The Preserve Project

SCH# 2019100515

Draft Environmental Impact Report

Prepared for

City of Rancho Cordova

November 2021

Prepared by

RANEY PLANNING & MANAGEMENT, INC.
20 years
1501 Sports Drive, Suite A, Sacramento, CA 95834

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Draft Environmental Impact Report

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Lead Agency

City of Rancho Cordova
Community Development Department
2729 Prospect Park Drive
Rancho Cordova, CA 95760

Darcy Goulart
Principal Planner
(916) 851-8784

Prepared By

Raney Planning and Management, Inc.
1501 Sports Drive, Suite A
Sacramento, CA 95834
(916) 372-6100

Contact:
Rod Stinson
Division Manager/Air Quality Specialist

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1. Introduction

1. INTRODUCTION

1.1 TYPE AND PURPOSE OF THE EIR

The Preserve Project Environmental Impact Report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) of 1970, Public Resources Code (PRC) Sections 21000-21178, as amended, and the Guidelines for Implementation of the California Environmental Quality Act, California Code of Regulations (CCR) Title 14, Sections 15000-15387 (CEQA Guidelines). The City of Rancho Cordova is the lead agency for the environmental review of The Preserve Project (proposed project) evaluated herein and has the principal responsibility for approving the project. As required by Section 15121 of the CEQA Guidelines, this EIR will (a) inform public agency decision-makers, and the public generally, of the significant environmental effects of the project, (b) identify possible ways to minimize the significant adverse environmental effects, and (c) describe reasonable and feasible project alternatives which reduce environmental effects. The public agency shall consider the information in the EIR along with other information that may be presented to the agency.

As provided in the CEQA Guidelines Section 15021, public agencies are charged with the duty to avoid or minimize environmental damage where feasible. The public agency has an obligation to balance a variety of public objectives, including economic, environmental, and social issues. CEQA requires the preparation of an EIR prior to approving any project that may have a significant effect on the environment. For the purposes of CEQA, the term project refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]). With respect to the proposed project, the City has determined that the proposed development is a *project* within the definition of CEQA, which has the potential for resulting in significant environmental effects.

The lead agency, which is the City of Rancho Cordova for this project, is required to consider the information in the EIR along with any other available information in deciding whether to approve the application. The basic requirements for an EIR include discussions of the environmental setting, environmental impacts, mitigation measures, alternatives, growth inducing impacts, and cumulative impacts.

The CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a *project-level EIR* pursuant to CEQA Guidelines Section 15161, which is an analysis that examines the environmental impacts of a specific development project. A *project-level EIR* focuses primarily on the changes in the environment that would result from the development of the project, and examines all phases of the project including planning, construction, and operation.

1.2 KNOWN RESPONSIBLE AND TRUSTEE AGENCIES

"Responsible agency" means a public agency that proposes to carry out or approve a project for which a lead agency is preparing or has prepared an EIR or Negative Declaration. For the purpose of CEQA, the term responsible agency includes all California public agencies other than the lead agency that have discretionary approval power over the project or an aspect of the project. The

Sacramento Metropolitan Air Quality Management District (SMAQMD) and Central Valley Regional Water Quality Control Board (CVRWQCD) are identified as potential responsible agencies for the proposed project.

"Trustee agency" means a State agency having jurisdiction by law over natural resources affected by a project, which are held in trust for the people of the State of California. The only known possible trustee agency is the California Department of Fish and Wildlife (CDFW).

Although not subject to California law, and, thus, outside the definitions of responsible agency or trustee agency, the U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS) would also be called upon to grant approvals — under federal law — necessary for the development of the project site. The above agencies do not have duties under CEQA, but, rather, are governed by a variety of federal statutes, such as the Clean Water Act, which governs the dredging and filling of waters of the U.S. (e.g., wetlands), and the Endangered Species Act, which requires USACE to consult with the USFWS as part of the review process for any wetland or fill permits that may be required.

1.3 PROJECT SUMMARY

The project site consists of 279.3 acres located northwest of Raymer Way and Grant Line Road, north of the Sunridge Specific Plan area and east of the Rio Del Oro Specific Plan area, within the City of Rancho Cordova. Currently, the project site contains two single-family residences and associated outbuildings on the southern portion of the site, an orchard within the northeastern portion of the site, and a third single-family residence and associated outbuildings in the northwestern portion of the site. The remainder of the site consists primarily of non-native grasses, with scattered trees located in the vicinity of the existing residences and associated access roads. The site is characterized by moderate rolling hills and flatlands interspersed with seasonal drainage corridors and wetlands. Morrison Creek runs northeast to southwest through the project site. Per the City of Rancho Cordova General Plan, the project site is located within the Grant Line West Planning Area and is designated Natural Resources and Residential-Mixed Density. The site is zoned Agricultural (AG-80) and Industrial Reserve (IR).

The proposed project would include subdivision of the project site to develop 440 single-family residences and associated parks, open space areas, and infrastructure to support the community. Of the 279.3 acres within the project site, 185.3 acres of currently undeveloped land on the northern parcels would remain as open space following development of the proposed project. A total of 8.65 acres are planned for two park areas located at the northern end of the development area, and an additional 9.77 acres of land would be designated Community Space. Finally, 0.45-acre of the project site would be designated green infrastructure which would include enhanced landscaped areas and trails with connection to the surrounding parks. Off-site improvements could be required, including utility connection or road development to the east of the site boundary and along the existing Raymer Way to the intersection with Grant Line Road, which could include expansion of the roadway or modifications to Morrison Creek.

A General Plan Amendment (GPA) is included as part of the proposed project to change the land use designation of the project site from Grant Line West Planning Area to Low-Density Residential. In addition, a GPA is included to amend the Circulation Element to alter the planned construction of Centennial Drive. If constructed as depicted in the Circulation Element, Centennial Drive would be a four-lane roadway and run through the project site in an east-west direction; however, through approval of the GPA, the portion within the project site would not be constructed.



The proposed project would require the following discretionary actions by the City of Rancho Cordova:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- General Plan Amendment from Grant Line West Planning Area to Low-Density Residential;
- General Plan Amendment to remove the portion of Centennial Drive through the project site, as depicted in the Circulation Element;
- Rezone from AG-80 (approximately 68.42 acres) and IR (approximately 30.48 acres) to Residential District (RD-5);
- Tentative Subdivision Map; and
- Development Agreement.

Please refer to Chapter 3, Project Description, of this EIR for a detailed description of the proposed project and entitlements, as well as a full list of the project objectives.

1.4 EIR PROCESS

The EIR process begins with the decision by the lead agency to prepare an EIR, either during a preliminary review of a project or at the conclusion of an Initial Study. Once the decision is made to prepare an EIR, the lead agency sends a Notice of Preparation (NOP) to appropriate government agencies and, when required, to the State Clearinghouse (SCH) in the Office of Planning and Research (OPR), which will ensure that responsible and trustee State agencies reply within the required time. The SCH assigns an identification number to the project, which then becomes the identification number for all subsequent environmental documents on the project. Commenting agencies have 30 days to respond to the NOP and provide information regarding alternatives and mitigation measures they wish to have explored in the Draft EIR and to provide notification regarding whether the agency will be a responsible agency or a trustee agency for the project.

Upon completion of the Draft EIR and prior to circulation to State and local agencies and interested members of the public, a notice of completion is filed with the SCH and a public notice of availability is published to inform interested parties that a Draft EIR is available for agency and public review. In addition, the notice provides information regarding the location where copies of the Draft EIR are available for public review and any public meetings or hearings that are scheduled. The Draft EIR is circulated for a minimum period of 45 days, during which time reviewers may submit comments on the document to the lead agency. The lead agency must respond to comments in writing. If significant new information, as defined in CEQA Guidelines Section 15088.5, is added to an EIR after public notice of availability is given, but before certification of the EIR, the revised EIR or affected chapters must be recirculated for an additional public review period with related comments and responses.

A Final EIR will be prepared, containing public comments on the Draft EIR and written responses to those comments, as well as a list of changes to the Draft EIR text necessitated by public comments, as warranted. Before approving a project, the lead agency shall certify that the EIR (consisting of the Draft EIR and Final EIR) has been completed in compliance with CEQA, and that the EIR has been presented to the decision-making body of the lead agency, which has reviewed and considered the EIR. The lead agency shall also certify that the EIR reflects the lead agency's independent judgment and analysis.

The findings prepared by the lead agency must be based on substantial evidence in the administrative record and must include an explanation that bridges the gap between evidence in the record and the conclusions required by CEQA. If the decision-making body elects to proceed with a project that would have unavoidable significant impacts, then a Statement of Overriding Considerations explaining the decision to balance the benefits of the project against unavoidable environmental impacts must be prepared.

1.5 SCOPE OF THE EIR

This EIR constitutes a project-level analysis for the proposed project and, pursuant to CEQA Guidelines Section 15161, covers "all phases of the project including planning, construction, and operation." State CEQA Guidelines § 15126.2(a) states, in pertinent part:

> An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced.

Pursuant to the CEQA Guidelines, the scope of this EIR addresses specific issues and concerns identified as potentially significant in the Initial Study prepared for the proposed project.

Environmental Issues Addressed in this EIR

The sections of the CEQA Guidelines Appendix G Checklist identified for study in this EIR include the following:

- Air Quality, Greenhouse Gas Emissions, and Energy;
- Biological Resources;
- Cultural and Tribal Resources;
- Geology and Soils/Mineral Resources;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning/Population and Housing;
- Noise;
- Public Services and Utilities; and
- Transportation.

The evaluation of effects is presented on a resource-by-resource basis in Chapters 4.1 through 4.10 of the EIR. Each chapter is divided into the following four sections: Introduction, Existing Environmental Setting, Regulatory Context, and Impacts and Mitigation Measures. Impacts that are determined to be significant in Chapters 4.1 through 4.10, and for which feasible mitigation measures are not available to reduce those impacts to a less-than-significant level, are identified as significant and unavoidable. Chapter 5 presents a discussion of growth-inducing impacts, a summary of cumulative impacts, and significant irreversible as well as significant and unavoidable environmental changes associated with the project. Alternatives to the proposed project are discussed in Chapter 6 of the EIR.

1.6 DEFINITION OF BASELINE

The CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a project-level EIR pursuant to CEQA Guidelines

Section 15161, which is an analysis that examines the environmental impacts of a specific development project. A project-level EIR focuses primarily on the changes in the environment that would result from the development of the project, and examines all phases of the project including planning, construction, and operation.

According to CEQA Guidelines Section 15125, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the "baseline physical conditions" against which project-related changes could be compared. In addition, CEQA Guidelines Section 15126.2(a) states that an EIR shall identify and focus on the significant environmental effects of the proposed project. The CEQA Guidelines, Section 15126.2(a), states in pertinent part:

> An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced.

Normally, the baseline condition is the physical condition that exists when the NOP is published. The NOP for the proposed project was published on October 25, 2019. Therefore, conditions existing at that time are considered to be the baseline against which changes that would result from the proposed project are evaluated. Impacts could include both direct and indirect physical changes to the baseline condition. The baseline condition for the proposed project site is described in Chapter 3, Project Description, of this EIR. The baseline conditions pertaining to each resource area are described in the "Existing Environmental Setting" section of the respective chapters of this EIR.

1.7 NOTICE OF PREPARATION AND SCOPING

In accordance with CEQA Guidelines Section 15082, an NOP, as well as an attached Initial Study (see Appendix A), was circulated to the public, local, State and federal agencies, and other known interested parties for a 30-day public and agency review period from October 25, 2019 to November 25, 2019. The purpose of the NOP was to provide notification that an EIR for the proposed project was being prepared and to solicit public input on the scope and content of the document.

A public scoping meeting was held on for the purpose of informing the public and receiving comments on the scope of the environmental analysis to be prepared for the proposed project.

In addition, pursuant to CEQA Guidelines Section 15082, the City of Rancho Cordova held an NOP scoping meeting during the 30-day review period, on November 29, 2019, for the purpose of receiving comments on the scope of the environmental analysis to be prepared for the proposed project. Agencies and members of the public were invited to attend and provide input on the scope of the EIR. A total of eight comment letters were received during the NOP public review period and verbal comments were received at the NOP scoping meeting. The comment letters are provided as Appendix B to this EIR. All comments were taken into consideration during the preparation of this EIR. A summary of the NOP comments received is provided in Section 1.8 below.

1.8 COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

During the NOP public review period from October 25, 2019 to November 25, 2019, the City of Rancho Cordova received eight comment letters. In addition, verbal comments were received at the public scoping meeting held on November 13, 2019. A copy of each letter is provided in Appendix B of this EIR. The comment letters received during the NOP public review period were authored by the following representatives of public agencies:

- County of Sacramento Department of Transportation – Matthew G. Darrow
- Cordova Recreation and Park District – Laura L. Taylor;
- County of Sacramento, Department of Waste Management and Recycling – Dave Ghirardelli;
- Sacramento Municipal Utility District – Nicole Goi;
- Department of California Highway Patrol – R.M. Johnson;
- Central Valley Regional Water Quality Control Board – Jordan Hensley;
- California Department of Transportation (Caltrans) – David Smith; and
- Sacramento Metropolitan Air Quality Management District – Molly Wright.

The following list, categorized by issue, summarizes the concerns brought forth in the comment letters and verbal comments received on the scope of the EIR:

Air Quality and Greenhouse Gas Emissions	Concerns related to: • Construction and operational emissions of criteria pollutants and GHG emissions. • Project emissions in conjunction with planned projects within the Grant Line West planning area.
Biological Resources	Concerns related to: • Loss of plant and wildlife habitat. • Impacts on Morrison Creek. • Removal of wetlands or protected plants and animals.
Cultural and Tribal Resources	Concerns related to: • Potential for encountering previously unknown cultural, historical, or tribal resources at the project site.
Geology and Soils/Mineral Resources	Concerns related to: • Increased stormwater runoff causing soil erosion. • Removal of unsuitable soils.
Hydrology and Water Quality	Concerns related to: • Degradation of water quality in area waterways.
Land Use and Planning/Population and Housing	Concerns related to: • Increase in population.
Noise	Concerns related to: • Increase in noise levels to surrounding residential areas.
Public Services and Utilities	Concerns related to: • Lack of public access to the proposed park facilities. • Location of the proposed parks. • Impacts from construction of the proposed park facilities. • Connection of proposed trail system to the City's existing trail system.

	• Cumulative impacts related to the need for increased electrical delivery. • Potential need to relocate and/or remove any electrical infrastructure.
Transportation	Concerns related to: • Traffic increases in the project vicinity. • Increased traffic delays and congestion during commute hours. • Increase in emergency response times due to increased traffic delays and congestion. • Cumulative traffic impacts on the local and regional transportation system.

All of these issues are addressed in this EIR, in the relevant sections identified in the first column.

1.9 PROJECT CHANGES SINCE PUBLICATION OF THE NOP

Since the NOP was published, relatively minor changes to the proposed project have been made, including the following:

- Changes to the Tentative Subdivision Map layout that resulted in an increase in the number of single-family lots by six from 434 to 440;
- An additional General Plan Amendment is proposed to amend the Circulation Element to alter the planned construction of Centennial Drive; and
- A slight modification to the requested Rezone of Residential District (RD-5 is proposed, rather than RD-6).

The above changes have been evaluated throughout this EIR.

1.10 DRAFT EIR AND PUBLIC REVIEW

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, the general public, organizations, and agencies can submit comments to the Lead Agency on the Draft EIR's accuracy and completeness. Release of the Draft EIR marks the beginning of a 45-day public review period pursuant to CEQA Guidelines Section 15105. The public can review the Draft EIR at the City's website at:

https://www.cityofranchocordova.org/government/planning/environmental-review/environmental-documents

or at the following address during normal business hours:

City of Rancho Cordova
Community Development Department
2729 Prospect Park Drive
Rancho Cordova, CA 95670

Comments may be submitted both in written form and/or orally at the public hearing on the Draft EIR. Notice of the time and location of the hearing will be published in local newspapers, mailed to property owners and residents surrounding the project, emailed to residents that have requested to be placed on the project's email notification list, posted on the City's website, and posted at and adjacent to the site prior to the hearing.

All comments or questions regarding the Draft EIR should be addressed to:

Darcy Goulart, Principal Planner
City of Rancho
Cordova Community Planning Department
Rancho Cordova, CA 95760
(916) 851-8784
fax (916) 851-8762
dgoulart@cityofranchocordova.org

1.11 ORGANIZATION OF THE DRAFT EIR

The EIR is organized into the following sections:

Chapter 1 – Introduction

Provides an introduction and overview describing the intended use of the EIR and the review and certification process, as well as summaries of the chapters included in the EIR and summaries of the issues and concerns received from the public and public agencies during the NOP review period.

Chapter 2 – Executive Summary

Summarizes the elements of the project and the environmental impacts that would result from implementation of the proposed project, describes proposed mitigation measures, and indicates the level of significance of impacts after mitigation.

Chapter 3 – Project Description

Provides a detailed description of the proposed project, including the project's location, background information, objectives, and technical characteristics.

Chapter 4 – Environmental Setting, Impacts, and Mitigation

Contains a project-level and cumulative analysis of environmental issue areas associated with the proposed project. The section for each environmental issue contains an introduction and description of the setting of the project site, identifies impacts, and recommends appropriate mitigation measures.

Chapter 5 – Statutorily Required Sections

Provides discussions required by CEQA regarding impacts that would result from the proposed project, including a summary of potential growth-inducing impacts, significant irreversible changes to the environment, and significant and unavoidable impacts.

Chapter 6 – Alternatives Analysis

Provides a comparative analysis of the alternatives to the proposed project, their respective comparative environmental effects, and a determination of the environmentally superior alternative.

Chapter 7 – EIR Authors and Persons Consulted

Lists EIR and technical report authors who provided technical assistance in the preparation and review of the EIR.

Chapter 8 – References
Provides bibliographic information for all references and resources cited.

Appendices
The Appendices include the NOP and Initial Study, comments received during the NOP comment period, and all technical reports prepared for the proposed project.

2. Executive Summary

2. EXECUTIVE SUMMARY

2.1 INTRODUCTION

The Executive Summary chapter of the EIR provides an overview of the proposed project (see Chapter 3, Project Description, for further details) and provides a table summary of the conclusions of the environmental analysis provided in Chapters 4.1 through 4.10. This chapter also summarizes the alternatives to the proposed project that are described in Chapter 6, Alternatives Analysis, and identifies the Environmentally Superior Alternative. Table 2-1 contains the environmental impacts associated with the proposed project, the significance of the impacts, the proposed mitigation measures for the impacts, and the significance of the impacts after implementation of the mitigation measures.

2.2 SUMMARY DESCRIPTION OF THE PROPOSED PROJECT

The project site consists of approximately 279.3 acres within the City of Rancho Cordova, located northwest of Raymer Way and Grant Line Road, north of the Sunridge Specific Plan area and east of the Rio Del Oro Specific Plan area. The site is identified by Assessor's Parcel Numbers (APNs) 072-0300-001, -002, -005, -008, and 073-0010-010, and -011.

Currently, the project site contains two single-family residences and associated outbuildings on the southern portion of the site, within parcels 072-0300-002 and -005. An orchard is located within the northeastern portion of the site within parcel 073-0010-011, and a third single-family residence and associated outbuildings are located on APN 072-0300-008. The remainder of the site consists primarily of non-native grasses, with scattered trees located in the vicinity of the existing residences and associated access roads. The site is characterized by moderate rolling hills and flatlands interspersed with seasonal drainage corridors and wetlands. Additionally, Morrison Creek runs northeast to southwest through the project site.

Per the City of Rancho Cordova General Plan, the project site is located within the Grant Line West Planning Area and is designated Natural Resources and Residential-Mixed Density. The site is zoned Agricultural (AG-80) and Industrial Reserve (IR).

The proposed project would include subdivision of the project site to develop 440 single-family residences and associated parks, open space areas, and infrastructure to support the community. Of the 279.3 acres within the project site, 185.3 acres of currently undeveloped land on the northern parcels would remain as open space following development of the proposed project. A total of 8.65 acres are planned for two park areas located at the northern end of the development area, and an additional 9.77 acres of land would be designated Community Space. Finally, 0.45-acre of the project site would be designated green infrastructure which would include enhanced landscaped areas and trails with connection to the surrounding parks.

The proposed project could include off-site improvements to the east of the site boundary. Improvements could include utility connection or road development. Additionally, off-site improvements could be required along the existing Raymer Way to the intersection with Grant Line Road, and could include expansion of the roadway or modifications to Morrison Creek.

A General Plan Amendment (GPA) is included as part of the proposed project to change the land use designation of the project site from Grant Line West Planning Area to Low-Density Residential. In addition, a GPA is included as part of the project to amend the Circulation Element to alter the planned construction of Centennial Drive. If constructed as depicted in the Circulation Element, Centennial Drive would be a four-lane roadway and run through the project site in an east-west direction; however, through approval of the GPA, the portion within the project site would not be constructed.

The proposed project would require the following discretionary actions by the City of Rancho Cordova:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- GPA from Grant Line West Planning Area to Low-Density Residential;
- GPA to remove the portion of Centennial Drive through the project site, as depicted in the Circulation Element;
- Rezone from AG-80 (approximately 68.42 acres) and IR (approximately 30.48 acres) to Residential District (RD-5);
- Tentative Subdivision Map; and
- Development Agreement.

In addition to the aforementioned entitlements from the City, the proposed project would require approvals/permits from the following State, federal, or local agencies:

- California Department of Fish and Wildlife (CDFW);
- Central Valley Regional Water Quality Control Board (CVRWQCB);
- Sacramento Metropolitan Air Quality Management District (SMAQMD);
- U.S. Army Corps of Engineers (USACE) – Nationwide Permit (404); and, possibly,
- U.S. Fish and Wildlife Service (USFWS).

Please refer to Chapter 3, Project Description, of this EIR for a detailed description of the proposed project and entitlements, as well as a full list of the project objectives.

2.3 ENVIRONMENTAL IMPACTS AND PROPOSED AND RECOMMENDED MITIGATION

Under CEQA, a significant effect on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, mineral, flora, fauna, ambient noise, and objects of historic or aesthetic significance. Mitigation measures must be implemented as part of the proposed project to reduce potential adverse impacts to a less-than-significant level. Such mitigation measures are noted in this EIR and are found in the following technical chapters: Air Quality, Greenhouse Gas Emissions, and Energy; Biological Resources; Cultural and Tribal Resources; Geology and Soils/Mineral Resources; Hazards and Hazardous Materials; Hydrology and Water Quality; Noise; and Transportation. Any impact that remains significant after implementation of mitigation measures is considered a significant and unavoidable impact.

A summary of the identified impacts in the technical chapters of the EIR, as well as the Initial Study prepared for the project, is presented in Table 2-1. In Table 2-1, the proposed project

impacts are identified for each technical chapter (Chapter 4.1 through 4.10) of the EIR. In addition, Table 2-1 includes the level of significance of each impact, any mitigation measures required for each impact, and the resulting level of significance after implementation of mitigation measures for each impact.

2.4 SUMMARY OF PROJECT ALTERNATIVES

The following section presents a summary of the evaluation of the alternatives considered for the proposed project, which include the following:

- No Project Alternative;
- Reduced VMT Alternative; and
- Reduced Footprint Alternative.

The following summary provides brief descriptions of the three alternatives to the proposed project that are evaluated in this EIR. For a more thorough discussion of project alternatives, please refer to Chapter 6, Alternatives Analysis.

No Project Alternative

The No Project Alternative assumes that the project site would remain in its current condition, as described above. The No Project Alternative would not meet any of the identified project objectives.

Reduced VMT Alternative

The Reduced VMT Alterative would consist of 376 single-family residential lots on the same 98.9-acre development footprint. Lot sizes would be larger in size than those of the currently proposed project, and the reduction in units would result in a density of 3.8 dwelling units per acre (du/ac). Under the Reduced VMT Alternative, the project would require a rezone of the 98.9 acres to the RD-4 zoning district.

Because the Reduced VMT Alternative would maintain a similar development footprint to the proposed project, access to the site under the alternative would continue to be provided by two entry points along Raymer Way, and Edington Drive would still be extended to provide access from the site to the existing Camden at Somerset Ranch subdivision. With the reduction in units, the site would require fewer interior streets and water and sewer line connections. The Alternative would still implement two bio-retention basins in the northwest portion of the site, and new drain inlets and underground storm drains would also be installed. The GPA would still be required to amend the General Plan's Circulation Element, which calls for extending Centennial Drive through the site.

The Reduced VMT Alternative would result in fewer impacts to Air Quality, GHG Emissions, and Energy, Noise, Public Services and Utilities, and Transportation, as compared to the proposed project. However, the Alternative would result in similar impacts related to Biological Resources, Cultural and Tribal Resources, Geology and Soils/Mineral Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, and Land Use and Planning/Population and Housing as compared to the proposed project.

The Reduced VMT Alternative would not achieve Objective #2. However, the Alternative would meet Objectives #1, #3, #4, #5, #6, and #7, as the reduction of units would not affect the ability for the alternative to consolidate the remaining parcels in the Grant Line West Planning Area in a

manner that concentrates development south of Morrison Creek; develop a residential community that is contiguous to and compatible with adjacent existing development; utilize existing utility capacity for maximum efficiency; develop a residential community that can provide timely housing; contribute to the overall bicycle and pedestrian connectivity of the City; or enhance the City's network of parks, trails, and open spaces.

Reduced Footprint Alternative

Under this alternative, the project site would be reduced to avoid wetland areas in the northwest section of the development area. The reduction in footprint would reduce the project's development area from 98.9 acres to 92.57 acres, which would preserve 6.33 acres of wetlands. The alternative would still implement the 9.77 acres designated for Community Space to allow for the inclusion of the bio-retention and hydromodification areas in the northwest portion of the site. Retaining the Community Space would necessitate a reduction in the number of units from 440 units to 315 units. The reduction in units and footprint would result in a density of 3.4 du/ac. As such, the Alternative would require a Rezone to the RD-4 Zoning District in order to accommodate the proposed density.

Access to the site under the alternative would continue to be provided by two entry points along Raymer Way, and Edington Drive would still be extended to provide access from the site to the existing Camden at Somerset Ranch subdivision. With the reduction in units, fewer water and sewer line connections would be required. The amount of stormwater infrastructure within the site would also be reduced due to the reduced area of ground disturbance. New drain inlets and underground storm drains would be installed. The GPA would still be required to amend the General Plan's Circulation Element, which calls for extending Centennial Drive through the site.

The Reduced Footprint Alternative would result in fewer impacts related to all issue areas, except for Land Use and Planning/Population and Housing, which would be similar as compared to the proposed project.

The Reduced Footprint Alternative would not achieve Objective #2. However, the Alternative would meet Objectives #1, #3, #4, #5, #6, and #7, as the reduction of units would not affect the ability for the alternative to consolidate the remaining parcels in the Grant Line West Planning Area in a manner that concentrates development south of Morrison Creek; develop a residential community that is contiguous to and compatible with adjacent existing development; utilize existing utility capacity for maximum efficiency; develop a residential community that can provide timely housing; contribute to the overall bicycle and pedestrian connectivity of the City; or enhance the City's network of parks, trails, and open spaces.

Environmentally Superior Alternative

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated and states, "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." The No Project Alternative would be considered the environmentally superior alternative, because the project site is assumed to remain in its current condition under the alternative. Consequently, the impacts resulting from the proposed project would not occur under the Alternative.

Based on the analysis presented in Chapter 6, Alternatives Analysis, of this EIR, the Reduced Footprint Alternative would meet would meet Objectives #1, #3, #4, #5, and #7. and would result in similar or fewer impacts as compared to the proposed project. In addition, the Reduced Footprint Alternative would result in fewer impacts to Biological Resources, Cultural and Tribal Resources, Geology and Soils/Mineral Resources, and Hazards and Hazardous Materials as compared to the Reduced VMT Alternative. Therefore, the Reduced Footprint Alternative would be the Environmentally Superior Alternative.

2.5 AREAS OF CONTROVERSY

Areas of controversy that were identified in NOP comment letters, and are otherwise known for the region, include the following:

- Construction and operational emissions of criteria pollutants and/or GHG emissions.
- Adverse effects from project emissions in conjunction with planned projects within the Grant Line West planning area.
- Loss of plant and wildlife habitat.
- Impacts on Morrison Creek.
- Removal of wetlands or protected plant and animals.
- Potential impacts related to the inadvertent discovery of cultural, historical, or tribal resources at the project site.
- Increased stormwater runoff causing soil erosion.
- Removal of unsuitable soils.
- Degradation of water quality in area waterways.
- Increase in population.
- Increase in ambient noise levels on surrounding residential areas.
- Concerns related to a lack of public access to the proposed park facilities.
- Concerns related to the interconnectivity of the proposed trail system to the City's existing trail system.
- Potential increase in emergency response times.
- Potential need to relocate and/or remove any electrical infrastructure.
- Increased traffic in the project vicinity.
- Cumulative traffic impacts on the local and regional transportation system.

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.1 Air Quality, Greenhouse Gas Emissions, and Energy			
4-1-1 Conflict with or obstruct implementation of the applicable air quality plan during project construction.	LS	*None required.*	N/A
4-1-2 Conflict with or obstruct implementation of the applicable air quality plan during project operation.	LS	*None required.*	N/A
4-1-3 Expose sensitive receptors to substantial pollutant concentrations.	S	*4.1-3* *Prior to the initiation of any ground-disturbing activities, the project applicant shall ensure that all heavy-duty off-road diesel-powered equipment to be used during the grading phase of construction of the proposed project (including owned, leased, and subcontractor equipment) shall be CARB Tier 4 or cleaner.* *In addition, all off-road equipment working at the construction site must be maintained in proper working condition according to manufacturer's specifications. Idling shall be limited to five minutes or less in accordance with the In-Use Off-Road Diesel Vehicle Regulation as required by CARB. Portable equipment over 50 horsepower must have either a valid SMAQMD Permit to Operate (PTO) or a valid statewide Portable Equipment Registration Program (PERP) placard and sticker issued by CARB.* *The aforementioned requirements shall be noted on improvement plans and submitted for review and*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		approval by the City of Rancho Cordova Community Development Department.	
4-1-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	LS	*None required.*	N/A
4-1-5 Result in the inefficient or wasteful use of energy, or conflict with a State or local plan for renewable energy or energy efficiency.	LS	*None required.*	N/A
4-1-6 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	LS	*None required.*	N/A
4-1-7 Generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.	S	*4.1-7 Off-site credits shall be purchased in order to reduce annual greenhouse gas (GHG) emissions by 617.30 MTCO2e per year. Credit purchases shall adhere to all of the following:* *1. Off-site credits shall be real, quantifiable, permanent, verifiable, enforceable, and additional, consistent with the standards set forth in California Health and Safety Code*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Section 38562, subdivisions (d)(1) and (d)(2). Such credits shall be based on protocols that are consistent with the criteria set forth in subdivision (a) of Section 95972 of Title 17 of the California Code of Regulations. Such credits must be purchased through one of the following: *(i) A California Air Resources Board (CARB)-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard;* *(ii) Any registry approved by CARB to act as a registry under the California Cap and Trade program; or* *(iii) Through the California Air Pollution Control Officers Association (CAPCOA) GHG Rx and the Sacramento Metropolitan Air Quality Management District (SMAQMD);* *(iv) In the event that no credits meeting these criteria are available within California, the applicant may purchase credits elsewhere so long as: (a) the Governor or the Governor's designee has made the findings set forth in Government Code Section 12894; (b) and these findings have been submitted to the Legislature; and*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		(c) California has accepted the credits as meeting the linkage standards contained in Government Code Section 12894 or its successor statute. *The applicant must show that the emission reductions from identified projects are real, permanent through the duration of the project (if it is a one-time purchase), enforceable, and are equal to the pollutant type and amount of the project impact being offset. In addition, any off-site purchase shall be subject to review and approval by the City of Rancho Cordova Community Development Department.*	
4.2 Biological Resources			
4.2-1 Have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species.	S	*4.2-1(a) Prior to initiation of ground-disturbing activities within the Raymer Way Offsite, the project applicant shall comply with SSHCP AMM Plant-1 (Rare Plant Surveys). Though stinkbells is not considered an SSHCP Covered Species, the special-status plant surveys conducted per PLANT-1 shall identify whether the species is present in the survey area. If any special-status plant species are found to be present during the focused survey(s), Mitigation Measure 4.2-1(b) shall be implemented. If special-status plant species are not found to be present during the focused survey(s), then no further action is required. A written summary of the survey results shall*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		be submitted to the City of Rancho Cordova Community Development Department. • ***PLANT-1 (Rare Plant Surveys):*** *If a Covered Activity project site contains modeled habitat for Ahart's dwarf rush (Juncus leiospermus var. ahartii), Bogg's Lake hedge-hyssop (Gratiola heterosepala), dwarf downingia (Downingia pusilla), Legenere (Legenere limosa), pincushion navarretia (Navarretia myersii), or Sanford's arrowhead (Sagittaria sanfordii), the Covered Activity project site will be surveyed for the rare plant by an approved biologist and following the California Department of Fish and Wildlife (CDFW) rare plant survey protocols (CDFG 2009) or the most recent CDFW rare plant survey protocols. An approved biologist will conduct the field surveys and will identify and map plant species occurrences according to the protocols. See Chapter 10 (of the SSHCP) for the process to submit survey information to the Plan Permittee and the Permitting Agencies.* *4.2-1(b)* *If any SSHCP-covered plants are determined to be present within the Raymer Way Offsite, SSHCP PLANT-2 (Rare Plant Protection) shall be implemented. If any special-status plant species are determined to be present, a mitigation plan shall be prepared for review and approval by the City of*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Rancho Cordova; mitigation may include harvesting and transplanting of impacted bulbs into a preserved area with suitable habitat. Avoided areas containing species shall be fenced with orange construction fencing. • ***PLANT-2 (Rare Plant Protection):*** *If a rare plant listed in AMM PLANT-1 is detected within an area proposed to be disturbed by a Covered Activity or is detected within 250 feet of the area proposed to be disturbed by a Covered Activity, the Implementing Entity will assure one unprotected occurrence of the species is protected within a SSHCP Preserve before any ground disturbance occurs at the project site.*	
4.2-2 Have a substantial adverse effect, either directly or through habitat modifications, on special-status invertebrates	S	*4.2-2(a)* *Prior to initiation of ground-disturbing activities, the project applicant shall submit a South Sacramento Habitat Conservation Plan (SSHCP) permit application package to the City of Rancho Cordova to request that the incidental take coverage provided by City's SSHCP Incidental Take Permit (ITP) be extended to the proposed activities. The City of Rancho Cordova shall review the SSHCP permit application for consistency with all of the SSHCP requirements and provide the South Sacramento Conservation Agency with a copy of the SSHCP requirements for tracking purposes. The project applicant shall be responsible for paying all SSHCP development fees associated with obtaining*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		coverage from the City of Rancho Cordova. Any proposal to provide land in fee title, or provide a conservation easement in lieu of paying all or part of the required SSHCP development fees, shall include a consistency analysis in the application that sufficiently shows that the proposal is consistent with the SSHCP Conservation Strategy. *4.2-2(b) The project applicant shall comply with SSHCP requirements and all relevant AMMs set forth in the SSHCP Permit obtained for the proposed project.* *4.2-2(c) Prior to approval of grading and improvement plans and prior to initiation of any groundbreaking activity associated with the proposed project, or timed as required by the applicable permits if the proposed project is constructed in phases, the project applicant shall ensure that mitigation for impacts to aquatic features and other habitat for special-status species has been implemented through the SSHCP In-Lieu Fee Program or by other methods agreeable to the USACE, RWQCB, USFWS, CDFW, City, and South Sacramento Conservation Agency as appropriate, depending on agency jurisdiction*	
4.2-3 Have a substantial adverse effect, either directly or through habitat modifications, on special-status amphibian species.	S	*Western Spadefoot* *4.2-3(a) The project applicant shall comply with SSHCP AMMs WS-1 through WS-6.* • ***WS-1 (Western Spadefoot Work Window):*** *Ground-disturbing Covered Activities within*	LS

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		western spadefoot modeled habitat (Figure 3-17 [of the SSHCP]) will occur outside the breeding and dispersal season (after May 15 and before October 15), to the maximum extent practicable. • ***WS-2 (Western Spadefoot Exclusion Fencing):*** *If Covered Activities must be implemented in modeled habitat (Figure 3-17) after October 15 and before May 15, exclusion fencing will be installed around the project footprint before October 15, and the project site must be monitored by an approved biologist following rain events. Temporary high- visibility construction fencing will be installed along the edge of work areas, and silt fencing will be installed immediately behind the temporary high-visibility construction fencing to exclude western spadefoot from entering the construction area. Fencing will remain in place until all construction activities within the construction area are completed. No project activities will occur outside the delineated project footprint. If a western spadefoot is encountered, refer to WS-6, below.* • ***WS-3 (Western Spadefoot Monitoring):*** *If Covered Activities must be implemented in modeled habitat (Figure 3-17 [of the SSHCP])*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		in the breeding and dispersal season (after October 15 and before May 15), an approved biologist experienced with western spadefoot identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction- related activities are taking place, and will inspect the project site daily for western spadefoot prior to construction activities. The approved biologist will also train construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western spadefoot enters an active construction zone (i.e., outside the buffer zone). If a western spadefoot is encountered, refer to WS-6, below. • ***WS-4 (Avoid Western Spadefoot Entrapment):*** *If a Covered Activity occurs in western spadefoot modeled habitat (Figure 3-17 [of the SSHCP]), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western spadefoot modeled habitat will be inspected for western spadefoot by the approved biologist prior to being moved. If a western spadefoot is encountered, refer to WS-6 below. • ***WS-5 (Erosion Control Materials in Western Spadefoot Habitat):*** *If erosion control (BMP-2) is implemented within western spadefoot modeled habitat (Figure 3-17 [of the SSHCP]), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that western spadefoots are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.* *Western Pond Turtle* *4.2-3(b) Prior to initiation of ground-disturbing activities, pre-construction surveys shall be conducted per SSHCP AMM WPT-1. If western pond turtles are detected, WPT-2 through WPT-9 shall be implemented.*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		• ***WPT-1 (Western Pond Turtle Surveys):*** *If the SSHCP western pond turtle modeled habitat maps (Figure 3-19 [of the SSHCP]) show that modeled habitat for western pond turtle is present within a Covered Activity's project footprint or within 300 feet of a project footprint, then an approved biologist will conduct a field investigation to delineate western pond turtle aquatic habitat within the project footprint and within 300 feet of the project footprint. In addition to the SSHCP land cover types shown in Figure 3-19 (of the SSHCP), western pond turtle aquatic habitat includes, but is not limited to, low-gradient streams and creeks, open water, freshwater marsh, and rice fields. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential sites and provide those maps to the Local Land Use Permittees and the Implementing Entity. Locations of delineated western pond turtle habitat must also be noted on plans that are submitted to a Local Land Use Permittee. The applicant will use this information to finalize project design. Covered Activities may occur throughout the year as long as western pond turtle habitat is identified and fully avoided. Otherwise,*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Covered Activities must comply with WPT-2 through WPT-9. See Chapter 10 (of the SSHCP) for the process to conduct and submit survey information. • ***WPT-2 (Western Pond Turtle Work Window):*** *Maintenance and improvements to existing structures may occur throughout the year as long as western pond turtle habitat is identified and avoided, and movement of equipment is confined to existing roads. Otherwise, construction and ground-disturbing Covered Activities must be conducted outside of western pond turtle's active season. Construction and ground-disturbing activities will be initiated after May 1 and will commence prior to September 15. If it appears that construction activities may go beyond September 15, the appropriate Plan Permittee will contact the Local Land Use Permittee and the Implementing Entity as soon as possible, but not later than September 1, to determine if additional measures are necessary to minimize take.* • ***WPT-3 (Western Pond Turtle Monitoring):*** *If a Covered Activity is occurring in western pond turtle modeled habitat (Figure 3-19 [of the SSHCP]), an approved biologist experienced with western pond turtle*	

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		identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place in aquatic habitat or within 300 feet of aquatic habitat, and will inspect the project site daily for western pond turtle prior to construction activities. The approved biologist will also training construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western pond turtle enters an active construction zone (i.e., outside the buffer zone). • ***WPT-4 (Western Pond Turtle Habitat Dewatering and Exclusion):*** *If construction activities will occur in western pond turtle aquatic habitat, aquatic habitat for the turtle will be dewatered and then remain dry and absent of aquatic prey (e.g., crustaceans and other aquatic invertebrates) for 15 days prior to the initiation of construction activities. If complete dewatering is not possible, the Implementing Entity will be contacted to determine what additional measures may be necessary to minimize effects to western pond turtle. After aquatic habitat has been dewatered 15 days prior to construction activities, exclusion fencing will be installed*	

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		extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent turtles from attempting to burrow or move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify construction limits and to protect adjacent habitat from encroachment of personnel and equipment. Western pond turtle habitat outside construction fencing will be avoided by all construction personnel. The fencing and work area will be inspected by the approved biologist to ensure that the fencing is intact and that no turtles have entered the work area before the start of each work day. Fencing will be maintained by the contractor until completion of the project. If, after exclusion fencing and dewatering, western pond turtles are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will discuss the next best steps with the Implementing Entity and Wildlife Agencies. • ***WPT-5 (Avoid Western Pond Turtle Entrapment):*** *If a Covered Activity occurs within western pond turtle modeled habitat*	

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		(Figure 3-19 [of the SSHCP]), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western pond turtle modeled habitat will be inspected for western pond turtle by the approved biologist prior to being moved. • ***WPT-6 (Erosion Control Materials in Western Pond Turtle Habitat):*** *If erosion control (BMP-2) is implemented within western pond turtle modeled habitat (Figure 3-19 [of the SSHCP]), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that turtles are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.*	

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		• ***WPT-7 (Western Pond Turtle Modeled Habitat Speed Limit):*** *Covered Activity construction and maintenance vehicles will observe a 20-mile-per-hour speed limit within western pond turtle modeled upland habitat (Figure 3-19 [of the SSHCP]).* • ***WPT-8 (Western Pond Turtle Encounter Protocol):*** *If a western pond turtle is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the turtle, within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service immediately. Any worker who inadvertently injures or kills a western pond turtle or who finds one dead, injured, or entrapped must immediately report the incident to the approved biologist.*	

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		• ***WPT-9 (Western Pond Turtle Post-Construction Restoration):*** *After completion of ground- disturbing Covered Activities, the applicant will remove any temporary fill and construction debris and will restore temporarily disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Implementing Entity. Restoration work may include replanting emergent aquatic vegetation and placing appropriate artificial or natural basking areas in waterways and wetlands. A photo documentation report showing pre- and post-project conditions will be submitted to the Implementing Entity 1 month after implementation of the restoration.*	
4.2-4 Have a substantial adverse effect, either directly or through habitat modifications, on burrowing owl.	S	*4.2-4* *Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs WBO-2 through WBO-7. If western burrowing owl is found within the survey area, WBO-3 through 7 shall be implemented as required based on the results of surveys conducted per WBO-2.* • ***WBO-1 (Western Burrowing Owl Surveys):*** *Surveys within modeled habitat*	LS

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		are required for both the breeding and non-breeding season. If the project site falls within modeled habitat, an approved biologist will survey the project site and map all burrows, noting any burrows that may be occupied. Occupied burrows are often (but not always) indicated by tracks, feathers, egg shell fragments, pellets, prey remains, and/or excrement. Surveying and mapping will be conducted by the approved biologist while walking transects throughout the entire project site plus all accessible areas within a 250-foot radius from the project site. The centerline of these transects will be no more than 50 feet apart and will vary in width to account for changes in terrain and vegetation that can preclude complete visual coverage of the area. For example, in hilly terrain with patches of tall grass, transects will be closer together, and in open areas with little vegetation, they can be 50 feet apart. This methodology is consistent with current survey protocols for this species (California Burrowing Owl Consortium 1993). Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. If suitable habitat is identified during the initial survey, and if the project does not fully avoid the habitat, pre-construction surveys will be	

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		required. Burrowing owl habitat is fully avoided if project-related activities do not impinge on a 250- foot buffer established by the approved biologist around suitable burrows. See Chapter 10 (of the SSHCP) for the process to conduct and submit survey information. • ***WBO-2 (Western Burrowing Owl Pre-Construction Surveys):*** *Prior to any Covered Activity ground disturbance, an approved biologist will conduct pre-construction surveys in all areas that were identified as suitable habitat during the initial surveys. The purpose of the pre-construction surveys is to document the presence or absence of burrowing owls on the project site, particularly in areas within 250 feet of construction activities. To maximize the likelihood of detecting owls, the pre-construction survey will last a minimum of 3 hours. The survey will begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total), or begin 2 hours before sunset and continue until 1 hour after sunset. Additional time may be required for large project sites. A minimum of two pre-construction surveys will be conducted (if owls are detected on the first survey, a second survey is not needed). All owls*	

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		observed will be counted and their location will be mapped. Surveys will conclude no more than 2 calendar days prior to construction. Therefore, the Third-Party Project Proponent must begin surveys no more than 4 days prior to construction (2 days of surveying plus up to 2 days between surveys and construction). To avoid last-minute changes in schedule or contracting that may occur if burrowing owls are found, the Third-Party Project Proponent may also conduct a preliminary survey up to 15 days before construction. This preliminary survey may count as the first of the two required surveys as long as the second survey concludes no more than 2 calendar days in advance of construction. • ***WBO-3 (Burrowing Owl Avoidance):*** *If western burrowing owl or evidence of western burrowing owl is observed on the project site or within 250 feet of the project site during pre-construction surveys, then the following will occur:* ***During Breeding Season:*** *If the approved biologist finds evidence of western burrowing owls within a project site during the breeding season (February 1 through August 31), all project-related activities will avoid nest sites*	

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		during the remainder of the breeding season or while the nest remains occupied by adults or young (nest occupation includes individuals or family groups foraging on or near the site following fledging). Avoidance is establishment of a minimum 250-foot buffer zone around nests. Construction and other project-related activities may occur outside of the 250-foot buffer zone. Construction and other project-related activities may be allowed inside of the 250-foot non-disturbance buffer during the breeding season if the nest is not disturbed, and the Third-Party Project Proponent develops an avoidance, minimization, and monitoring plan that is approved by the Implementing Entity and Wildlife Agencies prior to project construction based on the following criteria: ○ *The Implementing Entity and Wildlife Agencies approve of the avoidance and minimization plan provided by the project applicant.* ○ *An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline nesting and foraging behavior (i.e., behavior without construction).* ○ *The same approved biologist monitors the owls during*	

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		construction and finds no change in owl nesting and foraging behavior in response to construction activities. *If there is any change in owl nesting and foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer. Construction cannot resume within the 250-foot buffer until any owls present are no longer affected by nearby construction activities, and with written concurrence from the Wildlife Agencies.* *If monitoring by the approved biologist indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use, the non-disturbance buffer zone may be removed if approved by the Wildlife Agencies. The approved biologist will excavate the burrow in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl to prevent reoccupation after receiving approval from the Wildlife Agencies.* *The Implementing Entity and Wildlife Agencies will respond to a request from the Third-Party Project Proponent to review the*	

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		proposed construction monitoring plan within 21 days. ***During Non-Breeding Season:*** *During the non-breeding season (September 1 through January 31), the approved biologist will establish a minimum 250-foot non-disturbance buffer around occupied burrows. Construction activities outside of this 250-foot buffer will be allowed. Construction activities within the non-disturbance buffer will be allowed if the following criteria are met to prevent owls from abandoning over- wintering sites:* ○ *An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline foraging behavior (i.e., behavior without construction).* ○ *The same approved biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities.* ○ *If there is any change in owl foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer.*	

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		○ *If the owls are gone for at least 1 week, the Third-Party Project Proponent may request approval from the Implementing Entity and Wildlife Agencies that an approved biologist excavate usable burrows and install one-way exclusionary devices to prevent owls from re-occupying the site. After all usable burrows are excavated, the buffer zone will be removed and construction may continue.* *Monitoring must continue as described above for the non-breeding season as long as the burrow remains active.* • ***WBO-4 (Burrowing Owl Construction Monitoring):*** *During construction of Covered Activities, 250-foot construction buffer zones will be established and maintained around any occupied burrow. An approved biologist will monitor the site to ensure that buffers are enforced and owls are not disturbed. The approved biologist will also train construction personnel on avoidance procedures, buffer zones, and protocols in the event that a burrowing owl flies into an active construction zone.*	

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		• ***WBO-5 (Burrowing Owl Passive Relocation):*** *Passive relocation is not allowed without the express written approval of the Wildlife Agencies. Passive owl relocation may be allowed on a case-by-case basis on project sites during the non-breeding season (September 1 through January 31) with the written approval of the Wildlife Agencies if the other measures described in this condition preclude work from continuing. Passive relocation must be done in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl. Passive relocation will only be proposed if the burrow needing to be removed or with the potential to collapse from construction activities is the result of a Covered Activity. If passive relocation is approved by the Wildlife Agencies, an approved biologist can passively exclude birds from their burrows during the non-breeding season by installing one-way doors in burrow entrances. These doors will be in place for 48 hours to ensure that owls have left the burrow, and then the biologist will excavate the burrow to prevent reoccupation. Burrows will be excavated using hand tools only. During excavation, an escape route will be maintained at all times. This may include inserting an artificial structure into the burrow to avoid having materials collapse into the*	

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		burrow and trap owls inside. Other methods of passive relocation, based on best available science, may be approved by the Wildlife Agencies over the 50-year Permit Term. • ***WBO-6 (Burrowing Owl Timing of Maintenance Activities):*** *All activities adjacent to existing or planned Preserves, Preserve Setbacks, or Stream Setback areas will be seasonally timed, when safety permits, to avoid or minimize adverse effects on occupied burrows.* • ***WBO-7 (Rodent Control):*** *Rodent control will be allowed only in developed portions of a Covered Activity project site within western burrowing owl modeled habitat. Where rodent control is allowed, the method of rodent control will comply with the methods of rodent control discussed in the 4(d) Rule published in the U.S. Fish and Wildlife Service's (2004) final listing rule for tiger salamander.*	
4.2-5 Have a substantial adverse effect, either directly or through habitat modifications, on raptors and nesting birds.	S	*4.2-5(a)* *Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs RAPTOR-2 through RAPTOR-4. Raptor surveys conducted per RAPTOR-2 shall include surveying for golden eagle although it is not a SSHCP Covered Species. If raptor species (including golden eagles) are found nesting within the survey area, RAPTOR-3 and RAPTOR-4 shall be implemented as required*	LS

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		based on the results of surveys conducted per RAPTOR-2. The following AMMs do not apply to Swainson's hawk or burrowing owl, as specific AMMs have been developed for such covered raptor species and are included in separate mitigation measures. • ***RAPTOR-2 (Raptor Pre-Construction Surveys):*** *Pre-construction surveys will be required to determine if active nests are present with a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites are found during initial surveys and construction activities will occur during the raptor breeding season. An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground- disturbing activities within the proposed project footprint and within 0.25 mile of the proposed project footprint to determine presence of nesting covered raptor species. Pre- construction surveys will be conducted during the raptor breeding season. If a nest is present, then RAPTOR-3 and RAPTOR-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.* • ***RAPTOR-3 (Raptor Nest/Roost Buffer):*** *If active nests are found within the project*	

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		footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.25 mile temporary nest disturbance buffer around the active nest until the young have fledged. • ***RAPTOR-4 (Raptor Nest/Roost Buffer Monitoring):*** *If project-related Covered Activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then an approved biologist experienced with raptor behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the disturbance buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting raptors begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist/monitor will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and*	

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		Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a covered raptor species flies into an active construction zone (i.e., outside the buffer zone). *4.2-5(b) A qualified biologist shall conduct a preconstruction nesting bird survey of all areas associated with construction activities, and a 100-foot buffer around such areas, within 14 days prior to commencement of construction if construction occurs during the nesting season (February 1 through August 31). If active nests are found for any SSHCP Covered Species, the applicable SSHCP AMM(s) TCB-3 through -5, SWHA-3 through -4, WBO-3 through-6, and RAPTOR-3 through-4 shall be implemented. If active nests are found for any other species, a no-disturbance buffer around the nest shall be established. The buffer distance shall be established by a qualified biologist in consultation with the CDFW. The buffer shall be maintained until the fledglings are capable of flight and become independent of the nest, to be determined by a qualified biologist. Once the young are independent of the nest, further measures are not necessary.*	
4.2-6 Have a substantial adverse effect, either directly or	S	*4.2-6 Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs*	LS

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through habitat modifications, on Swainson's hawk.		*SWHA-2 through SWHA-4. If Swainson's hawk nesting is found within the survey area during the pre-construction survey conducted per SWHA-2, then SWHA-3 and SWHA-4 shall be implemented as required based on the results of surveys conducted per SWHA-2.* • ***SWHA-2 (Swainson's Hawk Pre-Construction Surveys):*** *Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites were found during initial surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities to determine presence of nesting Swainson's hawk. Pre-construction surveys will be conducted during the breeding season (March 1 through September 15). If a nest is present, then SWHA-3 and SWHA-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.*	

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		• ***SWHA-3 (Swainson's Hawk Nest Buffer):*** *If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.25-mile disturbance buffer around the active nest until the young have fledged, with concurrence from the Wildlife Agencies.* • ***SWHA-4 (Swainson's Hawk Nest Buffer Monitoring):*** *If nesting Swainson's hawks are present within the project footprint or within 0.25 mile of any project-related Covered Activity, then an approved biologist experienced with Swainson's hawk behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting Swainson's hawks begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist will have the authority to shut down construction activities. If agitated*	

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		behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a Swainson's hawk flies into an active construction zone (i.e., outside the buffer zone).	
4.2-7 Have a substantial adverse effect, either directly or through habitat modifications, on tricolored blackbird.	S	*4.2-7 Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs TCB-2 through TCB-5. If tricolored blackbirds are found within the survey area during the pre-construction survey conducted per TCB-2, then TCB-3 through TCB-5 shall be implemented as required based on the results of surveys conducted per TCB-2.* • ***TCB-2 (Tricolored Blackbird Pre-Construction Surveys):*** *Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 500 feet of a project footprint if existing or potential nest sites were found during design surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and within 3 days of*	LS

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		ground-disturbing activities, and within the proposed project footprint and 500 feet of the proposed project footprint to determine the presence of nesting tricolored blackbird. Pre-construction surveys will be conducted during the breeding season (March 1 through August 31). Surveys conducted in February (to meet pre-construction survey requirements for work starting in March) must be conducted within 14 days and 3 days in advance of ground-disturbing activities. If a nest is present, then TCB-3 and TCB-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and the Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies. • ***TCB-3 (Tricolored Blackbird Nest Buffer):*** *If active nests are found within the project footprint or within 500 feet of any project-related Covered Activity, the Third-Party Project Proponent will establish a 500-foot temporary buffer around the active nest until the young have fledged.* • ***TCB-4 (Tricolored Blackbird Nest Buffer Monitoring):*** *If nesting tricolored blackbirds are present within the project footprint or within 500 feet of any project-related Covered*	

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Summary of Impacts and Mitigation Measures

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		Activity, then an approved biologist experienced with tricolored blackbird behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place near the disturbance buffer. Work within the nest disturbance buffer will not be permitted. If the approved biologist determines that tricolored blackbirds are exhibiting agitated behavior, construction will cease until the buffer size is increased to a distance necessary to result in no harm or harassment to the nesting tricolored blackbirds. If the biologist determines that the colonies are at risk, a meeting with the Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will be held to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a tricolored blackbird flies into an active construction zone (i.e., outside the buffer zone).	

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		• ***TCB-5 (Timing of Pesticide Use and Harvest Timing on Agricultural Preserves):*** *On SSHCP Agricultural Preserves, pesticides (including herbicides) will not be applied from January 1 through July 15.*	
4.2-8 Have a substantial adverse effect, either directly or through habitat modifications, on special-status bats.	S	*4.2-8 Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs BAT-2 through BAT-4. Winter hibernaculum surveys conducted per BAT-2 shall also include surveying for pallid bat although it is not an SSHCP Covered Species. If winter hibernacula of western red bat or pallid bat are found within the survey area, then BAT-3 through BAT-4 shall be implemented as required based on the results of surveys conducted per BAT-2.* • ***BAT-2 (Winter Hibernaculum Pre-Construction Surveys):*** *If the Third-Party Project Proponent elects not to avoid potential winter hibernaculum sites within the project footprint plus a 300-foot buffer, additional surveys are required. Prior to any ground disturbance related to Covered Activities, an approved biologist will conduct a pre- construction survey within 3 days of ground-disturbing activities within the project footprint and 300 feet of the project footprint to determine the presence of winter hibernaculum sites. Pre-construction surveys*	LS

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		will be conducted during the winter hibernaculum season (November 1 through March 31). If a winter hibernaculum is present, then BAT-3 and BAT-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies. • ***BAT-3 (Winter Hibernaculum Buffer):*** *If active winter hibernaculum sites are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will establish a 300-foot temporary disturbance buffer around the active winter hibernaculum site until bats have vacated the hibernaculum and the Implementing Entity and Wildlife Agencies concur.* • ***BAT-4 (Bat Eviction Methods):*** *An approved biologist will determine if non-maternity and non-hibernaculum day and night roosts are present on the project site. If necessary, an approved biologist will use safe eviction methods to remove bats if direct impacts to non-maternity and non-hibernaculum day and night roosts cannot be avoided. If a winter hibernaculum site is present, Covered Activities will not occur until*	

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		the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to the Wildlife Agencies.	
4.2-9 Have a substantial adverse effect, either directly or through habitat modifications, on American badger.	S	*4.2-9 A qualified biologist shall conduct a preconstruction survey for American badger within 14 days prior to commencement of construction, and results of the survey shall be provided to the City's Community Development Department. If badgers or dens with signs of recent badger use are detected (i.e., fresh scat, claw marks), CDFW shall be consulted and a non-disturbance buffer shall be established around any active dens. The den(s) shall be monitored daily by the qualified biologist during construction. Work shall not occur within the non-disturbance buffer until the qualified biologist determines that the badger(s) have left the work area, or as determined in consultation with CDFW.*	LS
4.2-10 Have a substantial adverse effect on riparian habitat or other sensitive natural community, or State or Federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	S	*4.2-10(a) Prior to approval of grading and improvement plans and prior to initiation of any groundbreaking activity associated with the proposed project, the project applicant shall ensure that authorization pursuant to Clean Water Act (CWA) Section 404 from the U.S. Army Corps of Engineers (USACE) and CWA Section 401 from the Central Valley Regional Water Quality Control Board (RWQCB) is obtained. CWA Section 404 authorization is anticipated to be obtained through a Letter of Permission issued by USACE under the SSHCP ARP, and CWA Section 401 authorization is anticipated to be obtained through an individual Water*	LS

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		Quality Certification issued by the RWQCB under the SSHCP ARP. *The construction contractor shall adhere to all conditions outlined in the permits. The project applicant shall ensure that the proposed project replaces, restores, or enhances on a "no net loss" basis (in accordance with the USACE and the Central Valley RWQCB) the acreage of all wetlands and other waters of the U.S. that would be removed, lost, and/or degraded due to project implementation, either through the SSHCP In-Lieu Fee Program or by other methods agreeable to the USACE, the Central Valley RWQCB, and the City, as appropriate, depending on agency jurisdiction, and as determined during the Section 401 and Section 404 permitting processes.* *4.2-10(b) Prior to approval of grading and improvement plans and prior to initiation of any groundbreaking activity associated with the proposed project, the project applicant shall ensure that a CDFW 1602 Streambed Alteration Agreement has been obtained. The construction contractor shall adhere to all conditions outlined in the Streambed Alteration Agreement.* *4.2-10(c) The project applicant shall comply with SSHCP AMM STREAM-2 and a 100-foot setback from Morrison Creek shall be established. Only allowed compatible*	

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		uses described in the SSHCP shall be sited within the setback. • ***STREAM-2 (UDA Stream Setbacks):*** *A 100-foot setback measured from the top of the bank on both sides of the stream channel will be applied to all streams listed in Table 5-1 (see Table 4.2-3 below) (see also Figure 2-4 [of the SSHCP]). If a stream reach supports woody riparian vegetation, the setback will be equal to the riparian edge plus 25 feet or will be the setback defined above, whichever is greater. If trails are located within the Stream Setback, the nearest edge of the trail will be located at least 50 feet from the top of the bank.*	

Table 4.2-3
Stream Setback Minimum Requirements in the Urban Development Area

Stream	Minimum Setback (from the Top of Bank Measured in Aerial Perspective) on Both Sides of the Stream
Elder Creek	100 feet
Frye Creek	100 feet or as depicted as part of the NewBridge development project hardline Preserve (see SSHCP Appendix K)
Gerber Creek	100 feet
Morrison Creek	100 feet

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		Central Paseo: 100 feet or as depicted as part of the Cordova Hills development project hardline Preserve (see SSHCP Appendix K) Sun Creek: 100 feet or as depicted as part of the Sun Creek development project hardline Preserve (see SSHCP Appendix K) *4.2-10(d) Implement Mitigation Measure 4.2-2(c).*	
4.2-11 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 native wildlife nursery sites.	LS	*None required.*	N/A
4.2-12 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	S	*4.2-12 Prior to removal of any protected trees (as defined by Chapter 19.12 of the City's Municipal Code) within the project site and off-site improvement areas, a tree removal permit shall be procured from the City. In addition, tree species that are native to the Central Valley and Sierra Nevada foothills such as interior live oak (Quercus wislizeni), valley oak (Quercus lobata), blue oak (Quercus douglasii), Fremont cottonwood (Populus fremontii), black walnut (Juglans hindsii), and western redbud (Cercis occidentalis) shall be incorporated into the planned landscaping design in public spaces such as open space, parks, and parkways. Enough plantings of such native trees shall be incorporated into the landscaping such that the*	LS

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		number of surviving native trees after five years is equal to or greater than the number of non-native trees removed. Landscaping plans detailing the tree species to be planted shall be provided to the City for approval prior to tree removal.	
4.2-13 Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan.	LS	*None required.*	N/A
4.2-14 Cumulative loss of habitat for special-status species.	CC & S	*4.2-14 Implement Mitigation Measures 4.2-1 through 4.2-11.*	LCC
4.3 Cultural and Tribal Resources			
4.3-1 Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.	LS	*None required.*	N/A
4.3-2 Cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5 or disturb human remains, including those interred outside of dedicated cemeteries.	S	*4.3-2 The following requirements shall be included through a notation on all project improvement plans prior to the issuance of grading permits, to the satisfaction of the City Engineer.* *In the event subsurface deposits believed to be cultural or human in origin are discovered during construction, all work shall halt within a 50-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for precontact and historic archaeologist, shall be retained to*	LS

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		evaluate the significance of the find, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following notifications shall apply, depending on the nature of the find: • *If the professional archaeologist determines that the find does not represent a cultural resource, work may resume immediately, and agency notifications are not required.* • *If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, he or she shall immediately notify the City of Rancho Cordova and applicable landowner. The project applicant shall consult on a finding of eligibility and implement appropriate treatment measures, if the find is determined to be a Historical Resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines. Appropriate treatment measures that preserve or restore the character and integrity of a find may be, but are not limited to, processing materials for reburial, minimizing handling of historical objects, leaving objects in place within the landscape, construction monitoring of further construction activities, and/or returning objects to a location within the project area*	

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		where they will not be subject to future impacts. Work shall not resume within the no-work radius until the applicant, through consultation, as appropriate, determines that the site either: 1) is not a historical resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines; or 2) that the treatment measures have been completed to the City's satisfaction. • *If the find includes human remains, or remains that are potentially human, he or she shall ensure reasonable protection measures are taken to protect the discovery from disturbance (Assembly Bill [AB] 2641). The archaeologist shall notify the City of Rancho Cordova and the Sacramento County Coroner (per Section 7050.5 of the Health and Safety Code). The provisions of Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California PRC, and AB 2641 shall be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner shall notify the NAHC, which then shall designate a Native American Most Likely Descendant (MLD) for the proposed project (Section 5097.98 of the PRC). The designated MLD shall have 48 hours from the time access to the property is granted to make recommendations concerning*	

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		treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC shall mediate (Section 5097.94 of the PRC). If an agreement is not reached, the landowner shall rebury the remains where they shall not be further disturbed (Section 5097.98 of the PRC). The burial shall also include either recording the site with the NAHC or the appropriate information center, using an open space or conservation zoning designation or easement, or recording a reinternment document with Sacramento County (AB 2641). Work shall not resume within the no-work radius until the City, through consultation as appropriate, determines that the treatment measures have been completed to their satisfaction.	
4.3-3 Cause a substantial adverse change in the significance of a tribal cultural resource as defined in PRC Section 21074.	S	*4.3-3(a)* *Implement Mitigation Measures 4.3-2.* *4.3-3(b)* *Prior to initiation of ground-disturbing activities associated with the proposed project, a consultant and construction worker tribal cultural resources awareness brochure and training program for all personnel involved in project implementation shall be developed in coordination with interested Native American Tribes. The brochure shall be distributed and the training shall be conducted in coordination with qualified cultural resources specialists and Native American Representatives and Monitors from*	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		culturally affiliated Native American Tribes before any stages of project implementation and construction activities begin on the project site. The program shall 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 shall also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the project site and shall outline what to do and whom to contact if any potential tribal cultural resources are encountered. The program shall also underscore the requirement for confidentiality and culturally-appropriate treatment of any find of significance to Native Americans and behaviors, consistent with Native American Tribal values. Documentation of the brochure and training program (i.e., a sign-in sheet) shall be submitted along with all applicable reports to the City's Community Development Department. *4.3-3(c) Prior to the start of ground-disturbing activities associated with the proposed project, the project applicant and construction contractor(s) shall implement the following measures 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*	

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		resources at the earliest possible time during project-related earthmoving activities: • *Native American monitors from culturally affiliated Native American Tribes shall 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 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 shall recommend appropriate treatment of such sites or objects.* *Compliance with the aforementioned measures shall be documented and submitted with applicable reports to the City's Community Development Department.* *4.3-3(d) Develop a standard operating procedure, points of contact, timeline and schedule for the project so all*	

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		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 shall 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 Representatives and Monitors from culturally affiliated Native American Tribes shall assess the significance of the find and make recommendations for further evaluation and treatment as necessary. These recommendations shall be documented in the project record.* *If adverse impacts to tribal cultural resources, unique archeology, or other cultural resources occurs, then consultation with Wilton Rancheria regarding mitigation contained in the Public Resources Code Sections 21084.3(a) and (b) and CEQA Guidelines Section 15370 shall occur, in order to coordinate for compensation for the impact by replacing or providing substitute resources or environments.*	

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4.3-4 Cause a cumulative loss of cultural resources.	LS	*None required.*	N/A
4.4 Geology and Soils/Mineral Resources			
4.4-1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides.	LS	*None required.*	N/A
4.4-2 Result in substantial soil erosion or the loss of topsoil.	LS	*None required.*	N/A
4.4-3 Be located on a geological 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, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code.	PS	*4.4-3 The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer for review and approval by the Rancho Cordova Community Development Department. The report shall address and make recommendations on the following:* *A. Road, pavement, and parking area design;* *B. Structural foundations, including retaining wall design (if applicable);* *C. Grading practices;* *D. Erosion/winterization;* *E. Special problems discovered on-site, (i.e., open bodies of water, expansive/unstable soils, etc.); and*	LS

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		F. Slope stability. *Once approved by the Rancho Cordova Community Development Department, two copies of the final report shall be provided to the Rancho Cordova Community Development Department and one copy to the Rancho Cordova Building and Safety Division for its use. It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.*	
4.4-4 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 or of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.	LS	*None required.*	N/A
4.4-5 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	S	*4.4-5 Should construction or grading activities result in the discovery of unique paleontological resources, all work within the vicinity of the discovery shall cease. The City of Rancho Cordova Community Development Department shall be notified, and the resources shall be examined by a qualified paleontologist at the developer's expense, for the purpose of recording, protecting, or curating the discovery as appropriate. The paleontologist shall submit to the Community*	LS

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		Development Department for review and approval a report of the findings and method of curation or protection of the resources. Work may only resume in the area of discovery when the preceding work has occurred.	
4.4-6 Cumulative impacts to geology and soils, mineral resources, and paleontological resources.	LS	*None required.*	N/A
4.5 Hazards and Hazardous Materials			
4.5-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LS	*None required.*	N/A
4.5-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	S	*4.5-2(a) Prior initiation of demolition or construction activities associated with the proposed project, the project applicant shall complete and submit, for both the underground storage units identified on APNs 073-0010-011 and 072-0300-008, a Consolidated Application For Authority to Remove Under Ground Storage Tanks to the Sacramento County Environmental Management Department (EMD) for review. Upon issuance of a permit (Authority Letter to Remove) from the EMD, removal of the UST shall proceed in accordance with all permit conditions, including, but not limited to, inspection, testing, and plan/report submittal requirements.*	LS

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		4.5-2(b) *Prior initiation of demolition or construction activities associated with the proposed project, the project applicant shall retain a licensed contractor to remove the existing 55-gallon drum located on APN 072-0300-008, to the northeast of the existing residence. The drum shall be disposed of in accordance with all applicable federal, State, and local regulations related to the handling, transport, and disposal of hazardous waste. Proof of safe disposal shall be provided to the Community Development Department.* *4.5-2(c)* *Prior to issuance of a demolition permit for any on-site structures, the project applicant shall consult with certified Asbestos and/or Lead Risk Assessors to complete and submit for review to the Community Development Department an asbestos and lead survey. If asbestos-containing materials or lead-containing materials are not discovered during the survey, further mitigation related to asbestos-containing materials or lead containing materials shall not be required. If asbestos-containing materials and/or lead-containing materials are discovered by the survey, the project applicant shall prepare a work plan to demonstrate how the on-site asbestos-containing materials and/or lead-containing materials shall be removed in accordance with current California Occupational Health and Safety (Cal-OSHA) Administration regulations and disposed of in accordance with all CalEPA regulations, prior to the demolition and/or removal of the on-site structures. The*	

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		plan shall include the requirement that work shall be conducted by a Cal-OSHA registered asbestos and lead abatement contractor in accordance with Title 8 CCR 1529 and Title 8 CCR 1532.1 regarding asbestos and lead training, engineering controls, and certifications. The applicant shall submit the work plan to the Community Development Department for review and approval. Materials containing more than one (1) percent asbestos that is friable are also subject to SMAQMD regulations. Removal of materials containing more than one (1) percent friable asbestos shall be completed in accordance with SMAQMD Rule 902. *4.5-2(d) Prior to issuance of a demolition permit for any on-site structures, the project applicant shall retain the services of a licensed environmental professional to prepared a Phase II Environmental Assessment (ESA) for the project site. The Phase II ESA shall evaluate, at a minimum, potential lead contamination in the soils in the vicinity of the structures located on APN 072-0300-008, as well as potential termiticide contamination in the soils in the vicinity of the wooden structures located on APN 072-0300-002 and APN 072-0300-008. In the event that the lead and/or termiticide contamination is determined to occur, the project applicant shall implement all recommended measures in the Phase II ESA necessary to address such hazards. Such measures may include, but shall not be limited to, capping contaminated soil in place and deed-restricting the subject property, excavation and off-haul of*	

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		contaminated soils by a licensed contractor, or other appropriate methods deemed acceptable by the Sacramento County Environmental Management Department (EMD). *4.5-2(e) Prior to Improvement Plan approval, the applicant shall hire a licensed well contractor to obtain a well abandonment permit from the Sacramento County Environmental Management Department (EMD) for all on-site wells, and properly abandon the on-site wells, pursuant to Department of Water Resources Bulletin 74-81 (Water Well Standards, Part III), for review and approval by the EMD. In addition, prior to Improvement Plan approval, the project applicant shall ensure that any on-site septic systems are abandoned in compliance with applicable EMD standards. Verification of abandonment shall be ensured by the City of Rancho Cordova Community Development Department.* *4.5-2(f) If unidentified or suspected contaminated soil or groundwater evidenced by stained soil, noxious odors, or other factors, is encountered during site preparation or construction activities at the project site, work shall stop in the area of potential contamination, and the type and extent of contamination shall be identified by a Registered Environmental Assessor (REA) or qualified professional. The REA or qualified professional shall prepare a report that includes, but is not limited to, activities performed for the assessment, summary of*	

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Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		anticipated contaminants and contaminant concentrations, relevant environmental screening levels for identified contaminants, whether the contaminants exceed ESLs, thus warranting remediation, and recommendations for appropriate handling and disposal. Site preparation or construction activities shall not recommence within the contaminated areas until any necessary remediation identified in the report is complete. The report and verification of proper remediation and disposal shall be submitted to the City of Rancho Cordova Community Development Department for review and approval.	
4.5-3 Cumulative exposure to potential hazards and increases in the transport, storage, and use of hazardous materials.	LS	*None required.*	N/A
4.6 Hydrology and Water Quality			
4.6-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction.	S	*4.6-1(a)* *Implement Mitigation Measure 4.4-2.* *4.6-1(b)* *Prior to the commencement of ground-disturbing activities, the project applicant shall submit, and obtain approval of, a Spill Prevention Countermeasure and Control Plan (SPCC) to the Sacramento County Environmental Management Department. The SPCC shall specify measures and procedures to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during all construction activities, and shall meet the requirements specified in the Code of Federal Regulations, Title 40, Part 112.*	LS

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.6-2 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operations.	S	*4.6-2 Prior to approval of final project improvement plans, the project applicant shall submit a detailed Best Management Practice (BMP) and water quality maintenance plan to the City for review and approval. The BMP and water quality maintenance plan shall meet the standards of the City's NPDES Permit (No. CAS0085324), the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment, and the Stormwater Quality Design Manual for the Sacramento region. Site design measures, source control measures, hydromodification management, and Low Impact Development (LID) standards, as necessary, shall be incorporated into the design and shown on the improvement plans.* *4.6-3 Prior to approval of final project improvement plans, the project applicant shall submit a maintenance covenant to the City for review and approval. The maintenance covenant shall be executed to ensure the long-term maintenance of stormwater quality measures.*	LS
4.6-3 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a water	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	quality control plan or sustainable groundwater management plan.			
4.6-4	**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: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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.**	LS	*None required.*	N/A
4.6-5	**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**	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	would impede or redirect flood flows.			
4.6-6	**Cumulative impacts related to the violation of water quality standards or waste discharge requirements, groundwater quality, management, and recharge, and impacts resulting from the alteration of existing drainage patterns.**	LS	*None required.*	N/A
4.7 Land Use and Planning/Population and Housing				
4.7-1	**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 an environmental effect.**	LS	*None required.*	N/A
4.7-2	**Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure).**	LS	*None required.*	N/A
4.7-4	**Cause a significant cumulative environmental impact due to a conflict with any land use**	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.			
4.7-5	**Cumulative unplanned population growth.**	LS	*None required.*	N/A
	4.8 Noise			
4.8-1	**Generation of a substantial temporary 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.**	S	*4.8-1 The following criteria shall be noted on project Improvement Plans. Improvement Plans shall be submitted to the City's Community Development Department for review and approval.* • *Consistent with Section 6.68.090 of the Rancho Cordova Municipal Code, noise-generating construction activities shall be limited to the hours of 6:00 AM to 8:00 PM on weekdays and 7:00 AM to 8:00 PM on weekends.*	LS
4.8-2	**Generation of a substantial 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.**	LS	*None required.*	N/A
4.8-3	**Exposure of persons to or generation of excessive**	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	groundborne vibration or groundborne noise levels.			
4.8-4	**Generation of a substantial permanent increase in ambient noise levels associated with cumulative development of the proposed project in combination with future buildout of the General Plan.**	LS	*None required.*	N/A
	4.9 Public Services and Utilities			
4.9-1	**Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services.**	LS	*None required.*	N/A
4.9-2	**Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of**	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
	which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services.			
4.9-3	**Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools.**	LS	*None required.*	N/A
4.9-4	**Require or result in the relocation or construction of new or expanded water, wastewater treatment, or electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.**	LS	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.9-5 Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	LS	*None required.*	N/A
4.9-6 Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	LS	*None required.*	N/A
4.9-7 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, or conflict with federal, state, and local management and reduction statutes and regulations related to solid waste.	LS	*None required.*	N/A
4.9-8 Cumulative impacts to fire and police protection services.	LCC	*None required.*	N/A

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
4.9-9 Cumulative impacts to public schools.	LCC	*None required.*	N/A
4.9-10 Cumulative impacts to utilities and service systems.	LCC	*None required.*	N/A
4.10 Transportation			
4.10-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	LS	*None required.*	N/A
4.10-2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) under Existing Plus Project conditions.	S	*4.10-2(a) Prior to approval of Improvement Plans, the project applicant shall include in the Improvement Plan submittal a Trail System Plan detailing the applicant's construction of a portion of the regional trail system in the vicinity of the project site. The Trail System Plan shall be subject to review and approval by the City of Rancho Cordova Community Development Department.* *4.10-2(b) Prior to the recording of a Final Map, the project applicant shall pay a fair share contribution to provide monetary support for the City's transportation services, as determined by the City of Rancho Cordova Community Development Department. The charges for residential and nonresidential development will fund these transportation services as determined appropriate by the City Council. Supplemental*	SU

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		transportation services may include, but are not limited to, the following: • *Transit Shuttle – shuttle for residents and/or employees between residential areas, employment centers, shopping and service centers and light rail stations and/or other public transit options;* • *Guaranteed Ride Home – free taxi rides and rental cars for ride sharers in case of an emergency;* • *Transit Subsidies – financial assistance to encourage residents and employees to use transit or other alternative transportation measures;* • *Transportation Plans for employers and/or resident groups – plans which guide employers and resident groups on the implementation of trip reduction programs, such as ride share matching or other similar programs;* • *Education Programs – various programs such as education of transit options, home office set up, alternative commute opportunities;* • *Infrastructure Support – additional bike racks and lockers, transportation alternative and ride share informational boards/kiosks, and transit facilities;*	

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Table 2-1
Summary of Impacts and Mitigation Measures

Impact	Level of Significance Prior to Mitigation	Mitigation Measures	Level of Significance After Mitigation
		• *Transportation Coordinator Training and Support – instruction in mobility (transportation alternatives) for residential groups and work site coordinators; and* • *Bicycle and Alternative Fuel Vehicle Incentives – incentives for purchasing new bicycles or alternative fuel vehicles.*	
4.10-3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LS	*None required.*	N/A
4.10-4 Result in inadequate emergency access.	LS	*None required.*	N/A
4.10-5 Conflict with a program, plan, ordinance, or policy addressing the circulation system under Cumulative Plus Project conditions.	LS	*None required.*	N/A
4.10-6 Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) under Cumulative Plus Project conditions.	LS	*None required.*	N/A

N/A = *Not Applicable*; LS = *Less Than Significant*; LCC = *Less Than Cumulatively Considerable*; S = *Significant*; CC = *Cumulatively Considerable*; SU = *Significant and Unavoidable*

3. Project Description

3. PROJECT DESCRIPTION

3.1 INTRODUCTION

The Project Description chapter of the EIR provides a comprehensive description of The Preserve Project (proposed project) in accordance with CEQA Guidelines. Please note that this chapter provides an overall general description of the existing environmental conditions; however, detailed discussions of the existing setting in compliance with CEQA Guidelines Section 15125, as it relates to each given potential impact area, is included in each technical chapter of this EIR.

3.2 PROJECT LOCATION

The project site consists of approximately 279.3 acres located within the City of Rancho Cordova. (see Figure 3-1). The site is located northwest of Raymer Way and Grant Line Road, north of the Sunridge Specific Plan area and east of the Rio Del Oro Specific Plan area (see Figure 3-2). The site is identified by Assessor's Parcel Numbers (APNs) 072-0300-001, -002, -005, -008, and 073-0010-010, and -011.

3.3 PROJECT SETTING AND SURROUNDING LAND USES

Section 15125 of CEQA Guidelines requires an EIR to include a description of the physical environmental conditions of the project site and the site vicinity, as they exist at the time the Notice of Preparation is published, from a local and regional perspective. Per CEQA Guidelines Section 15125, the description of the environmental setting shall not be longer than necessary to understand the potential significant effects of the project.

The following sections describe the existing setting of the project site and the surrounding land uses in the project vicinity. Please note that detailed discussions of the existing setting in compliance with CEQA Guidelines Section 15125, specific to each environmental resource area, are included in each corresponding technical chapter of this EIR.

Site Characteristics

Currently, the 279.3-acre project site contains two single-family residences and associated outbuildings on the southern portion of the site, within parcels 072-0300-002 and -005. An orchard is located within the northeastern portion of the site within parcel 073-0010-011, and a third single-family residence and associated outbuildings are located on APN 072-0300-008. The remainder of the site consists primarily of non-native grasses, with scattered trees located in the vicinity of the existing residences and associated access roads. The site is characterized by moderate rolling hills and flatlands interspersed with seasonal drainage corridors and wetlands. Additionally, Morrison Creek runs northeast to southwest through the project site. The elevation of the site ranges from 210 to 250 feet above mean sea level.

Per the City of Rancho Cordova General Plan, the project site is located within the Grant Line West Planning Area and is designated Natural Resources and Residential-Mixed Density. The site is zoned Agricultural (AG-80) and Industrial Reserve (IR)

Figure 3-1
Project Location

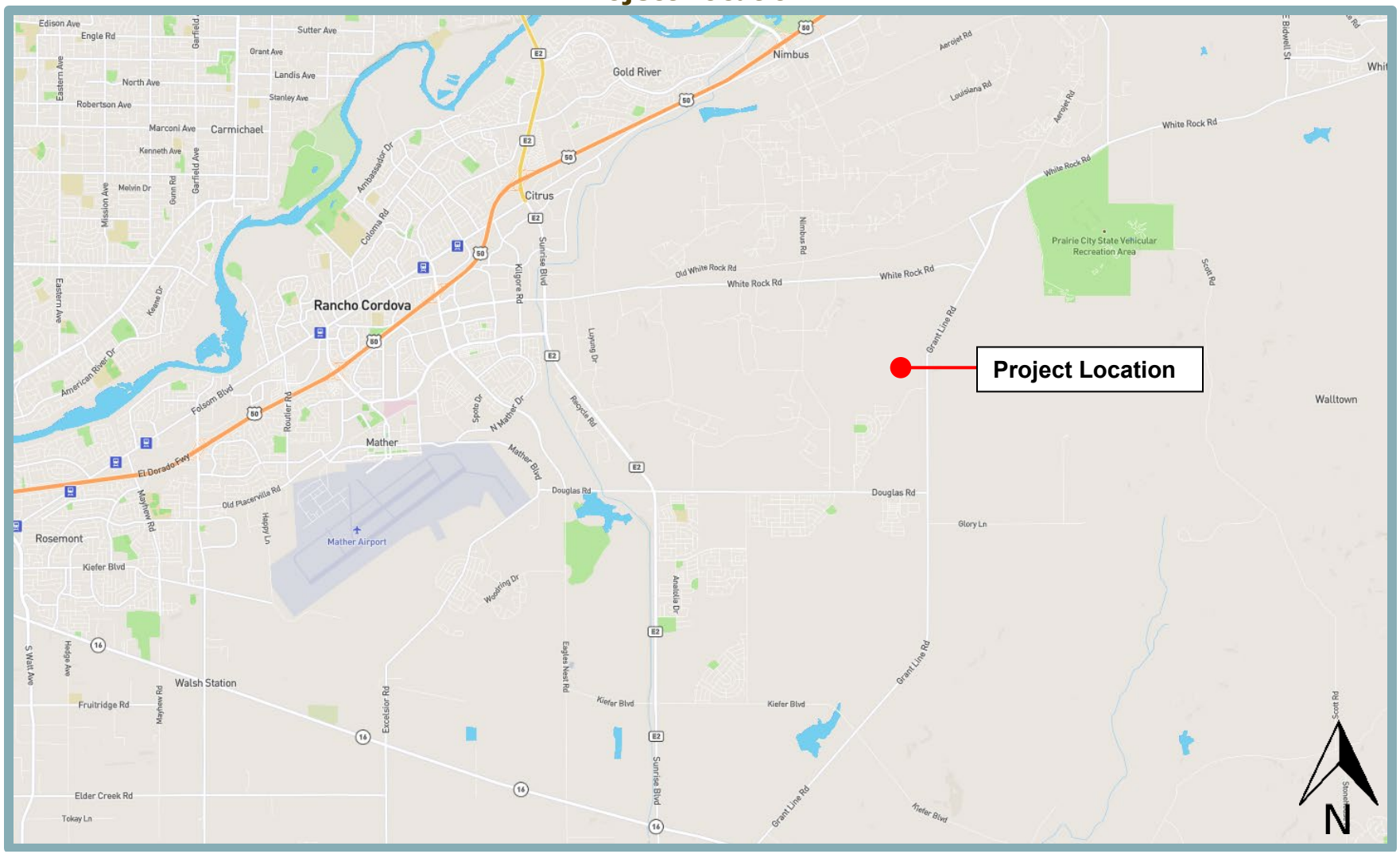
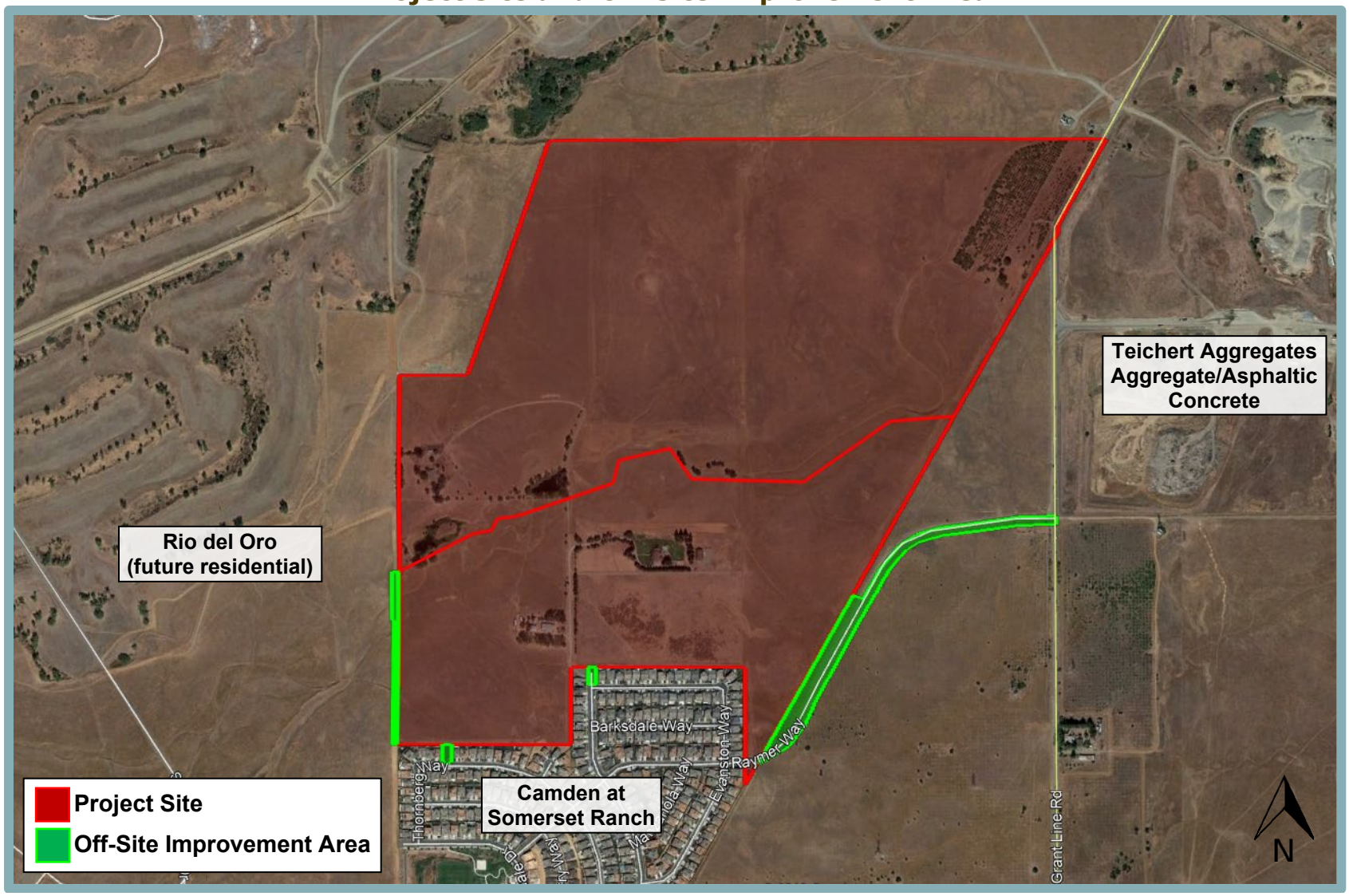


Figure 3-2
Project Site and Off-Site Improvement Area



Surrounding Land Uses

Surrounding land uses include the Camden at Somerset Ranch residential subdivision directly to the south, vacant agricultural lands under a Williamson Act contract and a Teichert Aggregates Aggregate/Asphaltic Concrete site across Grant Line Road to the east, industrial/open space to the north, and vacant land approved for the development of the Rio Del Oro residential community immediately adjacent to the west.

Vegetation and Wetlands

The following description focuses on the proposed area of disturbance, south of Morrison Creek. The area is covered in vernal pool grassland primarily composed of non-native annual grasses and forbs, with limited patchy riparian vegetation along Morrison Creek. An arborist report documented 247 trees within the area of disturbance, including coast redwood, eucalyptus, and other trees not native to the region. The area of disturbance contains approximately 7.9 acres of jurisdictional wetland, including seasonal wetlands and vernal pools.

3.4 PROJECT OBJECTIVES

The following project objectives have been developed by the project applicant for the proposed project:

1. Consolidate the remaining parcels in the Grant Line West Planning Area of the City of Rancho Cordova General Plan in a manner that concentrates development south of Morrison Creek to avoid and minimize potential conflicts with the South Sacramento Habitat Conservation Plan.
2. Develop a residential mixed-density community that is consistent with the General Plan conceptual land use designation for the Grant Line West Planning Area.
3. Develop a residential community that is contiguous to and compatible with adjacent existing development and that provides a range of housing choices.
4. Utilize existing utility capacity for maximum efficiency.
5. Develop a residential community that can provide timely housing to help meet current demand during a period of housing shortages in the region and throughout the State.
6. Contribute to the overall bicycle and pedestrian connectivity of the City by building key components of the regional trail system and providing strong connections for both existing and future residents.
7. Enhance the City's network of parks, trails and open spaces for the enjoyment of all residents.

3.5 PROJECT COMPONENTS

The proposed project would include subdivision of the project site to develop a total of 440 single-family lots and various associated improvements including, but not limited to, parks, landscaping, circulation improvements, and utility installation. The project would require City approval of the following: General Plan Amendments; Rezone; Development Agreement; and Tentative Subdivision Map. The details of the proposed project, including required approvals, are described in further detail below.

General Plan Amendments/Rezone

As noted previously, the project site is currently designated Residential-Mixed Density and Natural Resources in the Grant Line West Planning Area by the City of Rancho Cordova General Plan. The proposed project would require a General Plan Amendment to change the site's land use

designation from Natural Resources and Residential-Mixed Density within the Grant Line West Planning Area to Low-Density Residential. The General Plan Amendment would also amend the Circulation Element to alter the planned construction of Centennial Drive. Centennial Drive is a future roadway depicted in the Circulation Element's Circulation Plan with Roadway System and Sizing map (Figure C-1 in the Circulation Element). If constructed as depicted in the Circulation Element, Centennial Drive would be a four-lane roadway and run through the project site in an east-west direction; however, through approval of the General Plan Amendment, the portion within the project site would not be constructed. In addition, the project would require a rezone to change approximately 68.42 acres of the AG-80 and approximately 30.48 acres of the IR zoning designations to Residential District (RD-5), five dwelling units per acre maximum (see Figure 3-3).

Tentative Subdivision Map

The proposed project would include a Tentative Subdivision Map to subdivide the project site into 440 single-family residential lots (see Figure 3-4 through Figure 3-9). Lots on the western portion of the project site would generally be a minimum of 4,050 square feet (sf) (45 feet x 90 feet), with larger lots at the corners of each block. Lots in the central portion of the site would generally be a minimum of 5,775 sf (55 feet x 105 feet) with corner lots and others being larger, and lots in the eastern portion of the site would generally be a minimum of 4,725 sf (45 feet x 105 feet). Overall, the proposed lots would range from a minimum of 4,050 sf to a maximum of 9,416 sf. The units would include either an 18- or 20-foot setback from the front of the residence to the street. In addition, the proposed project would establish a 100-foot setback from Morrison Creek and would include park areas, community spaces, green infrastructure, and open space areas.

Development Agreement

The proposed project would include a Development Agreement to assure the City that the proposed project would be constructed and developed in compliance with the plans submitted by the applicant. Development Agreements increase the certainty in the approval of development projects, thereby preventing the waste of resources, reducing the cost of development, and encouraging investment in comprehensive planning.

Access and Circulation

The proposed project would include two entry points from Raymer Way, as well as connection to the existing Camden at Somerset Ranch subdivision by way of an extension of Edington Drive and a new connection to Thornburg Way. The streets would be between 32 and 50-feet wide (curb to curb), which would allow for emergency vehicle access within the minimum 20-foot street width requirement. The internal circulation system would consist of several drive aisles with circulation to all residences within the subdivision. The proposed project would include construction of five-foot attached sidewalks and three-foot gutters along the majority of internal streets. Six-foot margins along the sides of each street would allow for street parking.

Parks, Open Space, and Landscaping

A total of 8.65 acres are planned for two park areas located at the northern end of the development area (see Figure 3-10). The parks would be managed by the Cordova Recreation and Park District. An additional 9.77 acres of land would be designated Community Space. The Community Space area would include bioretention and hydromodification areas. Finally, 0.45-acre of the project site would be designated green infrastructure which would include enhanced landscaped areas and trails with connection to the surrounding parks.

Figure 3-3
Existing and Proposed Zoning

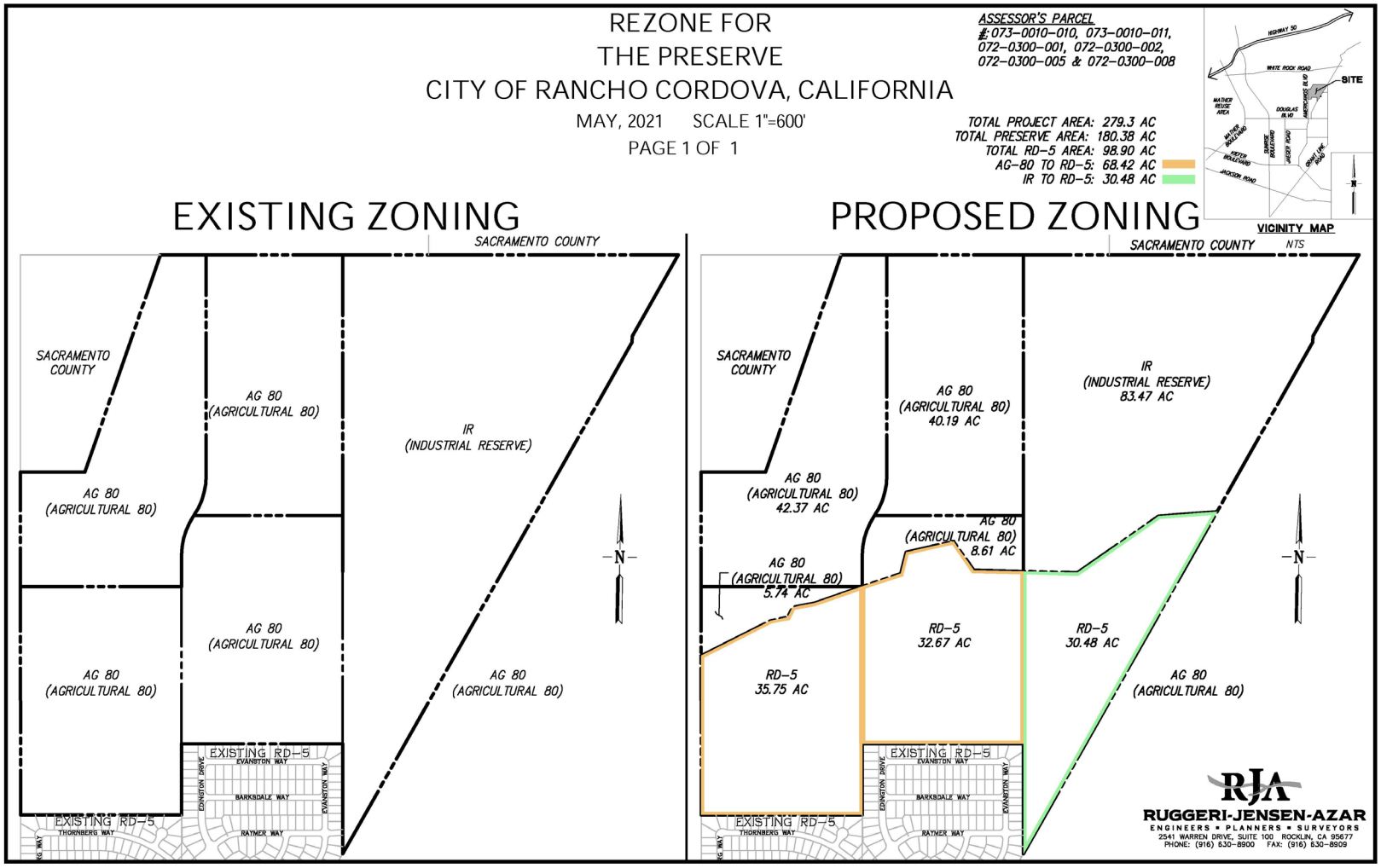


Figure 3-4
Tentative Subdivision Map Overview

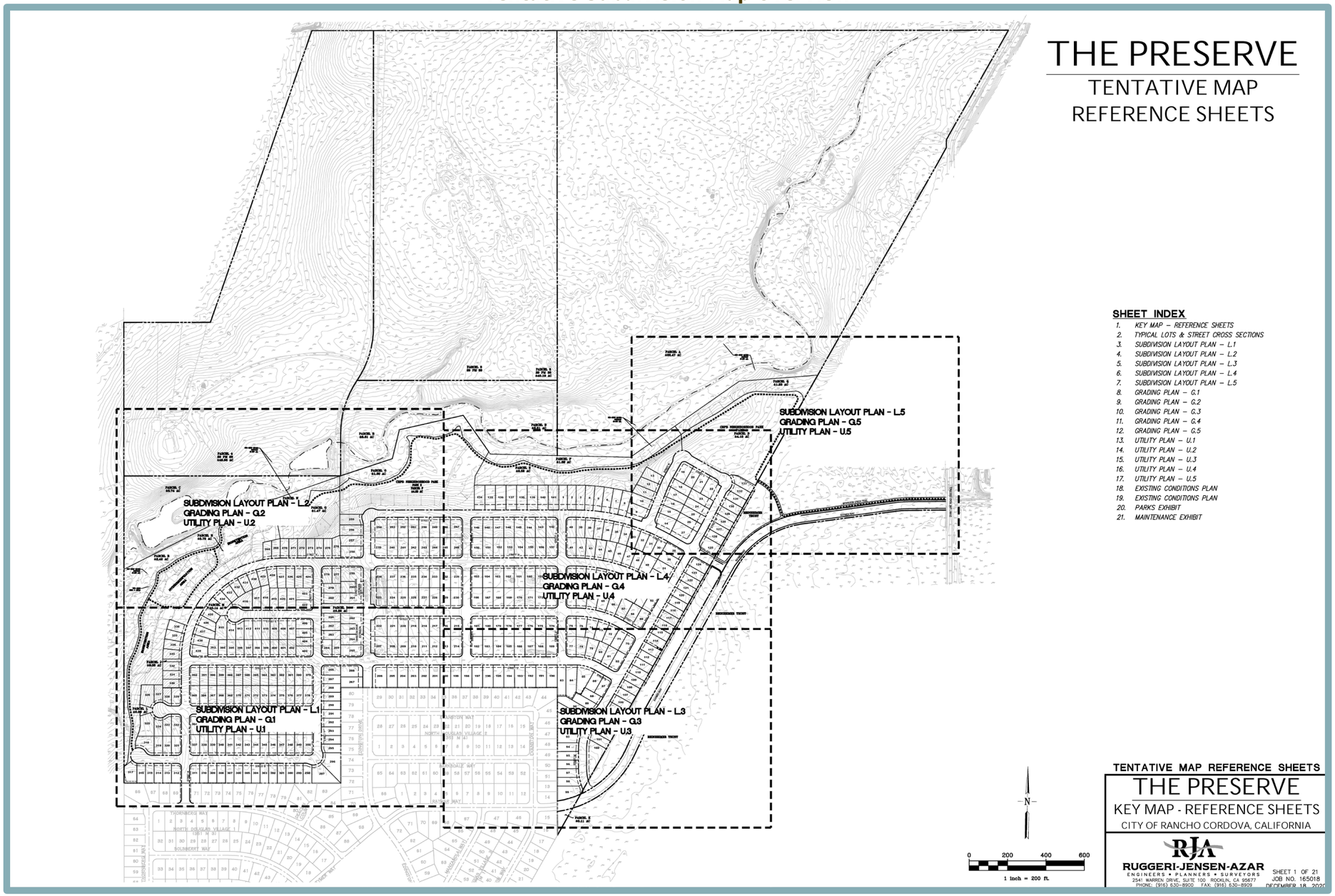


Figure 3-5
Tentative Subdivision Map – Section 1

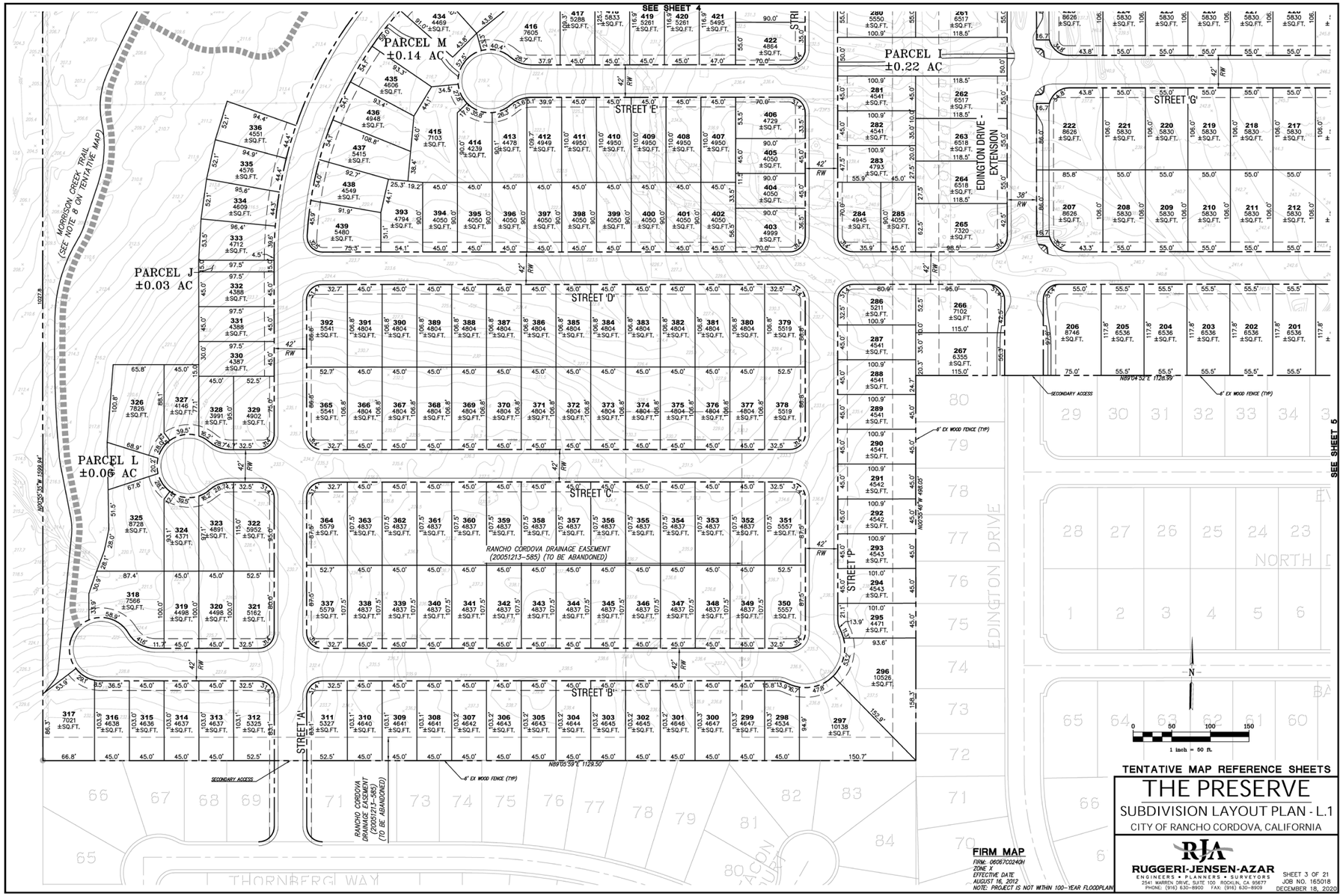


Figure 3-6
Tentative Subdivision Map – Section 2

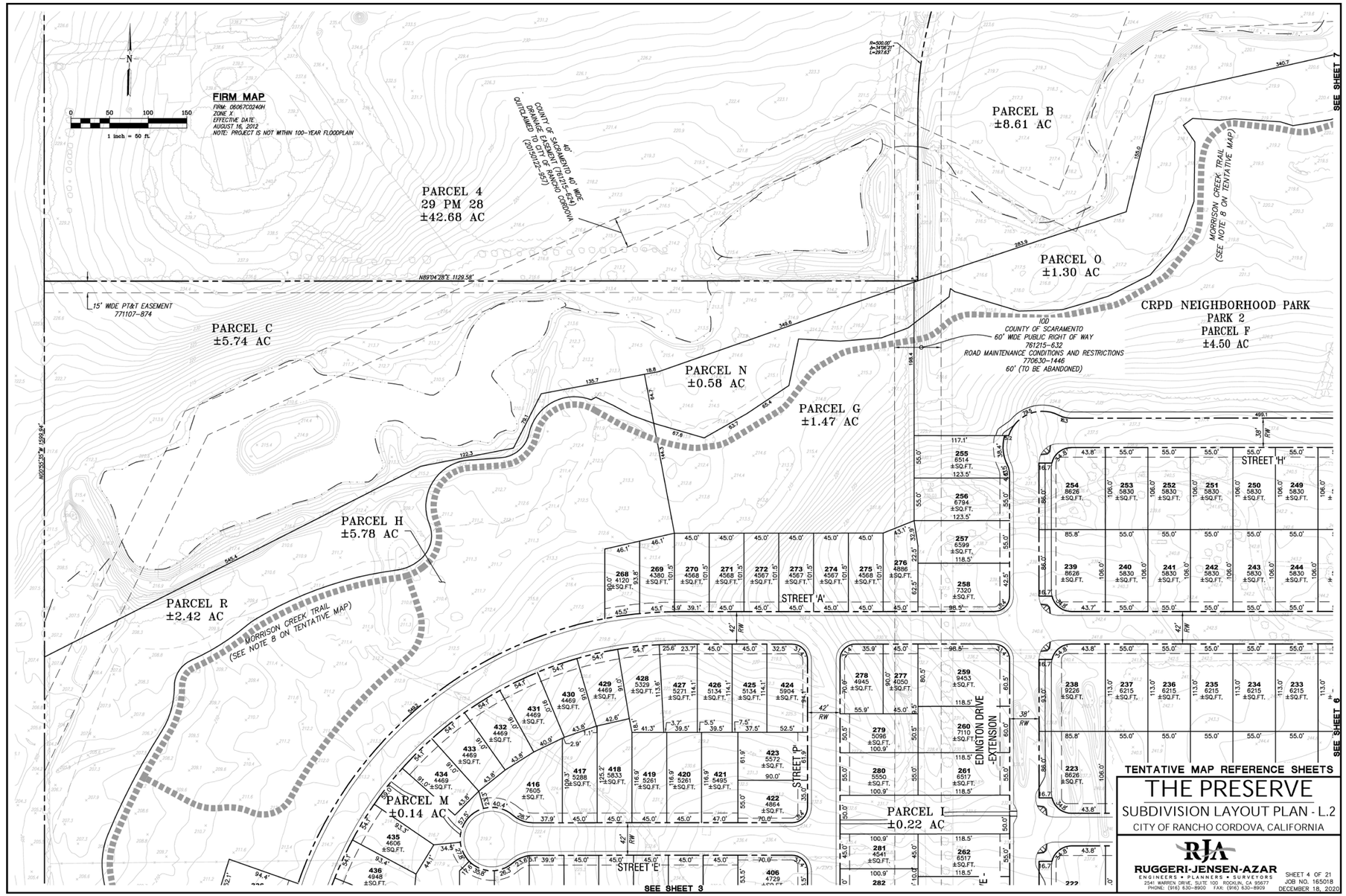


Figure 3-7
Tentative Subdivision Map – Section 3

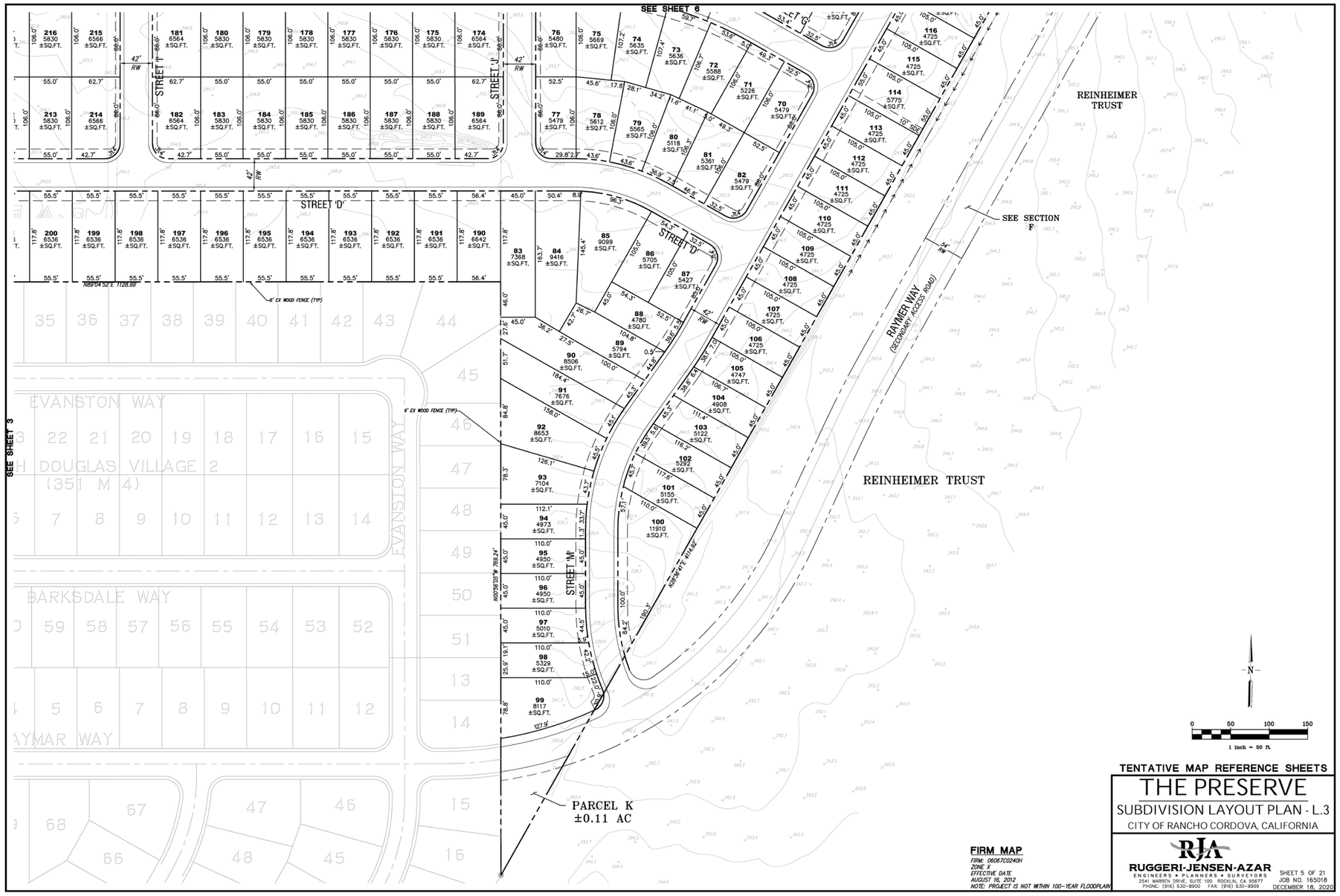


Figure 3-8
Tentative Subdivision Map – Section 4

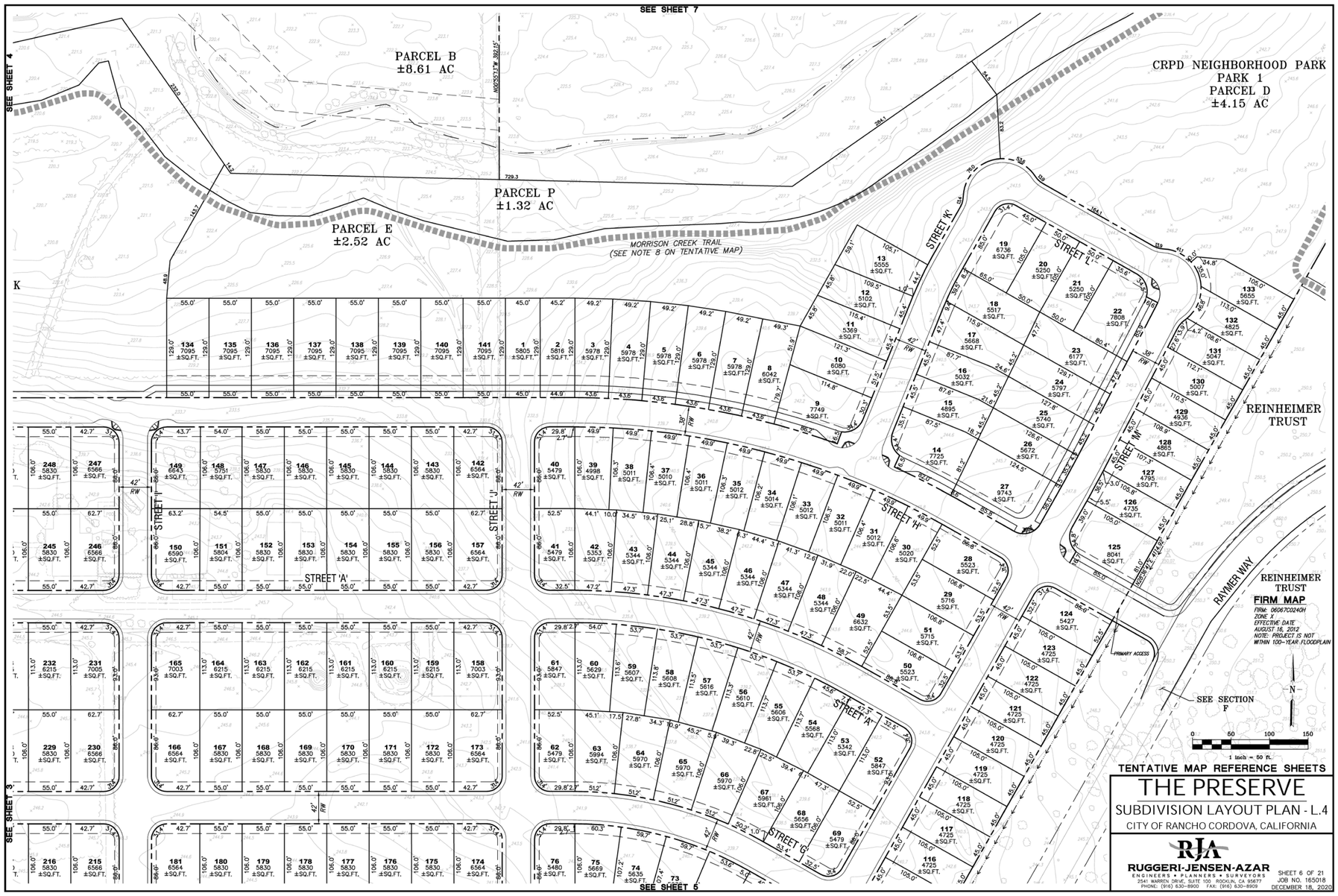


Figure 3-9
Tentative Subdivision Map – Section 5

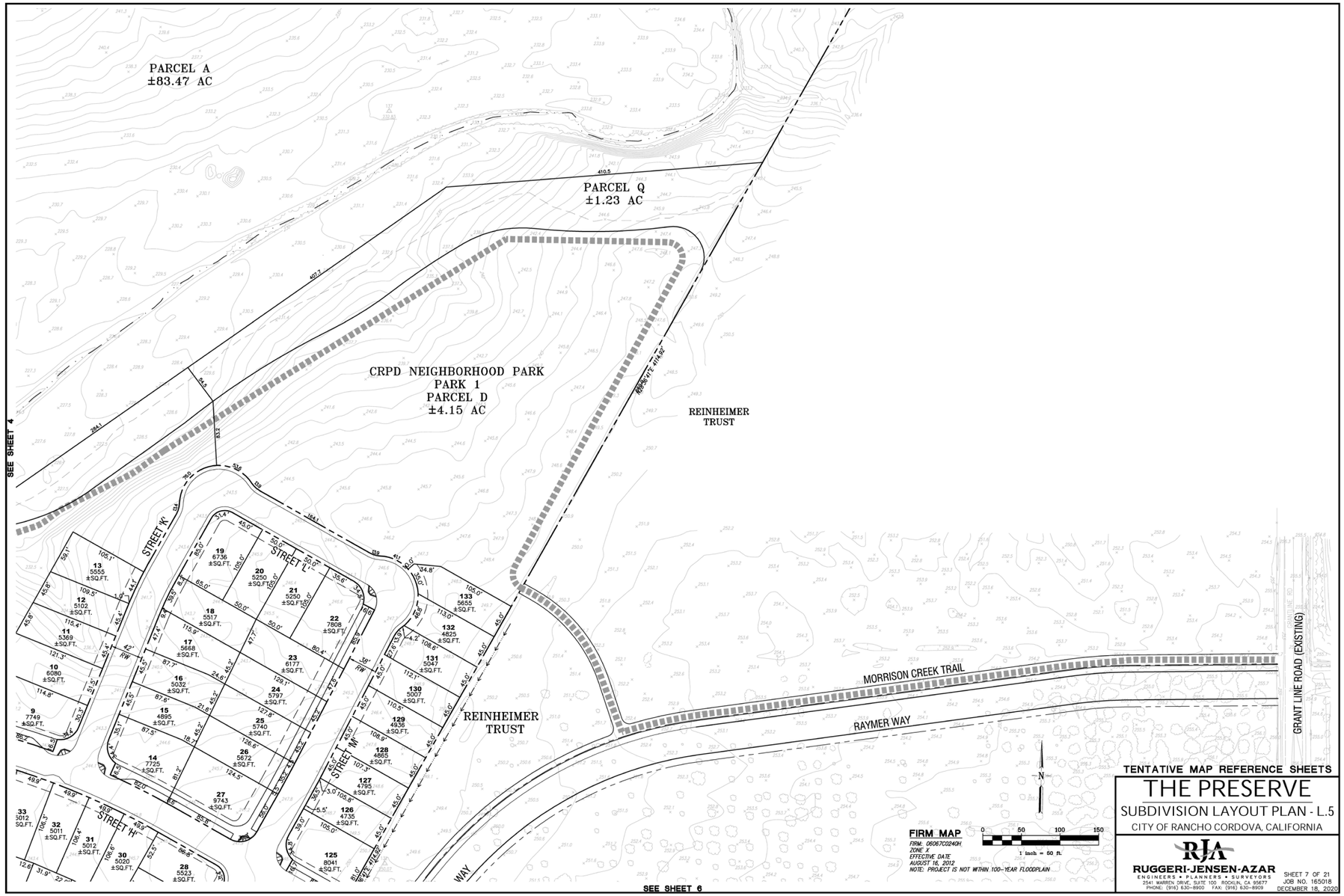


Figure 3-10
Parks and Open Space Plan



Area	Parcel	Description	Owner	Acreage
	D	CRPD Neighborhood Park	CRPD	4.15*
	E	Community Places	City	2.52
	F	CRPD Neighborhood Park	CRPD	4.50*
	G	Community Places	City	1.47
	H	Community Places	City	5.78
	I	Green Infrastructure	City	0.22
	J	Green Infrastructure	City	0.03
	K	Residential	Developer	0.11
	L	Green Infrastructure	City	0.06
	M	Green Infrastructure	City	0.14
	N	Creek Buffer	TBD	0.58
	O	Creek Buffer	TBD	1.30
	P	Creek Buffer	TBD	1.32
	Q	Creek Buffer	TBD	1.23
	R	Creek Buffer	TBD	2.42

* Total Acreage for Parcels D & F
This Exhibit is conceptual only. Programmed elements and final concept plan is subject to change and CRPD's Board of Director formal approval process.

CRPD QUIMBY REQUIREMENTS			
Units	PPU	Population	AREA* (AC)
439	2.95	1295	6.48
* 5.0 AC / 1000 Residents			

CITY OS REQUIREMENTS			
Units	PPU	Population	AREA* (AC)
439	2.95	1295	1.30
* 1.0 AC / 1000 Residents			

PROPOSED PARK ACREAGE		
CRPD	Tentative Map (Ac.)	Quimby (Ac.)
Park 1	4.15	4.09
Park 2	4.50	3.10
TOTAL	8.65	7.19

PROPOSED OPEN SPACE	
Type of Open space	Acres
Community Places	9.77
Green Infrastructure	0.45
TOTAL	10.22

N

0 150 300 450
1 inch = 150 ft.

TENTATIVE MAP REFERENCE SHEETS

THE PRESERVE
PARKS EXHIBIT
CITY OF RANCHO CORDOVA, CALIFORNIA

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

SHEET 10 OF 11
JOB NO. 165018
AUGUST 9, 2021

It should be noted that through current project entitlements, the 185.3 acres of undeveloped land on the northern parcels of the project site would remain as open space following development of the proposed project. Morrison Creek would be undisturbed within the open space area.

The proposed project would include measures to protect the vegetation and habitats within the 185.3 acres of open space area, including but not limited to, fencing and long-term funding for management of the area. The area would also include an easement for the future extension of Centennial Drive. The areas designated for open space would maintain the IR or AG-80 zoning designation and would not require an amendment.

Utilities

Figure 3-11 through Figure 3-15 provide an overview of the proposed water, sewer, and stormwater utility improvements.

Treated water service for the project would be provided by the Sacramento County Water Agency. The proposed project would include connection of new eight-inch water mains to an existing 10-inch water main located within Edington Drive. The new water lines would run throughout the drive aisles of the project site and would service all units.

Sanitary sewer service is provided to the City by the County Sanitation District 1. The County Sanitation District 1 operates and maintains the sewer system, which collects wastewater flows from individual developments within the City and conveys them to the Sacramento Regional County Sanitation District Inceptor system. Wastewater is ultimately delivered to the Sacramento Regional Wastewater Treatment Plant north of Elk Grove. The proposed project would include installation of eight-inch sanitary sewer pipelines throughout the project site which would divert wastewater to the County Sanitation District. The project would include connection of the eight-inch sanitary sewer lines to existing eight-inch sewer lines within Edington Drive and Thornberg Way.

Stormwater generated by impervious areas within the project site would be captured by a series of drain inlets located within the internal roadways and routed, through new underground 12- to 24-inch storm drains, to two bio-retention basins located within the northwest portion of the development area. The bio-retention basins would provide for treatment runoff by allowing stormwater to infiltrate through underlying soils, prior to capture with a perforated underdrain located underneath the bio-retention soil media. In addition, each basin would include an overflow structure connected to the underdrain. Treated stormwater captured by the perforated underdrain would flow, through new 15-inch storm drains, to a hydromodification basin located in between the two bio-retention basins. During large storm events, excess stormwater in the bio-retention basins would flow directly through the overflow structures. The hydromodification basin would allow for detention of captured runoff prior to discharging, through a new 36-inch storm drain and outlet structure, to Morrison Creek.

Off-Site Improvements

As shown in Figure 3-2, the project could include off-site improvements to the east of the site boundary. The improvements could occur adjacent to the proposed structures along the easternmost border. Improvements could include utility connection or road development. Additionally, off-site improvements could be required along the existing Raymer Way to the intersection with Grant Line Road. Improvements within the area would include expansion of the roadway or modifications to Morrison Creek.

Figure 3-11
Preliminary Utilities Plan – Section 1

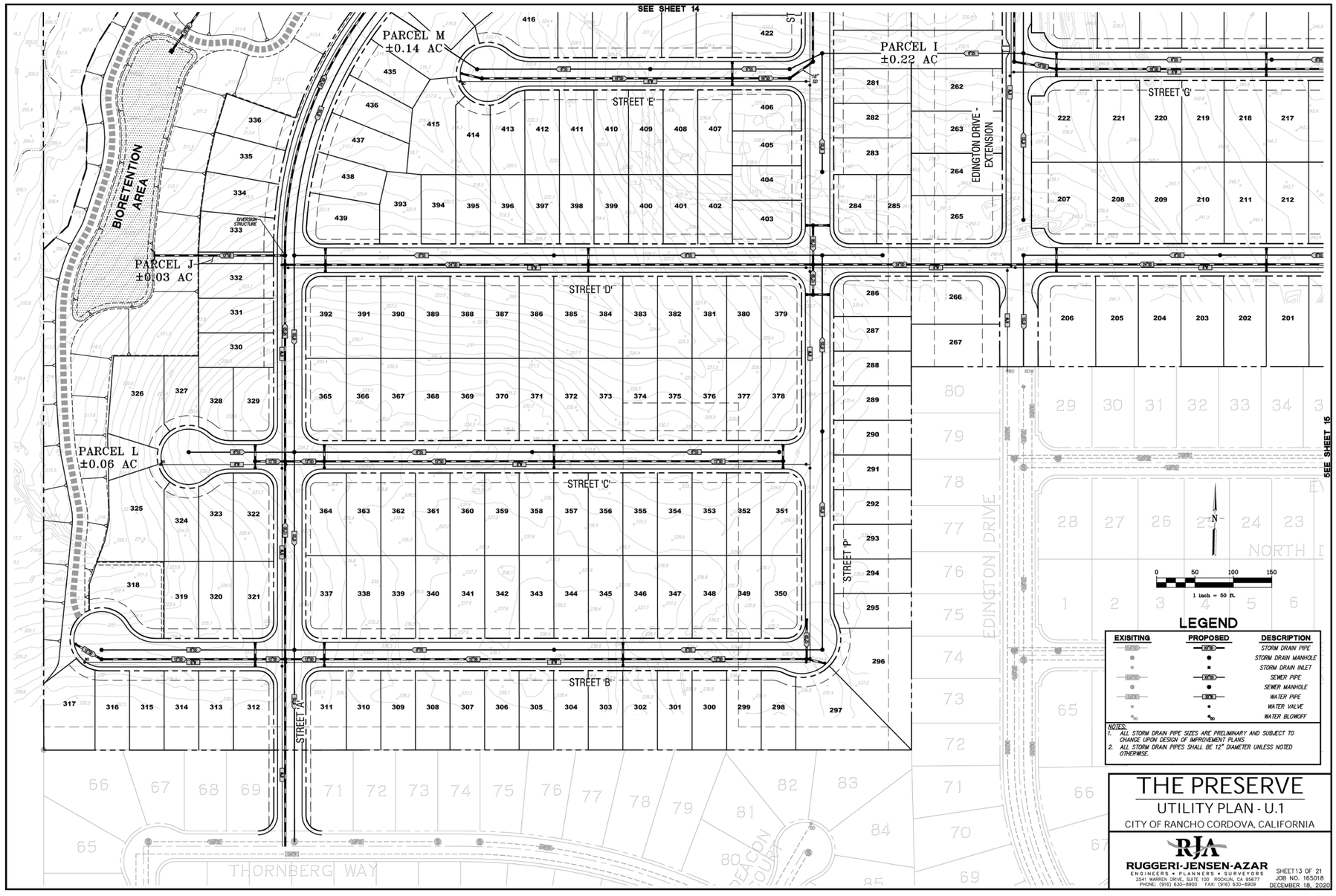


Figure 3-12
Preliminary Utilities Plan – Section 2

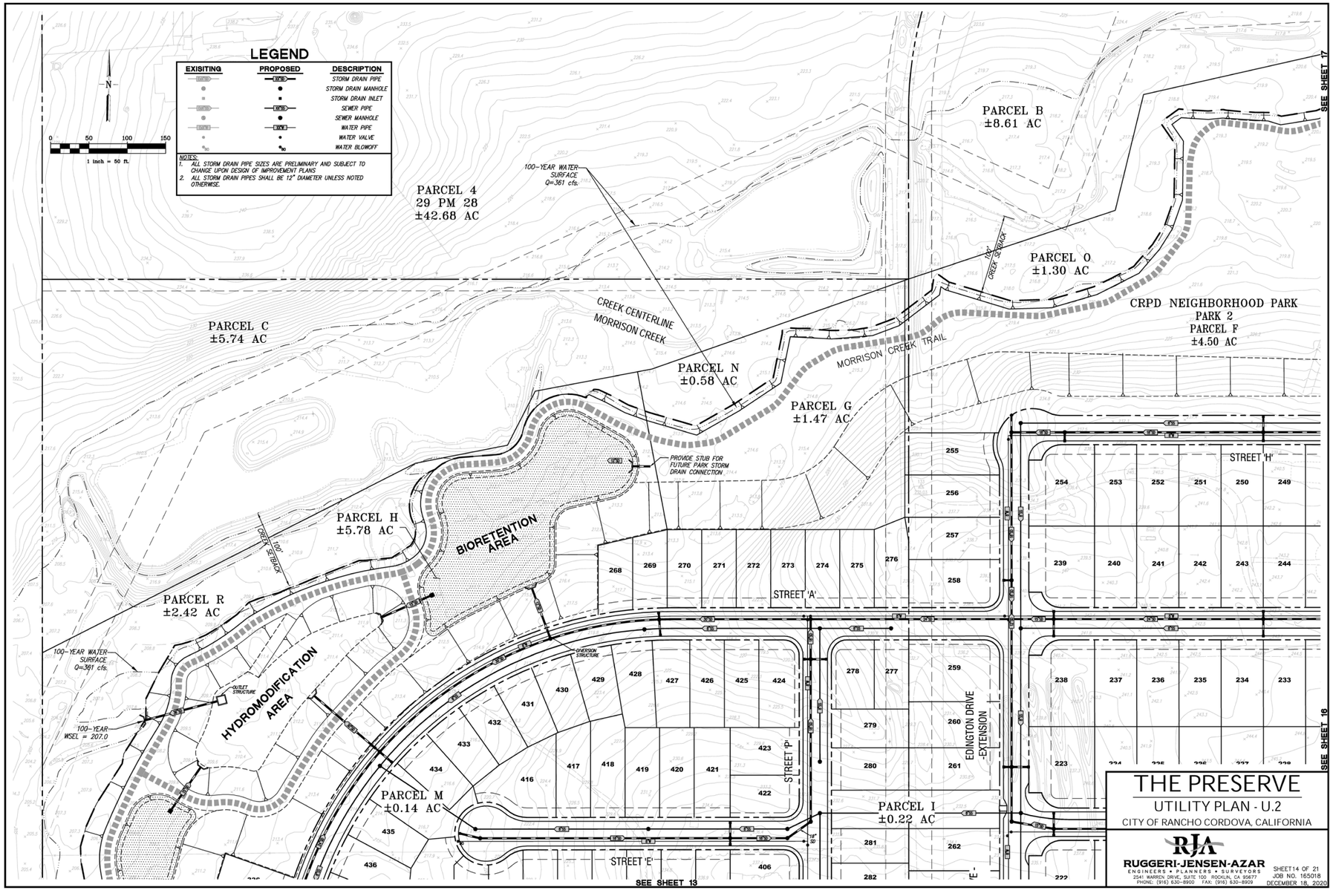


Figure 3-13
Preliminary Utilities Plan – Section 3

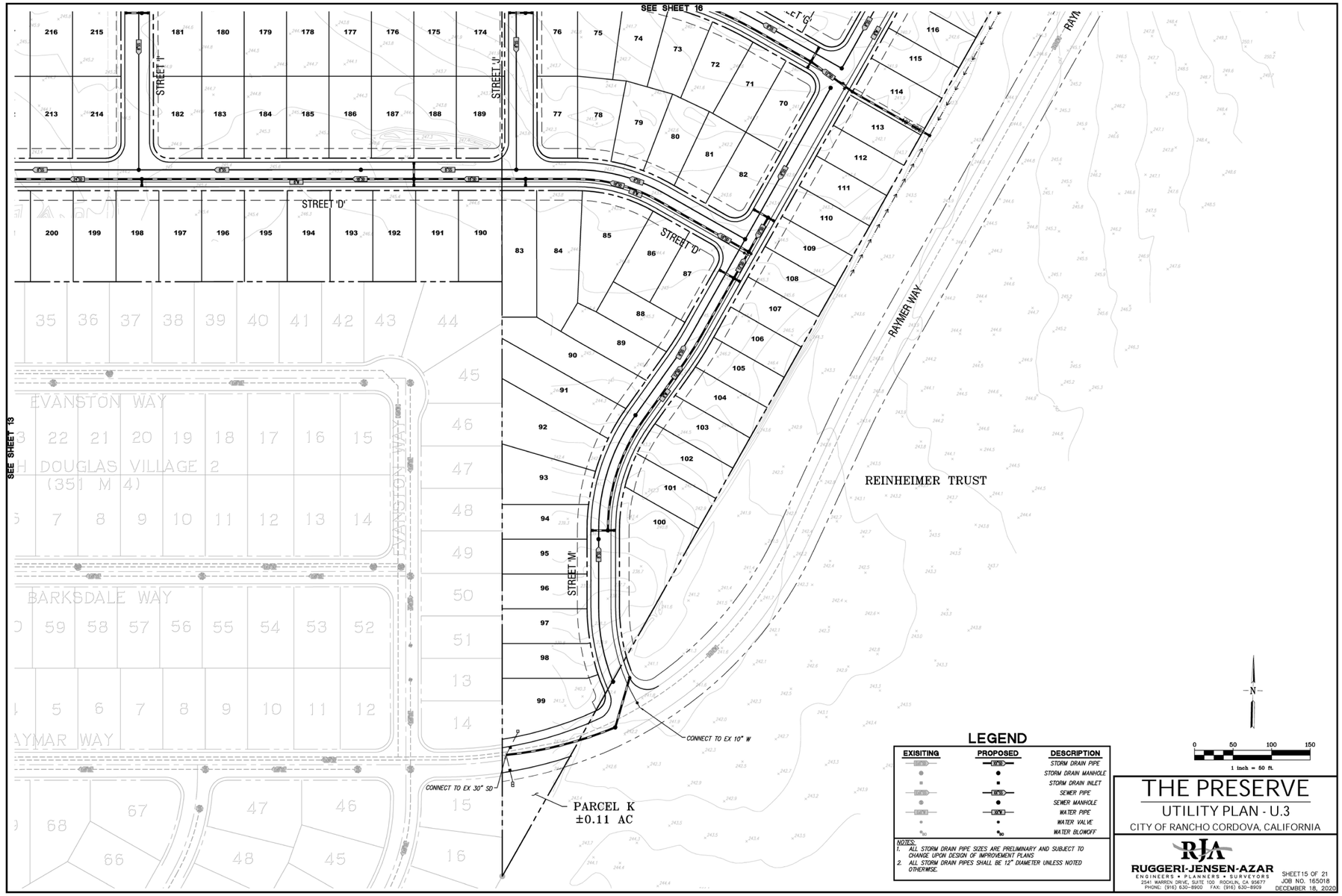


Figure 3-14
Preliminary Utilities Plan – Section 4

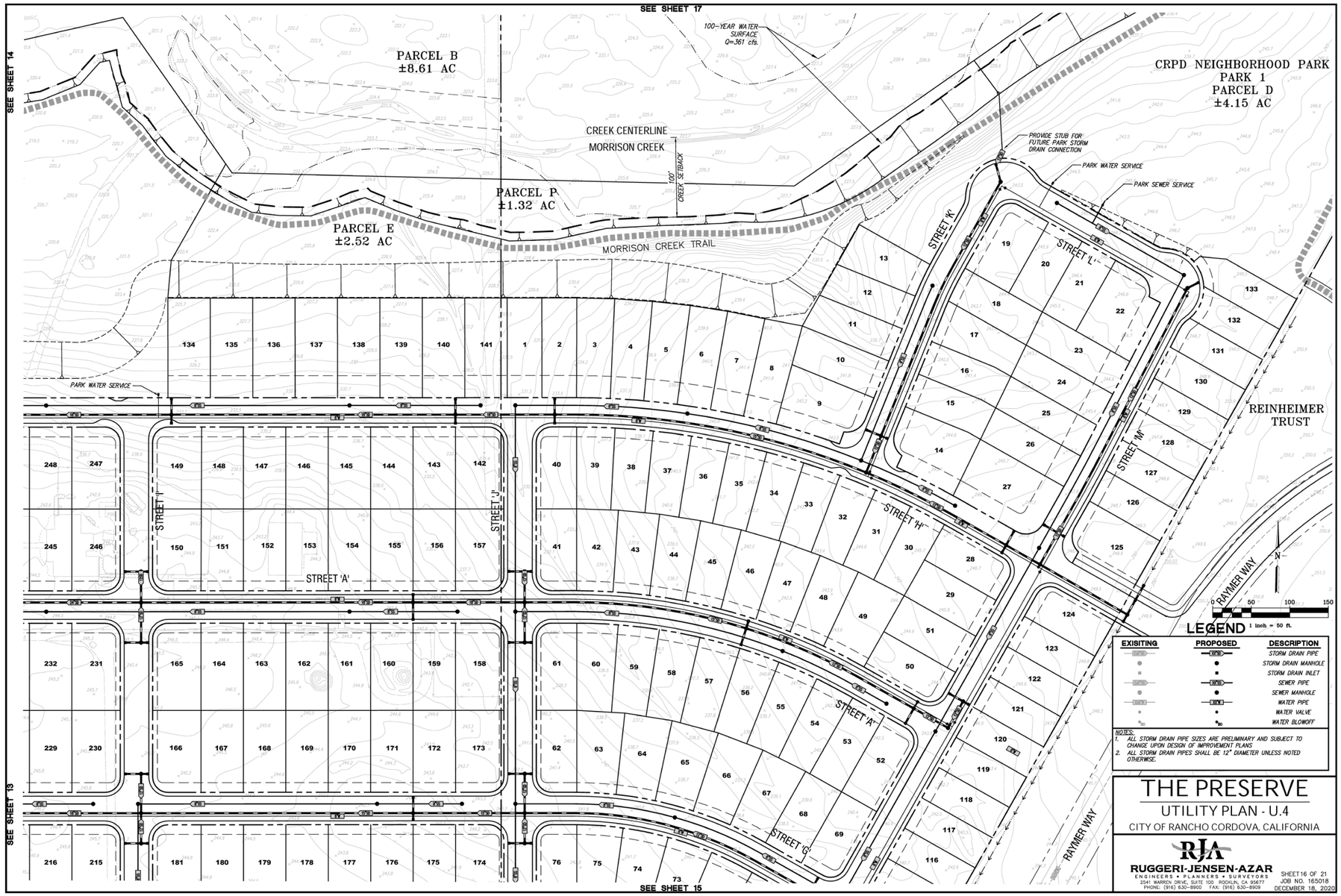
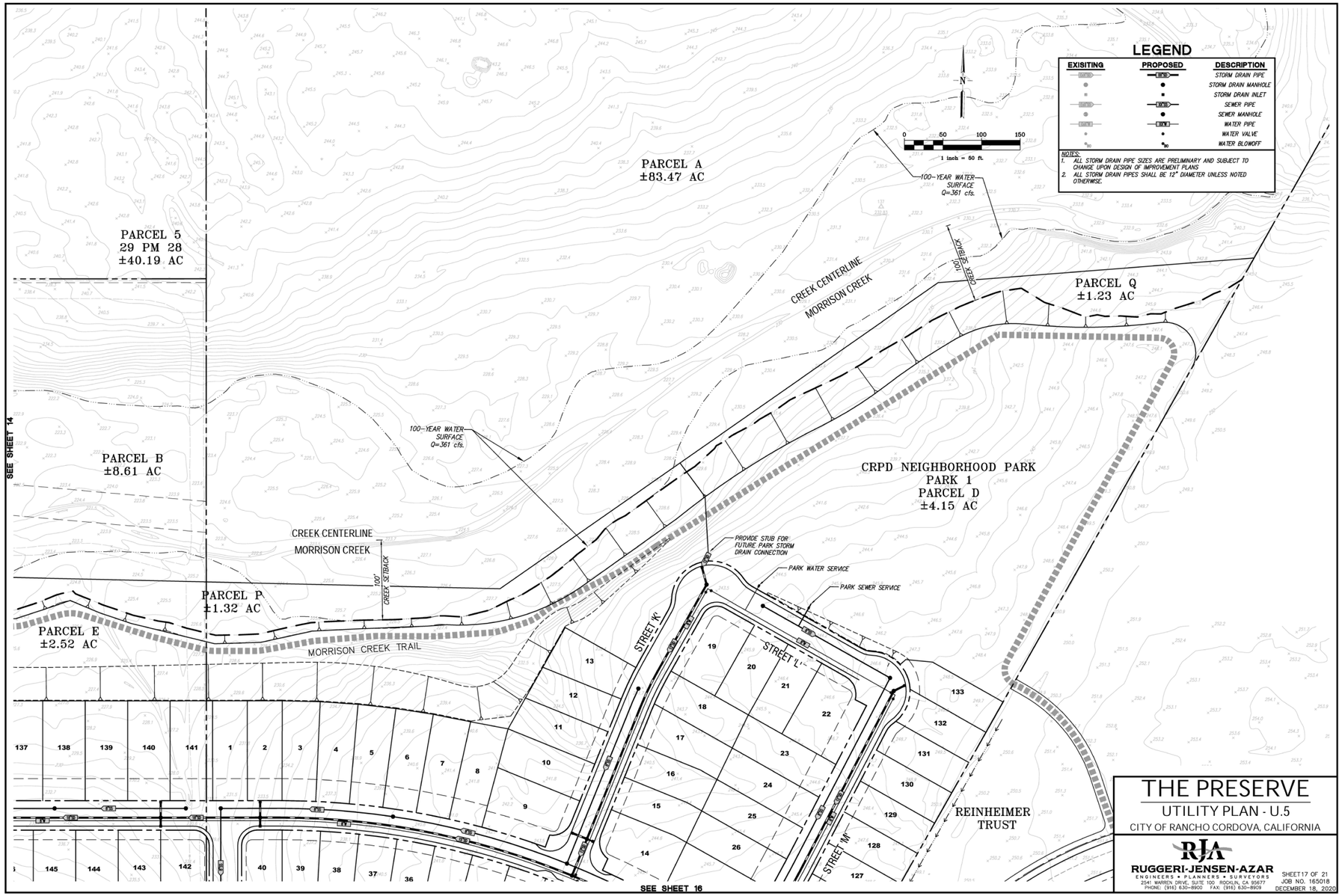


Figure 3-15
Preliminary Utilities Plan – Section 5



3.6 REQUIRED DISCRETIONARY APPROVALS

The proposed project would require City approval of the following:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- General Plan Amendment from Grant Line West Planning Area to Low-Density Residential;
- General Plan Amendment to remove the portion of Centennial Drive through the project site, as depicted in the Circulation Element;
- Rezone from AG-80 (approximately 68.42 acres) and IR (approximately 30.48 acres) to Residential District (RD-5);
- Tentative Subdivision Map; and
- Development Agreement.

3.7 OTHER AGENCY AND PERMIT APPROVALS

In addition to the aforementioned entitlements from the City of Rancho Cordova, the proposed project would require approvals/permits from the following State, federal, or local agencies:

- California Department of Fish and Wildlife (CDFW);
- Central Valley Regional Water Quality Control Board (CVRWQCB);
- Sacramento Metropolitan Air Quality Management District (SMAQMD);
- U.S. Army Corps of Engineers (USACE) – Nationwide Permit (404); and, possibly,
- U.S. Fish and Wildlife Service (USFWS).

4.0 Introduction to the Analysis

4.0 INTRODUCTION TO THE ANALYSIS

4.0.1 INTRODUCTION

The technical chapters of the EIR analyze the potential impacts of buildout of the proposed project on a range of environmental issue areas. Chapters 4.1 through 4.10 of the EIR include the following: the environmental setting as the setting relates to the specific issue; standards of significance; method of analysis; and project-specific impacts and mitigation measures. Additionally, Chapters 4.1 through 4.10 describe the cumulative impacts of the project combined with past, present and reasonably probable future projects for each issue area. The format of each of the technical chapters is described at the end of this chapter. It should be noted that all technical reports are either attached to this EIR, available by request from the City, or available on the City's website at:

www.cityofranchocordova.org/government/planning/environmental-review/environmental-documents.

4.0.2 DETERMINATION OF SIGNIFICANCE

Under CEQA, a significant effect is defined as a substantial or potentially substantial adverse change in the environment (Public Resources Code Section 21068). The CEQA Guidelines require that the determination of significance be based on scientific and factual data. The specific criteria for determining the significance of a particular impact are identified within in each technical chapter, and are consistent with significance criteria set forth in the CEQA Guidelines or as based on the professional judgment of the EIR preparers.

4.0.3 ENVIRONMENTAL ISSUES DISMISSED IN THE INITIAL STUDY

The Initial Study prepared for the proposed project (see Appendix A to this EIR) includes a detailed environmental checklist addressing a range of technical environmental issues. For each technical environmental issue, the Initial Study identifies the level of impact for the proposed project. The Initial Study identifies the environmental effects as "no impact," "less than significant," "less than significant with mitigation incorporated," and "potentially significant."

Impacts identified in the Initial Study as no impact, less than significant, or less than significant with the implementation of mitigation are presented below. All remaining issues identified in the Initial Study as potentially significant are discussed in the subsequent technical chapters of this EIR.

> *Aesthetics (All Sections):* The City of Rancho Cordova General Plan EIR designates the American River and the Sierra Nevada Mountain range as scenic resources and notes that scenic views of Mount Diablo are available from Grant Line Road. However, considering the lack of designated public views of the American River or the Sierra Nevada foothills across the project site, the setback of proposed structures from Grant Line Road, and the existing maximum height requirements, the proposed project would not result in a substantial adverse effect on a scenic vista. The project site is not visible from the nearest designated State scenic highway to the project site, State Route (SR) 50. As a result, the project would not substantially damage scenic resources, including, but not

limited to, trees, rock outcroppings, and historic buildings within a State scenic highway. In addition, the Initial Study determined that compliance with the City's Municipal Code and *Design Guidelines* would ensure that the proposed project would not result in a degradation of the existing visual character of the site or quality of the public views of the site and its surroundings. The proposed project could introduce new sources of substantial light and glare to the site in the form of street lights, homes, windows, and increased vehicle traffic. The proposed project would comply with Section 23.725.060 of the Rancho Cordova Municipal Code which requires shielding of fixtures to limit light pollution and the restriction of direct lighting from crossing property lines. In addition, Mitigation Measure I-1 set forth in the Initial Study (see Appendix A to this EIR) requires the City's approval of a lighting plan for the proposed project, which would ensure the impact on the surrounding area due to lighting on the project site would be reduced to a less-than-significant level. Based on the above, impacts related to Aesthetics from the proposed project would be *less than significant* and *less than significant with mitigation incorporated*.

- *Agriculture and Forest Resources (All Sections):* Per the Department of Conservation Farmland Mapping and Monitoring Program (FMMP), the project site is currently classified as Grazing Land, Farmland of Local Importance, and Unique Farmland. However, the portion of the site designated Unique Farmland is located within the 185.3-acre open space area, which would not be developed as part of the proposed project. The project site is currently zoned Agricultural (AG-80) and Industrial Reserve (IR), and the proposed project includes a request for a rezone of a portion of the site to RD-5. However, the project site is not currently being used for agricultural purposes, and, thus, the project would not result in development of land being used for agriculture. The project site is not under a Williamson Act Contract, is not considered forest land or timberland, and is not zoned for Timberland Production. Therefore, the proposed project would result in *no impacts* and *less-than-significant* impacts related to Agriculture and Forest Resources.

- *Air Quality (d):* Typical sources of objectionable odor include wastewater treatment plants, landfills, and composting facilities, which are not proposed as part of the project. Diesel fumes from construction equipment can be considered objectionable; however, construction activities would be temporary in nature. During operations, residential land uses, such as the proposed project, are not typically associated with creation of substantial objectionable odors. Therefore, the proposed project would not create objectionable odors affecting a substantial number of people, and a *less-than-significant* impact would occur.

- *Geology and Soils (ai and e):* According to the City's General Plan EIR, the closest fault zone to the project site is the Bear Mountain fault zone, located approximately 24 miles northeast of Rancho Cordova's Planning Area. In addition, the proposed residences would connect to the County Sanitation District 1 system. Therefore, the project would not result in substantial adverse effects, including risk, injury, or death, associated with the rupture of a known fault zone and would not include the use of septic tanks or alternative wastewater disposal systems, and *no impact* would occur related to such.

- *Hazards and Hazardous Materials (c-g):* The project site is not located within one-quarter mile of an existing or proposed school nor is it located within an airport land use plan and/or within two miles of a public airport. Thus, *no impact* would occur related to emitting hazardous emissions or handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school or result in a safety

hazard or excessive noise for a project located within an airport land use plan or within two miles of a public airport.

The project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and the project site is not located within a High or Very High Fire Hazard Severity Zone. Furthermore, the proposed would not impair or physically interfere with an adopted emergency response plan due to substantial street width and number of access points. Therefore, the proposed project would result in *less-than-significant* impacts related to being located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, exposing people or structures to the risk of loss, injury or death involving wildland fires, or impairing implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

- *Hydrology and Water Quality (d):* Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the project site is not located within a Special Flood Hazard Area. In addition, the project site is not located near the ocean or a large closed body of water which would be subject to tsunamis or seiches. Therefore, the proposed project would result in *no impact* related to the risk release of pollutants due to project inundation.

- *Land Use and Planning (a):* The two on-site residences would be demolished as part of the proposed project, but do not belong to an established community. Therefore, the project would not have the potential to physically divide an established community, and a *less-than-significant* impact would occur.

- *Noise (c):* The nearest airport to the project site, Mather Airport, is located approximately five miles away. Therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels related to air traffic, and *no impact* would occur.

- *Population and Housing (b):* The proposed project would require demolition of the two existing single-family residences. While the project would displace inhabitants of the two residences, replacement housing would be available from the existing housing stock in Rancho Cordova. Furthermore, the project would add 440 residential units to the site, resulting in a net increase of 437 units to the City's housing stock. Therefore, *a less-than-significant* impact would occur related to the displacement of existing people or housing.

- *Public Services (d and e):* The proposed project would introduce new residents to the project area and thereby increase the demand for parks and other public facilities. However, the proposed project would include dedication of parkland, satisfying the City's Municipal Code requirements. In addition, the future residents of the proposed project would have access to the City's existing public facilities. Thus, implementation of the project would not result in substantial adverse physical impacts associated with the provision of new or altered parks or other public facilities, and a *less-than-significant* impact would occur.

- *Recreation (All Sections):* Given that the proposed project would induce population growth through the development of new residences, the project would result in increased demand

for recreational facilities. As mentioned above, the project would include the dedication of land for parks, Community Space, and green infrastructure. Furthermore, the project applicant would be required to pay development impact fees. Therefore, a *less-than-significant* impact would occur related to recreation.

- *Wildfire (All Sections):* According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program the project site is not located within or adjacent to a High or Very High Fire Hazard Severity Zone. Furthermore, the project is not located on a slope or near a downstream flooding area that would increase hazards related to wildfire. Therefore, a *less-than-significant* impact would occur related to wildfire.

4.0.4 ENVIRONMENTAL ISSUES ADDRESSED IN THIS EIR

The EIR provides the analysis necessary to address the technical environmental impacts of the proposed project. The following environmental issues are addressed in this EIR:

- Air Quality, Greenhouse Gas Emissions, and Energy;
- Biological Resources;
- Cultural and Tribal Resources;
- Geology and Soils/Mineral Resources;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning/Population and Housing;
- Noise;
- Public Services and Utilities; and
- Transportation.

See Section 5.3, Cumulative Impacts, of Chapter 5, Statutorily Required Sections, for additional information on the scope of the cumulative impact analysis for each environmental issue addressed in the EIR.

4.0.5 CHAPTER FORMAT

Each technical chapter addressing a specific environmental issue begins with an **introduction** describing the purpose of the section. The introduction is followed by a description of the project's **existing environmental setting** as the setting pertains to that particular issue. The setting description is followed by the **regulatory context** and the **impacts and mitigation measures** discussion, which contains the **standards of significance**, followed by the **method of analysis**. The **impact and mitigation measures** discussion includes impact statements prefaced by a number in bold-faced type (for both project-specific and cumulative analyses). An explanation of each impact and an analysis of the impact's significance follow each impact statement. All mitigation measures pertinent to each individual impact follow directly after the impact statement (see below). The degree of relief provided by identified mitigation measures is also evaluated. An example of the format is shown below.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance.

4.x-1 Statement of Project-Specific Impact

Discussion of impact for the proposed project in paragraph format.

Statement of ***level of significance*** of impact prior to mitigation is included at the end of each impact discussion. The following levels of significance are used in the EIR: less than significant, significant, or significant and unavoidable. If an impact is determined to be significant, mitigation will be included in order to reduce the specific impact to the maximum extent feasible. Impacts that cannot be reduced to a less-than-significant level with implementation of all feasible mitigation would be considered to remain significant and unavoidable.

Mitigation Measure(s)

Statement of *level of significance* after the mitigation is included immediately preceding mitigation measures.

4.x-1(a) *Required mitigation measure(s) presented in italics and listed in consecutive order.*

4.x-1(b) *Required additional mitigation measure, if necessary.*

Cumulative Impacts and Mitigation Measures

The following discussion of cumulative impacts is based on implementation of the proposed project in combination with cumulative development within the applicable area or region.

4.x-2 Statement of Cumulative Impact

Discussion of cumulative impacts for the proposed project in paragraph format.

As discussed in detail in Chapter 5, Statutorily Required Sections, of the EIR, the cumulative setting for the proposed project is generally considered to be development anticipated to occur upon buildout of the Rancho Cordova General Plan (i.e., Rancho Cordova city limits), as well as buildout of a number of approved or reasonably foreseeable projects within the project region.

Statement of ***level of significance*** of cumulative impact prior to mitigation is included at the end of each impact discussion. The following levels of significance are used in the EIR for cumulative impacts: less than significant, less than cumulatively considerable, cumulatively considerable, or significant and unavoidable. If an impact is determined to be cumulatively considerable, mitigation will be included in order to reduce the specific impact to the maximum extent feasible. Impacts that cannot be reduced to a less-than-significant or less than cumulatively considerable levels with the implementation of all feasible mitigation would be considered to remain significant and unavoidable.

Mitigation Measure(s)

Statement of *level of significance* after the mitigation is included immediately preceding mitigation measures.

4.x-2(a) *Required mitigation measure(s) presented in italics and listed in consecutive order.*

4.x-2(b) *Required additional mitigation measure, if necessary.*

4.1 Air Quality, Greenhouse Gas Emissions, and Energy

4.1 AIR QUALITY, GREENHOUSE GAS EMISSIONS, AND ENERGY

4.1.1 INTRODUCTION

The Air Quality, Greenhouse Gas Emissions, and Energy chapter of the EIR describes the potential impacts of the proposed project on local and regional air quality emissions, potential impacts related to greenhouse gas (GHG) emissions and climate change, and potential impacts related to energy. The chapter includes a discussion of the existing air quality, GHG, and energy setting, the existing regulatory setting, as well as potential air quality, GHG, and energy impacts resulting from implementation of the project. In addition, the chapter includes mitigation measures warranted to reduce or eliminate any identified significant impacts. This chapter is based on the Rancho Cordova General Plan[1] and associated EIR,[2] the Sacramento Metropolitan Air Quality Management District (SMAQMD) CEQA Guide,[3] and technical analysis performed by Raney Planning and Management, Inc.

4.1.2 EXISTING ENVIRONMENTAL SETTING

The following information provides an overview of the existing environmental setting in relation to air quality within the proposed project area. Air basin characteristics, ambient air quality standards (AAQS), attainment status and regional air quality plans, local air quality monitoring, odors, sensitive receptors, greenhouse gases, and energy are discussed.

Air Basin Characteristics

The proposed project site is located in the City of Rancho Cordova, which falls within the Sacramento Valley Air Basin (SVAB) and is within the jurisdictional boundaries of the SMAQMD. The SVAB is in the northern half of California's Great Valley and is bordered on three sides by mountain ranges. Air flows into the SVAB through the Carquinez Strait, moves across the Delta and carries pollutants from the heavily populated San Francisco Bay Area into the SVAB. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

Most precipitation in the SVAB results from air masses moving in from the Pacific Ocean during the winter months. Storms usually move through the area from the west or northwest. During the winter rainy season (November through February) over half the total annual precipitation falls while the average winter temperature is a moderate 49 degrees Fahrenheit. During the summer, daytime temperatures can exceed 100 degrees Fahrenheit. Dense fog occurs mostly in mid-winter and rarely in the summer. Daytime temperatures from April through October average between 60 and 80 degrees Fahrenheit with low humidity. The inland location and surrounding mountains shelter the valley from much of the ocean breeze that keeps the coastal regions moderate in temperature. The only breech in the mountain barrier is the Carquinez Strait, which exposes the midsection of the valley to the coastal air mass.

1 City of Rancho Cordova. *Rancho Cordova General Plan*. June 26, 2006.
2 City of Rancho Cordova. *Rancho Cordova General Plan Draft Environmental Impact Report.* March 2006.
3 Sacramento Metropolitan Air Quality Management District. *CEQA Guide*. April 2020.

Air quality in the City of Rancho Cordova is also affected by inversion layers, which occur when a layer of warm air traps a layer of cold air, preventing vertical dispersion of air contaminants. The presence of an inversion layer results in higher concentrations of pollutants near ground level. Summer inversions are strong and frequent, but are less troublesome than those that occur in the fall. Autumn inversions, formed by warm air subsiding in a region of high pressure, have accompanying light winds that do not provide adequate dispersion of air pollutants.

Air quality in the project vicinity is influenced by both local and distant emission sources. Air pollutant sources in the immediate project vicinity include emissions from vehicle traffic on United States Route 50 (US 50) and other nearby roadways. Other sources of air pollutants in the area include activities associated with commercial, residential, and industrial land uses.

Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established AAQS for common pollutants. The federal standards are divided into primary standards, which are designed to protect the public health, and secondary standards, which are designed to protect the public welfare. The AAQS for each contaminant represent safe levels that avoid specific adverse health effects. Pollutants for which AAQS have been established are called “criteria” pollutants. Table 4.1-1 identifies the major pollutants, characteristics, health effects and typical sources. The national and California AAQS (NAAQS and CAAQS, respectively) are summarized in Table 4.1-2. The NAAQS and CAAQS were developed independently with differing purposes and methods. As a result, the federal and State standards differ in some cases. In general, the State of California standards are more stringent than the federal standards, particularly for ozone and particulate matter (PM).

A description of each criteria pollutant and its potential health effects is provided below.

Ozone

Ozone is a reactive gas consisting of three oxygen atoms. In the troposphere, ozone is a product of the photochemical process involving the sun's energy, and is a secondary pollutant formed as a result of a complex chemical reaction between reactive organic gases (ROG) and oxides of nitrogen (NO_X) emissions in the presence of sunlight. As such, unlike other pollutants, ozone is not released directly into the atmosphere from any sources. In the stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation. The primary source of ozone precursors is mobile sources, including cars, trucks, buses, construction equipment, and agricultural equipment. Ground-level ozone reaches the highest level during the afternoon and early evening hours. High levels occur most often during the summer months. Ground-level ozone is a strong irritant that could cause constriction of the airways, forcing the respiratory system to work harder in order to provide oxygen. Ozone at the Earth's surface causes numerous adverse health effects and is a major component of smog. High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments.

Reactive Organic Gas

ROG is a reactive chemical gas composed of hydrocarbon compounds typically found in paints and solvents that contributes to the formation of smog and ozone by involvement in atmospheric chemical reactions. A separate health standard does not exist for ROG. However, some compounds that make up ROG are toxic, such as the carcinogen benzene.

Table 4.1-1
Summary of Criteria Pollutants

Pollutant	Characteristics	Health Effects	Major Sources
Ozone	A highly reactive gas produced by the photochemical process involving a chemical reaction between the sun's energy and other pollutant emissions. Often called photochemical smog.	• Eye irritation • Wheezing, chest pain, dry throat, headache, or nausea • Aggravated respiratory disease such as emphysema, bronchitis, and asthma	Combustion sources such as factories, automobiles, and evaporation of solvents and fuels.
Carbon Monoxide	An odorless, colorless, highly toxic gas that is formed by the incomplete combustion of fuels.	• Impairment of oxygen transport in the bloodstream • Impaired vision, reduced alertness, chest pain, and headaches • Can be fatal in the case of very high concentrations	Automobile exhaust, combustion of fuels, and combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide	A reddish-brown gas that discolors the air and is formed during combustion of fossil fuels under high temperature and pressure.	• Lung irrigation and damage • Increased risk of acute and chronic respiratory disease	Automobile and diesel truck exhaust, industrial processes, and fossil-fueled power plants.
Sulfur Dioxide	A colorless, irritating gas with a rotten egg odor formed by combustion of sulfur-containing fossil fuels.	• Aggravation of chronic obstruction lung disease • Increased risk of acute and chronic respiratory disease	Diesel vehicle exhaust, oil-powered power plants, and industrial processes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	A complex mixture of extremely small particles and liquid droplets that can easily pass through the throat and nose and enter the lungs.	• Aggravation of chronic respiratory disease • Heart and lung disease • Coughing • Bronchitis • Chronic respiratory disease in children • Irregular heartbeat • Nonfatal heart attacks	Combustion sources such as automobiles, power generation, industrial processes, and wood burning. Also from unpaved roads, farming activities, and fugitive windblown dust.
Lead	A metal found naturally in the environment as well as in manufactured products.	• Loss of appetite, weakness, apathy, and miscarriage • Lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract	Industrial sources and combustion of leaded aviation gasoline.

Sources:

- ***California Air Resources Board. California Ambient Air Quality Standards (CAAQS). Available at: http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm. Accessed May 2021.***
- ***Sacramento Metropolitan, El Dorado, Feather River, Placer, and Yolo-Solano Air Districts: Sacramento Region Spare the Air. Air Quality Information for the Sacramento Region. Available at: http://www.sparetheair.com/health.cfm?page=healthoverall. Accessed May 2021.***
- ***California Air Resources Board. Glossary of Air Pollution Terms. Available at: http://www.arb.ca.gov/html/gloss.htm. Accessed May 2021.***

Table 4.1-2
Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS	NAAQS	
			Primary	Secondary
Ozone	1 Hour	0.09 ppm	-	Same as primary
	8 Hour	0.070 ppm	0.070 ppm	
Carbon Monoxide	8 Hour	9 ppm	9 ppm	-
	1 Hour	20 ppm	35 ppm	
Nitrogen Dioxide	Annual Mean	0.030 ppm	53 ppb	Same as primary
	1 Hour	0.18 ppm	100 ppb	-
Sulfur Dioxide	24 Hour	0.04 ppm	-	-
	3 Hour	-	-	0.5 ppm
	1 Hour	0.25 ppm	75 ppb	-
Respirable Particulate Matter (PM_{10})	Annual Mean	20 ug/m^3	-	Same as primary
	24 Hour	50 ug/m^3	150 ug/m^3	
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	12 ug/m^3	12 ug/m^3	15 ug/m^3
	24 Hour	-	35 ug/m^3	Same as primary
Lead	30 Day Average	1.5 ug/m^3	-	-
	Calendar Quarter	-	1.5 ug/m^3	Same as primary
Sulfates	24 Hour	25 ug/m^3	-	-
Hydrogen Sulfide	1 Hour	0.03 ppm	-	-
Vinyl Chloride	24 Hour	0.010 ppm	-	-
Visibility Reducing Particles	8 Hour	see note below	-	-

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

Note: Statewide Visibility Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Source: California Air Resources Board. Ambient Air Quality Standards. May 4, 2016. Available at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed May 2021.

Oxides of Nitrogen

NO_X are a family of gaseous nitrogen compounds and are precursors to the formation of ozone and particulate matter. The major component of NO_X, nitrogen dioxide (NO_2), is a reddish-brown gas that discolors the air and is toxic at high concentrations. NO_X results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of NO_X. NO_X reacts with ROG to form smog, which could result in adverse impacts to human health, damage the environment, and cause poor visibility. Additionally, NO_X emissions are a major component of acid rain. Health effects related to NO_X include lung irritation and lung damage and can cause increased risk of acute and chronic respiratory disease.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels such as gasoline, oil, and wood. When CO enters the body, the CO

combines with chemicals in the body, which prevents blood from carrying oxygen to cells, tissues, and organs. Symptoms of exposure to CO can include problems with vision, reduced alertness, and general reduction in mental and physical functions. Exposure to CO can result in chest pain, headaches, reduced mental alertness, and death at high concentrations.

Sulfur Dioxide

Sulfur Dioxide (SO_2) is a colorless, irritating gas with a rotten egg odor formed primarily by the combustion of sulfur-containing fossil fuels from mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Similar to airborne NO_X, suspended sulfur oxide particles contribute to poor visibility. The sulfur oxide particles are also a component of particulate matter that is 10 micrometers in diameter and smaller (PM_{10}).

Particulate Matter

Particulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health impacts. The USEPA is concerned about PM_{10} because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, the particles could affect the heart and lungs and cause serious health effects. USEPA groups particle pollution into three categories based on their size and where they are deposited:

- "Inhalable coarse particles ($PM_{2.5-10}$)," which are found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5-10}$ is deposited in the thoracic region of the lungs.
- "Fine particles ($PM_{2.5}$)," which are found in smoke and haze, are 2.5 micrometers in diameter and smaller. $PM_{2.5}$ particles could be directly emitted from sources such as forest fires, or could form when gases emitted from power plants, industries, and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
- “Ultrafine particles (UFP),” are very, very small particles (less than 0.1 micrometers in diameter) largely resulting from the combustion of fossil fuels, meat, wood, and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, their high surface area, deep lung penetration, and transfer into the bloodstream could result in disproportionate health impacts relative to their mass. UFP is not currently regulated separately, but is analyzed as part of $PM_{2.5}$.

PM_{10}, $PM_{2.5}$, and UFP include primary pollutants, which are emitted directly to the atmosphere and secondary pollutants, which are formed in the atmosphere by chemical reactions among precursors. Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM_{10} sources include the same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust. Long-term PM pollution, especially fine particles, could result in significant health problems including, but not limited to, the following: increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing; decreased lung function; aggravated asthma; development of chronic respiratory disease in children; development of chronic bronchitis or obstructive lung disease; irregular heartbeat; heart attacks; and increased blood pressure.

Lead

Lead is a relatively soft and chemically resistant metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, and, thus, essentially persists forever. Lead forms compounds with both organic and inorganic substances. As an air pollutant, lead is present in small particles. Sources of lead emissions in California include a variety of industrial activities. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. However, because lead was emitted in large amounts from vehicles when leaded gasoline was used, lead is present in many soils (especially urban soils) as a result of airborne dispersion and could become re-suspended into the air.

Because lead is only slowly excreted by the human body, exposures to small amounts of lead from a variety of sources could accumulate to harmful levels. Effects from inhalation of lead above the level of the ambient air quality standard may include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms could include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children. Lead also causes cancer.

Sulfates

Sulfates are the fully oxidized ionic form of sulfur and are colorless gases. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. The sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The sulfates standard established by CARB is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, because they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide

Hydrogen Sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations, especially in enclosed spaces (800 parts per million [ppm] can cause death).

Vinyl Chloride

Vinyl Chloride (C_2H_3Cl, also known as VCM) is a colorless gas that does not occur naturally, but is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloro-ethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Visibility Reducing Particles

Visibility Reducing Particles are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are also a category of environmental concern. TACs are present in many types of emissions with varying degrees of toxicity. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases. Common stationary sources of TACs include gasoline stations, dry cleaners, and diesel backup generators, which are subject to SMAQMD stationary source permit requirements. The other, often more significant, common source type is on-road motor vehicles, such as cars and trucks, on freeways and roads, and off-road sources such as construction equipment, ships, and trains.

Fossil fueled combustion engines, including those used in cars, trucks, and some pieces of construction equipment, release at least 40 different TACs. In terms of health risks, the most volatile contaminants are diesel particulate matter (DPM), benzene, formaldehyde, 1,3-butadiene, toluene, xylenes, and acetaldehyde. Gasoline vapors contain several TACs, including benzene, toluene, and xylenes. Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust, DPM, is composed of carbon particles and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of such chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and NO_X. Due to the published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects, the CARB has identified DPM from diesel-fueled engines as a TAC. Although a variety of TACs are emitted by fossil fueled combustion engines, the cancer risk due to DPM exposure represents a more significant risk than the other TACs discussed above.[4]

More than 90 percent of DPM is less than one micrometer in diameter, and, thus, DPM is a subset of $PM_{2.5}$. As a California statewide average, DPM comprises about eight percent of $PM_{2.5}$ in outdoor air, although DPM levels vary regionally due to the non-uniform distribution of sources throughout the State. Most major sources of diesel emissions, such as ships, trains, and trucks, operate in and around ports, rail yards, and heavily-traveled roadways. Such areas are often located near highly populated areas. Thus, elevated DPM levels are mainly an urban problem, with large numbers of people exposed to higher DPM concentrations, resulting in greater health consequences compared to rural areas.

Due to the high levels of diesel activity, high volume freeways, stationary diesel engines, rail yards and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Construction-related activities also have the potential to generate concentrations of DPM from on-road haul trucks and off-road equipment exhaust emissions.

[4] California Air Resources Board. *Reducing Toxic Air Pollutants in California's Communities*. February 6, 2002.

The size of diesel particulates that are of the greatest health concern are fine particles (i.e., $PM_{2.5}$) and UFPs. UFPs have a small diameter (on the order of 0.1 micrometers).[5] The small diameter of UFPs imparts the particulates with unique attributes, such as high surface areas and the ability to penetrate deeply into lungs. Once UFPs have been deposited in lungs, the small diameter allows the UFPs to be transferred to the bloodstream. The high surface area of the UFPs also allows for a greater adsorption of other chemicals, which are transported along with the UFPs into the bloodstream of the inhaler, where the chemicals can eventually reach critical organs.[6] The penetration capability of UFPs may contribute to adverse health effects related to heart, lung, and other organ health.[7] UFPs are a subset of DPM and activities that create large amounts of DPM, such as the operations involving heavy diesel-powered engines, also release UFPs.

Health risks from TACs are a function of both the concentration of emissions and the duration of exposure, which typically are associated with long-term exposure and the associated risk of contracting cancer. Health effects of exposure to TACs other than cancer include birth defects, neurological damage, and death. Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level. The identification, regulation, and monitoring of TACs is relatively new compared to criteria air pollutants that have established AAQS. TACs are regulated or evaluated on the basis of risk to human health rather than comparison to an AAQS or emission-based threshold.

Attainment Status and Regional Air Quality Plans

The Federal Clean Air Act (FCAA) and the California Clean Air Act (CCAA) require all areas of California to be classified as attainment, nonattainment, or unclassified as to their status with regard to the NAAQS and/or CAAQS. The FCAA and CCAA require that the CARB, based on air quality monitoring data, designate portions of the State where the federal or State AAQS are not met as "nonattainment areas." Because of the differences between the national and State standards, the designation of nonattainment areas is different under the federal and State legislation. The FCAA requires areas violating the NAAQS to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The CCAA requires local air pollution control districts to prepare air quality attainment plans. These plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods or, provide for adoption of "all feasible measures on an expeditious schedule."

As presented in Table 4.1-3, under the CCAA, Sacramento County has been designated nonattainment for the State one-hour ozone, State and federal eight-hour ozone, State PM_{10}, and Federal $PM_{2.5}$ standards. The County is designated attainment or unclassified for all other AAQS. Due to the nonattainment designations, the SMAQMD, along with the other air districts in the SVAB region, is required to develop plans to attain the federal and State standards for ozone and particulate matter. The air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control measures have worked, and show how air pollution would be reduced. In addition, the plans include the estimated future levels of pollution to ensure that the area would meet air quality goals. Each of the attainment plans currently in effect are discussed in further detail in the Regulatory Context section of this chapter.

[5] South Coast Air Quality Management District. *Final 2012 Air Quality Management Plan*. December 2012.
[6] Health Effects Institute. *Understanding the Health Effects of Ambient Ultrafine Particles*. January 2013.
[7] South Coast Air Quality Management District. *Final 2012 Air Quality Management Plan*. December 2012.

Table 4.1-3
Sacramento County Attainment Status Designations

Pollutant	Averaging Time	California Standards	Federal Standards
Ozone	1 Hour	**Nonattainment**	Attainment
	8 Hour	**Nonattainment**	**Nonattainment**
Carbon Monoxide	8 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
Nitrogen Dioxide	Annual Mean	Attainment	Unclassifiable/ Attainment
	1 Hour	Attainment	Unclassifiable/ Attainment
Sulfur Dioxide	24 Hour	Attainment	-
	1 Hour	Attainment	Attainment
Respirable Particulate Matter (PM_{10})	Annual Mean	**Nonattainment**	-
	24 Hour	**Nonattainment**	Attainment
Fine Particulate Matter ($PM_{2.5}$)	Annual Mean	Attainment	Attainment
	24 Hour	-	**Nonattainment**
Lead	Rolling 3-Month Average	Attainment	Attainment
Sulfates	24 Hour	Attainment	-

Source: Sacramento Metropolitan Air Quality Management District. Air Quality Pollutants and Standards. Available at: http://www.airquality.org/air-quality-health/air-quality-pollutants-and-standards. Accessed May 2021.

Local Air Quality Monitoring

Air quality is monitored by CARB at various locations to determine which air quality standards are being violated, and to direct emission reduction efforts, such as developing attainment plans and rules, incentive programs, etc. The nearest local air quality monitoring station to the project site is the Sloughhouse station, located at 7520 Sloughhouse Road in Elk Grove, CA, approximately seven miles south of the project site. Data for $PM_{2.5}$ and PM_{10} was not available for the Sloughhouse monitoring site; thus, such data was obtained from the next nearest site, the Sacramento-Del Paso Manor monitoring site, located approximately 9.8 miles northwest of the project site at 2701 Avalon Drive, in the City of Sacramento. Table 4.1-4 shows historical occurrences of pollutant levels exceeding the State and federal AAQS for the three-year period from 2017 to 2019.

Odors

While offensive odors rarely cause physical harm, they can be unpleasant, leading to considerable annoyance and distress among the public and can generate citizen complaints to local governments and air districts. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative or formulaic methodologies to determine the presence of a significant odor impact do not exist. Adverse effects of odors on residential areas and other sensitive receptors warrant the closest scrutiny; but consideration should also be given to other land use types where people congregate, such as recreational facilities, worksites, and commercial areas. The potential for an odor impact is dependent on a number of variables including the nature of the odor source, distance between a receptor and an odor source, and local meteorological conditions.

Table 4.1-4
Air Quality Data Summary (2017-2019)

Pollutant	Standard	Days Standard Was Exceeded		
		2017	2018	2019
1-Hour Ozone	State	0	2	0
	Federal	0	0	0
8-Hour Ozone	State	7	4	2
	Federal	6	4	0
24-Hour $PM_{2.5}$	Federal	6.2	10.6	0
24-Hour PM_{10}	State	18.6	12.2	*
	Federal	0	12.3	*
1-Hour Nitrogen Dioxide	State	0	0	0
	Federal	0	0	0

Note: * indicates that sufficient data was not available to determine the value.

Source: California Air Resources Board. Aerometric Data Analysis and Management (iADAM) System. Available at http://www.arb.ca.gov/adam/welcome.html. Accessed May 2021.

One of the most important factors influencing the potential for an odor impact to occur is the distance between the odor source and receptors, also referred to as a buffer zone or setback. The greater the distance between an odor source and receptor, the less concentrated the odor emission would be when reaching the receptor.

Meteorological conditions also affect the dispersion of odor emissions, which determines the exposure concentration of odiferous compounds at receptors. The predominant wind direction in an area influences which receptors are exposed to the odiferous compounds generated by a nearby source. Receptors located upwind from a large odor source may not be affected due to the produced odiferous compounds being dispersed away from the receptors. Wind speed also influences the degree to which odor emissions are dispersed away from any area.

Odiferous compounds could be generated from a variety of source types including both construction and operational activities. Examples of common land use types that typically generate significant odor impacts include, but are not limited to wastewater treatment plants; sanitary landfills; composting/green waste facilities; recycling facilities; petroleum refineries; chemical manufacturing plants; painting/coating operations; rendering plants; and food packaging plants.

While the project site is located across from the Teichert Aggregate Grantline Plant, the materials mined at the Teichert site include aggregates such as sand and gravel. Aggregate material is not associated with any odors. Although some heavy-duty equipment could be used at the plant, the distance of the project site from the Teichert plant would not likely result in diesel odors reaching the proposed residences.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, day care centers, playgrounds, and medical facilities. A residential subdivision exists directly to the south

of the project site. The closest residences are approximately 50 feet away from the project site. The remaining surrounding areas are primarily vacant.

Greenhouse Gas Emissions

GHGs are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the earth's atmosphere. Some GHGs occur naturally and are emitted into the atmosphere through both natural processes and human activities. Other GHGs are created and emitted solely through human activities. The principal GHGs that enter the atmosphere due to human activities are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated carbons. Other common GHGs include water vapor, ozone, and aerosols. The increase in atmospheric concentrations of GHG due to human activities has resulted in more heat being held within the atmosphere, which is the accepted explanation for global climate change.

The primary GHG emitted by human activities is CO_2, with the next largest components being CH_4 and N_2O. A wide variety of human activities result in the emission of CO_2. Some of the largest sources of CO_2 include the burning of fossil fuels for transportation, electricity production, and industrial processes, including plastic and cement production. The primary sources of CH_4 emissions include domestic livestock sources, decomposition of wastes in landfills, releases from natural gas systems, coal mine seepage, and manure management. The main human activities producing N_2O are agricultural soil management, fuel combustion in motor vehicles, nitric acid production, manure management, and stationary fuel combustion. Emissions of GHG by economic sector indicate that energy-related activities account for the majority of U.S. emissions. The transportation sector is the largest single-source of GHG emissions, and electricity production is the second largest source, followed by industrial activities. The agricultural, commercial, and residential sectors account for the remainder of GHG emission sources.[8]

Emissions of GHG are partially offset by uptake of carbon and sequestration in trees, agricultural soils, landfilled yard trimmings and food scraps, and absorption of CO_2 by the earth's oceans. Additional emission reduction measures for GHG could include, but are not limited to, compliance with local, State, or federal plans or strategies for GHG reductions, on-site and off-site mitigation, and project design features. Attainment concentration standards for GHGs have not been established by the federal or State government.

Global Warming Potential

Global Warming Potential (GWP) is one type of simplified index (based upon radiative properties) that can be used to estimate the potential future impacts of emissions of various gases. According to the USEPA, the GWP of a gas, or aerosol, to trap heat in the atmosphere is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas." The reference gas for comparison is CO_2. GWP is based on a number of factors, including the heat-absorbing ability of each gas relative to that of CO_2, as well as the decay rate of each gas relative to that of CO_2. Each gas's GWP is determined by comparing the radiative forcing associated with emissions of that gas versus the radiative forcing associated with emissions of the same mass of CO_2, for which the GWP is set at one. Methane gas, for example, is estimated by the USEPA to have a comparative global warming potential 25 times greater than that of CO_2, as shown in Table 4.1-5.

[8] U.S. Environmental Protection Agency. *Sources of Greenhouse Gas Emissions.* Available at: https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions. Accessed May 2021.

Table 4.1-5
Global Warming Potentials and Atmospheric Lifetimes of Select GHGs

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	See footnote[1]	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
Hydrofluorocarbon (HFC)-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

[1] For a given amount of carbon dioxide emitted, some fraction of the atmospheric increase in concentration is quickly absorbed by the oceans and terrestrial vegetation, some fraction of the atmospheric increase will only slowly decrease over a number of years, and a small portion of the increase will remain for many centuries or more.

Source: USEPA. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019 [Table 1-2]. April 14, 2021.

As shown in the table above, at the extreme end of the scale, sulfur hexafluoride is estimated to have a comparative GWP 22,800 times that of CO_2. The "specified time horizon" is related to the atmospheric lifetimes of such GHGs, which are estimated by the USEPA to vary from 50 to 200 years for CO_2, to 50,000 years for tetrafluoromethane. Longer atmospheric lifetimes allow GHG to buildup in the atmosphere; therefore, longer lifetimes correlate with the GWP of a gas. The common indicator for GHG is expressed in terms of metric tons of CO_2 equivalents ($MTCO_2e$), which is calculated based on the GWP for each pollutant.

Effects of Global Climate Change

Uncertainties exist as to exactly what the climate changes will be in various areas of the Earth. According to the Intergovernmental Panel on Climate Change's Working Group II Report, *Climate Change 2007: Impacts, Adaptation and Vulnerability*,[9] climate change impacts to North America may include:

- Diminishing snowpack;
- Increasing evaporation;
- Exacerbated shoreline erosion;
- Exacerbated inundation from sea level rising;
- Increased risk and frequency of wildfire;
- Increased risk of insect outbreaks;
- Increased experiences of heat waves; and

[9] Intergovernmental Panel on Climate Change. *Summary for Policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA* [pg. 1-32]. 2014.

- Rearrangement of ecosystems as species and ecosystems shift northward and to higher elevations.

For California, climate change has the potential to cause/exacerbate the following environmental impacts:

- Increased frequency, duration, and intensity of conditions conducive to air pollution formation (particularly ozone);
- Reduced precipitation, changes to precipitation and runoff patterns, reduced snowfall (precipitation occurring as rain instead of snow), earlier snowmelt, decreased snowpack, and increased agricultural demand for water;
- Increased growing season and increased growth rates of weeds, insect pests and pathogens;
- Inundation by sea level rise;
- Increased incidents and severity of wildfire events; and
- Expansion of the range and increased frequency of pest outbreaks.

Energy

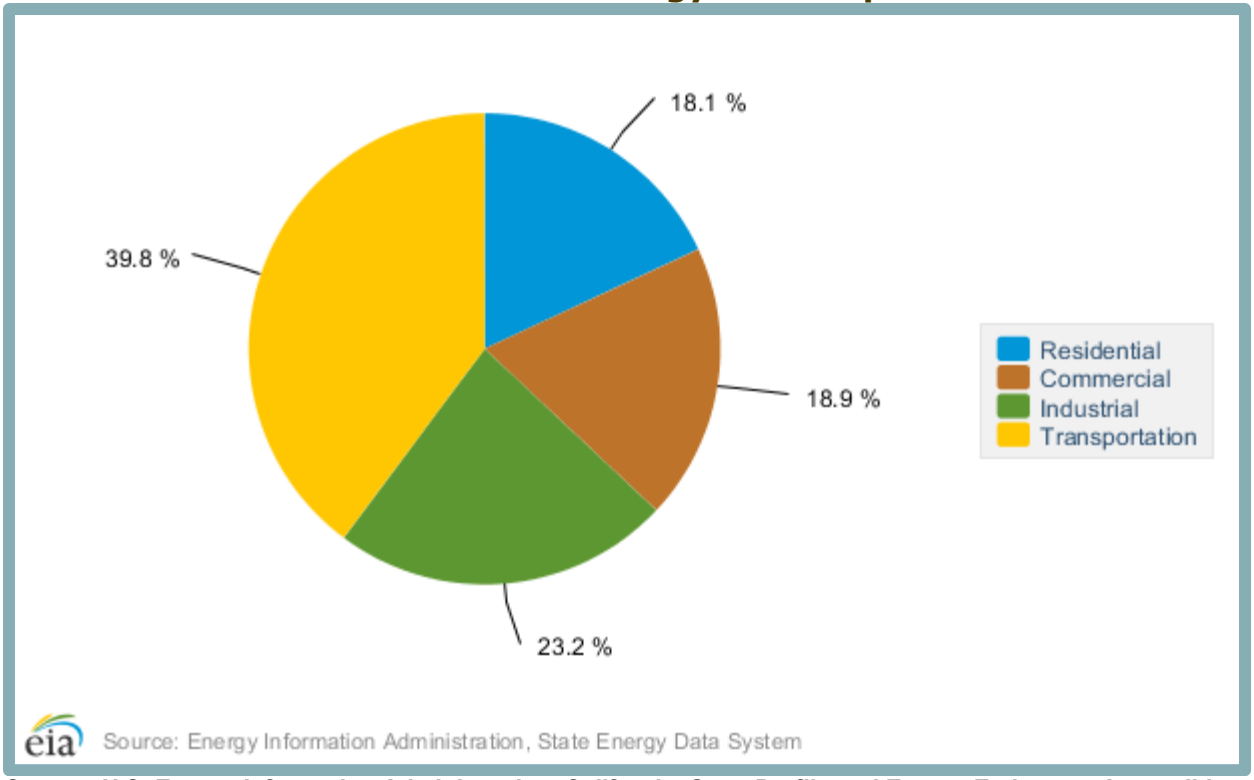
California is one of the highest energy demanding states within the nation. Activities such as heating and cooling structures, lighting, the movement of goods, agricultural production, and countless other facets of daily life consume a variety of energy sources. Energy within the state is provided primarily by the combustion of fossil fuels such as natural gas, motor gasoline, diesel, jet fuel, and, to a lesser extent, coal. In addition to the fossil fuel-based energy sources, the state is ranked second in the nation in renewable energy generation, which includes solar, geothermal, wind, and biomass resources. In fact, California leads the nation in solar thermal electricity capacity, with 73 percent of the nation's total solar thermal capacity installed within the State.[10]

Figure 4.1-1 presents energy consumption within California for the most recent year for which data is available, 2018. As shown in Figure 4.1-1, transportation-related activity consumes the largest single share of energy within the State. Within the transportation sector, motor gasoline is the dominate form of energy, with jet fuel, diesel, natural gas, and electricity supplying the remaining portions of California's transportation sector energy demand. However, when considered together, energy demand from the built-environment including the residential, commercial, and industrial sectors, represents the greatest share of total State-wide energy demand.

Electricity is provided to California consumers through a mix of sources including natural gas, hydroelectric, non-hydroelectric renewable sources, nuclear, coal, and petroleum. Of the foregoing sources of electricity, natural gas provided the greatest amount of electricity at approximately 45 percent of California's statewide supply in 2018. Meanwhile, non-hydroelectric based sources of renewable energy provided an additional 35 percent of the state's energy, with hydroelectric and nuclear providing nine and 11 percent, respectively. Coal contributed less than 0.2 percent of the State's total electricity supply.

[10] U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed December 2020.

Figure 4.1-1
2018 California Energy Consumption



Source: U.S. Energy Information Administration. California: State Profile and Energy Estimates. Accessible at: https://www.eia.gov/state/index.php?sid=CA. Accessed May 2021.

California residents and businesses consume petroleum products for various purposes including on-road vehicles, off-road equipment, and air travel. In 2018, 49 percent of all petroleum products consumed within California consisted of motor gasoline. The second largest demand on petroleum products is jet fuel, which represents 19 percent of the petroleum products consumed, while distillate fuel oils, which includes diesel fuel, represents 16 percent of the total petroleum products demanded within the State.[11]

In the year 2019, the entire State consumed approximately 279.401.90 gigawatt hours (GWh) of electricity. Of the total electricity consumed by the State, Sacramento County consumed approximately 10,852.26 GWh, which constitutes approximately 3.9 percent of the total energy consumed within the State.[12]

Energy Consumption at the Project Site

Currently, the project site contains three single-family residences and associated outbuildings and an orchard on the northeastern portion of the site. The remainder of the site consists primarily of non-native grasses, with scattered trees located in the vicinity of the existing residences and associated access roads. Existing energy use associated with the project site would be typical of

[11] U.S. Energy Information Administration. *California: State Profile and Energy Estimates*. Available at: https://www.eia.gov/state/index.php?sid=CA. Accessed May 2021.

[12] California Energy Commission. *Electricity Consumption by County*. Available at: http://ecdms.energy.ca.gov/elecbycounty.aspx. Accessed April 2021.

residential uses, requiring electricity for interior and exterior building lighting, heating, ventilation, and air conditioning (HVAC), electronic equipment, machinery, refrigeration, appliances, security systems, and more. Maintenance activities during operations, such as landscape and orchard maintenance and harvesting, would involve the use of electric or gas-powered equipment.

4.1.3 REGULATORY CONTEXT

Air quality, GHG emissions, and energy are monitored and regulated through the efforts of various international, federal, State, and local government agencies. Agencies work jointly and individually to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for regulating and improving the air quality within the project area, monitoring or reducing GHG emissions, and monitoring or reducing energy consumption are discussed below. Although significant overlap exists within the regulatory environment for air quality, GHG emissions, and energy, the following discussion presents regulations primarily focused on air quality, GHG, and energy separately to the extent feasible.

Federal Regulations Related to Air Quality

The following discussion provides a summary of the federal regulations relevant to air quality, organized by pollutant type.

Criteria Pollutants

The FCAA, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The USEPA is responsible for implementing most aspects of the FCAA, including setting NAAQS for major air pollutants; setting hazardous air pollutant standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric ozone protection measures, and enforcement provisions. Under the FCAA, NAAQS are established for the following criteria pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for ozone, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for ozone, NO_2, SO_2, PM_{10}, $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The FCAA requires the USEPA to reassess the NAAQS at least every five years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a SIP that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants/TACs

The 1977 FCAA amendments required the USEPA to identify national emission standards for hazardous air pollutants to protect public health and welfare. Hazardous air pollutants include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 FCAA Amendments, which expanded the control program for hazardous air pollutants, 189 substances and chemical families were identified as hazardous air pollutants.

Federal Regulations Related to GHG Emissions

The following are the federal regulations relevant to GHG emissions.

Federal Vehicle Standards

In 2007, in response to the *Massachusetts v. EPA* U.S. Supreme Court ruling, the Bush Administration issued Executive Order (EO) 13432 directing the USEPA, the Department of Transportation (DOT), and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the National Highway Transportation Safety Administration (NHTSA) issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the USEPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012 through 2016 (75 FR 25324–25728).

In 2010, President Obama issued a memorandum directing the DOT, Department of Energy, USEPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the USEPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards were projected to achieve emission rates as low as 163 grams per mile of CO_2 by model year 2025 on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if the foregoing emissions level was achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021 (77 FR 62624–63200), and NHTSA intended to set standards for model years 2022 through 2025 in future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the USEPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the USEPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by six to 23 percent over the 2010 baselines (76 FR 57106–57513).

In August 2016, the USEPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program would have applied to vehicles with model years 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types of sizes of buses and work trucks. The final standards were expected to lower CO_2 emissions by approximately 1.1 billion MT, and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

In August 2018, the USEPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new, less-stringent standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards that were previously in place, the 2018 proposal would increase U.S. fuel consumption by approximately 0.5 million barrels per day, and would impact the global climate by 3/1000th of 1°C by 2100. California and other states stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures, and committed to cooperating with other countries to implement global climate change initiatives.

On September 27, 2019, the USEPA and NHTSA published the *Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program* (84 FR 51,310), which became effective November 26, 2019. The Part One Rule revokes California's authority to set its own GHG

emissions standards and set zero-emission-vehicle mandates in California. On March 31, 2020, the USEPA and NHTSA issued the Part Two Rule, which sets CO_2 emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model years 2021 through 2026. On January 20, 2021, President Joe Biden issued an Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which includes review of the Part One Rule by April 2021 and review of the Part Two Rule by July 2021. Implementation of both rules will be determined by the results of these reviews.

Federal Regulations Related to Energy

The following are the federal regulations relevant to energy.

Energy Policy and Conservation Act

The Energy Policy and Conservation Act was originally enacted in 1975 with the intention of ensuring that all vehicles sold in the U.S. meet established fuel economy standards. Following congressional establishment of the original set of fuel economy standards the U.S. DOT was tasked with establishing additional on-road vehicle standards and making revisions to standards as necessary. Compliance with established standards is based on manufacturer fleet average fuel economy, which originally applied to both passenger cars and light trucks but did not apply to heavy-duty vehicles exceeding 8,500 pounds in gross vehicle weight. The fuel economy program implemented under the Energy Policy and Conservation Act is known as the Corporate Average Fuel Economy (CAFE) Standards. Updates to the CAFE standards since original implementation have increased fuel economy requirements and begun regulation of medium- and heavy-duty vehicles.

Energy Policy Act of 2005

The Energy Policy Act of 2005 addressed energy production in the U.S. from various sources. In particular, the Energy Policy Act of 2005 included tax credits, loans, and grants for the implementation of energy systems that would reduce GHG emissions related to energy production.

State Regulations Related to Air Quality

The following discussion summarized applicable State regulations related to air quality, organized by pollutant type. Only the most prominent and applicable California air quality-related legislation is included below; however, an exhaustive list and extensive details of California air quality legislation can be found at the CARB website (http://www.arb.ca.gov/html/lawsregs.htm).

Criteria Air Pollutants

The FCAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the CCAA of 1988, responding to the FCAA, and regulating emissions from motor vehicles and consumer products.

CARB has established CAAQS, which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered “in attainment” if pollutant levels are continuously below the CAAQS and do not violate the standards more than once each year.



The CAAQS for ozone, CO, SO_2 (one-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

Hazardous Air Pollutants/TACs

The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807 (Tanner), and involved definition of a list of TACs. The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. The State list of TACs includes the federally-designated hazardous air pollutants. In 1987, the Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over five years. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

CARB Air Quality and Land Use Handbook

CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB Handbook) addresses the importance of considering health risk issues when siting sensitive land uses, including residential development, in the vicinity of intensive air pollutant emission sources including freeways or high-traffic roads, distribution centers, ports, petroleum refineries, chrome plating operations, dry cleaners, and gasoline dispensing facilities.[13] The CARB Handbook draws upon studies evaluating the health effects of traffic traveling on major interstate highways in metropolitan California centers within Los Angeles (Interstate-405 and Interstate-710), the San Francisco Bay, and San Diego areas. The recommendations identified by CARB, including siting residential uses a minimum distance of 500 feet from freeways or other high-traffic roadways, are consistent with those adopted by the State of California for location of new schools. Specifically, the CARB Handbook recommends, "Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day".[14]

Importantly, the Introduction chapter of the CARB Handbook clarifies that the guidelines are strictly advisory, recognizing that: "[l]and use decisions are a local government responsibility. The Air Resources Board Handbook is advisory and these recommendations do not establish regulatory standards of any kind." CARB recognizes that there may be land use objectives as well as meteorological and other site-specific conditions that need to be considered by a governmental jurisdiction relative to the general recommended setbacks, specifically stating, "[t]hese recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues".[15]

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13 California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.
14 *Ibid.*
15 *Ibid.*

Diesel Particulate Matter

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions, including DPM, from new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80 percent decrease in statewide diesel health risk by 2020 compared with the diesel health risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. The aforementioned regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. Several Airborne Toxic Control Measures (ATCMs) exist that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 California Code of Regulations [CCR] 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

Heavy-Duty Diesel Truck and Bus Regulation

CARB adopted the final Heavy-Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014, to reduce DPM (black carbon) and NO_X emissions from heavy-duty diesel vehicles. The rule requires DPM filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule requires nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an ATCM to limit idling of diesel-fueled commercial vehicles on December 12, 2013. The rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than five minutes at any location (13 CCR 2485).

Asbestos

Asbestos is strictly regulated due to the serious adverse health effects resulting from exposure, including asbestosis and lung cancer, and based on the natural widespread occurrence of asbestos and the use of asbestos as a building material. CARB has established two ATCMs for naturally occurring asbestos. The first asbestos ATCM applies to Surfacing Applications (i.e., restricts the content of asbestos material used in surfacing applications, such as unpaved roads and parking lots), and the second asbestos ATCM is for Construction, Grading, Quarrying and Surface Mining Operations (i.e., requires implementation of mitigation measures to minimize asbestos-laden dust during the namesake activities).

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person must not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. Section 41700 also applies to sources of objectionable odors.

Heavy-Duty Vehicle Idling Emission Reduction Program

On October 20, 2005, CARB approved a regulatory measure to reduce emissions of toxics and criteria pollutants by limiting idling of new and in-use sleeper berth equipped diesel trucks.[16] The regulation established new engine and in-use truck requirements and emission performance requirements for technologies used as alternatives to idling the truck's main engine. For example, the regulation requires 2008 and newer model year heavy-duty diesel engines to be equipped with a non-programmable engine shutdown system that automatically shuts down the engine after five minutes of idling, or optionally meet a stringent NO_X emission standard. The regulation also requires operators of both in-state and out-of-state registered sleeper berth equipped trucks to manually shut down their engine when idling more than five minutes at any location within California. Emission producing alternative technologies such as diesel-fueled auxiliary power systems and fuel-fired heaters are also required to meet emission performance requirements that ensure emissions are not exceeding the emissions of a truck engine operating at idle.

In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, CARB adopted a regulation to reduce DPM and NO_X emissions from in-use (existing), off-road, heavy-duty diesel vehicles in California.[17] Such vehicles are used in construction, mining, and industrial operations. The regulation is designed to reduce harmful emissions from vehicles by subjecting fleet owners to retrofit or accelerated replacement/repower requirements, imposing idling limitations on owners, operators, renters, or lessees of off-road diesel vehicles. The idling limits require operators of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) to limit idling to less than five minutes. The idling requirements are specified in Title 13 of the CCR.

State Regulations Related to GHG Emissions

The statewide GHG emissions regulatory framework is summarized below. The following text describes EOs, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues. The following discussion does not include an exhaustive list of applicable regulations; rather, only the most prominent and applicable California legislation related to GHG emissions and climate change is included below.

State Climate Change Targets

California has taken a number of actions to address climate change, including EOs, legislation, and CARB plans and requirements, which are summarized below.

EO S-3-05

EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the State agencies for implementing the EO and for reporting on progress toward the targets. The EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

[16] California Air Resources Board. *Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling*. October 24, 2013. Available at: http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm. Accessed December 2020.

[17] California Air Resources Board. *In-Use Off-Road Diesel Vehicle Regulation*. December 10, 2014. Available at: http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm. Accessed December 2020.

EO S-3-05 also directed the California EPA to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010.

AB 32

In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive, multiyear program to limit California's GHG emissions at 1990 levels by 2020, and initiate the transformations required to achieve the State's long-range climate objectives. AB 32 also required that the CARB prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020. The CARB's Scoping Plan is described in further detail below.

CARB's 2007 Statewide Limit on GHG Emissions

In 2007, in accordance with California Health and Safety Code Section 38550, CARB approved a statewide limit on GHG emissions by 2020, consistent with the determined 1990 baseline (427 million metric tons [MMT] CO_2e).

EO B-18-12

EO B-18-12 (April 2012) directed State agencies, departments, and other entities under the governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10 percent by 2015 and 20 percent by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing State buildings for reducing grid-based energy purchases and water use.

EO B-30-15

EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under EO S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40 percent below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050 as set forth in EO S-3-05. To facilitate achieving this goal, EO B-30-15 called for an update to the CARB's Climate Change Scoping Plan: A Framework for Change (Scoping Plan) to express the 2030 target in terms of $MMTCO_2e$. The CARB's Scoping Plan is discussed in further detail below. The EO also called for State agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

Senate Bill (SB) 32 and AB 197

SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to the Board as nonvoting members; requires CARB to make available and update (at least annually via the CARB's website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

CARB's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a scoping plan for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code Section 38561[a]), and to update the Scoping Plan at least once every five years. In 2008, CARB approved the first Scoping Plan. The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives. The key elements of the Scoping Plan include the following:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewable energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions;
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
5. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS) (17 CCR, Section 95480 et seq.); and
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15 percent from then levels (2008) by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The *First Update to the Climate Change Scoping Plan: Building on the Framework* (First Update) defined the State's GHG emission reduction priorities for the next five years and laid the groundwork to start the transition to the post-2020 goals set forth in EO S-3-05 and EO B-16-2012. The First Update concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuation of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the State's 1990 emissions level using more recent GWPs identified by the Intergovernmental Panel on Climate Change, from 427 $MMTCO_2e$ to 431 $MMTCO_2e$.

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40 percent below 1990 levels by 2030 to keep California on a trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050, as set forth in EO S-3-05. Governor Jerry Brown called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In summer 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In December 2017, CARB adopted California's *2017 Climate Change Scoping Plan* (2017 Scoping Plan) for public review and comment. The 2017 Scoping Plan builds on the successful framework established in the initial Scoping Plan and First Update while identifying new, technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target as established by SB 32 and define the State's climate change priorities to 2030 and beyond. Strategies within the 2017 Scoping Plan include implementing renewable energy and energy efficiency measures, increased stringency of the LCFS, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant (SLCP) Plan, and increased stringency of SB 375 targets (discussed in further detail below). To fill the gap in additional reductions needed to achieve the 2030 target, the 2017 Scoping Plan recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20 percent.

For local governments, the 2017 Scoping Plan replaced the initial Scoping Plan's 15 percent reduction goal with a recommendation to aim for a community-wide goal of no more than six $MTCO_2e$ per capita by 2030, and no more than two $MTCO_2e$ per capita by 2050, which are consistent with the State's long-term goals. Such goals are also consistent with the Under 2 Memorandum of Understanding (Under 2 Coalition 2019) and the Paris Agreement, which were developed around the scientifically based levels necessary to limit global warming to below an increase of 2°C. The 2017 Scoping Plan recognized the benefits of local government GHG planning (e.g., through Climate Action Plans [CAPs]) and provide more information regarding tools CARB is working on to support those efforts. The 2017 Scoping Plan also recognizes the CEQA streamlining provisions for project-level review where a legally adequate CAP exists.[18]

When discussing project-level GHG emissions reduction actions and thresholds in the context of CEQA, the 2017 Scoping Plan states that "achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development" for project-level CEQA analysis, but also recognizes that such a standard may not be appropriate or feasible for every development project. The 2017 Scoping Plan further provides that "the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."

CARB's Regulations for the Mandatory Reporting of GHG Emissions

CARB's Regulation for the Mandatory Reporting of GHG Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that the USEPA promulgated in its Final Rule on

[18] *Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490; *San Francisco Tomorrow et al. v. City and County of San Francisco* (2015) 229 Cal.App.4th 498; *San Franciscans Upholding the Downtown Specific Plan v. City & County of San Francisco* (2002) 102 Cal.App.4th 656; *Sequoyah Hills Homeowners Assn. V. City of Oakland* (1993) 23 Cal.App.4th 704, 719.

Mandatory Reporting of GHGs (40 Code of Federal Regulations Part 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that the USEPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit more than 10,000 $MTCO_2e$ per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 $MTCO_2e$ per year threshold are required to have their GHG emission report verified by a CARB-accredited third party.

SB 605 and SB 1383

SB 605 (2014) required CARB to complete a comprehensive strategy to reduce emissions of SLCPs in the State, and SB 1383 (2016) required CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of SLCPs (40 percent below 2013 levels by 2030 for CH_4 and HFCs, and 50 percent below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, CARB adopted its SLCP Reduction Strategy in March 2017. The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, CH_4, and fluorinated gases.

EO B-55-18

EO B-55-18 (September 2018) establishes a statewide policy for California to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net-negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the State's GHG emissions. CARB intends to work with relevant State agencies to ensure that future scoping plan updates identify and recommend measures to achieve the carbon neutrality goal.

Mobile Sources

The following regulations relate to the control of GHG emissions from mobile sources. Mobile sources include both on-road vehicles and off-road equipment.

AB 1493

AB 1493 (Pavley) (July 2002) was enacted in response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the State board to be vehicles that are primarily used for noncommercial personal transportation in the State. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards would result in a reduction of approximately 22 percent of GHG emissions compared to the emissions from the 2002 fleet, and the mid-term (2013–2016) standards would result in a reduction of approximately 30 percent. However, as previously described within the Federal Vehicle Standards section, the USEPA's SAFE Vehicles Rule Part One, adopted in November 2019, revokes California's authority to set GHG emissions standards. As the USEPA rule is the subject of pending legal challenges and President Biden issued an EO to review Part One and Part Two, the analysis within this EIR uses the best available information at this time, as set forth in CARB's EMFAC.

EO S-1-07

EO S-1-07 (January 2007, implementing regulation adopted in April 2009) set a declining LCFS for GHG emissions measured in CO_2e grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10 percent by 2020 (17 CCR 95480 et seq.). Carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

SB 375

SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every eight years. SB 375 requires the State's 18 regional metropolitan planning organizations to prepare a sustainable communities strategy as part of their Regional Transportation Plans that will achieve the GHG reduction targets set by CARB. If a metropolitan planning organization is unable to devise a sustainable communities strategy to achieve the GHG reduction target, the metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to California Government Code Section 65080(b)(2)(K), a sustainable communities strategy does not (1) regulate the use of land, (2) supersede the land use authority of cities and counties, or (3) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with the sustainable community strategy. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the State-mandated housing element process.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars. To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. By 2025, implementation of the rule is anticipated to reduce emissions of smog-forming pollution from cars by 75 percent compared to the average new car sold in 2015. To reduce GHG emissions, CARB, in conjunction with the USEPA and NHTSA, adopted GHG standards for model year 2017 to 2025 vehicles; the standards were estimated to reduce GHG emissions by 34 percent by 2025. The zero-emissions vehicle program acts as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emissions vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years. However, implementation of the Advanced Clean Cars program is contingent upon the outcome of the on-going SAFE Vehicles Rule litigation.

EO B-16-12

EO B-16-12 (March 2012) required that State entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. The order directed



CARB, California Energy Commission (CEC), California Public Utilities Commission (CPUC), and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. EO B-16-12 did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

AB 1236

AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of electric-vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based on substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and a feasible method to satisfactorily mitigate or avoid the specific, adverse impact does not exist. The bill provided for appeal of that decision to the planning commission, as specified. AB 1236 required electric-vehicle charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for electric-vehicle charging stations. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt the ordinance by September 30, 2017.

EO N-79-20

EO N-79-20 (September 2020) establishes a Statewide goal that 100 percent of in-state vehicle sales of new passenger cars and trucks shall be zero-emission by the year 2035. The order directed the CARB to develop and propose passenger vehicle and truck regulations requiring increasing volumes of new zero-emission vehicles sold in the State in order to achieve the goal by 2035. In addition, the order required that a Zero-Emissions Vehicle Market Development Strategy be created and updated to ensure coordinated and expeditious implementation of the EO.

Water

The following regulations relate to the conservation of water, which reduces GHG emissions related to electricity demands from the treatment and transportation of water.

EO B-29-15

In response to a drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives subsequently became permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the State. In response to EO B-29-15, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency, and broadens the applicability of the ordinance to include new development projects with smaller landscape areas.

EO B-37-16

Issued in May 2016, EO B-37-16 directed the State Water Resources Control Board (SWRCB) to adjust emergency water conservation regulations through the end of January 2017 to reflect

differing water supply conditions across the State. The SWRCB also developed a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25 percent reduction called for in EO B-29-15. The SWRCB and Department of Water Resources were directed to develop new, permanent water use targets that build upon the existing State law requirements that the State achieve 20 percent reduction in urban water usage by 2020. EO B-37-16 also specifies that the SWRCB permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.

EO B-40-17

EO B-40-17 (April 2017) lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinded EO B-29-15, but expressly stated that EO B-37-16 remains in effect and directed the SWRCB to continue development of permanent prohibitions on wasteful water use.

Solid Waste

The following regulations relate to the generation of solid waste and means to reduce GHG emissions from solid waste produced within the State.

AB 939 and AB 341

In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code [PRC] Sections 40000 et seq.), was passed because of the observed increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25 percent by 1995 and 50 percent by 2000.

AB 341 (Chapter 476, Statutes of 2011 [Chesbro]) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that the policy goal of the State is that not less than 75 percent of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery to develop strategies to achieve the State's policy goal.

Other State Actions

The following State regulations are broadly related to GHG emissions.

SB 97

SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities. The advisory further recommended that the lead agency determine the significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The California Natural



Resource Agency (CNRA) adopted the CEQA Guidelines amendments in December 2009, and the amended CEQA Guidelines became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis, or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply the lead agency's own thresholds of significance or those developed by other agencies or experts. CNRA acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions.

With respect to GHG emissions, the CEQA Guidelines state that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions (14 CCR 15064.4[a]). The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards" (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]).

EO S-13-08

EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs State agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009, and an update, *Safeguarding California: Reducing Climate Risk*, followed in July 2014. To assess the State's vulnerability, the report summarizes key climate change impacts to the State for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of the *Safeguarding California: Implementation Action Plans* followed in March 2016. In January 2018, the CNRA released the *Safeguarding California Plan: 2018 Update,* which communicates current and needed actions that State government should take to build climate change resiliency.

State Regulations Related to Energy

The State has adopted various regulations aimed at reducing energy consumption, increasing energy efficiency, and mandating sourcing requirements for electricity production.

Building Energy

The following regulations relate to energy efficiency and energy use reductions in the built environment.

Title 24, Part 6

Title 24 of the CCR was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed periodically, and revised if necessary, by the Building Standards Commission and CEC (PRC Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (PRC Section 25402). The regulations are scrutinized and analyzed for technological and economic feasibility (PRC Section 25402[d]) and cost effectiveness (PRC Sections 25402[b][2] and [b][3]). As a result, the standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The 2019 Title 24 standards are the currently applicable building energy efficiency standards and became effective on January 1, 2020. The 2019 Title 24 Building Energy Efficiency Standards reduced energy used and associated GHG emissions compared to the previous 2016 Title 24 standards. In general, single-family residences built to the 2019 standards are anticipated to use approximately seven percent less energy due to energy efficiency measures than those built to the 2016 standards; once rooftop solar electricity generation is factored in, single-family residences built under the 2019 standards use approximately 53 percent less energy than those under the 2016 standards. Nonresidential buildings built to the 2019 standards use an estimated 30 percent less energy than those built to the 2016 standards.

Title 24, Part 11

In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CALGreen, and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals. The original CALGreen standards have been updated several times. The CALGreen 2019 standards, which are the current standards, improved upon the 2016 CALGreen standards, and went into effect on January 1, 2020. The mandatory standards require the following:

- Mandatory reduction in indoor water use through compliance with specified flow rates for plumbing fixtures and fittings;
- Mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the California Department of Water Resources' Model Water Efficient Landscape Ordinance;
- 65 percent of construction and demolition waste must be diverted from landfills;
- Mandatory inspections of energy systems to ensure optimal working efficiency;



- Inclusion of electric vehicle charging stations or designated spaces capable of supporting future charging stations; and
- Low-pollutant-emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle boards.

The CALGreen standards also include voluntary efficiency measures that are provided at two tiers and implemented at the discretion of local agencies and applicants. CALGreen's Tier 1 standards call for a 15 percent improvement in energy requirements, stricter water conservation, 65 percent diversion of construction and demolition waste, 10 percent recycled content in building materials, 20 percent permeable paving, 20 percent cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30 percent improvement in energy requirements, stricter water conservation, 80 percent diversion of construction and demolition waste, 15 percent recycled content in building materials, 30 percent permeable paving, 25 percent cement reduction, and cool/solar-reflective roofs.

Title 20

Title 20 of the CCR requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low-voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations, and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

SB 1

SB 1 (Murray) (August 2006) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the California PRC, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for homes and businesses within 10 years of adoption, and placing solar energy systems on 50 percent of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

AB 1470

AB 1470 established the Solar Water Heating and Efficiency Act of 2007. The bill made findings and declarations of the Legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand. AB 1470 required the CEC to evaluate the data available from a specified pilot program, and, if the CEC made a specified determination, to

design and implement a program of incentives for the installation of 200,000 solar water heating systems in homes and businesses throughout the state by 2017.

AB 1109

Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting to reduce electricity consumption by 50 percent for indoor residential lighting and by 25 percent for indoor commercial lighting.

Renewable Energy and Energy Procurement

The following regulations relate to the source of electricity provided to consumers within the State, as well as standards related to the generation of electricity within the State.

Renewable Portfolio Standard (RPS) and SB 100

Established in 2002 under SB 1078 (which added Section 387, 390.1, and 399.25 to the Public Utilities Code and added Article 16 to Chapter 2.3 of Part 1 Division 1 of the Public Utilities Code), accelerated in 2006 under SB 107 (which amended Sections 25620.1, 25740, 25741, 25742, 25743, 25746, and 25751 of, added Sections 25470.5 and 25744.5, and repealed Sections 25745 and 25749 of, the PRC, as well as amending Sections 87, 399.11, 399.12, 399.13, 399.14, and 399.15 of the Public Utilities Code, adding Article 9 to Chapter 3 of Part 1 of Division 1 of the Public Utilities Code, and to repeal and add Section 399.16 of the Public Utilities Code), and expanded in 2011 under SB 2 (which amended Sections 5740, 25740.5, 25741, 25742, 25746, 25747, and 25751 of the PRC, added Section 25519.5 to the PRC, to add and repeal Section 25741.5 of, the PRC, and to amend Sections 399.11, 399.12, 399.20, and 454.5 of, to amend, renumber, and add Sections 399.13 and 399.16 of, to add Sections 399.18, 399.19, 399.26, 399.30, 399.31, and 1005.1, to add Article 11 (commencing with Section 910) to Chapter 4 of Part 1 of Division 1 of, to repeal Section 387 of, and to repeal and add Sections 399.14, 399.15, and 399.17 of, the Public Utilities Code), California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020.

Since the inception of the RPS program, the program has been extended and enhanced multiple times. In 2015, SB 350 (An act to add Section 44258.5 to the Health and Safety Code, to amend Section 1720 of the Labor Code, to amend Sections 25310 and 25943 of, and to add Sections 25302.2 and 25327 to, the PRC, and to amend Sections 359, 399.4, 399.11, 399.12, 399.13, 399.15, 399.16, 399.18, 399.21, 399.30, 454.55, 454.56, 701.1, 740.8, 9505, and 9620 of, to amend and repeal Sections 337 and 352 of, to add Sections 237.5, 365.2, 366.3, 454.51, 454.52, 740.12, 9621, and 9622 to, to add Article 17 (commencing with Section 400) to Chapter 2.3 of Part 1 of Division 1 of, to add and repeal Article 5.5 (commencing with Section 359.5) of Chapter 2.3 of Part 1 of Division 1 of, and to repeal Article 5 (commencing with Section 359) of Chapter 2.3 of Part 1 of Division 1 of, the Public Utilities Code) extended the State's RPS program by requiring that publicly owned utilities procure 50 percent of their electricity from renewable energy sources by 2030. The requirements of SB 350 were expanded and intensified in 2018 through the adoption of SB 100 (An act to amend Sections 399.11, 399.15, and 399.30 of, and to add Section 454.53 to, the Public Utilities Code), which mandated that all electricity generated within the State by publicly owned utilities be generated through carbon-free sources by 2045. In addition, SB 100 increased the previous renewable energy requirement for the year 2030 by 10 percent; thus, requiring that 60 percent of electricity generated by publicly owned utilities originate from renewable sources by the year 2030.

Local Regulations

The most prominent local regulations related to air quality, GHG emissions, and energy are established by the SMAQMD and the Rancho Cordova General Plan and are discussed in further detail below.

Sacramento Metropolitan Air Quality Management District

The SMAQMD regulates many sources of pollutants in the ambient air as well as GHG emissions, and is responsible for implementing certain programs and regulations for controlling air pollutant and GHG emissions to improve air quality in order to attain federal and State AAQS and reduce GHG emissions in compliance with State goals.

Air Quality Attainment Plan

As a part of the SVAB federal ozone nonattainment area, the SMQAMD works with the other local air districts within the Sacramento area to develop a regional air quality management plan under the FCAA requirement. The regional air quality management plan is called the SIP which describes and demonstrates how Sacramento County, as well as the Sacramento nonattainment area, would attain the required federal ozone standard by the proposed attainment deadline. In accordance with the requirements of the FCAA, the SMQAMD, along with the other air districts in the region, prepared the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Ozone Attainment Plan) in December 2008. The CARB determined that the Ozone Attainment Plan met federal Clean Air Act requirements and approved the Plan on March 26, 2009 as a revision to the SIP. An update to the plan, *2017 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (2017 Ozone Attainment Plan), was prepared and adopted by CARB on November 16, 2017. An additional update to the plan was prepared and adopted by CARB on October 15, 2018, and known as the *2018 Updates to the California State Implementation Plan.*

The 2013 Ozone Attainment Plan, and subsequent updates, demonstrate how existing and new control strategies would provide the necessary future emission reductions to meet the FCAA requirements, including the NAAQS. It should be noted that in addition to strengthening the 8-hour ozone NAAQS, the USEPA also strengthened the secondary 8-hour ozone NAAQS, making the secondary standard identical to the primary standard. The SVAB remains classified as a severe nonattainment area for ozone with an attainment deadline of 2027. On October 26, 2015, the USEPA released a final implementation rule for the revised NAAQS for ozone to address the requirements for reasonable further progress, modeling and attainment demonstrations, and reasonably available control measures (RACM) and reasonably available control technology (RACT). The USEPA published designations for areas in attainment/unclassifiable for the 2015 ozone standards. The USEPA identified the entire Sacramento County as nonattainment for the 2015 ozone standards.[19]

Rancho Cordova General Plan

The following goals and policies related to air quality are from the Rancho Cordova General Plan:

Air Quality Element

Goal AQ.1 Ensure a healthy community by participating in local and regional efforts to meet or exceed all state and federal air quality standards.

[19] U.S. Environmental Protection Agency. *Nonattainment and Unclassifiable Area Designations for the 2015 Ozone Standards*. April 30, 2018.

Policy AQ.1.1 Coordinate with responsible agencies and other jurisdictions to improve air quality within Rancho Cordova and the greater Sacramento region.

Policy AQ.1.2 Evaluate projects for compliance with State and federal ambient air quality standards and the Sacramento Metropolitan Air Quality Management District's (SMAQMD) thresholds of significance.

Policy AQ.1.3 The City shall prohibit wood-burning open masonry fireplaces in all new development. Fireplaces with EPA-approved inserts, EPA-approved stoves, and fireplaces burning natural gas will be allowed.

Policy AQ.1.4 The City shall develop an incentive program to encourage homeowners to replace high-pollution emitting non-EPA-certified wood stoves that were installed before the effective date of the applicable EPA regulation with newer cleaner-burning EPA-certified wood stoves.

Policy AQ.1.5 Require odor impact analyses be conducted for evaluating new development requests that either could generate objectionable odors that may violate SMAQMD Rule 402 or any subsequent rules and regulations regarding objectionable odors near sensitive receptors or locate new sensitive receptors near existing sources of objectionable odors. Should objectionable odor impacts be identified, odor mitigation shall be required in the form of setbacks, facility improvements or other appropriate measures.

Goal AQ.2 Support land use patterns and densities that lessen air quality impacts.

Policy AQ.2.1 Promote strategic land use patterns for businesses that reduce the number and length of motor vehicle trips and that encourage multiple forms of transportation for employees and patrons.

Policy AQ.2.2 Encourage mixed-use developments that put residences in close proximity to services, employment, transit, schools, and civic facilities/services.

Policy AQ.2.3 Encourage infill development as a way to reduce vehicle trips and improve air quality.

Policy AQ.2.4 Maximize air quality benefits through selective use of landscaping vegetation that is low in emission of volatile organic compounds, and through revegetation of appropriate areas.

Goal AQ.3 Support multiple forms of transportation and a circulation system design that reduces vehicle trips and emissions.

Policy AQ.3.1 Promote walking and bicycling as viable forms of transportation to services, shopping, and employment.

Policy AQ.3.2 Promote mass transit as an alternative to single-occupant motor vehicle travel.

Policy AQ.3.3 Involve local businesses in creating, maintaining, or promoting mass transit opportunities and reducing vehicle emissions.

Policy AQ.3.4 Emphasize "demand management" strategies that seek to reduce single occupant vehicle use in order to achieve state and federal air quality plan objectives.

Goal AQ.4 Support energy conservation, the use of alternative fuels, clean vehicles and industries to reduce air quality impacts.

Policy AQ.4.1 Promote improved air quality benefits through energy conservation measures for new and existing development.

Policy AQ.4.2 Support vehicle improvements and the use of clean vehicles that reduce emissions and improve air quality.

Policy AQ.4.4 Support SMAQMD's program of retrofitting construction equipment.

Natural Resources Element

Goal NR.7 Reduce per capita energy consumption.

Policy NR.7.1 Increase energy conservation Citywide.

Policy NR.7.2 Promote the development and use of advanced energy technology and building materials in Rancho Cordova.

Policy NR.7.3 Encourage the development of energy efficient buildings and subdivisions.

Policy NR.7.4 Promote energy rebate programs offered by local energy providers (e.g., SMUD, PG&E) as a way to bring energy efficiency into older neighborhoods and developments.

4.1.4 IMPACTS AND MITIGATION MEASURES

The standards of significance and methodology used to analyze and determine the proposed project's potential project-specific impacts related to air quality and GHG emissions are described below. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Based on the recommendations of SMAQMD, and consistent with Appendix G of the CEQA Guidelines, the effects of a project are evaluated to determine if they would result in a significant adverse impact on the environment. For the purposes of this EIR, an impact is considered significant if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations (including localized CO concentrations and TAC emissions);
- Result in other emissions (such as those leading to odors) affecting a substantial number of people;
- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources;
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Criteria Pollutant Emissions and TAC Emissions

In order to evaluate criteria air pollutant emissions from development projects, SMAQMD has established significance thresholds for emissions of NO_X, ROG, PM_{10}, and $PM_{2.5}$. The significance thresholds serve as air quality standards in the evaluation of air quality impacts associated with proposed development projects. Thus, if the proposed project's emissions exceed the SMAQMD thresholds, the project could have a significant effect on regional air quality and attainment of federal and State AAQS. The SMAQMD's recommended thresholds of significance are listed in Table 4.1-6. Therefore, if the proposed project's emissions exceed the pollutant thresholds presented in Table 4.1-6, the project could have a significant effect on air quality, the attainment of federal and State AAQS, and could conflict with or obstruct implementation of the applicable air quality plan.

Table 4.1-6
SMAQMD Thresholds of Significance

Pollutant	Construction Threshold	Operational Threshold
NO_X	85 lbs/day	65 lbs/day
ROG	-	65 lbs/day
PM_{10}	80 lbs/day and 14.6 tons/yr	80 lbs/day and 14.6 tons/yr
$PM_{2.5}$	82 lbs/day and 15 tons/yr	82 lbs/day and 15 tons/yr

Source: SMAQMD Thresholds of Significance Table, April 2020.

For TAC emissions, if a project would introduce a new source of TAC or a new sensitive receptor near an existing source of TAC that would not meet the CARB's minimum recommended setback, a detailed health risk assessment may be required. Neither SMAQMD nor the City has established quantitative thresholds of significance for construction-related TAC emissions.

GHG Emissions and Other Cumulative Emissions

Nearly all development projects in the region have the potential to generate air pollutants that may increase global climate change. SMAQMD has adopted thresholds of significance for GHG emissions during construction and operations of projects.

This GHG analysis has been prepared to show compliance with SMAQMD's GHG thresholds of significance.

Where a residential or mixed-use residential project is consistent with an applicable Sustainable Communities Strategy (SCS) that the State Air Resources Board (CARB) has determined, if implemented, will achieve the greenhouse gas emission reduction targets for the region, and the residential or mixed-use residential project incorporates mitigation measures from a prior applicable environmental document, then, pursuant to PRC Section 21159.28, the environmental review completed for the residential or mixed-use residential project is not "required to reference, describe, or discuss … any project specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network." (PRC, Section 21159.28[a])

The Sacramento Area Council of Governments (SACOG) approved its current 2020 SCS on November 18, 2019. On October 26, 2020, CARB accepted that "SACOG's determination that the SCS adopted by the SACOG Board of Directors on November 18, 2019, would, when implemented, achieve the applicable GHG emissions reduction target for automobiles and light trucks of 19 percent per capita reduction by 2035, relative to 2005 levels, as established by CARB for the region."

As explained in SACOG's 2020 SCS, Rancho Cordova has emerged as a regional job center over the past twenty years. However, housing development has not kept up with employment growth in the City. To help improve the City's job/housing balance, the 2020 SCS forecasts construction of an additional 1,070 new housing units in the Established Communities community type within the City. As SACOG's 2020 SCS was approved in late 2019, few housing units have been developed in the City's Established Communities community type since SACOG adopted the plan. By proposing the creation of 440 residential lots within the City's Established Communities community type, the proposed project is consistent with the 2020 SCS's use designation and build-out forecast for the site and will help to address the City's existing job/housing imbalance. Furthermore, the proposed project is consistent with, and will implement, all applicable General Plan Policies. As a result, pursuant to PRC Section 21159.28, this EIR is not required to reference, describe, or discuss any project specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network. For this reason, in evaluating the proposed project's consistency with SMAQMD's GHG thresholds of significance (discussed further below), the City could evaluate consistency excluding project specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming. However, notwithstanding PRC Section 21159.28, to be conservative, in applying SMAQMD's GHG thresholds of significance to the proposed project, this EIR does not exclude emissions from cars and light-duty truck trips.

As such, if the proposed project would result in GHG emissions in excess of the thresholds of significance shown in Table 4.1-7, including emissions associated with cars and light-duty truck trips, the project could be considered to result in a potentially significant impact related to global climate change and mitigation measures would be required to reduce the impact.

Table 4.1-7 **SMAQMD GHG Thresholds of Significance ($MTCO_2e$/year)**	
Construction	**Operations**
1,100	1,100
Source: SMAQMD Thresholds of Significance Table, April 2020.	

To accomplish consistency with statewide and regional GHG reduction goals, SMAQMD has prepared a two-tiered framework of analysis for new projects.

Tier 1

All projects within SMAQMD's jurisdiction would be required to comply with the Best Management Practices (BMPs) included in Tier 1. The proposed Tier 1 BMPs are as follows:

- ***BMP 1:*** No natural gas: Projects shall be designed and constructed without natural gas infrastructure.
- ***BMP 2:*** Electric vehicle (EV) ready: Projects shall meet the current CALGreen Tier 2 standards, except all EV Capable spaces shall instead be EV Ready.

If a project would not comply with both of the foregoing BMPs, the project would be required to include features that would achieve an equivalent level of GHG emissions reductions. For instance, a project that includes natural gas infrastructure may include pre-wiring to allow for the future retrofit of all natural gas appliances with all-electric appliances. Furthermore, projects that are below the Governor's Office of Planning and Research's (OPR's) *de minimis* vehicle miles travelled (VMT) criteria, and/or projects that emit less than 1,100 $MTCO_2e$/yr prior to implementation of BMP 1 and BMP 2 would be considered sufficiently small to screen out of further requirements, and would be assumed to result in a less-than-significant impact related to GHG emissions and climate change.

The following types of projects would be considered to be below the OPR's *de minimis* VMT criteria:

- Small projects that generate or attract fewer than 110 trips per day;
- Residential and office projects in areas with low VMT (currently below threshold VMT) that incorporate similar features (i.e., density, mix of uses, transit accessibility), including affordable housing infill development; or
- Residential, retail, office, or mixed-use projects within 0.5-mile walking distance of an existing major transit stop or existing stop along a high-quality transit corridor, unless the primary use of the site is auto-oriented (e.g., car dealership, car wash, gas station).

Projects that are not small enough to screen out of further review are subject to review under Tier 2 of SMAQMD's updated thresholds.

Tier 2

The second tier of SMAQMD's updated thresholds includes the following BMP:

- ***BMP 3***: Residential projects shall achieve a 15 percent reduction in VMT per resident, and office projects should achieve a 15 percent reduction in VMT per worker compared to existing average VMT per capita for the county, or for the city if a more local SB 743 target has been established. It is noted that the City of Rancho Cordova establishes the same

VMT threshold of 15 percent reduction in VMT per resident.[20] VMT reductions can be achieved by many strategies, such as:

- Locate in an area that already has low VMT due to location, transit service, etc.;
- Adopt CAPCOA measures;
- Adopt measures noted in Sacramento's CAP checklist;
- Join a Transportation Management Association;
- Incorporate traffic calming measures;
- Incorporate pedestrian facilities and connections to public transportation; and/or
- Promote electric bicycle or other micro-mobility options.

If a project cannot incorporate the foregoing BMPs, other reductions or purchasing and retiring of GHG/carbon offsets can be used as an alternative method of compliance.

In accordance with CARB and SMAQMD recommendations, the City of Rancho Cordova, as lead agency, uses the currently adopted SMAQMD GHG thresholds of significance as presented above. Therefore, if the proposed project would result in construction GHG emissions in excess of 1,100 $MTCO_2e$/yr or if the project would not achieve the SMAQMD's operational GHG requirements, the project would be considered to result in a cumulatively considerable contribution to global climate change.

With regard to other cumulative emissions, such as the cumulative emissions of criteria air pollutants, the SMAQMD directs lead agencies to use the region's existing attainment plans as a basis for analysis of cumulative emissions. If a project would interfere with an adopted attainment plan, the project would inhibit the future attainment of AAQS, and thus result in a significant incremental contribution to cumulative emissions. As discussed throughout this Chapter, the SMAQMD's recommended thresholds of significance for ozone precursors and PM_{10} are based on attainment plans for the region. Thus, SMAQMD concluded that if a project's ozone precursor and PM_{10} emissions would be less than the associated thresholds, the project would not be expected to conflict with any relevant attainment plans, and would not result in a cumulatively considerable contribution to a significant cumulative impact. As a result, the operational phase cumulative-level emissions thresholds established by SMAQMD are identical to the project-level operational emissions thresholds; the operational/cumulative thresholds for criteria pollutants are presented in Table 4.1-6.

Energy

Quantitative thresholds for the analysis of potential impacts related to energy consumption have not been adopted by any local, regional, or statewide entities. Consequently, potential impacts of the project related to energy will be determined based on whether the project would result in wasteful, inefficient, or unnecessary use of energy. In addition, the potential for the project to conflict with or obstruct a state or local plan for renewable energy generation or energy efficiency will be considered. The analysis of energy consumption will include consideration of energy demand during both project construction and operations.

[20] City of Rancho Cordova. *City of Rancho Cordova Transportation Impact Guidelines*. June 2, 2020.

Method of Analysis

The analysis protocol and guidance provided by the SMAQMD's *CEQA Guide*, including screening criteria and pollutant thresholds of significance, was used to analyze the proposed project's air quality impacts.

Construction Emissions

The proposed project's short-term construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 software, which is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the ITE Manual, vehicle mix, trip length, average speed, etc. Where project-specific information is available, such information should be applied in the model. Accordingly, the proposed project's construction modeling assumes the following based on applicant-provided project-specific data:

- Construction would begin in the year 2021;
- Construction would occur over an approximately two-year period;
- 12,000 square feet of existing buildings would be demolished;
- Approximately 10,000 cubic yards of soil would be imported during grading;
- The proposed project would improve the pedestrian network connectivity; and
- The project would comply with all applicable provisions of the 2019 California Building Standard Code (CBSC), 2019 CALGreen Code, and Model Water Efficiency Landscape Ordinance (MWELO).

The results of construction emissions estimations were compared to the standards of significance discussed above in order to determine the associated level of impact. All CalEEMod modeling results are included in Appendix C to this EIR.

Operational Emissions and Operational Energy Use

The proposed project's operational emissions were estimated using CalEEMod. Based on project-specific construction information provided by the project applicant, the proposed project is anticipated to be fully operational by 2023. The modeling performed for the proposed project included compliance with SMAQMD rules and regulations as well as with the 2019 California Building Energy Efficiency Standards Code, which is part of the CBSC. The proposed project's compliance with such would be verified as part of the City's building approval review process. Kimley-Horn & Associates, Inc. provided project-specific trip generation rates[21] and VMT data,[22] which were applied to the project modeling. In compliance with the 2019 CBSC, the modeling for project operations included the assumption that 100 percent of the electricity required for project operations would be provided by on-site renewable energy systems.

The results of operational emissions estimations were compared to the standards of significance discussed above in order to determine the associated level of impact. All CalEEMod modeling results are included in Appendix C to this EIR.

[21] Kimley-Horn. *Traffic Impact Analysis for The Preserve, City of Rancho Cordova, California.* November 4, 2020.
[22] Kimley-Horn. *The Preserve,Vehicle Miles Traveled (VMT) Evaluation.* March 5, 2021.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

4.1-1 Conflict with or obstruct implementation of the applicable air quality plan during project construction. Based on the analysis below, the impact is *less than significant*.

During construction of the project, various types of equipment and vehicles would temporarily operate on the project site and in off-site improvement areas. Construction-related emissions would be generated from construction equipment, vegetation clearing and earth movement activities, construction workers' commute, and construction material hauling for the entire construction period. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Project construction activities also represent sources of fugitive dust, which includes PM emissions. As construction of the proposed project would generate emissions of criteria air pollutants, including ROG, NO_X, and PM_{10}, intermittently within the site and in the vicinity of the site, until all construction has been completed, construction is a potential concern, as the proposed project is located in a nonattainment area for ozone and PM.

Table 4.1-8 below presents the estimated construction-related emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with the proposed project in comparison with the SMAQMD thresholds of significance as described above. The construction modeling assumptions are described in the Method of Analysis section above.

As shown in Table 4.1-8, construction activities would result in emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ below the applicable SMAQMD thresholds of significance. Therefore, construction activities associated with development of the proposed project would not substantially contribute to the SVAB's non-attainment status for ozone or PM. Accordingly, construction of the proposed project would not violate an air quality standard or contribute to an existing or projected air quality violation, and a less-than-significant impact would occur associated with construction.

Table 4.1-8
Maximum Unmitigated Construction-Related Emissions

Pollutant	Project Emissions	Construction Threshold	Exceeds Threshold?
NO_X	54.00 lbs/day	85 lbs/day	**NO**
ROG	28.63 lbs/day	-	**NO**
PM_{10}	20.32 lbs/day and 0.53 tons/yr	80 lbs/day and 14.6 tons/yr	**NO**
$PM_{2.5}$	11.87 lbs/day and 0.28 tons/yr	82 lbs/day and 15 tons/yr	**NO**

Source: CalEEMod, May 2021.

It should be noted that construction activity related to implementation of the proposed project is required to comply with all SMAQMD rules and regulations. The applicable rules and regulations would include, but would not be limited to, the following:

- Rule 403 related to Fugitive Dust;
- Rule 404 Related to Particulate Matter;
- Rule 407 related to open burning;
- Rule 442 related to Architectural Coatings;
- Rule 453 related to Cutback and Emulsified Asphalt Paving Materials; and
- Rule 460 related to Adhesives and Sealants.

In addition, the control of fugitive dust during construction is required by SMAQMD Rule 403, and enforced by SMAQMD staff. The BMPs for dust control include the following:

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads;
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered;
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited;
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph);
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used;
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [CCR Title 13, Sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site;
- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [CCR Title 13, Sections 2449 and 2449.1]. For more information contact CARB at 877-593-6677, doors@arb.ca.gov, or www.arb.ca.gov/doors/compliance_cert1.html.; and
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

Compliance with the foregoing measures is required per Rule 403, and the City would enforce compliance with Rule 403 as a condition of approval of the proposed project. Thus, project construction is assumed to include compliance with the foregoing BMPs.

Conclusion

Construction activities associated with the proposed project would be required to comply with all SMAQMD BMPs, and would therefore adhere to local air quality plans. Nonetheless, the emissions resulting from construction activity are anticipated to fall below SMAQMD's applicable thresholds of significance. Thus, implementation of the proposed project would not conflict with or obstruct implementation of the applicable air quality plan related to the region's nonattainment status for ozone, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

4.1-2 Conflict with or obstruct implementation of the applicable air quality plan during project operation. Based on the analysis below, the impact is *less than significant*.

Operational emissions of ROG, NO_X, and PM would be generated by the proposed project from both mobile and stationary sources. Day-to-day activities such as the future residents' vehicle trips to and from the project site would make up the majority of the mobile emissions. Emissions would occur from area sources such as natural gas combustion from heating mechanisms, landscape maintenance equipment exhaust, fireplaces, and consumer products (e.g., deodorants, cleaning products, spray paint, etc.).

As discussed above, due to the nonattainment designations of the area, the SMAQMD has developed plans to attain the State and federal standards for ozone and particulate matter. The current applicable air quality plan for the proposed project area is the *Sacramento Regional 2009 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Ozone Attainment Plan), updated July 24, 2017. The Ozone Attainment Plan demonstrates how existing and new control strategies would provide the necessary future emission reductions to meet the CAA requirements, including the federal AAQS. Adopted SMAQMD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with the applicable air quality plan. Thus, if a project's operational emissions exceed the SMAQMD's mass emission thresholds, a project would be considered to conflict with or obstruct implementation of the SMAQMD's air quality planning efforts.

Emissions of ROG, NO_X, and PM_{10} would be generated during operations of the proposed project from both mobile and stationary sources. Emissions related to operation of the proposed project would include sources such as architectural coatings, landscape maintenance equipment exhaust, and consumer products (e.g., deodorants, detergents, hair spray, cleaning products, spray paint, insecticides, floor finishes, polishes, etc.). However, the most significant source of emissions related to the proposed project would be from mobile sources. As discussed in the Method of Analysis section above, to capture the potential emissions related to mobile sources from the proposed project, Kimley-Horn & Associates, Inc. prepared project-specific trip generation rates and VMT estimates.

The project is required to comply with all SMAQMD rules and regulations related to operations, such as the following:

- Rule 414 related to water heaters; and
- Rule 417 related to wood-burning appliances.

The modeling was adjusted to reflect the project's inherent site or design features (i.e., proximity to nearest planned bus stop), and compliance with applicable regulations

(i.e., 2019 California Building Energy Efficiency Standards). Based on project-specific information, the project was assumed to include natural gas hearths in each of the proposed residential units. It should be noted that the project would not involve installation or operation of any pieces of equipment that would require implementation of SMAQMD's Best Available Control Technology (BACT) measures; therefore, the project would be subject to SMAQMD's mass emissions thresholds for PM_{10} and $PM_{2.5}$.

The maximum unmitigated operational emissions for the proposed project are presented in Table 4.1-9 below.

Table 4.1-9
Maximum Unmitigated Project Operational Emissions

Pollutant	Project Emissions	Operational Threshold	Exceeds Threshold?
NO_X	29.54 lbs/day	65 lbs/day	**NO**
ROG	28.81 lbs/day	65 lbs/day	**NO**
PM_{10}	24.66 lbs/day and 4.33 tons/yr	80 lbs/day and 14.6 tons/yr	**NO**
$PM_{2.5}$	7.03 lbs/day and 1.23 tons/yr	82 lbs/day and 15 tons/yr	**NO**

Source: CalEEMod, May 2021.

As shown in Table 4.1-9, the emissions resulting from operation of the proposed project would be below all applicable SMAQMD thresholds. Based on the emissions presented in Table 4.1-9, operation of the proposed project would not create a conflict with nor obstruction of implementation of the applicable air quality plan, and a ***less-than-significant*** impact would result.

Mitigation Measure(s)

None required.

4.1-3 Expose sensitive receptors to substantial pollutant concentrations. Based on the analysis below, and with the implementation of mitigation, the impact is *less than significant*.

As noted previously, the nearest sensitive receptors to the project site are the residential subdivision directly to the south of the project site. The closest residences are approximately 50 feet away from the project site.

The major pollutant concentrations of concern are localized CO emissions, TAC emissions, and criteria pollutant emissions, which are addressed in further detail below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Per the SMAQMD Guide, emissions of CO are generally of less concern than other criteria pollutants, as operational activities are not likely to generate substantial quantities of CO, and the SVAB has been in attainment for CO

for multiple years.[23] Consequently, the proposed project is not anticipated to result in significant impacts to air quality related to localized CO emissions.

TAC Emissions

Another category of environmental concern are TACs. The CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook) provides recommended setback distances for sensitive land uses from major sources of TACs, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified DPM from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks associated with TACs are a function of both the concentration of emissions and the duration of exposure, where the higher the concentration and/or the longer the period of time that a sensitive receptor is exposed to pollutant concentrations would correlate to a higher health risk.

The proposed project would not involve any land uses or operations that would be considered major sources of TACs, including DPM. The CARB's Handbook includes facilities (distribution centers) associated with 100 or more heavy-duty diesel trucks per day as a source of substantial DPM emissions. The proposed project is not a distribution center, and is not located near any existing distribution centers. Residential developments do not involve frequent heavy-duty diesel truck trips. Some future residents may own diesel-fueled vehicles; however, emissions from passenger vehicles are typically less intense than from heavy-duty trucks, and the likelihood that the equivalent of 100 heavy-duty diesel trucks per day would occur from diesel-fueled passenger vehicles to and from the site is very low. Accordingly, the proposed project would not involve diesel trucks at the site in excess of 100 per day and would not be expected to expose any existing sensitive receptors to substantial DPM emissions associated with truck trips. As such, the proposed project would not generate any substantial pollutant concentrations during operations.

Construction-related activities have the potential to generate concentrations of TACs, specifically DPM, from on-road haul trucks and off-road equipment exhaust emissions. However, construction would be temporary and would occur over a relatively short duration in comparison to the operational lifetime of the proposed project. While methodologies for conducting health risk assessments are associated with long-term exposure periods (e.g., over a 30-year period or longer), construction activities associated with the proposed project were estimated to occur over an approximately two-year period. Only portions of the site would be disturbed at a time throughout the construction period, with operation of construction equipment occurring intermittently throughout the course of a day rather than continuously at any one location on the project site. In addition, all construction equipment and operation thereof would be regulated per the In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation includes emissions reducing requirements such as limitations on vehicle idling, disclosure, reporting, and labeling requirements for existing vehicles, as well as standards relating to fleet average emissions and the use of BACTs. Thus, off-road diesel vehicles used during construction of the proposed

[23] Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment, Chapter 4: Operational Criteria Air Pollutant and Precursor Emissions*. June 2020.

project would be required to comply with statewide emissions reductions targets. Project construction would also be required to comply with all applicable SMAQMD rules and regulations, particularly associated with permitting of air pollutant sources. In addition, construction equipment would operate intermittently throughout the course of a day, would be restricted to daytime hours per Section 6.68.090 of the Rancho Cordova Municipal Code, and would likely only occur over portions of the project site at a time. Considering the intermittent nature of construction equipment operating within an influential distance to the nearest sensitive receptors, the duration of construction activities in comparison to the operational lifetime of the project, the typical long-term exposure periods associated with conducting health risk assessments, and compliance with regulations, the likelihood that any one nearby sensitive receptor would be exposed to high concentrations of DPM for any extended period of time would be low. Nonetheless, because heavy equipment would operate in close proximity to the sensitive receptors to the south of the project site, such receptors could be exposed to increased pollutant concentrations. Without the implementation of mitigation, construction activities associated with the project could result in a potentially significant impact related to the exposure of sensitive receptors to substantial concentrations of DPM.

Naturally-Occurring Asbestos

According to the *Special Report 192: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California,* prepared by the Department of Conservation, the project site is located within an area categorized as least likely to contain naturally-occurring asbestos (NOA). The geology in the project site is known to consist of sedimentary rocks, whose deposits are generally less likely to contain NOA due to the composition and lack of metamorphism. Faults and serpentinite outcroppings are not known to be in the project area.[24] Consequently, NOA is not anticipated to be present on the project site.

Criteria Pollutants

Recent rulings from the California Supreme Court (including the *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 case regarding the proposed Friant Ranch Project) have underscored the need for analysis of potential health impacts resulting from the emission of criteria pollutants during operations of proposed projects. Although analysis of project-level health risks related to the emission of CO and TACs has long been practiced under CEQA, the analysis of health impacts due to individual projects resulting from emissions of criteria pollutants is a relatively new field. SMAQMD released the *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District* (Guidance) for the analysis of criteria emissions in areas within the District's jurisdiction.[25] The Guidance represents SMAQMD's effort to develop a methodology that provides a consistent, reliable, and meaningful analysis in response to the Supreme Court's direction on correlating health impacts to a project's emissions.

The Guidance was prepared by conducting regional photochemical modeling, and relies on the USEPA's Benefits Mapping and Analysis Program (BenMAP) to assess

[24] Department of Conservation, California Geological Survey. *Special Report 192: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California*. Published 2006.

[25] Sacramento Metropolitan Air Quality Management District. *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District*. October 2020.

health impacts from ozone and $PM_{2.5}$. SMAQMD has prepared two tools that are intended for use in analyzing health risks from criteria pollutants. Small projects with criteria pollutant emissions close to or below SMAQMD's adopted thresholds of significance may use the Minor Project Health Effect Screening Tool, while larger projects with emissions between two and six times greater than SMAQMD's adopted thresholds may use the Strategic Area Project Health Screening Tool. Considering the proposed project would result in emissions lower than the SMAQMD's thresholds of significance, the project would qualify for use of the Minor Project Health Effects Screening Tool. It is important to note, however, that the Minor Project Health Effects Screening Tool applies the assumption that all small projects result in emissions of criteria pollutants equal to the SMAQMD thresholds of significance. As shown in Table 4.1-9, the project would result in operational emissions below the SMAQMD thresholds of significance and, thus, the health impacts calculated for the project using in the Minor Project Health Effects Screening Tool are highly conservative. The project's actual health impacts associated with criteria pollutant emissions would be expected to be much less than what is presented herein based on the aforementioned SMAQMD tool. Results from the Minor Project Health Effects Screening Tool are shown in Table 4.1-10 below.

As shown in the table, according to the Minor Project Health Effects Screening Tool, which is based on the highly conservative assumption that the project would emit criteria pollutants at levels equal to the SMAQMD thresholds of significance, the proposed project could result in 1.7 premature deaths per year due to the project's $PM_{2.5}$ emissions and 0.04 premature deaths per year due to the project's ozone emissions. Such numbers represent a very small increase over the background incidence of premature deaths due to $PM_{2.5}$ and ozone concentrations (0.0039 percent and 0.0001 percent, respectively). In addition, according to the Minor Project Health Effects Screening Tool, $PM_{2.5}$ emissions from the proposed project could result in 0.67 asthma-related emergency room visits, and ozone emissions from the proposed project could result in 0.56 asthma-related emergency room visits.

Such numbers represent a minute increase over the background level of asthma-related emergency room visits (0.0037 percent and 0.0062 percent, respectively). As noted above, because the proposed project's emissions would be substantially below the SMAQMD thresholds of significance, the proposed project's actual health impacts associated with criteria pollutant emissions would be much lower than what is presented in Table 4.1-10.

Furthermore, the SMAQMD criteria pollutant thresholds of significance were established with consideration given to the health-based air quality standards established by the NAAQS and CAAQS, and are designed to aid the district in achieving attainment of the NAAQS and CAAQS. The thresholds of significance represent emissions levels that would ensure that project-specific emissions would not inhibit attainment of regional NAAQS and CAAQS and, therefore, would not adversely affect public health.

Table 4.1-10
Health Effects from Proposed Project

Health Endpoint	Age Range[1]	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3] (%)	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory $PM_{2.5}$				
Emergency Room Visits, Asthma	0-99	0.67	0.0037	18,419
Hospital Admissions, Asthma	0-64	0.04	0.0024	1,846
Hospital Admissions, All Respiratory	65-99	0.26	0.0013	19,644
Cardiovascular $PM_{2.5}$				
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65-99	0.14	0.0006	24,037
Acute Myocardial Infarction, Nonfatal	18-24	0.00	0.0014	4
Acute Myocardial Infarction, Nonfatal	25-44	0.01	0.0016	308
Acute Myocardial Infarction, Nonfatal	45-54	0.01	0.0018	741
Acute Myocardial Infarction, Nonfatal	55-64	0.02	0.0018	1,239
Acute Myocardial Infarction, Nonfatal	65-99	0.09	0.0018	5,052
Mortality $PM_{2.5}$				
Mortality, All Cause	30-99	1.7	0.0039	44,766
Respiratory Ozone				
Hospital Admissions, All Respiratory	65-99	0.06	0.0003	19,644
Emergency Room Visits, Asthma	0-17	0.20	0.0034	5,859
Emergency Room Visits, Asthma	18-99	0.36	0.0028	12,560
Mortality Ozone				
Mortality, Non-Accidental	0-99	0.04	0.0001	30,386

[1] Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

[2] Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects are shown for the 5-Air-District Region.

[3] The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, the background incidence rates cover the 5-Air-District Region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

[4] The total number of health incidences across the 5-Air-District Region is calculated based on the modeling data. The information is presented to assist in providing overall health context.

Source: SMAQMD, Minor Project Health Effects Screening Tool. June 2020 (see Appendix C).

Considering that implementation of the proposed project would not result in emissions of criteria pollutants that would exceed the SMAQMD standards, the proposed project would not inhibit attainment of regional NAAQS and CAAQS and would not result in adverse health impacts related to the emission of criteria pollutants.

The results of the Minor Project Health Effects Screening Tool have been presented for informational purposes only. Overall, because the project would be relatively small compared to the regional growth and development that drives health impacts from criteria pollutants, and the anticipated air quality emissions would fall below all applicable thresholds of significance, potential health impacts related to criteria air pollutants would be less than significant.

Conclusion

Based on the above analysis, the operations of the proposed residential land uses would not be anticipated to result in the production of substantial concentrations of TACs, including DPM, localized CO, or criteria pollutants. In addition, the likelihood of NOA being present on the project site is low. However, construction activities have the potential to expose nearby sensitive receptors to increased concentration of DPM. Therefore, the proposed project could result in the exposure of sensitive receptors to substantial pollutant concentrations, and a ***potentially significant*** impact could result.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.1-3 *Prior to the initiation of any ground-disturbing activities, the project applicant shall ensure that all heavy-duty off-road diesel-powered equipment to be used during the grading phase of construction of the proposed project (including owned, leased, and subcontractor equipment) shall be CARB Tier 4 or cleaner.*

In addition, all off-road equipment working at the construction site must be maintained in proper working condition according to manufacturer's specifications. Idling shall be limited to five minutes or less in accordance with the In-Use Off-Road Diesel Vehicle Regulation as required by CARB. Portable equipment over 50 horsepower must have either a valid SMAQMD Permit to Operate (PTO) or a valid statewide Portable Equipment Registration Program (PERP) placard and sticker issued by CARB.

The aforementioned requirements shall be noted on improvement plans and submitted for review and approval by the City of Rancho Cordova Community Development Department.

4.1-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Based on the analysis below, the impact is *less than significant*.

Emissions of pollutants have the potential to adversely affect sensitive receptors within the project area. Pollutants of principal concern include emissions leading to odors, emissions that have the potential to cause dust, or emissions considered to constitute air pollutants. Air pollutants have been discussed in Impacts 4.1-1 through 4.1-3 above. Therefore, the following discussion focuses on emissions of odors and dust.

Odors

Odors are generally regarded as an annoyance rather than a health hazard. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative methodologies to determine the presence of a significant odor impact are difficult. Certain land uses such as wastewater treatment and conveyance facilities, landfills, confined animal facilities, composting operations, food manufacturing plants, refineries, and chemical plants have the potential to generate considerable odors. Operations of the proposed project would involve activities typical to residential developments, and, consequently, would not be anticipated to result in the creation of substantial odors.

Diesel fumes from construction equipment could be found to be objectionable; however, as addressed above, operation of construction equipment would be regulated by SMAQMD rules and regulations, restricted to daytime hours per Section 6.68.090 of the Rancho Cordova Municipal Code, and would occur intermittently throughout the course of a day. For the aforementioned reasons, the project would not result in any noticeable objectionable odors associated with construction.

In addition, SMAQMD Rule 402, Nuisance, prohibits the emission of nuisance air contaminant discharges, including odors, and provides enforcement of odor control. Rule 402 is complaint-based, where if public complaints are sufficient to cause the odor source to be considered a public nuisance, then SMAQMD is required to investigate the identified source, as well as determine and ensure a solution for the source of the complaint, which could include operational modifications to correct the nuisance condition. Thus, although not anticipated, if odor or air quality complaints are made upon development of the proposed project, SMAQMD would be required (per SMAQMD Rule 402) to ensure that such complaints are addressed and mitigated, as necessary.

Dust

With regard to dust, the proposed project is required to comply with all applicable SMAQMD rules and regulations for construction, including, but not limited to, Rule 403 (Fugitive Dust) and Rule 404 (Particulate Matter). Furthermore, all projects are required to implement the SMAQMD's Basic Construction Emission Control Practices (BCECP). Compliance with SMAQMD rules and regulations and BCECP would help to ensure that dust is minimized during project construction. Following project construction, vehicles operating within the project site would be limited to paved areas of the site, which would not have the potential to create substantial dust emissions.

Thus, project operations would not include sources of dust that could adversely affect a substantial number of people.

Conclusion

For the aforementioned reasons, project construction and operations would not result in substantial emissions, such as those leading to odors or dust, which could adversely affect a substantial number of people, and a ***less-than-significant*** impact would result.

Mitigation Measure(s)

None required.

4.1-5 Result in the inefficient or wasteful use of energy, or conflict with a State or local plan for renewable energy or energy efficiency. Based on the analysis below, the impact is *less than significant*.

The following discussion addresses the proposed project's potential effects related to energy demand during construction and operations.

Construction Energy Use

Construction of the proposed project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the site where energy supply cannot be met via a hookup to the existing electricity grid.

Even during the most intense period of construction, due to the different types of construction activities (e.g., site preparation, grading, building construction), only portions of the project site would be disturbed at a time, with operation of construction equipment occurring at different locations on the project site, rather than a single location. In addition, the entire construction phase is anticipated to occur over approximately two years. As a result, the increased energy demand associated with construction would take place for a minimal amount of time compared to the operational lifetime of the project.

All construction equipment and operation thereof would be regulated pursuant to the CARB In-Use Off-Road Diesel Vehicle Regulation. The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing limits on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. In addition, as a means of reducing emissions, construction vehicles are required to become cleaner through the use of renewable energy resources. The In-Use Off-Road Diesel Vehicle Regulation would therefore help to improve fuel efficiency for equipment used in construction of the proposed project.

Technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to further reduce demand on oil and limit emissions associated with construction.

The CARB prepared the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan),[26] which builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. Appendix B of the 2017 Scoping Plan includes examples of local actions (municipal code changes, zoning changes, policy directions, and mitigation measures) that would support the State's climate goals. The examples provided include, but are not limited to, enforcing idling time restrictions for construction vehicles, utilizing existing grid power for electric energy rather than operating temporary gasoline/diesel-powered generators, and increasing use of electric and renewable fuel-powered construction equipment. The In-Use Off-Road Diesel Vehicle Regulation and idling restriction regulations described above, with which the proposed project must comply, would be consistent with the intention of the 2017 Scoping Plan and the recommended actions included in Appendix B of the 2017 Scoping Plan.

Based on the above, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. In addition, the proposed project would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand.

Operational Energy Use

Energy use associated with operation of the proposed project would be typical of residential uses, requiring electricity for interior and exterior building lighting, HVAC, electronic equipment, machinery, refrigeration, appliances, security systems, and more. Maintenance activities during operations, such as landscape maintenance, would involve the use of electric or gas-powered equipment. As noted above, the project would be required to include a solar photovoltaic system in accordance with the Building Energy Efficiency Standards.

In addition to on-site energy use, the proposed project would result in transportation energy use associated with vehicle trips generated by the proposed single-family residences. With regard to transportation energy use, the proposed project would comply with all applicable regulations associated with vehicle efficiency and fuel economy.

The proposed project would be subject to all relevant provisions of the most recent update of the CBSC, including the CALGreen Code and the Building Energy Efficiency Standards. Adherence to the most recent CALGreen Code and the Building Energy Efficiency Standards would ensure that the proposed structure would consume energy efficiently through the incorporation of such features as efficient water heating systems, high performance attics and walls, and high efficacy lighting. In addition, California has set energy-use reduction goals targeting zero-net-energy use in all new

26 California Air Resources Board. *The 2017 Climate Change Scoping Plan Update.* January 20, 2017.

homes.[27] The CALGreen Code requires that new residential buildings use a combination of energy efficiency and distributed renewable energy generation to meet all annual energy needs. Required compliance with the CBSC would ensure that the building energy use associated with the proposed project would not be wasteful, inefficient, or unnecessary.

Conclusion

Based on the context above, construction and operation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects. The geographic context for the cumulative air quality and GHG analysis includes Sacramento County and surrounding areas within the portion of the SVAB that is designated nonattainment for ozone and PM_{10}. Refer to Section 5.3 of Chapter 5, Statutorily Required Sections, for additional detail regarding the cumulative setting evaluated in this EIR.

4.1-6 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). Based on the analysis below, the project's incremental contribution to this significant cumulative impact is *less than cumulatively considerable*.

The proposed project is within a nonattainment area for ozone and PM_{10}. By nature, air pollution is largely a cumulative impact. The population growth and vehicle usage within the nonattainment area from the proposed project, in combination with other past, present, and reasonably foreseeable projects within Rancho Cordova and surrounding areas, contributes to the region's adverse air quality impacts on a cumulative basis, and could either delay attainment of AAQS or require the adoption of additional controls on existing and future air pollution sources to offset emission

[27] California Energy Commission. *Title 24 2019 Building Energy Efficiency Standards FAQ*. November 2018.

increases. Thus, the project's emissions of criteria air pollutants would contribute to cumulative regional air quality effects.

As noted in the Standards of Significance section above, SMAQMD directs lead agencies to use the region's existing attainment plans as a basis for analysis of cumulative emissions. A project's interference with such plans may be determined through the use of the SMAQMD's recommended thresholds of significance for ozone precursors, $PM_{2.5}$, and PM_{10}. The SMAQMD's recommended cumulative thresholds are identical to the operational thresholds, both of which are presented in Table 4.1-6.

Accordingly, if the proposed project would result in an increase of ROG, NO_X, PM_{10}, or $PM_{2.5}$ in excess of SMAQMD's operational phase cumulative-level emissions threshold, which are equivalent to SMAQMD's project-level operational emissions thresholds, the project could potentially result in a significant incremental contribution towards cumulative air quality impacts. The proposed project's unmitigated cumulative contribution to regional emissions are equivalent to the project's unmitigated operational emissions, as presented in Table 4.1-9.

As shown in Table 4.1-9, the proposed project's unmitigated operational emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ would all be below the SMAQMD's applicable thresholds of significance. Therefore, implementation of the proposed project would not result in a significant incremental contribution to a cumulative violation of any air quality standards, contribute substantially to an existing or projected air quality violation, or conflict with and/or obstruct implementation of the SMAQMD's air quality planning efforts. As such, the proposed project's incremental contribution to regional air quality impacts would be ***less-than-cumulatively considerable***.

Mitigation Measure(s)

None required.

4.1-7 Generation of GHG emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Based on the analysis below, and with the implementation of mitigation, the project's incremental contribution to this significant cumulative impact is *less than cumulatively considerable*.

Buildout of the proposed project would contribute to increases of GHG emissions that are associated with global climate change during construction and operation. As discussed in the Method of Analysis section, the modeling assumed that both on- and off-site construction would occur during implementation of the proposed project.

Construction GHG Emissions

The estimated unmitigated maximum construction-related emissions from the proposed project are presented in Table 4.1-11. As shown in the table, the short-term emissions related to on-site construction would be below the applicable threshold of significance.

As shown in the table, the maximum annual emissions related to implementation of the proposed project are anticipated to occur in 2022. However, even in 2022, the construction-related GHG emissions would be below the threshold of 1,100 $MTCO_2e$/yr, and project construction would not be considered to result in a cumulatively considerable contribution to global climate change.

Table 4.1-11
Unmitigated On-site Construction GHG Emissions

Year	GHG Emissions ($MTCO_2e$/yr)	Threshold of Significance ($MTCO_2e$/yr)	Exceeds Threshold?
2021	468.99	1,100	**NO**
2022	735.89	1,100	**NO**
2023	164.25	1,100	**NO**

Source: CalEEMod, May 2021 (see Appendix C).

Operational GHG Emissions

As noted previously, projects that are below the OPR's *de minimis* VMT criteria would be considered sufficiently small to screen out of further requirements, and would be assumed to result in a less-than-significant impact related to GHG emissions and climate change. The following types of projects would be considered to be below the OPR's *de minimis* VMT criteria:

- Small projects that generate or attract fewer than 110 trips per day;
- Residential and office projects in areas with low VMT (currently below threshold VMT) that incorporate similar features (i.e., density, mix of uses, transit accessibility), including affordable housing infill development; or
- Residential, retail, office, or mixed-use projects within 0.5-mile walking distance of an existing major transit stop or existing stop along a high-quality transit corridor, unless the primary use of the site is auto-oriented (e.g., car dealership, car wash, gas station).

The proposed project would generate greater than 110 daily trips, would not be considered infill development, and is not located within 0.5-mile of a high-quality transit station. As a result, the project would not qualify for screening pursuant to the OPR's *de minimis* VMT criteria, and further analysis of operational GHG emissions is warranted.

The modeling assumptions for the GHG emissions related to operations of the proposed project are discussed in the Method of Analysis section above. The estimated operational GHG emissions at full buildout (2023) are presented in Table 4.1-12.

As noted above, because the project is located within the jurisdiction of SMAQMD, the project is required to implement BMPs 1 and 2. Even with implementation of BMPs 1 and 2, the project would still result in annual emissions over the SMAQMD's threshold of significance, and the proposed project would not meet the OPR's *de minimis* criteria for VMT. Therefore, the project would be subject to BMP 3, which requires that project-related VMT be reduced by 15 percent relative to Sacramento County targets.

Table 4.1-12
Project Operational GHG Emissions ($MTCO_2e$/yr)

Emission Source	GHG Emissions
Area	7.59
Energy[1]	0.00
Mobile	4,298.89
Waste	212.73
Water	43.21
TOTAL ANNUAL GHG EMISSIONS[2]	**4,562.42**

[1] Pursuant to SMAQMD BMP 1, the proposed project would not include any natural gas infrastructure. As such, GHG emissions resulting from the combustion of natural gas have been omitted from this table. Any resulting increase in electricity required to compensate for the lack of ntaural gas would be achieved through renewable resources, and an increase in GHG emissions would not occur.
[2] Rounding may result in small differences in summation.

Source: CalEEMod, May 2021 (see Appendix C).

The Sacramento VMT target is 19.7 VMT per capita, which is 15 percent below the regional average.[28] According to the VMT Evaluation prepared for the proposed project by Kimley-Horn, the project is anticipated to generate 23.3 VMT per capita. As such, the project would not achieve a 15 percent VMT reduction and would not comply with BMP 3.

Conclusion

During construction, the propose project would result in GHG emissions below the applicable threshold of significant. However, during operations, the project would not comply with BMP 3 of the SMAQMD's Guidance. As such, the proposed project would be considered to generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment, or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Consequently, the project would result in a cumulatively considerable incremental contribution to impacts related to GHG emissions or climate change and the project's impact would be ***significant***.

Mitigation Measure(s)

Per the SMAQMD's Guidance, when a project does not achieve BMP 3, the applicant may estimate excess GHG emissions from VMT and purchase offsite carbon offsets to indirectly achieve the BMP 3 target. The VMT significance threshold for residential land use types as determined by the City is 19.7 VMT per capita. For the proposed project, the allowable annual VMT would be approximately 9,585,000 (19.7 VMT per resident per day * 1,333 residents * 365 days per year = 9,584,937 VMT per year). As proposed, the project is anticipated to generate approximately 11,336,500 annual VMT. If BMP 3 is to be achieved, the project-related VMT must be reduced by 15.45 percent.

CalEEMod was used to calculate the difference in GHGs that would occur when VMT is reduced by 15.45 percent. As demonstrated in Table 4.1-13, if annual VMT is

[28] Kimley-Horn. *The Preserve,Vehicle Miles Traveled (VMT) Evaluation.* March 5, 2021.

reduced by 15.45 percent, as required in order to achieve BMP 3, then annual mobile GHG emissions would be reduced by 617.30 $MTCO_2e$.

Table 4.1-13
Annual VMT Compared to Mobile-Sourced GHG Emissions

Scenario	Annual VMT	Mobile-Sourced GHGs ($MTCO_2e$/yr)
Unmitigated Project	11,336,500	4,298.89
15.45 Percent Reduction in Annual VMT	9,585,000	3,681.59
CO_2e Offset Purchase Required	**--**	***617.30***
Source: CalEEMod, May 2021.		

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.1-7 *Off-site credits shall be purchased in order to reduce annual greenhouse gas (GHG) emissions by 617.30 $MTCO_2e$ per year. Credit purchases shall adhere to all of the following:*

1. *Off-site credits shall be real, quantifiable, permanent, verifiable, enforceable, and additional, consistent with the standards set forth in California Health and Safety Code Section 38562, subdivisions (d)(1) and (d)(2). Such credits shall be based on protocols that are consistent with the criteria set forth in subdivision (a) of Section 95972 of Title 17 of the California Code of Regulations. Such credits must be purchased through one of the following:*

   (i) *A California Air Resources Board (CARB)-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard;*
   (ii) *Any registry approved by CARB to act as a registry under the California Cap and Trade program; or*
   (iii) *Through the California Air Pollution Control Officers Association (CAPCOA) GHG Rx and the Sacramento Metropolitan Air Quality Management District (SMAQMD);*
   (iv) *In the event that no credits meeting these criteria are available within California, the applicant may purchase credits elsewhere so long as: (a) the Governor or the Governor's designee has made the findings set forth in Government Code Section 12894; (b) and these findings have been submitted to the Legislature; and (c) California has accepted the credits as meeting the linkage standards contained in Government Code Section 12894 or its successor statute.*

2. *The applicant must show that the emission reductions from identified projects are real, permanent through the duration of the project (if it is a one-time purchase), enforceable, and are equal to the pollutant type and amount of the project impact being offset. In addition, any off-site purchase shall be subject to review and approval by the City of Rancho Cordova Community Development Department.*

4.2 Biological Resources

4.2. BIOLOGICAL RESOURCES

4.2.1 INTRODUCTION

The Biological Resources chapter of the EIR evaluates the biological resources known to occur or potentially occur within the project site. The Biological Resources chapter describes potential impacts to those resources and identifies measures to eliminate or substantially reduce those impacts to a less-than-significant level. Existing plant communities, wetlands, wildlife habitats, and potential for special-status species and communities are discussed for the 98.9-acre development area within the southern portion of the project site and the proposed off-site improvement areas, referred to hereinafter as the "study area" for the purpose of this analysis. The study area does not include the 185.3 acres of open space area within the northern portion of the site which would not be developed as part of the proposed project.

The information contained in the analysis is primarily based on the Biological Resources Assessment prepared for the proposed project by ECORP Consulting, Inc. (ECORP) (see Appendix D).[1] Appendices to the Biological Resources Assessment include, but are not limited to, Bird and Bat Potential Habitat Assessment Surveys,[2] a Special-Status Plant Survey Report,[3] an Aquatic Resources Delineation,[4] and an Arborist Survey Report[5], along with addenda thereto. Further information was sourced from the City of Rancho Cordova General Plan[6] and associated EIR.[7]

4.2.2 EXISTING ENVIRONMENTAL SETTING

The following sections describe the existing environmental setting and biological resources occurring in the proposed project area.

Regional Setting

The study area is located in the Great Valley region, Sacramento Valley subregion of the California Floristic Province. The project region is characterized by agricultural areas, grasslands, wetlands, and valley oaks. The average annual precipitation for the region is 36.9 inches, with the wettest period during November through March, and average daily temperatures range from 47.7 degrees Fahrenheit (˚F) in winter to 73.8˚F in summer.

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1 ECORP Consulting, Inc. *Biological Resources Assessment, The Preserve Development, Rancho Cordova, California.* June 28, 2019.
ECORP Consulting, Inc. *Addendum to Biological Resources Assessment for The Preserve Development.* July 25, 2019.

2 ECORP Consulting, Inc. *Bird and Bat Potential Habitat Assessment Surveys – The Preserve Development Project, Rancho Cordova, California.* June 21, 2019.

3 ECORP Consulting, Inc. *Special-Status Plant Survey Report, The Preserve Development, Rancho Cordova, California.* June 27, 2019.

4 ECORP Consulting, Inc. *Aquatic Resources Delineation, The Preserve Development, Rancho Cordova, California.* November 26, 2018.
ECORP Consulting, Inc. *Addendum to Aquatic Resources Delineation for The Preserve Development.* June 27, 2019.

5 ECORP Consulting, Inc. *Arborist Survey Report, The Preserve, Rancho Cordova, California.* June 21, 2019.

6 City of Rancho Cordova. *General Plan*. Adopted June 26, 2006.

7 City of Rancho Cordova. *General Plan Environmental Impact Report.* 2006.

As noted in the General Plan EIR, the topography within the City's Planning Area includes gently rolling terrain, such as that found in the eastern Great Central Valley, interrupted by numerous seasonal creeks and streams. Such creeks and streams are largely ephemeral and intermittent, which is typical of areas that experience extremely dry summers and cool, wet winters, as is the case for the project region. The most notable creeks in the City's Planning Area are Morrison Creek, Laguna Creek, Deer Creek, Buffalo Creek, and Carson Creek.

Project Setting

The 108.25-acre study area for the proposed project is depicted in Figure 4.2-1, and includes the 98.9-acre proposed development area, as well as a total of 7.85 acres in which potential off-site improvements are proposed. For the purpose of this chapter, the off-site improvement areas are referred to as follows: the Rio del Oro Offsite, located to the west of the project site; the Raymer Way Offsite, located to the east of the project site; the Morrison Creek Offsite, located to the north of the study area around an existing crossing of Morrison Creek; and the North Douglas Offsites, consisting of road stubs located to the south of the project site. The Raymer Way Offsite has been included in this analysis in anticipation that future improvements to the roadway may be required to support the proposed project. Within the Morrison Creek Offsite, an existing berm to the east of a gravel road crossing Morrison Creek is proposed to be removed to minimize flooding of the adjacent areas during 100-year storms. The North Douglas Offsites are the locations of future roadway connections to the existing North Douglas Project. The Rio del Oro Offsite is located entirely within a disced firebreak on the Rio del Oro property. It should be noted that the Morrison Creek Offsite is located within the boundaries of the 279.3-acre project site, but outside of the 98.9-acre development area.

The study area is situated at an elevation range between approximately 200 and 250 feet above mean sea level (MSL). The study area is characterized by flat to gently rolling terrain and consists primarily of grazed annual grasslands with two single-family residences and other outbuildings. It should be noted that although the structure is not included within the study area, a third single-family residence and associated outbuildings is located within the northwest portion of the project site, in a portion of the project site which would not be developed as part of the proposed project. A private road, sometimes identified as Douglas Road, leads from south of the study area into the two residences. The study area is located within the U.S. Fish and Wildlife Service (USFWS) Mather Core Area. Core Areas are areas prioritized for the conservation and recovery of threatened and endangered vernal pool species.

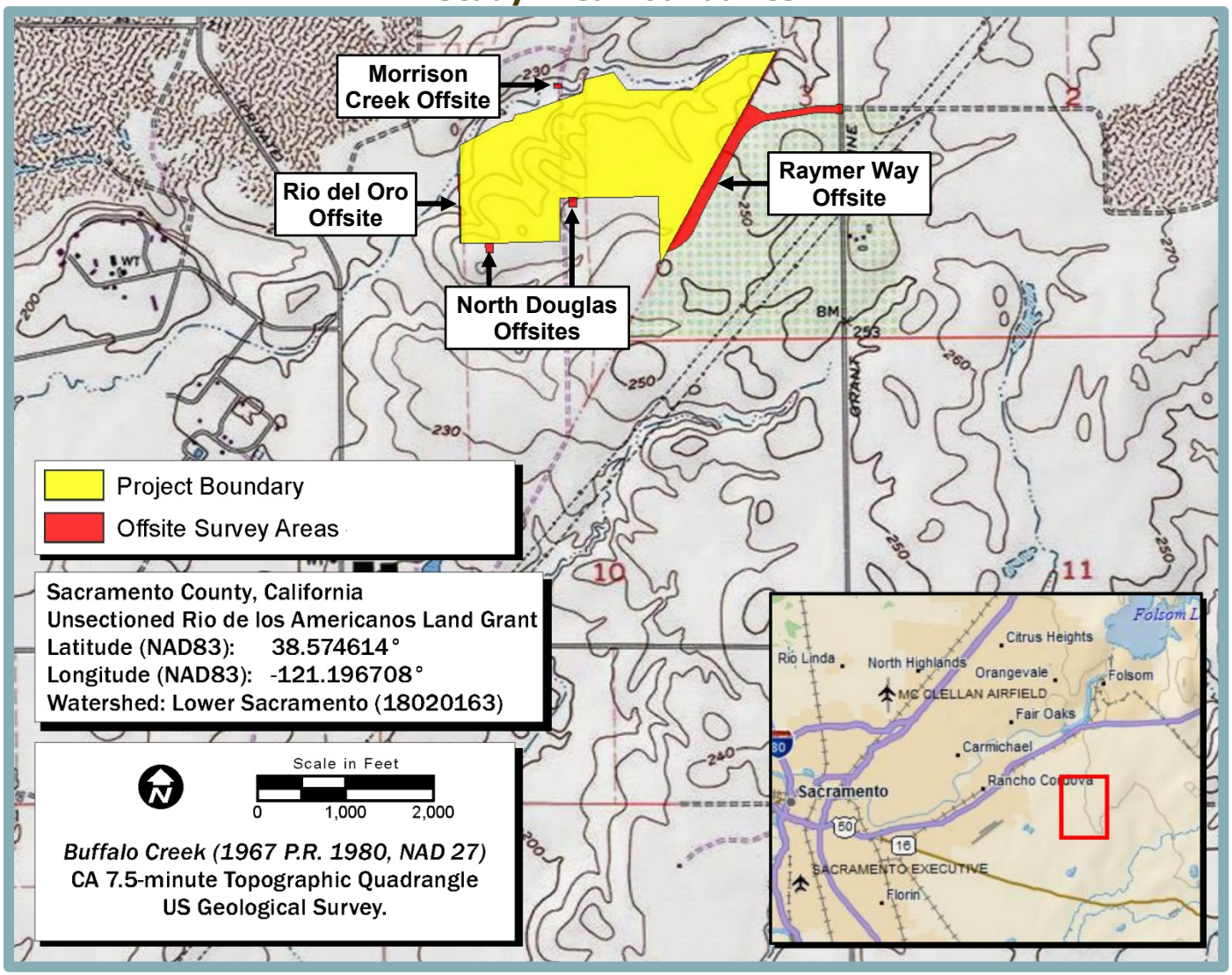
Soils

Per the Biological Resources Assessment, two soil units, or types, have been mapped within the study area: (159) Hicksville gravelly loam, 0 to 2 percent slopes, occasionally flooded; and (193) Red Bluff-Redding complex, 0 to 5 percent slopes. Hicksville and Red Bluff soils are formed in alluvium derived from mixed rock sources. Redding soils are formed in gravelly and cobbly alluvium derived from mixed rock sources.

Land Cover Types

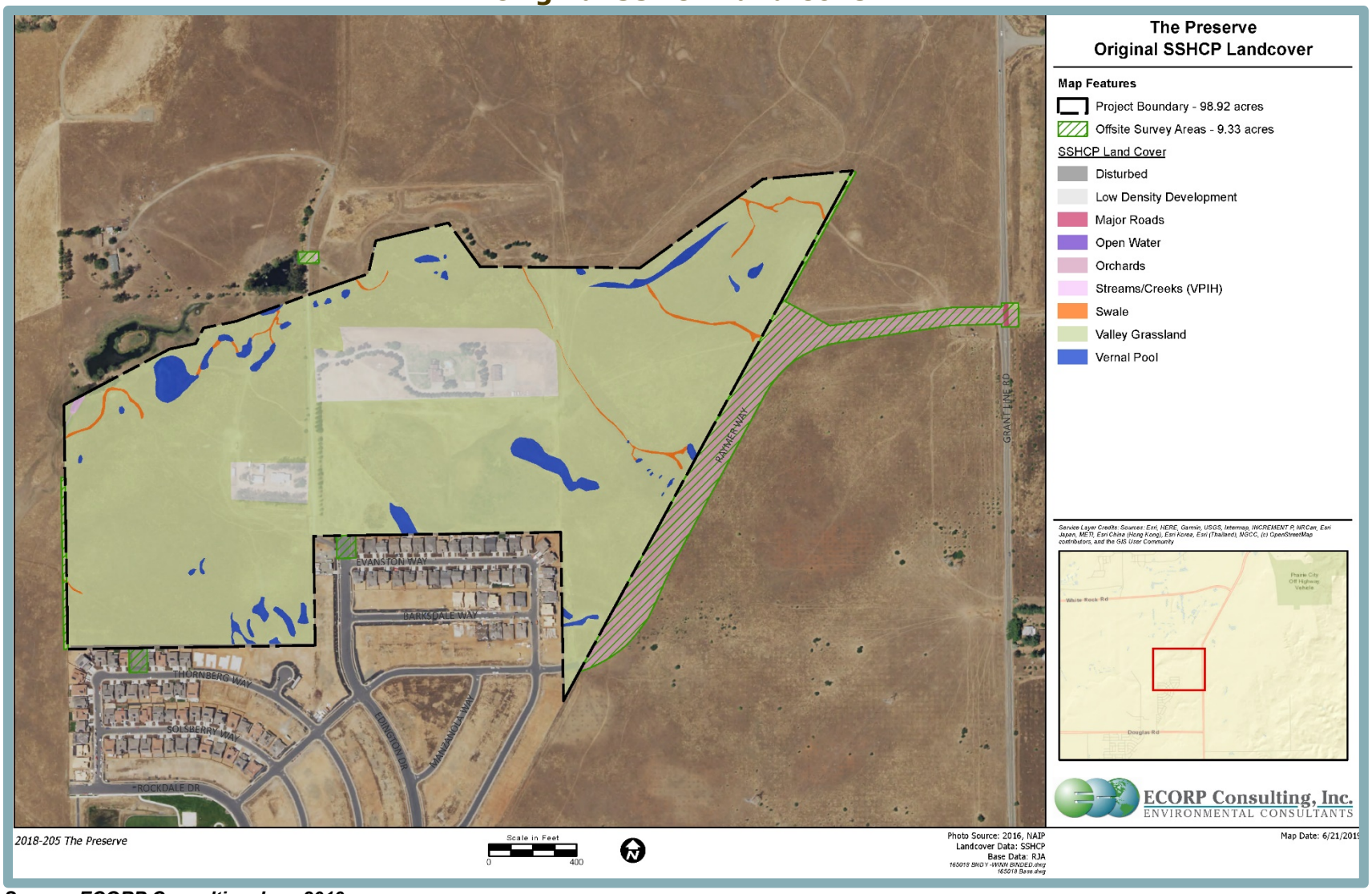
The study area is covered by the South Sacramento Habitat Conservation Plan (SSHCP), discussed in greater detail under the Regulatory Context section below. As part of the Biological Resources Assessment, SSHCP Land Cover data within the study area were reviewed; however, the type and extent of SSHCP Land Cover types was revised to reflect field conditions based on an on-site assessment conducted by ECORP. Baseline SSHCP Land Cover data is presented in Figure 4.2-2, and a revised Land Cover map is provided as Figure 4.2-3.

Figure 4.2-1
Study Area Boundaries



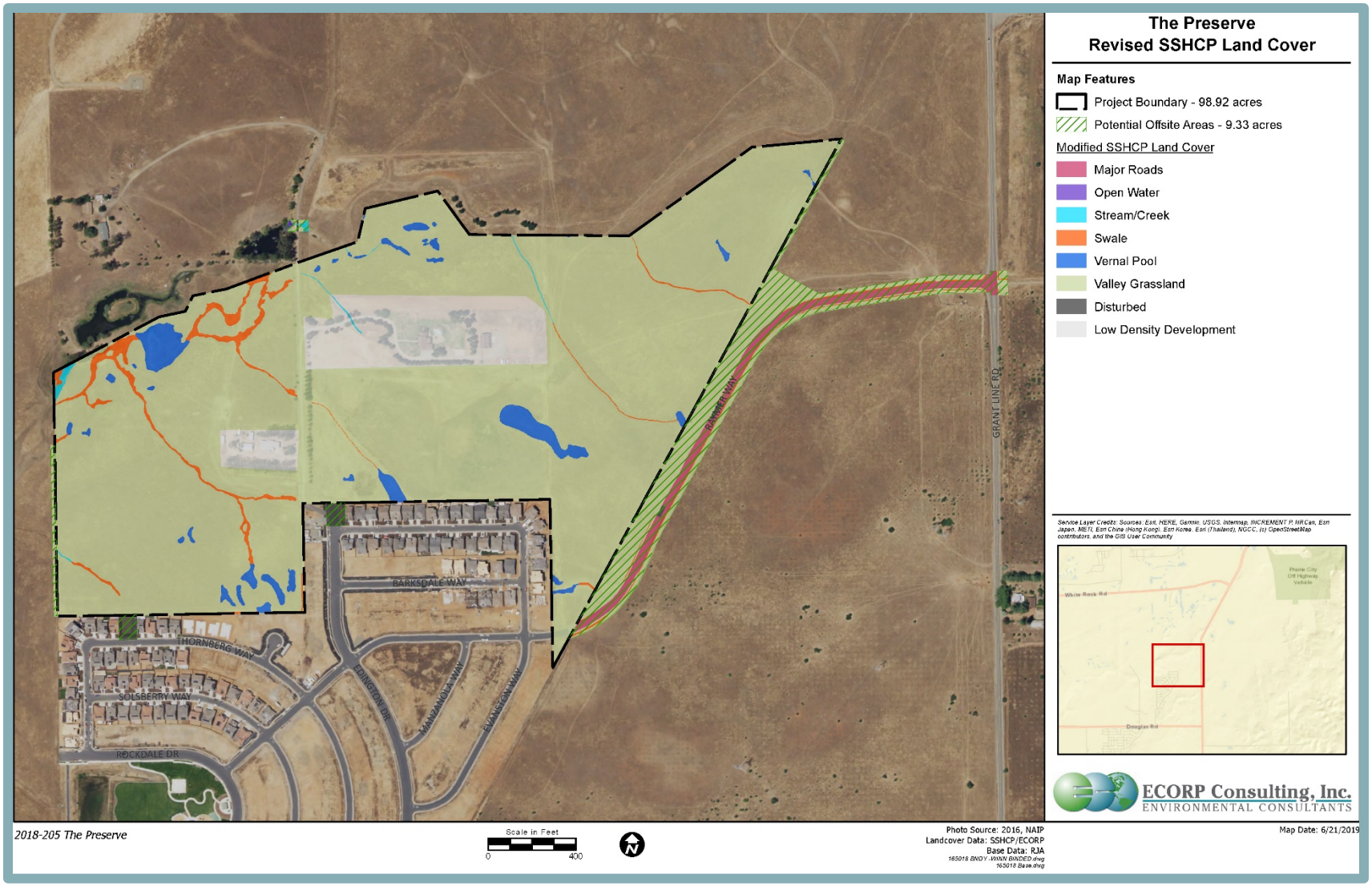
Source: ECORP Consulting, Inc., 2019.

Figure 4.2-2
Original SSHCP Land Cover



Source: ECORP Consulting, Inc., 2019.

Figure 4.2-3
Revised SSHCP Land Cover



Source: ECORP Consulting, Inc., 2019.

The SSHCP Land Cover data indicated that the study area primarily contains the Valley Grassland land cover type, and the reconnaissance visit revised the extent of this land cover type on Figure 4.2-3. In addition, the study area contains Low Density Development and a small amount of Disturbed land cover.

The Valley Grassland land cover type is predominantly characterized by non-native (naturalized) annual grasses. Within the study area, the common plant species found in Valley Grassland are a mixture of nonnative annual grasses, including medusahead grass (*Elymus caput-medusae*), soft brome (*Bromus hordeaceus*), wild oats (*Avena fatua*), and brome fescue (*Festuca bromoides*). Narrow tarplant (*Holocarpha virgata*), a native perennial forb, is also common in this land cover type within the study area.

The Low Density Development land cover type consists of existing homesteads including buildings/structures and horticultural trees. The Disturbed and Major Roads land cover types consists of disturbed areas, and sections of paved and gravel road within the study area. Major Roads land cover type consists of Grant Line Road and Raymer Way within the Raymer Way Offsite.

Aquatic Resources

An Aquatic Resources Delineation was prepared for the study area, the Morrison Offsite, the North Douglas Offsites, and the Rio del Oro Offsite in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. The U.S. Army Corps of Engineers (USACE) verified the delineation on May 9, 2019. It should be noted that a 72.6-acre area that includes the western portion of the project site was previously delineated and verified by the USACE in 2012 as part of the Rio del Oro Project (SPK-1999-00590). As part of the Aquatic Resources Delineation prepared for the proposed project, the portion of the 72.6-acre area that falls within the study area was reverified.

An addendum to the delineation has been prepared for the Raymer Way Offsite, but has not yet been verified by the USACE.

Per the Aquatic Resources Delineation and associated addendum, a total of 4.687 acres of aquatic resources have been mapped on the study area, including 0.215-acre within the Raymer Way Offsite, which has not been verified (see Table 4.2-1). The Rio Del Oro Offsite and North Douglas Offsites do not contain any mapped aquatic resources. The identified features include vernal pool, swale, and stream/creek land cover types.

Table 4.2-1
Aquatic Resources Mapped within the Study Area

Resource Type	Acreage
Vernal Pool	2.613
Swale	1.866
Stream/Creek (Non VPIH)	0.192
Open Water	0.016
Total	**4.687**

Source: ECORP Consulting, Inc., 2019.

A discussion of the aquatic resources found within the study area is presented below, and an aquatic resources delineation map is presented in Figure 4.2-4.

Vernal Pool

Vernal pools are seasonal ephemeral wetlands that fill and dry each year, forming in shallow depressions within Valley Grassland that are underlaid by an impermeable layer (e.g., a hardpan). Water collects in the depressions during the winter rainy season and recedes during the spring.

Soils typically remain moist until late spring before becoming desiccated, and then remain dry throughout the summer. Vernal pools provide habitat for several special-status species, including invertebrates, plants, and amphibians. Vernal pools occur throughout the study area. The features are variously dominated by Great Valley button-celery (*Eryngium castrense*), stalked popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), Mediterranean barley (*Hordeum marinum*), waxy mannagrass (*Glyceria declinata*), hairy hawkbit (*Leontodon saxatilis*), and toad rush (*Juncus bufonius*).

Swale

Swales are shallow ephemeral drainages found in flat to gently rolling Valley Grassland in association with vernal pool complexes, on soils with an impermeable layer. Swales convey runoff as shallow, gently sloping ephemeral wetlands during and shortly after winter rainstorms, but usually maintain soil saturation for longer periods during the growing season. Swales typically have hydric soils and support hydrophytic vegetation, but lack an ordinary high-water mark (OHWM). Roadside ditches that may represent habitat for vernal pool invertebrates may also be classified as swales. Swales serve as habitat for many vernal pool species and provide hydrological connections between vernal pools that allows movement/dispersal of amphibian species, plant seeds, and vernal pool invertebrates (both adults and cysts). Swales occur throughout the study area, and are dominated by Italian ryegrass (*Festuca perennis*), Fitch's spikeweed (*Centromadia fitchii*), and Mediterranean barley. Swale land cover within the Raymer Way Offsite represents roadside ditches.

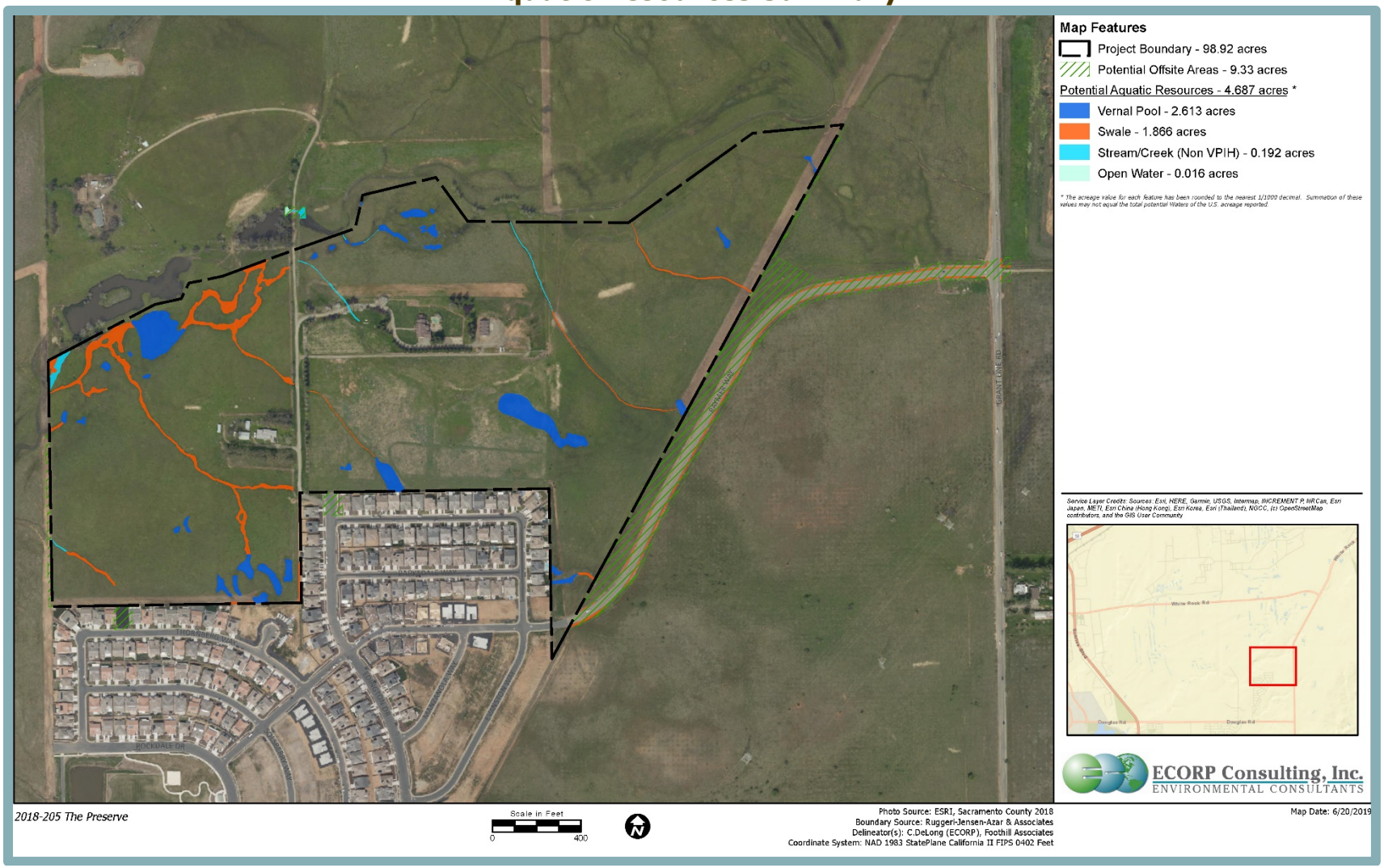
Stream/Creek

The stream/creek land cover type includes intermittent and perennial linear water features such as rivers, streams, creeks, drainages, and roadside and irrigation ditches. These features typically exhibit a bed and bank and an OHWM. Morrison Creek is primarily located outside and to the north of the study area, with the exception of one Offsite located around a crossing of Morrison Creek. Several small headwater tributaries to the creek flow through the study area into Morrison Creek. The stream/creek features do not represent habitat for vernal pool invertebrates, due to the fast-moving flow and ephemeral nature of the features. Stream/creek features occur throughout the study area, flowing northwest to Morrison Creek, and vary from steep, unvegetated features, to gently sloping features that are sparsely vegetated with creeping spikerush (*Eleocharis macrostachya*).

Special-Status Species

Special-status species are species that have been listed as "threatened" or "endangered" under the Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), or are of special concern to federal resource agencies, the State, or private conservation organizations. A species may be considered special-status due to declining populations, vulnerability to habitat change, or restricted distributions. A description of the criteria and laws pertaining to special-status classifications is described below.

Figure 4.2-4
Aquatic Resources Summary



Source: ECORP Consulting, Inc., 2019.

Special-status plant species may meet one or more of the following criteria:

- Plants listed or proposed for listing as threatened or endangered under the FESA (50 CFR 17.12 for listed plants and various notices in the Federal Register [FR] for proposed species);
- Plants that are candidates for possible future listing as threatened or endangered under the FESA (64 FR 205, October 25, 1999; 57533-57547);
- Plants listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 California Code of Regulations [CCR] 670.5);
- Plants that meet the definitions of rare or endangered species under the California Environmental Quality Act (CEQA) (CEQA Guidelines, Section 15380); or
- Plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered" in California (Lists 1A, 1B, 2A, 2B, and 3 species in CNPS [2001]).

Special-status wildlife species may meet one or more of the following criteria:

- Wildlife listed as threatened or endangered, or proposed or candidates for listing by the USFWS or National Marine Fisheries Service (NMFS) under the FESA (50 CFR 17.11 for listed wildlife and various notices in the Federal Register for proposed species);
- Wildlife listed or proposed for listing by the State of California as threatened and endangered under the CESA (14 CCR 670.5);
- Wildlife that meet the definitions of rare or endangered species under CEQA (CEQA Guidelines, Section 15380);
- Wildlife identified as Medium or High priority species by the Western Bat Working Group (WBWG);
- Wildlife species of special concern to the California Department of Fish and Wildlife (CDFW) (Remsen [1978] for birds; Williams [1986] for mammals); and/or
- Wildlife species that are fully protected in California (California Fish and Game Code [FGC], Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

Several species of plants and animals within the State of California have low populations, limited distributions, or both. Such species may be considered "rare" and are vulnerable to extirpation as the State's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described below, State and federal laws have provided the CDFW and the USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to the State. A number of native plants and animals have been formally designated as threatened or endangered under State and federal endangered species legislation. Others have been designated as "candidates" for such listing. Still others have been designated as "species of special concern" by the CDFW. In addition, the CNPS has developed a set of lists of native plants considered rare, threatened, or endangered. Collectively, these plants and animals are referred to as "special-status species."

As part of the Biological Resources Assessment, SSHCP Modeled Species Habitat data were used to determine which SSHCP Covered Species are considered to have the potential to occur within the study area. Surveys for potential Covered Species habitat were conducted by ECORP consistent with SSHCP standards, discussed in greater detail under the Method of Analysis section below. In addition, surveys for special-status plants were conducted in spring of 2019. In order to determine whether any special-status species other than SSHCP Covered Species have the potential to occur within the study area, the following resources were queried:



- CDFW California Natural Diversity Database (CNDDB) record search for the "Buffalo Creek, California" 7.5-minute quadrangle and the eight surrounding USGS quadrangles;
- USFWS Information, Planning, and Consultation System Resource Report List for the study area;
- CNPS' electronic *Inventory of Rare and Endangered Plants of California* was queried for the "Buffalo Creek, California" 7.5-minute quadrangle and the eight surrounding USGS quadrangles.

Based on SSHCP modeled species habitat, species occurrence information from the literature review, and field assessments, a list of special-status plant and animal species that have been documented within the project region was generated. The full list of special-status species is included in Appendix E to the Biological Resources Assessment (Appendix D to this EIR). Each of the species was evaluated based on the following criteria:

- **Present** - Species was observed during field surveys or is known to occur within the study area based on documented occurrences within the CNDDB, SSHCP, or other literature.
- **Potential to Occur** - Habitat (including soil and elevation requirements) for the species occurs within the study area based on site assessment, literature research, or SSHCP Modeled Species Habitat data.
- **Low Potential to Occur** - Marginal or limited amounts of habitat occur, and/or the species is not known to occur within the vicinity of the study area based on CNDDB records and other available documentation. This designation is only used for species that are not SSHCP Covered Species.
- **Absent** - Suitable habitat (including soil and elevation requirements) and/or the species is not known to occur within the vicinity of the study area based on CNDDB records and other documentation, or SSHCP Modeled Species Habitat data does not indicate that habitat for the species occurs within the study area.

Based on SSHCP Modeled Species Habitat data, the study area contains habitat for 21 of the 28 SSHCP Covered Species. Of the 21 Covered Species, one species was considered to be present based on field observations made during habitat surveys required by the SSHCP, and one species was considered present based on CNDDB data. Seven of the 28 SSHCP Covered Species were determined to be absent from the study area because SSHCP Modeled Species Habitat does not exist within the study area.

In addition, based on the literature sources listed previously, seven additional special-status species, that are not SSHCP Covered Species, were considered to have potential to occur within the study area. Each of the 28 species that were considered to be present or have the potential to occur, according to the definitions listed above, are listed in Table 4.2-2, and descriptions are provided in the following sections. Species that were considered to be absent from the study area due to the lack of suitable habitat, or because the known distribution of the species does not include the study area vicinity, are not discussed further in this chapter.

Table 4.2-2
Special-Status Species with Potential to Occur within the Study Area

Common Name *(Scientific Name)*	Status			Habitat Requirements	Survey Period	Potential for Occurrence
	ESA	CESA	Other			
Plants						
Stinkbells *(Fritillaria agrestis)*	-	-	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, Pinyon and juniper woodland, and Valley and foothill grassland (33' to 5,102').	March to June	**Absent within Project**. Special-status plant surveys did not detect the species. **Potential to Occur** within off-site along Raymer Way; Valley grassland represents suitable habitat.
Boggs Lake hedge–hyssop *(Gratiola heterosepala)*	–	–	1B.2, SSHCP Covered Species	Mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields (USFWS 2005a) (98’ to 751’).	April to August	**Absent**. Special-status plant surveys did not detect the species. Field surveys have determined that habitat is not present for the species within the unsurveyed Raymer Way Offsite.
Ahart’s dwarf rush (*Juncus leiospermus var. ahartii*)	–	–	1B.2, SSHCP Covered Species	Mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields (USFWS 2005a) (98’ to 751’).	March to May	**Absent within Project**. Special-status plant surveys did not detect the species. **Potential to Occur** within off-site along Raymer Way; small amounts of SSHCP

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Table 4.2-2
Special-Status Species with Potential to Occur within the Study Area

Common Name *(Scientific Name)*	Status			Habitat Requirements	Survey Period	Potential for Occurrence
	ESA	CESA	Other			
						Modeled Species Habitat present within unsurveyed Raymer Way Offsite.
Legenere *(Legenere limosa)*	–	–	1B.1, SSHCP Covered Species	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005b) (3' to 2,887').	April to June	**Absent**. Special-status plant surveys did not detect the species. Field surveys have determined that habitat for the species is not present within the unsurveyed Raymer Way Offsite.
Slender Orcutt grass *(Orcuttia tenuis)*	FT	CE	1B.1, SSHCP Covered Species	Vernal pools, often gravelly (115' to5,774').	May to September	**Absent**. Special-status plant surveys did not detect the species. Field surveys have determined that habitat for the species is not present within the unsurveyed Raymer Way Offsite.
Sacramento Orcutt grass *(Orcuttia viscida)*	FE	CE	1B.1, SSHCP Covered Species	Vernal pools (98' to 328').	April to July	**Absent**. Special-status plant surveys did not detect the species. Field surveys have determined that habitat for the species is not present within

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Table 4.2-2
Special-Status Species with Potential to Occur within the Study Area

Common Name *(Scientific Name)*	Status			Habitat Requirements	Survey Period	Potential for Occurrence
	ESA	CESA	Other			
						the unsurveyed Raymer Way Offsite.
Sanford's arrowhead *(Sagittaria sanfordii)*	–	–	1B.2, SSHCP Covered Species	Shallow marshes and freshwater swamps (0' to 2,133').	May to October	**Absent**. Special-status plant surveys did not detect the species. Field surveys have determined that habitat for the species is not present within the unsurveyed Raymer Way Offsite.
Invertebrates						
Conservancy fairy shrimp (*Branchinecta conservatio)*	FE	-	-	Vernal pools/wetlands.	November to April	**Potential to Occur** within vernal pool habitat.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	-	SSHCP Covered Species	Vernal pools/wetlands.	November to April	**Potential to Occur**. SSHCP Modeled Species Habitat present.
Midvalley fairy shrimp *(Branchinecta mesovallensis)*	-	-	CNDDB, SSHCP Covered Species	Vernal pools/wetlands.	November to April	**Potential to Occur**. SSHCP Modeled Species Habitat present.
Ricksecker's water scavenger beetle (*Hydochara rickseckeri)*	-	-	SSHCP Covered Species	Vernal pools/wetlands.	November to April	**Potential to Occur**. SSHCP Modeled Species Habitat present.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	-	SSHCP Covered Species	Vernal pools/wetlands.	November to April	**Present**. SSHCP Modeled Species Habitat present and

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Table 4.2-2
Special-Status Species with Potential to Occur within the Study Area

Common Name *(Scientific Name)*	Status			Habitat Requirements	Survey Period	Potential for Occurrence
	ESA	CESA	Other			
						CNDDB occurrence overlaps the site.
Amphibians						
Western spadefoot (*Spea hammondii*)	-	-	SSC, SSHCP Covered Species	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March to May	**Potential to Occur**. SSHCP Modeled Species Habitat present.
Reptiles						
Western pond turtle (*Actinemys marmorata*)	-	-	SSC, SSHCP Covered Species	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April to September	**Potential to Occur**. No SSHCP Modeled Species Habitat present; however, ponded areas in Morrison Creek represent potential habitat.
Birds						
Burrowing owl *(Athene cunicularia)*	-	-	BCC, SSC, SSHCP Covered Species	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g. prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February to August	**Present**. SSHCP Modeled Species Habitat present, and burrowing owls were observed during survey conducted per SSHCP AMM WBO-1.
Ferruginous hawk (*Buteo regalis*)	-	-	BCC, CDFW WL, SSHCP Covered Species	Rarely breeds in California (Lassen County); winter range includes grassland and shrubsteppe habitats from Northern California (except northeast and northwest corners) south to Mexico and east to Oklahoma, Nebraska, and Texas.	September to March (wintering)	**Potential to Occur**. SSHCP Modeled Species Habitat present.

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Table 4.2-2
Special-Status Species with Potential to Occur within the Study Area

Common Name (*Scientific Name*)	Status			Habitat Requirements	Survey Period	Potential for Occurrence
	ESA	CESA	Other			
Golden eagle (*Aquila chrysaetos*)	-	-	BCC, CFP	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/savannah and chaparral. Nesting occurs on cliff ledges, river banks, trees, and human-made structures (e.g. windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter.	Nest (February to August); winter CV (October to February)	**Potential to Occur**. Winter foraging habitat present.
Grasshopper sparrow (*Ammodramus savannarum*)	-	-	SSC	In California, breeding range includes most coastal counties south to Baja California; western Sacramento Valley and western edge of Sierra Nevada region. Nests in moderately open grasslands and prairies with patchy bare ground. Avoids grasslands with extensive shrub cover; more likely to occupy large tracts of habitat than small fragments; removal of grass cover by grazing often detrimental.	May to August	**Potential to Occur**. Nesting habitat present.
Loggerhead shrike (*Lanius ludovicianus*)	-	-	BCC, SSC, SSHCP Covered Species	Found throughout California in open country with short vegetation, pastures, old orchards, grasslands, agricultural areas, open woodlands. Not found in heavily forested habitats.	March to July	**Potential to Occur**. SSHCP Modeled Species Habitat present.
Merlin *(Falco columbarius)*	-	-	CDFW WL	Breeds in Oregon, Washington north into Canada. Winters in southern Canada to South America, including California. Breeds near forest openings, fragmented woodlots, and riparian areas. Wintering habitat includes	September to April (wintering in the Central Valley); does not breed in California	**Potential to Occur**. Winter foraging habitat present.

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Table 4.2-2
Special-Status Species with Potential to Occur within the Study Area

Common Name (*Scientific Name*)	Status			Habitat Requirements	Survey Period	Potential for Occurrence
	ESA	CESA	Other			
				wide variety, open forests, grasslands, tidal flats, plains, and urban settings.		
Northern harrier (*Circus hudsonius*)	-	-	SSC, SSHCP Covered Species	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	April to September	**Potential to Occur**. SSHCP Modeled Species Habitat present.
Swainson's hawk (*Buteo swainsoni*)	-	CT	BCC, SSHCP Covered Species	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures.	March to August	**Potential to Occur**. SSHCP Modeled Species Habitat present.
Tricolored blackbird (*Agelaius tricolor*)	-	CT	BCC, SSC, SSHCP Covered Species	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta counties south to San Bernardino, Riverside and San Diego Counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc and Lassen Counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck and fava bean fields.	March to August	**Present**. SSHCP Modeled Species Habitat present, evidence of past nesting observed during survey per SSHCP AMM TCB- 1; however, the species is nomadic and may not be present every year.
White-tailed kite (*Elanus leucurus*)	-	-	CFP, SSHCP Covered Species	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March to August	**Potential to Occur**. SSHCP Modeled Species Habitat present.
Yellow-billed magpie (*Pica nuttallii*)	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles	April to June	**Potential to Occur**. Nesting habitat present.

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Table 4.2-2
Special-Status Species with Potential to Occur within the Study Area

Common Name *(Scientific Name)*	Status			Habitat Requirements	Survey Period	Potential for Occurrence
	ESA	CESA	Other			
				County; nesting habitat includes oak savannah with large in large expanses of open ground; also found in urban parklike settings.		
Mammals						
Pallid bat *(Antrozous pallidus)*	-	-	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of redwoods cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (Western Bat Working Group [WBWG] 2018).	April to September	**Potential to Occur**. Structures onsite represent potential hibernacula.
Western red bat (*Lasiurus blossevillii*)	-	-	SSC, SSHCP Covered Species	Roosts in foliage of trees or shrubs; day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2017)	April to September	**Potential to Occur**. SSHCP Modeled Species Habitat present; potential hibernacula habitat identified during survey per SSHCP AMM BAT-1.
American badger *(Taxidea taxus)*	-	-	SSC, SSHCP Covered Species	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	**Potential to Occur**. SSHCP Modeled Species Habitat present.

Notes: **ESA** – Endangered Species Act; **CESA** California Endangered Species Act; **FE** – Federally Endangered; **FT** – Federally Threatened; **BCC** – USFWS Bird of Conservation Concern; **CFP** – CDFW Fully Protected Species; **CE** – CDFW Endangered; **CT** – CDFW Threatened; **SSC** – CDFW Species of Special Concern; **SSHCP** – South Sacramento Habitat Conservation Plan-covered species; **1B –** California Rare Plant Ranks (CRPR)/Rare or Endangered in California or elsewhere; **4** – CRPR/Plants of Limited Distribution – A Watch List; **0.1** – Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat); and **0.2** – Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Source: ECORP Consulting, Inc., 2019.

Special-Status Plants

The following sections provide a discussion of special-status plant species with potential to occur within the study area.

Stinkbells

Stinkbells (*Fritillaria agrestis*) is not listed pursuant to either the FESA or CESA, but is designated as a CRPR 4.2 species. The species is a perennial bulbiferous herb that occurs in clay, sometimes serpentine areas in chaparral, cismontane woodland, pinyon, and juniper woodland, and Valley and foothill grassland. Stinkbells bloom from March to June and the species is known to occur at elevations ranging from 33 to 5,102 feet above MSL. The current range of the species in California includes Alameda, Contra Costa, Fresno, Kern, Mendocino, Merced, Monterey, Mariposa, Placer, Sacramento, Santa Barbara, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Stanislaus, Tuolumne, Ventura, and Yuba counties, and is considered to be extirpated from Santa Cruz and San Mateo counties.

Documented CNDDB occurrences of the species within five miles of the study area do not exist. Stinkbells was not detected during the special-status plant surveys conducted in spring and summer 2019. However, the grassland within the unsurveyed Raymer Way Offsite provides suitable habitat for this species. Thus, stinkbells has potential to occur within the Raymer Way Offsite.

Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is not listed pursuant to either the FESA or CESA, but is designated as a CRPR 1B.2 species. The species is an herbaceous annual that occurs in mesic areas in Valley and foothill grasslands. The species also appears to have an affinity for slight disturbance, given that the species has been found on farmed fields and gopher turnings. Ahart's dwarf rush blooms from March through May and is known to occur at elevations ranging from 98 to 751 feet above MSL. Ahart's dwarf rush is endemic to California; the current range of this species includes Butte, Calaveras, Placer, Sacramento, Tehama, and Yuba counties.

Two documented CNDDB occurrences of the species exist within five miles of the study area. Ahart's dwarf rush is a SSHCP Covered Species, and the aquatic features and grassland within the study area provide suitable habitat for the species according to SSHCP Modeled Species Habitat. While Ahart's dwarf rush was not detected during the special-status plant surveys conducted in spring and summer 2019, the species has a potential to occur within the unsurveyed Raymer Way Offsite.

Special-Status Wildlife

The following sections provide a discussion of special-status wildlife species with potential to occur within the study area.

Conservancy Fairy Shrimp

The conservancy fairy shrimp (*Branchinecta conservatio*) is listed as endangered pursuant to the FESA. Critical Habitat units were designated for the species in the following counties: Butte, Colusa, Mariposa, Merced, Solano, Stanislaus, Tehama, and Ventura. The species is usually associated with cool-water pools, which are low to moderate in dissolved solids. The species appears to be most commonly associated with relatively large, turbid vernal pools. Conservancy fairy shrimp have been netted from November to late April, at water temperatures ranging from

as low as 41°F early in the ponding cycle, to as high as 75°F near the end of the season. Hatching generally occurs in the week following inundation of the pool at temperatures around 50°F.

Maturation takes at least 19 days, if pool temperatures slowly increase to at least 68°F; however, the average time to maturity is 49 days. The distribution of conservancy fairy shrimp is limited to the northern two-thirds of the Central Valley at an elevation range of approximately 16 to 475 feet above MSL. Populations of the species have been documented at eight widely separated locations, which include Vina Plains, Butte and Tehama counties; Sacramento National Wildlife Refuge, Glenn County; Yolo Bypass Wildlife Area, Yolo County; Jepson Prairie, Solano County; Mapes Ranch, Stanislaus County; University of California Merced area, Merced County; Grasslands Ecological Area, Merced County; and Los Padres National Forest, Ventura County.

Documented CNDDB occurrences of conservancy fairy shrimp within five miles of the study area do not exist. However, the vernal pools within the study area provide suitable habitat for the species. Thus, conservancy fairy shrimp has potential to occur within the study area.

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened in accordance with the FESA. Vernal pool fairy shrimp may occur in seasonal ponds, vernal pools, and swales during the wet season, which generally occurs from December through May. The species can be found in a variety of pool sizes, ranging from less than 0.001-acre to over 24.5 acres. The shrimp hatch from cysts when colder water (50°F or less) fills the pool and mature in as few as 18 days, under optimal conditions. At maturity, mating takes place and cysts are dropped. Vernal pool fairy shrimp occur in disjunct patches dispersed across California's Central Valley from Shasta County to Tulare County, the central and southern Coast Ranges from northern Solano County to Ventura County, and three areas in Riverside County.

A total of 16 documented CNDDB occurrences of the species exist within five miles of the study area. Vernal pool fairy shrimp is a SSHCP Covered Species, and the vernal pools within the study area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Thus, vernal pool fairy shrimp has potential to occur within the study area.

Midvalley Fairy Shrimp

The midvalley fairy shrimp (*Branchinecta mesovallensis*) is not listed pursuant to either the CESA or FESA, but occurrences of the species are tracked by the CNDDB. The midvalley fairy shrimp was formally described as a species in 2000. The species typically occurs in small, shallow vernal pools, swales, and various artificial ephemeral wetland types (e.g., roadside puddles, scrapes and ditches, and railroad toe-drain pools). Midvalley fairy shrimp have been collected from late January to early April. The cysts typically hatch in the first week of pool filling if water temperatures are near 50°F. The species has been documented in several California counties including: Sacramento, Solano, Contra Costa, San Joaquin, Madera, Merced, Fresno, and Yolo.

Two documented CNDDB occurrences of the species exist within five miles of the study area. Midvalley fairy shrimp is a SSHCP Covered Species, and the vernal pools and grassland within the study area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Midvalley fairy shrimp has potential to occur within the study area.

Ricksecker's Water Scavenger Beetle

Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*) is not listed and protected under either CESA or FESA but is currently tracked by CDFW in the CNDDB. Ricksecker's water scavenger beetles inhabit ponds in the Coast Range and Central Valley. One documented CNDDB occurrence of the species exists within five miles of the study area. Ricksecker's water scavenger beetle is a SSHCP Covered Species, and the vernal pools within the study area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Thus, Ricksecker's water scavenger beetle has potential to occur within the study area.

Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp (*Lepidurus packardi*) is listed as endangered pursuant to the FESA. The species inhabits vernal pools containing clear to highly turbid water, ranging in size from 0.001 to 89.0 acres (USFWS 1994). Vernal pool tadpole shrimp are distinguished from other vernal pool branchiopods by a large, shield like carapace that covers the anterior half of their body (USFWS 2003). Cysts hatch during the wet season and the shrimp reach maturity in a few weeks. The species matures slowly and is long lived, relative to other species. Vernal pool tadpole shrimp will continue to grow as long as the pools the individuals occur in remain inundated, and in some instances the species can survive for six months or longer (USFWS 2003). The geographic range of vernal pool tadpole shrimp extends from Shasta County to northern Tulare County in California's Central Valley, and in the central coast range from Solano County to Alameda County (USFWS 2003). One documented CNDDB occurrence polygon exists for this species which overlaps the study area, and 32 other documented occurrences of the species are located within five miles of the study area (CDFW 2018a). Vernal pool tadpole shrimp is a SSHCP Covered Species, and the vernal pools and grassland within the study area provide suitable habitat for the species according to SSHCP Modeled Species Habitat. Vernal pool tadpole shrimp is considered present within the study area.

Western Spadefoot

The western spadefoot (*Spea hammondii*) is not listed pursuant to either the CESA or FESA; however, the species is designated as a CDFW species of special concern. Necessary habitat components of the western spadefoot include loose, friable soils in which to burrow in upland habitats and breeding ponds. Breeding sites include temporary rain pools, such as vernal pools and seasonal wetlands, or pools within portions of intermittent drainages. The western spadefoot spends most of the species' adult life within underground burrows or other suitable refugia, such as rodent burrows. In California, western spadefoot is known to occur from the Redding area, Shasta County southward to northwestern Baja California, at elevations below 4,475 feet.

Three documented CNDDB occurrences of the species exist within five miles of the study area. Western spadefoot is a SSHCP Covered Species, and the grassland and aquatic areas within the study area provide suitable foraging habitat for the species according to SSHCP Modeled Species Habitat. Thus, western spadefoot has potential to occur within the study area.

Western Pond Turtle

The western pond turtle (*Actinemys marmorata*) is not listed pursuant to either the CESA or FESA; however, the species is designated as a CDFW species of special concern. Western pond turtles occur in a variety of fresh and brackish water habitats including marshes, lakes, ponds, and slow-moving streams. The species is primarily aquatic; however, individuals typically leave aquatic habitats in the fall to reproduce and to overwinter. Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops is optimal for basking and thermoregulation.



Although adults are habitat generalists, hatchlings and juveniles and hatchlings require shallow edgewater with relatively dense submergent or short emergent vegetation in which to forage.

Western pond turtles are typically active between March and November. Mating generally occurs during late April and early May and eggs are deposited between late April and early August. Eggs are deposited within excavated nests in upland areas, with substrates that typically have high clay or silt fractions. The majority of nesting sites are located within 650 feet of the aquatic sites; however, nests have been documented as far as 1,310 feet from the aquatic habitat.

Four documented CNDDB occurrences of western pond turtle exist within five miles of the study area. Western pond turtle is a SSHCP Covered Species. While SSHCP Modeled Species Habitat is not present within the study area, the ponded areas along Morrison Creek may provide suitable aquatic habitat and the adjacent grasslands provide suitable upland habitat for the species. Western pond turtle is considered to have potential to occur within the study area.

Burrowing Owl

The burrowing owl (*Athene cunicularia*) is not listed pursuant to either the CESA or FESA; however, the species is designated as a bird of conservation concern by the USFWS and a species of special concern by the CDFW. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. The species can also inhabit developed areas such as golf courses, cemeteries, roadsides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds. Burrowing owl typically uses burrows created by fossorial mammals, most notably the California ground squirrel (*Spermophilus beecheyi*), but may also use man-made structures such as cement culverts or pipes; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement. The breeding season typically occurs between February 1 and August 31.

Seven documented CNDDB occurrences of burrowing owl exist within five miles of the study area. Western burrowing owl is a SSHCP Covered Species. The grassland within the study area provides suitable nesting and foraging habitat for this species and the aquatic features provide suitable foraging habitat, according to SSHCP Modeled Species Habitat. Burrowing owls and occupied burrows were observed along the southeastern boundary of the site during a preliminary survey of potential habitat. Burrowing owl is considered present within the study area.

Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) is listed as a threatened species pursuant to the CESA. The species nests in North America (Canada, western U.S., and Mexico) and typically winters from South America north to Mexico. However, a small population has been observed wintering in the Sacramento-San Joaquin River Delta. In California, the nesting season for Swainson's hawk ranges from mid-March to late August. Swainson's hawks nest within tall trees in a variety of wooded communities including riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas, among others. Foraging habitat includes open grassland, savannah, low-cover row crop fields, and livestock pastures. In the Central Valley, Swainson's hawks typically feed on a combination of California vole (*Microtus californicus*), California ground squirrel (*Spermophilus beecheyi*), ring-necked pheasant (*Phasianus colchicus*), many passerine birds, and grasshoppers (*Melanopulus* species).

Swainson's hawks are opportunistic foragers and will readily forage in association with agricultural mowing, harvesting, disking, and irrigating. The removal of vegetative cover by such farming activities results in more readily available prey items for the species.

Seven documented CNDDB occurrences of the species occur within five miles of the study area. Swainson's hawk is a SSHCP Covered Species, and the grassland and aquatic areas within the study area provide suitable foraging habitat for this species according to SSHCP Modeled Species Habitat. In addition, a preliminary survey of potential habitat found several trees within the Survey Area and survey buffers that represent potential nesting habitat. Thus, Swainson's hawk has potential to occur within the study area.

Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is listed as threatened pursuant to the CESA. In addition, the species is currently considered a USFWS bird of conservation concern and a CDFW species of special concern. Tricolored blackbird is a colonial nesting species distributed widely throughout the Central Valley, Coast Range, and into Oregon, Washington, Nevada, and Baja California. Tricolored blackbird nest in colonies that can range from several pairs to several thousand pairs, depending on prey availability, the presence of predators, or level of human disturbance. Tricolored blackbird nesting habitat includes emergent marsh, riparian woodland/scrub, blackberry thickets, densely vegetated agricultural and idle fields (e.g., wheat, triticale, safflower, fava bean fields, thistle, mustard, cane, and fiddleneck), usually with some nearby standing water or ground saturation. The species feeds mainly on grasshoppers during the breeding season, but may also forage upon a variety of other insects, grains, and seeds in open grasslands, wetlands, feedlots, dairies, and agricultural fields. The nesting season is generally from March through August.

A total of 10 documented CNDDB occurrences of the species exist within five miles of the study area. Tricolored blackbird is a SSHCP Covered Species. According to SSHCP Modeled Species Habitat, the grassland within the study area provides suitable nesting and foraging habitat for the species, and the aquatic features provide suitable foraging habitat. In addition, a preliminary survey of potential habitat documented evidence of previous tricolored blackbird nesting within patches of bull thistle (*Cirsium vulgare*) in the central portion of the project site, and a small area of riparian habitat along Morrison Creek was also determined to represent potential nesting habitat. However, tricolored blackbirds were not observed nesting during a site visit on June 13, 2019. The species is nomadic and may or may not return to the study area. Thus, tricolored blackbirds are considered to be present within the study area.

Other Raptors and Nesting Birds

Various other raptors and nesting birds that are protected by the federal Migratory Bird Treaty Act (MBTA) are described below.

Ferruginous Hawk

Ferruginous hawk (*Buteo regalis*) is not listed pursuant to either the CESA or FESA. However, ferruginous hawk is a CDFW "watch list" species and USFWS bird of conservation concern. The species typically occurs in open environments and nests from Oregon to Canada, though nesting has been documented in Lassen County, California. For the remainder of the state, including the Central Valley, ferruginous hawk occurrences are restricted to the non-breeding season (approximately September through March). Winter foraging habitat includes a variety of open communities including annual

grasslands, agricultural areas, deserts, and savannahs. Ferruginous hawks do not nest in the project region but may occasionally forage within grassland and other open vegetation communities within the study area during winter or migration.

Documented CNDDB occurrences of the species within five miles of the study area do not exist. However, ferruginous hawk is a SSHCP Covered Species, and the grassland and aquatic areas within the study area provide suitable foraging habitat for this species according to SSHCP Modeled Species Habitat. Thus, ferruginous hawk has potential to occur within the study area.

Golden Eagle

Golden eagle (*Aquila chrysaetos*) is not listed pursuant to either the CESA or FESA, but is a USFWS Bird of Conservation Concern and is Fully Protected per CDFW. Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/savannah, and chaparral. Nesting occurs on cliff ledges, river banks, trees, and human-made structures (e.g., windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where the species can be found during winter. The study area provides potential winter foraging habitat for the species; thus, golden eagle has potential to occur within the study area.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is not listed pursuant to either the CESA or FESA, but is designated as a species of special concern by CDFW. The grasshopper sparrow is an uncommon and local, summer resident and breeder along the western edge of the Sierra Nevada and most coastal counties south to Baja California. The species generally inhabits moderately open grasslands and prairies with patchy bare ground and scattered shrubs. Grasshopper sparrows are more likely to occupy large tracts of habitat than small fragments. Breeding generally occurs from early May through August.

Documented CNDDB occurrences of grasshopper sparrow within five miles of the study area do not exist. However, the grassland within the study area provides suitable nesting habitat for the species. Thus, grasshopper sparrow has potential to occur within the study area.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not listed pursuant to either the CESA or FESA, but is considered a bird of conservation concern by the USFWS and a species of special concern by the CDFW. Loggerhead shrikes nest throughout California except the northwestern corner, montane forests, and high deserts. Loggerhead shrikes nest in small trees and shrubs in open country with short vegetation such as pastures, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands. The nesting season extends from March through July.

Documented CNDDB occurrences of the species within five miles of the study area do not exist. However, loggerhead shrike is a SSHCP Covered Species. The grassland within the study area provides suitable nesting and foraging habitat for this species and the aquatic features provide suitable foraging habitat according to SSHCP Modeled Species Habitat. Thus, loggerhead shrike has potential to occur within the study area.

Merlin

The merlin (*Falco columbarius*) is not listed pursuant to either the CESA or FESA, but is a CDFW "watch list" species and currently tracked in the CNDDB. While not considered a special-status species, the merlin is protected under the MBTA. The merlin breeds in Canada and Alaska and occurs in California as a migrant and during the non-breeding season (September through April). Foraging habitat in winter includes open forests, grasslands, and tidal flats. Merlin do not nest in the region but may occasionally forage within grassland and woodland communities on-site during winter or migration.

One documented CNDDB occurrence of the species exists within five miles of the study area. In addition, the grassland within the study area provides suitable wintering habitat for the species. Thus, merlin has potential to occur within the study area.

Northern Harrier

The northern harrier (*Circus cyaneus*) is not listed pursuant to either the CESA or FESA; however, the species is considered to be a species of special concern by the CDFW. Northern harrier is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. The northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah communities usually in areas with dense vegetation. Foraging occurs within a variety of open environments such as marshes, agricultural fields, and grasslands. Nesting occurs during April through September.

Documented CNDDB occurrences of the species within five miles of the study area do not exist. However, northern harrier is a SSHCP Covered Species. The grassland within the study area provides suitable nesting and foraging habitat for the species and the aquatic features provide suitable foraging habitat according to SSHCP Modeled Species Habitat. Thus, northern harrier has potential to occur within the study area.

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not listed pursuant to either the CESA or FESA; however, the species is fully protected pursuant to Section 3511 of the California FGC. White-tailed kite species is a common resident in the Central Valley and the entire length of the California coast, and all areas up to the Sierra Nevada foothills and southeastern deserts. In northern California, white-tailed kite nesting occurs from March through early August, with nesting activity peaking from March through June. Nesting occurs in trees within riparian, oak woodland, savannah, and agricultural communities that are near foraging areas such as low elevation grasslands, agricultural fields, meadows, farmlands, savannahs, and emergent wetlands.

Five documented CNDDB occurrences of the species exist within five miles of the study area. White-tailed kite is a SSHCP Covered Species, and the grassland and aquatic areas within the study area provide suitable foraging habitat for the species according to SSHCP Modeled Species Habitat. Thus, white-tailed kite has potential to occur within the study area.

Yellow-Billed Magpie

The yellow-billed magpie (*Pica nuttalli*) is not listed pursuant to either the CESA or FESA but is considered a USFWS bird of conservation concern. Yellow-billed magpie is an

endemic species that is a yearlong resident of the Central Valley and Coast Ranges from San Francisco Bay to Santa Barbara County. Yellow-billed magpies build large, bulky nests in trees in a variety of open woodland habitats, typically near grassland, pastures or cropland. Nest building begins in late-January to mid-February, which may take up to six to eight weeks to complete, with eggs laid during April through May, and fledging during May through June. The young leave the nest at about 30 days after hatching. Yellow-billed magpies are highly susceptible to West Nile Virus, which may have been the cause of death to thousands of magpies during 2004 through 2006.

Documented CNDDB occurrences of yellow-billed magpie within five miles of the study area do not exist. However, the grassland and trees within the study area provide suitable nesting habitat for the species. Thus, yellow-billed magpie has potential to occur within the study area.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either the CESA or FESA; however, the species is considered a species of special concern by CDFW. The pallid bat is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. The species ranges throughout North America from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). The species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges, and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards. Although the species uses echolocation to locate prey, often the species relies only on passive acoustic cues. The species is not thought to migrate long distances between summer and winter sites.

Documented CNDDB occurrences of pallid bat within five miles of the study area do not exist. However, some of the structures within the study area represent potential hibernacula. Thus, pallid bat has potential to occur within the study area.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is not listed pursuant to either the CESA or FESA; however, the species is considered a species of special concern by CDFW. The western red bat is easily distinguished from other western bat species by its distinctive red coloration. The species is broadly distributed, with a range extending from southern British Columbia in Canada through Argentina and Chile in South America, and including much of the western U.S. The species day roosts primarily in the foliage of trees or shrubs in edge habitats bordering streams or open fields, in orchards, and occasionally urban areas. They western red bat may be associated with intact riparian habitat, especially with willows, cottonwoods, and sycamores. The species may occasionally utilize caves for roosting as well. Western red bat feeds on a variety of insects, and generally begin to forage one to two hours after sunset. The species is considered highly migratory; however, the timing of migration and the summer ranges of males and females may be different. Winter behavior of the species is poorly understood.

Documented CNDDB occurrences of the species within five miles of the study area do not exist. However, western red bat is a SSHCP Covered Species. The grassland and wetland areas within

the study area provide suitable foraging habitat, and the Raymer Way Offsite contains roosting-foraging habitat for this species according to SSHCP Modeled Species Habitat. A preliminary survey of potential habitat identified some of the trees with cavities along Morrison Creek as potential hibernacula. Thus, western red bat has potential to occur within the study area.

American Badger

American badger (*Taxidea taxus*) is not listed pursuant to either the CESA or FESA; however, the species is considered a species of special concern by CDFW. American badger historically ranged throughout much of the state, except in humid coastal forests. American badgers were once numerous in the Central Valley; however, populations now occur in low numbers in the surrounding peripheral parts of the Central Valley and in the adjacent lowlands of eastern Monterey, San Benito, and San Luis Obispo counties. American badgers occupy a variety of habitats, including grasslands and savannas. The principal requirements are significant food supply, friable soils, and relatively open, uncultivated ground.

One documented CNDDB occurrence of the species exists within five miles of the study area. American badger is a SSHCP Covered Species, and the grassland and wetland areas within the study area provide suitable foraging habitat for this species according to SSHCP Modeled Species Habitat. Thus, American badger has potential to occur within the study area.

Sensitive Natural Communities

Per the Biological Resources Assessment, five sensitive natural communities were initially identified as having the potential to occur within the study area based on a literature review: Great Valley Oak Riparian Forest, Ione Chaparral, Northern Hardpan Vernal Pool, Northern Volcanic Mudflow Vernal Pool, and Valley Needlegrass Grassland. Valley oaks are not present within the study area; therefore, Great Valley Oak Riparian Forest does not occur onsite. Vernal pool communities are present on-site, and are discussed separately under the Aquatic Resources section above. Chaparral vegetation is not present within the study area and the study area does not include any Ione formation soils; therefore, Ione chaparral is not present. The "Valley Needlegrass Grassland" vegetation alliance name used by the CNDDB has been phased out of use, and instead, "Needlegrass-Melic Grass Grassland" as well as other associations containing needlegrass (*Stipa* spp.) are now used by the California Vegetation Manual and the CDFW-maintained list of sensitive natural communities. Needlegrass species were not found during special-status plant surveys.

Based on the above, vernal pool communities are the only sensitive natural community known to occur within the study area.

Wildlife Movement Corridors

The study area does not fall within an Essential Habitat Connectivity area mapped by the CDFW. However, per the Biological Resources Assessment, the permanently ponded open waters and the small patches of riparian habitat along the upper reach of Morrison Creek within the Morrison Creek Offsite may represent a marginal wildlife movement corridor.

Trees

An arborist survey was conducted for the study area in October 2018 and June 2019 as part of the Arborist Survey Report prepared for the proposed project by ECORP Consulting, Inc. A total of 247 trees greater than six inches diameter at standard height (dsh) were mapped within the study area; all tree species inventoried are nonnative to the project region.

A total of 149 trees have a dsh equal to or greater than 12 inches and therefore meet the definition of a Protected Tree as defined in the City of Rancho Cordova's Tree Preservation Ordinance. The 149 Protected Trees include redwood (*Sequoia sempervirens*), eucalyptus (*Eucalyptus* spp.), callery pear (*Pyrus calleryana*), American sweetgum (*Liquidambar styraciflua*), Brazilian pepper-tree (*Schinus terabinthifolia*), deodar cedar (*Cedrus deodara*), white mulberry (*Morus alba*). Tree condition and structure for each of the protected trees was rated on a five-point scale (poor, fair to poor, fair, fair to good, and good) for each of the 247 trees surveyed. The locations of the protected trees are shown in Figure 4.2-5.

4.2.3 REGULATORY CONTEXT

A number of Federal, State, and local policies provide the regulatory framework that guides the protection of biological resources. The following discussion summarizes those laws that are most relevant to biological resources in the vicinity of the project site.

Federal Regulations

The following are the federal environmental laws and policies relevant to biological resources.

Federal Endangered Species Act

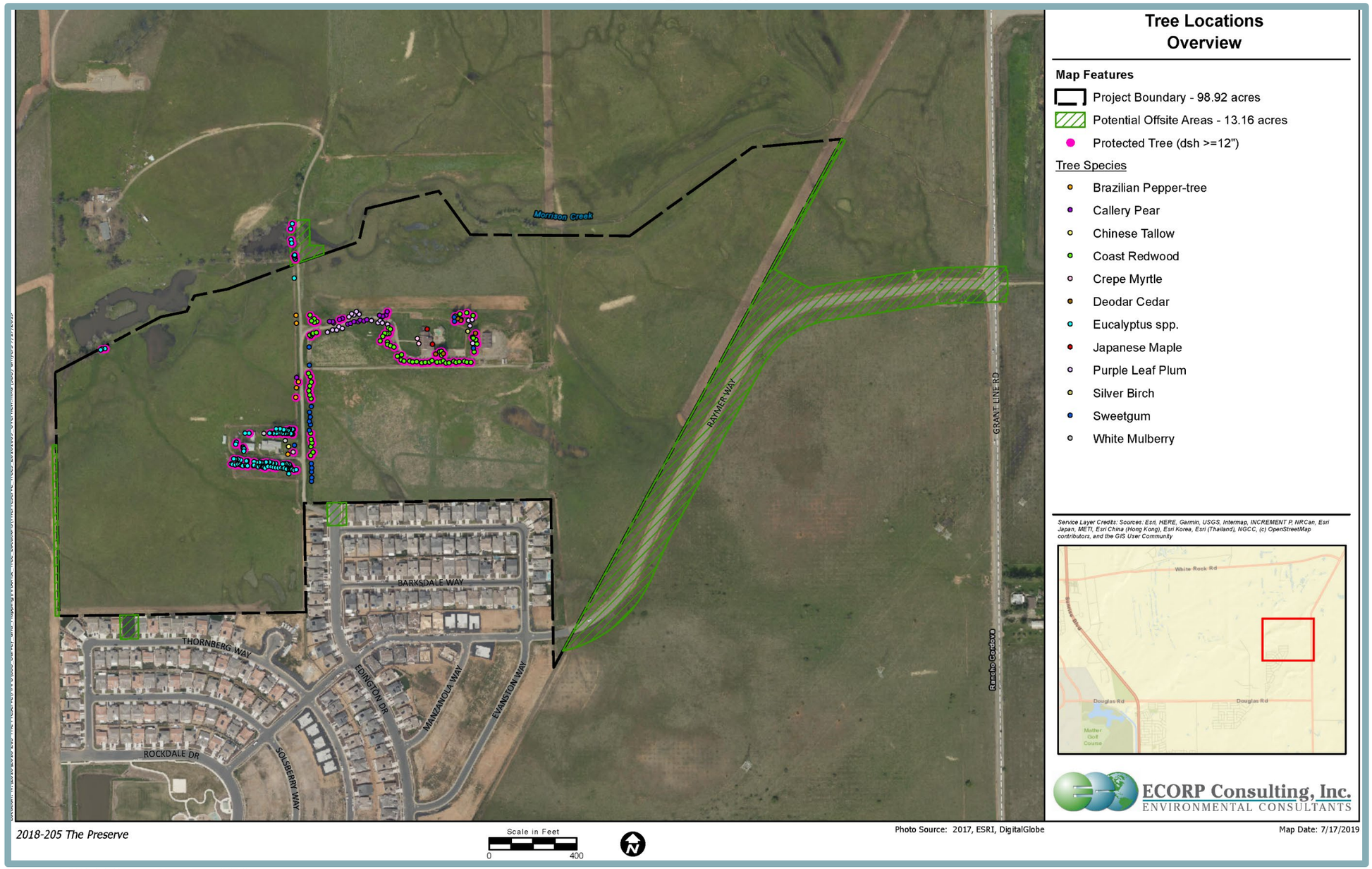
Under the FESA, the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 U.S. Code [USC] Section 1533(c)). Two federal agencies oversee the FESA: the USFWS has jurisdiction over plants, wildlife, and resident fish, while the NMFS has jurisdiction over anadromous fish and marine fish and mammals. Section 7 of the FESA mandates that federal agencies consult with the USFWS and NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species.

The FESA prohibits the 'take' of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery. Take is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct.

Section 10 requires the issuance of an "incidental take" permit before any public or private action may be taken that could take an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan (HCP) that would offset the take of individuals that may occur, incidental to implementation of a proposed project, by providing for the protection of the affected species.

Pursuant to the requirements of the FESA, a federal agency reviewing a project within the jurisdiction of the agency must determine whether any federally listed threatened or endangered species may be present in the project area and whether the proposed project will have a potentially significant impact on such species. In addition, the agency is required to determine whether the proposed action is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536(3), (4)).

Figure 4.2-5
Tree Locations



Source: ECORP Consulting, Inc., 2019.

Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of state and federal laws. The federal MBTA prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of Interior. Section 3503.5 of the California FGC states, "It is unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by the code or any regulation adopted pursuant thereto."

Clean Water Act

The USACE regulates discharge of dredged or fill material into waters of the U.S. under Section 404 of the Clean Water Act (CWA). "Discharge of fill material" is defined as the addition of fill material into waters of the U.S., including but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for the construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and sub-aqueous utility lines (33 CFR Section 328.2[f]). In addition, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Waters of the U.S. include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Section 328.3[b]).

Furthermore, jurisdictional waters of the U.S. can be defined by exhibiting a defined bed and bank and OHWM. The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]).

U.S Fish and Wildlife Service Draft Vernal Pool Recovery Plan

The USFWS designated critical habitat for certain vernal pool crustaceans and plants in 34 counties in California, including Sacramento County, and identified such habitat in its final rule of the vernal pool recovery plan on February 10, 2006, entitled, "Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon; Evaluation of Economic Exclusions From August 2003 Final Designation." 71 Fed. Reg. 28 (2006) (to be codified at 50 CFR Part 17). The Recovery Plan identifies a five-part strategy to ameliorate or eliminate threats to affected species and to preserve intact vernal pools. The five key elements of the Recovery Plan are: habitat protection; adaptive habitat management, restoration, and monitoring; status surveys; research; and participation and outreach. The Recovery Plan identifies habitat loss, fragmentation, and isolation of functional vernal pool ecosystems as the greatest threat to the survival and recovery of listed species and species of concern that are found in vernal pools. According to the Recovery Plan, habitat loss is generally the result of urbanization, agricultural conversion, and mining. Habitat loss may also occur from habitat alteration and degradation as a result of changes to natural hydrology; invasive species; incompatible grazing regimes, including



insufficient grazing for prolonged periods; and infrastructure projects such as roads, water storage and conveyance, and utilities. In addition, recreational activities such as off-highway vehicles and hiking, erosion, contamination, and inadequate management and monitoring may result in habitat loss. Habitat fragmentation is generally the result of activities associated with habitat loss due to road and other infrastructure projects that contribute to the isolation and fragmentation of vernal pool habitats.

State Regulations

The following are the State environmental laws and policies relevant to biological resources.

California Department of Fish and Wildlife

CDFW administers a number of laws and programs designed to protect fish and wildlife resources under the California FGC, such as CESA (FGC Section 2050, et seq.), Fully Protected Species (FGC Section 3511) and the Lake or Streambed Alteration Agreement Program (FGC Sections 1600 to 1616). Such regulations are summarized in the following sections.

California Endangered Species Act

The State of California enacted CESA in 1984. CESA is similar to the FESA but pertains to State-listed endangered and threatened species. CESA requires State agencies to consult with CDFW when preparing CEQA documents to ensure that the State lead agency actions do not jeopardize the existence of listed species. CESA directs agencies to consult with CDFW on projects or actions that could affect listed species, directs CDFW to determine whether jeopardy would occur, and allows CDFW to identify "reasonable and prudent alternatives" to the project consistent with conserving the species. Agencies can approve a project that affects a listed species if they determine that "overriding considerations" exist; however, the agencies are prohibited from approving projects that would result in the extinction of a listed species.

CESA prohibits the taking of State-listed endangered or threatened plant and wildlife species. CDFW exercises authority over mitigation projects involving State-listed species, including those resulting from CEQA mitigation requirements. CDFW may authorize taking if an approved habitat management plan or management agreement that avoids or compensates for possible jeopardy is implemented. CDFW requires preparation of mitigation plans in accordance with published guidelines.

Fish and Game Code Section 3505

Birds of prey are protected in California under provisions of the California FGC, Section 3503.5, (1992), which states, "it is unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by CDFW.

Lake or Streambed Alteration Program

The CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the California FGC, Section 1602, requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel. If notification is required and CDFW believes the proposed activity is likely to result in adverse harm to the natural environment, the CDFW will require that the parties enter into a Lake or Streambed Alteration Agreement.

CDFW Species of Special Concern

In addition to formal listings under FESA and CESA, plant and wildlife species receive additional consideration during the CEQA process. Species that may by considered for review are included on a list of "Species of Special Concern" developed by CDFW. Species whose numbers, reproductive success, or habitat may be threatened are tracked by CDFW in California.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the Fish and Game Commission to designate plants as rare or endangered. Currently 64 species, subspecies, and varieties of plants that are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations, emergencies, and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

Regional Water Quality Control Board

Any action requiring a CWA Section 404 permit, or a Rivers and Harbors Act Section 10 permit, must also obtain a CWA Section 401 Water Quality Certification. The State of California Water Quality Certification (WQC) Program was formally initiated by the State Water Resources Control Board (SWRCB) in 1990 under the requirements stipulated by Section 401 of the federal CWA. Although the CWA is a federal law, Section 401 of the CWA recognizes that states have the primary authority and responsibility for setting water quality standards. In California, under Section 401, the State and Regional Water Quality Control Boards (RWQCBs) are the authorities that certify that issuance of a federal license or permit does not violate California's water quality standards (i.e., that they do not violate Porter-Cologne and the Water Code). The WQC Program currently issues the WQC for discharges requiring USACE permits for fill and dredge discharges within waters of the U.S., and also implements the State's wetland protection and hydromodification regulation program under the Porter-Cologne Water Quality Control Act.

On April 2, 2019, the SWRCB adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures), for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California Plan. The Procedures consist of four major elements: (1) a wetland definition; (2) a framework for determining if a feature that meets the wetland definition is a water of the State; (3) wetland delineation procedures; and (4) procedures for the submittal, review, and approval of applications for WQCs and Waste Discharge Requirements (WDRs) for dredge or fill activities. The State Office of Administrative Law approved the Procedures on August 28, 2019, and the Procedures became effective May 28, 2020.

Under the Procedures and the State Water Code (Water Code Section 13050[e]), "waters of the State" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." Unless excluded by the Procedures, any activity that could result in discharge of dredged or fill material to waters of the State, which includes waters of the U.S. and non-federal waters of the State, requires filing of an application under the Procedures.

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act, Water Code Section 13000 et seq.) is California's statutory authority for the protection of water quality in conjunction with the federal CWA. The Porter-Cologne Act requires the SWRCB and RWQCBs under the CWA to adopt and periodically update water quality control plans, or basin plans. Basin plans are plans in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Porter-Cologne Act also requires dischargers of pollutants or dredged or fill material to notify the RWQCBs of such activities by filing Reports of Waste Discharge and authorizes the SWRCB and RWQCBs to issue and enforce WDRs, National Pollution Discharge Elimination System (NPDES) permits, Section 401 WQC, or other approvals.

Local Regulations

The following are the local environmental laws and policies relevant to biological resources.

City of Rancho Cordova General Plan

Goals and policies from the City's General Plan related to biological resources that are applicable to the proposed project are presented below:

Goal NR1: Protect and preserve diverse wildlife and plant habitats, including habitat for special status species.

- Policy NR.1.1 Protect rare, threatened, and endangered species and their habitats in accordance with State and federal law.
- Policy NR.1.4 Discourage the planting of invasive species.
- Policy NR.1.7 Prior to project approval, the City shall require a biological resources evaluation for private and public development projects in areas identified to contain or possibly contain listed plant and/or wildlife species based upon the City's biological resource mapping provided in the General Plan EIR or other technical materials.
- Policy NR.1.8 The City shall encourage creation of habitat preserves that are immediately adjacent to each other in order to provide interconnected open space areas for animal movement.
- Policy NR.1.9 The City shall require that impacts to riparian habitats be mitigated at a no net loss of existing function and value based on field survey and analysis of the riparian habitat to be impacted. No net loss may be accomplished by avoidance of the habitat, restoration of existing habitat, or creation of new habitat, or through some combination of the above.

Policy NR.1.10 The placement of new roadways within habitat preserves shall be discouraged, but is not prohibited. This Policy shall not apply to roadways shown in the Circulation Element or needed to meet goals or policies of the Circulation Element.

Policy NR.1.11 In such cases where a new roadway crosses a habitat preserve or separates two adjacent preserves, the roadway shall include design features, where feasible and appropriate, to allow for the movement of wildlife across or beneath the road without causing a hazard for vehicles, bicycles and pedestrians on the roadway.

Goal NR.2: Preserve the City's rich and diverse natural wetlands.

Policy NR.2.1 Require mitigation that provides for "no net loss" of wetlands consistent with current State and federal policies.

Policy NR.2.2 Ensure that direct and indirect effects to wetland habitats are mitigated to the extent feasible by environmentally sensitive project siting and design or other measures.

Policy NR.2.5 The City shall require that drainage improvements that discharge into areas of wetlands to be preserved are, to the maximum extent feasible, designed to mimic the undeveloped surface water flow conditions of the area in terms of seasonality, volume, and flow velocity.

Goal NR.3: Preserve and maintain creek corridors and wetland preserves with useable buffer zones throughout the new development areas as feasible.

Policy NR.3.2 In general, the City will encourage the preservation of existing location, topography, and meandering alignment of natural creeks. The modification, re-creation and realignment of creek corridors shall recreate the character of the natural creek corridor to the extent feasible, appropriate and consistent with other City policies. Channelization and the use of concrete within creek corridors shall be discouraged, but is not prohibited.

Policy NR.3.3 Encourage the creation of secondary flood control channels where the existing channel supports extensive riparian vegetation.

Policy NR.3.4 Encourage projects that contain wetland preserves or creeks, or are located adjacent to wetland preserves or creeks, to be designed for visibility and, as appropriate, access.

Goal NR.4: Encourage the planting and preservation of high-quality trees throughout the City.

Policy NR.4.1 Conserve native oak and landmark tree resources for their historic, economic, aesthetic, educational, and environmental value.



Policy NR.4.2 Improve overall landscaping quality and sustainability in all areas visible to the public.

Policy NR.4.4 Prior to the approval of any public or private development project in areas identified or assumed to contain trees, the City shall require that a determinate survey of trees species and size be performed. If any native oaks or other native trees six inches or more in diameter at breast height (dbh), multitrunk native oaks or native trees of 10 inches or greater dbh, or non-native trees of 18 inches or greater dbh that have been determined by a certified arborist to be in good health are found to occur, such trees shall be avoided if feasible. If such trees cannot be avoided, the project applicant shall do one of the following:

- All such trees shall be replaced at an inch-for-inch ratio. A replacement tree planting plan shall be prepared by a certified arborist or licensed landscape architect and shall be submitted to the City of Rancho Cordova for approval prior to removal of trees; or,
- The project applicant shall submit a mitigation plan that provides for complete mitigation of the removal of such trees in coordination with the City of Rancho Cordova. The mitigation plan shall be subject to the approval of the City.
- If the City of Ranch Cordova adopts a tree preservation ordinance at any time in the future, any future development activities shall be subject to that ordinance instead.

City of Rancho Cordova Tree Protection Ordinance

Chapter 19.12, Preservation and Protection of Private Trees, of the City's Municipal Code establishes regulations for the protection, removal, and preservation of landmark trees and protected trees within the City. "Landmark trees" are defined as any trees designated by council through resolution as a vital and historical part of the City's landscape, such that the trees need to be designated as landmarks for protection and preservation. "Protected tree" is defined to include the following:

1. Native oak – Quercus lobata, valley oak; Quercus wislizenii, interior live oak; Quercus douglasii, blue oak; or Quercus morehus, oracle oak – having a trunk diameter of at least six inches or greater; or
2. Any tree species other than a native oak having a trunk diameter of at least 12 inches or greater on nonresidential property; or
3. Any tree species other than a native oak having a trunk diameter of at least 24 inches or greater on residential property; or
4. Any tree planted as a requirement tree for site development, tree permit condition, landscape plan removal replacement, or other designated condition by the Public Works Director or Planning Director.
5. "Protected tree" does not include any trees for sale within the City sold by a nursery.

Per Section 19.12.090, no person shall, without an approved permit from the Public Works Director, do, or cause to be done by others, any of the following acts:

A. Secure, fasten, or run any rope, wire, sign, unprotected electrical installation or other device or material to, around, or through a protected tree;
B. Break, injure, deface, kill, or destroy a protected tree or allow any fire to burn where it will injure any protected tree;
C. Allow any chemical, gas, smoke, salt brine, oil, pesticide, or other injurious substance to seep, drain, or be emptied upon, above, or below any protected tree;
D. Excavate any ditch, tunnel, or trench, or fill within the dripline of any protected tree;
E. Erect, alter, repair or raze any building or structure without placing suitable guards around all nearby protected trees which may be injured by such operations;
F. Remove any guard or other device or materials intended for the protection of a protected tree or take away or obstruct any open space around the base of a protected tree designed to prevent soil compaction or physical damage; or
G. Allow the topping of any protected tree. [Ord. 12-2017 Section 2].

South Sacramento Habitat Conservation Plan

The SSHCP is intended to streamline federal and State permitting processes for SSHCP-covered development and infrastructure projects while protecting habitat, open space and agricultural lands.[8] The SSHCP plan area encompasses 317,656 acres that are bordered by U.S. Route 50 (US 50) on the north, San Joaquin County on the south, El Dorado County and Amador County to the east, and the Sacramento River to the west, including Galt and most of Rancho Cordova. Within the SSHCP plan area, 36,282 acres are to become part of an interconnected preserve system, including approximately 1,000 acres of vernal pool habitat. A total of 28 plant and wildlife species, and their natural habitats, are conserved under the plan.

The SSHCP is led by a multi-jurisdiction collaborative that includes Sacramento County; the cities of Rancho Cordova and Galt; the Sacramento County Water Agency; the Sacramento Regional County Sanitation District; and the Capital SouthEast Connector Joint Powers Authority. The Rancho Cordova City Council adopted the SSHCP on October 15, 2018.

4.2.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to biological resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, the County's General Plan, and professional judgment, a significant impact would occur if the proposed project would result in the following:

- 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 CDFW or USFWS;

[8] South Sacramento Habitat Conservation Plan. *What is the South Sacramento HCP?* Available at: https://www.southsachcp.com/. Accessed July 2019.

- 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 CDFW or USFWS;
- 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.
- 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 native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional, or State habitat conservation plan.

Method of Analysis

The analysis presented herein is based primarily on the Biological Resources Assessment prepared for the proposed project by ECORP. The Biological Resources Assessment includes, as attachments, an Aquatic Resources Delineation and Arborist Survey Report prepared for the project.

Special-Status Species

As part of the Biological Resources Assessment, a list of special-status species with potential to occur within the study area was developed by conducting a query of the following resources:

- CNDDB record search for the "Buffalo Creek, California" 7.5-minute quadrangle and the eight surrounding USGS quadrangles;
- USFWS Information, Planning, and Consultation System Resource Report List for the study area;
- CNPS' electronic Inventory of Rare and Endangered Plants of California was queried for the "Buffalo Creek, California" 7.5-minute quadrangle and the eight surrounding USGS quadrangles; and
- SSHCP Modeled Species Habitat data for the study area.

Field Assessment for Covered Species and Pallid Bat

Surveys for potential habitat for tricolored blackbird, burrowing owl, Swainson's hawk, other raptors, and western red bat were conducted per requirements of SSHCP Avoidance and Minimization Measures (AMMs) TCB-1, WBO-1, SWHA-1, RAPTOR-1, and BAT-1. The methods used and results of the surveys are described in Attachment C to the Biological Resources Assessment (see Appendix D). Inaccessible off-site areas and surrounding buffers were visually assessed from within the study area or from publicly accessible roads.

It should be noted that pallid bat is not an SSHCP covered species, but is considered a species of special concern by CDFW. A CNDDB search revealed a nearby occurrence of pallid bat. Therefore, although not an SSHCP-covered species, ECORP Consulting Inc. assessed potential pallid bat habitat within the study area using AMM BAT-1.

Information from the surveys was used to determine whether specific potential habitat features (e.g., nesting trees, burrows) for the covered species were present within the study area. In

addition, surveys for special-status plant species were conducted per AMMs PLANT-1 and ORCUTT-1, as well as guidelines promulgated by USFWS, CDFW, and CNPS. The special-status plant surveys were conducted on April 29, 2019 and June 13, 2019 by ECORP Consulting, Inc. The results of the surveys are described in the Special-Status Plant Survey Report, included as Attachment D to the Biological Resources Assessment (see Appendix D).

Field Assessment for Other Species

Several surveys were conducted by ECORP Consulting, Inc. during fall 2018 and spring 2019. During the surveys, the study area was walked on foot, and topographic maps and aerial imagery were referenced. Biological communities occurring within the study area were characterized and the following biological resource information was collected:

- Potential aquatic features (described in detail under the Aquatic Resources Delineation section below);
- Protected trees occurring on-site;
- Animal and plant species directly observed;
- Habitat and vegetation communities; and
- Representative photographs of the study area.

Aquatic Resources Delineation

The Aquatic Resources Delineation was conducted in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Arid West Region Supplement). The boundaries of aquatic resources were delineated through standard field methods (e.g., paired sample set analyses) and aerial photograph interpretation. Field data were recorded on Wetland Determination Data Forms - Arid West Region. A color aerial photograph was used to assist with mapping and ground-truthing. Munsell Soil Color Charts and the Natural Resources Conservation Services (NRCS) Web Soil Survey were used to aid in identifying hydric soils in the field. The 2012 Jepson Manual, 2nd Edition was used for plant nomenclature and identification.

Field surveys were conducted on October 12, 2018 by ECORP Consulting, Inc. The entire 41.2-acre unverified portion of the delineation area was walked to determine the location and extent of aquatic resources. Paired locations were sampled to evaluate whether or not the vegetation, hydrology, and soils data supported an aquatic resource determination. At each paired location, one point was located such that it was within the estimated aquatic resource area, and the other point was situated outside the limits of the estimated aquatic resource area. Aquatic resources within the unverified portion of the delineation area were recorded in the field using a post-processing capable global positioning system unit with sub-meter accuracy (Trimble GeoXT). The previously verified portion of the delineation area was reviewed through aerial photograph interpretation and limited field reconnaissance.

As part of the Addendum to the Aquatic Resources Delineation, an assessment of potential waters of the U.S. within the Raymer Way Offsite was conducted on June 13, 2019 by ECORP Consulting, Inc. biologist Matt Spaulding. Access to the property was not authorized; therefore, Mr. Spaulding walked along Raymer Way and assessed potential aquatic features from the publicly accessible roadway. In addition, historic aerial photos were reviewed. Several roadside ditches were mapped and classified as swales according to land cover definitions within the SSHCP.

Arborist Survey Report

ECORP Consulting, Inc. arborist Ben Waitman (ISA Certification #WE-12108), assisted by ECORP biologist Daniel Wong, conducted a field survey of the study area on October 9, 2018 and June 13, 2019. During the field surveys, the entire study area was walked or viewed across level ground, and data were recorded using an iPad paired with a GPS unit accurate to less than one meter. The survey data included species, dsh, dripline radius, tree structure, and tree condition. Each surveyed tree was tagged with a permanent numbered aluminum tag at breast height (approximately 4.5 feet).

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to biological resources is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above.

4.2-1 Have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As shown in Table 4.2-2, the study area contains potentially suitable habitat for special-status plant species. Special-status plant species were not detected within the project site during the special-status plant surveys conducted in spring and summer 2019. However, per the Biological Resources Assessment, the unsurveyed Raymer Way Offsite provides suitable habitat for stinkbells and Ahart's dwarf rush.

The proposed project would include ground disturbance and removal of vegetation associated with removal of the existing gravel roadway within the Raymer Way Offsite. The Raymer Way Offsite was not included in the special-status plant surveys prepared for the study area. Thus, in the event that stinkbells and Ahart's dwarf rush occur within the Raymer Way Offsite, the proposed project could result in a ***significant*** impact related to the disturbance of special-status plant species.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.2-1(a) *Prior to initiation of ground-disturbing activities within the Raymer Way Offsite, the project applicant shall comply with SSHCP AMM Plant-1 (Rare Plant Surveys). Though stinkbells is not considered an SSHCP Covered Species, the special-status plant surveys conducted per PLANT-1 shall identify whether the species is present in the survey area. If any special-status plant species are found to be present during the focused survey(s), Mitigation Measure 4.2-1(b) shall be implemented. If special-status plant species are not found to be present during the focused survey(s), then no further action is required. A written summary of the survey results shall be submitted to the City of Rancho Cordova Community Development Department.*

- ***PLANT-1 (Rare Plant Surveys):*** *If a Covered Activity project site contains modeled habitat for Ahart's dwarf rush (Juncus leiospermus var. ahartii), Bogg's Lake hedge-hyssop (Gratiola heterosepala), dwarf downingia (Downingia pusilla), Legenere (Legenere limosa), pincushion navarretia (Navarretia myersii), or Sanford's arrowhead (Sagittaria sanfordii), the Covered Activity project site will be surveyed for the rare plant by an approved biologist and following the California Department of Fish and Wildlife (CDFW) rare plant survey protocols (CDFG 2009) or the most recent CDFW rare plant survey protocols. An approved biologist will conduct the field surveys and will identify and map plant species occurrences according to the protocols. See Chapter 10 (of the SSHCP) for the process to submit survey information to the Plan Permittee and the Permitting Agencies.*

4.2-1(b) *If any SSHCP-covered plants are determined to be present within the Raymer Way Offsite, SSHCP PLANT-2 (Rare Plant Protection) shall be implemented. If any special-status plant species are determined to be present, a mitigation plan shall be prepared for review and approval by the City of Rancho Cordova; mitigation may include harvesting and transplanting of impacted bulbs into a preserved area with suitable habitat. Avoided areas containing species shall be fenced with orange construction fencing.*

- ***PLANT-2 (Rare Plant Protection):*** *If a rare plant listed in AMM PLANT-1 is detected within an area proposed to be disturbed by a Covered Activity or is detected within 250 feet of the area proposed to be disturbed by a Covered Activity, the Implementing Entity will assure one unprotected occurrence of the species is protected within a SSHCP Preserve before any ground disturbance occurs at the project site.*

4.2-2 Have a substantial adverse effect, either directly or through habitat modifications, on special-status invertebrates. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Per the Biological Resources Assessment, the existing vernal pools located within the study area were determined to contain vernal pool fairy shrimp. In addition, the vernal pools provide suitable habitat for other special-status vernal pool branchiopods, including conservancy fairy shrimp, midvalley fairy shrimp, Ricksecker's water scavenger beetle, and vernal pool fairy shrimp. The proposed development footprint would include all 2.613 acres of vernal pool habitat identified within the study area per the Biological Resources Assessment. Therefore, in the event that such pools are occupied by special-status vernal pool branchiopods prior to the start of ground-disturbing activities associated with the proposed project, development of the proposed project could cause a substantial adverse effect to vernal pool branchiopods, and a ***significant*** impact could result.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.2-2(a) *Prior to initiation of ground-disturbing activities, the project applicant shall submit a South Sacramento Habitat Conservation Plan (SSHCP) permit application package to the City of Rancho Cordova to request that the incidental take coverage provided by City's SSHCP Incidental Take Permit (ITP) be extended to the proposed activities. The City of Rancho Cordova shall review the SSHCP permit application for consistency with all of the SSHCP requirements and provide the South Sacramento Conservation Agency with a copy of the SSHCP requirements for tracking purposes. The project applicant shall be responsible for paying all SSHCP development fees associated with obtaining coverage from the City of Rancho Cordova. Any proposal to provide land in fee title, or provide a conservation easement in lieu of paying all or part of the required SSHCP development fees, shall include a consistency analysis in the application that sufficiently shows that the proposal is consistent with the SSHCP Conservation Strategy.*

4.2-2(b) *The project applicant shall comply with SSHCP requirements and all relevant AMMs set forth in the SSHCP Permit obtained for the proposed project.*

4.2-2(c) *Prior to approval of grading and improvement plans and prior to initiation of any groundbreaking activity associated with the proposed project, or timed as required by the applicable permits if the proposed project is constructed in phases, the project applicant shall ensure that mitigation for impacts to aquatic features and other habitat for special-status species has been implemented through the SSHCP In-Lieu Fee Program or by other methods agreeable to the USACE, RWQCB, USFWS, CDFW, City, and South Sacramento Conservation Agency as appropriate, depending on agency jurisdiction.*

4.2-3 Have a substantial adverse effect, either directly or through habitat modifications, on special-status amphibian species. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As noted in the Biological Resources Assessment, according to SSHCP Modeled Species Habitat, the grassland and aquatic areas within the study area provide suitable foraging habitat for western spadefoot. In addition, while SSHCP Modeled Species Habitat for western pond turtle is not present within the study area, the ponded areas along the Morrison Creek Offsite may provide suitable aquatic habitat and the adjacent grasslands provide suitable upland habitat for the species. Thus, both western spadefoot and western pond turtle have the potential to occur within the study area.

Construction of the proposed project would include disturbance of existing grassland habitat within the study area. Thus, the project could cause a substantial adverse effect, either directly or through habitat modifications, on western spadefoot and western pond turtle. A ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

Western Spadefoot

4.2-3(a) The project applicant shall comply with SSHCP AMMs WS-1 through WS-6.

- ***WS-1 (Western Spadefoot Work Window):*** *Ground-disturbing Covered Activities within western spadefoot modeled habitat (Figure 3-17 [of the SSHCP]) will occur outside the breeding and dispersal season (after May 15 and before October 15), to the maximum extent practicable.*

- ***WS-2 (Western Spadefoot Exclusion Fencing):*** *If Covered Activities must be implemented in modeled habitat (Figure 3-17) after October 15 and before May 15, exclusion fencing will be installed around the project footprint before October 15, and the project site must be monitored by an approved biologist following rain events. Temporary high- visibility construction fencing will be installed along the edge of work areas, and silt fencing will be installed immediately behind the temporary high-visibility construction fencing to exclude western spadefoot from entering the construction area. Fencing will remain in place until all construction activities within the construction area are completed. No project activities will occur outside the delineated project footprint. If a western spadefoot is encountered, refer to WS-6, below.*

- ***WS-3 (Western Spadefoot Monitoring):*** *If Covered Activities must be implemented in modeled habitat (Figure 3-17 [of the SSHCP]) in the breeding and dispersal season (after October 15 and before May 15), an approved biologist experienced with western spadefoot identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place, and will inspect the project site daily for western spadefoot prior to construction activities. The approved biologist will also train construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western spadefoot enters an active construction zone (i.e., outside the buffer zone). If a western spadefoot is encountered, refer to WS-6, below.*

- ***WS-4 (Avoid Western Spadefoot Entrapment):*** *If a Covered Activity occurs in western spadefoot modeled habitat (Figure 3-17 [of the SSHCP]), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western spadefoot modeled habitat will be inspected for western spadefoot by the approved biologist prior to being moved. If a western spadefoot is encountered, refer to WS-6 below.*

- ***WS-5 (Erosion Control Materials in Western Spadefoot Habitat):*** *If erosion control (BMP-2) is implemented within western spadefoot modeled habitat (Figure 3-17 [of the SSHCP]), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that western spadefoots are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.*

Western Pond Turtle

4.2-3(b) *Prior to initiation of ground-disturbing activities, pre-construction surveys shall be conducted per SSHCP AMM WPT-1. If western pond turtles are detected, WPT-2 through WPT-9 shall be implemented.*

- ***WPT-1 (Western Pond Turtle Surveys):*** *If the SSHCP western pond turtle modeled habitat maps (Figure 3-19 [of the SSHCP]) show that modeled habitat for western pond turtle is present within a Covered Activity's project footprint or within 300 feet of a project footprint, then an approved biologist will conduct a field investigation to delineate western pond turtle aquatic habitat within the project footprint and within 300 feet of the project footprint. In addition to the SSHCP land cover types shown in Figure 3-19 (of the SSHCP), western pond turtle aquatic habitat includes, but is not limited to, low-gradient streams and creeks, open water, freshwater marsh, and rice fields. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential sites and provide those maps to the Local Land Use Permittees and the Implementing Entity. Locations of delineated western pond turtle habitat must also be noted on plans that are submitted*

to a Local Land Use Permittee. The applicant will use this information to finalize project design. Covered Activities may occur throughout the year as long as western pond turtle habitat is identified and fully avoided. Otherwise, Covered Activities must comply with WPT-2 through WPT-9. See Chapter 10 (of the SSHCP) for the process to conduct and submit survey information.

- ***WPT-2 (Western Pond Turtle Work Window):*** *Maintenance and improvements to existing structures may occur throughout the year as long as western pond turtle habitat is identified and avoided, and movement of equipment is confined to existing roads. Otherwise, construction and ground-disturbing Covered Activities must be conducted outside of western pond turtle's active season. Construction and ground-disturbing activities will be initiated after May 1 and will commence prior to September 15. If it appears that construction activities may go beyond September 15, the appropriate Plan Permittee will contact the Local Land Use Permittee and the Implementing Entity as soon as possible, but not later than September 1, to determine if additional measures are necessary to minimize take.*

- ***WPT-3 (Western Pond Turtle Monitoring):*** *If a Covered Activity is occurring in western pond turtle modeled habitat (Figure 3-19 [of the SSHCP]), an approved biologist experienced with western pond turtle identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place in aquatic habitat or within 300 feet of aquatic habitat, and will inspect the project site daily for western pond turtle prior to construction activities. The approved biologist will also training construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western pond turtle enters an active construction zone (i.e., outside the buffer zone).*

- ***WPT-4 (Western Pond Turtle Habitat Dewatering and Exclusion):*** *If construction activities will occur in western pond turtle aquatic habitat, aquatic habitat for the turtle will be dewatered and then remain dry and absent of aquatic prey (e.g., crustaceans and other aquatic invertebrates) for 15 days prior to the initiation of construction activities. If complete dewatering is not possible, the Implementing Entity will be contacted to determine what additional measures may be necessary to minimize effects to western pond turtle. After aquatic habitat has been dewatered 15 days prior to construction activities, exclusion fencing will be installed*

extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent turtles from attempting to burrow or move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify construction limits and to protect adjacent habitat from encroachment of personnel and equipment. Western pond turtle habitat outside construction fencing will be avoided by all construction personnel. The fencing and work area will be inspected by the approved biologist to ensure that the fencing is intact and that no turtles have entered the work area before the start of each work day. Fencing will be maintained by the contractor until completion of the project. If, after exclusion fencing and dewatering, western pond turtles are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will discuss the next best steps with the Implementing Entity and Wildlife Agencies.

- ***WPT-5 (Avoid Western Pond Turtle Entrapment):*** *If a Covered Activity occurs within western pond turtle modeled habitat (Figure 3-19 [of the SSHCP]), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western pond turtle modeled habitat will be inspected for western pond turtle by the approved biologist prior to being moved.*

- ***WPT-6 (Erosion Control Materials in Western Pond Turtle Habitat):*** *If erosion control (BMP-2) is implemented within western pond turtle modeled habitat (Figure 3-19 [of the SSHCP]), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that turtles are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.*

- ***WPT-7 (Western Pond Turtle Modeled Habitat Speed Limit):*** *Covered Activity construction and maintenance vehicles will observe a 20-mile-per-hour speed limit within*

western pond turtle modeled upland habitat (Figure 3-19 [of the SSHCP]).

- ***WPT-8 (Western Pond Turtle Encounter Protocol):*** *If a western pond turtle is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the turtle, within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service immediately. Any worker who inadvertently injures or kills a western pond turtle or who finds one dead, injured, or entrapped must immediately report the incident to the approved biologist.*

- ***WPT-9 (Western Pond Turtle Post-Construction Restoration):*** *After completion of ground- disturbing Covered Activities, the applicant will remove any temporary fill and construction debris and will restore temporarily disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Implementing Entity. Restoration work may include replanting emergent aquatic vegetation and placing appropriate artificial or natural basking areas in waterways and wetlands. A photo documentation report showing pre- and post-project conditions will be submitted to the Implementing Entity 1 month after implementation of the restoration.*

4.2-4 Have a substantial adverse effect, either directly or through habitat modifications, on burrowing owl. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As noted previously, the grassland within the study area provides suitable nesting and foraging habitat for burrowing owl and the aquatic features provide suitable foraging habitat for the species, according to SSHCP Modeled Species Habitat. In addition, burrowing owls and occupied burrows were observed along the southeastern boundary of the project site during a preliminary survey of potential habitat. Therefore, burrowing owl is considered present within the study area.

Construction activities associated with implementation of the proposed project would include disturbance of on-site grassland habitat, and would have the potential to disturb existing burrowing owl burrows on the project site. Should individual burrowing owls be present within burrows during ground disturbance within the study area, project construction could result in loss of individual owls. As such, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on burrowing owl. A ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.2-4 *Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs WBO-2 through WBO-7. If western burrowing owl is found within the survey area, WBO-3 through 7 shall be implemented as required based on the results of surveys conducted per WBO-2.*

- ***WBO-1 (Western Burrowing Owl Surveys):*** *Surveys within modeled habitat are required for both the breeding and non-breeding season. If the project site falls within modeled habitat, an approved biologist will survey the project site and map all burrows, noting any burrows that may be occupied. Occupied burrows are often (but not always) indicated by tracks, feathers, egg shell fragments, pellets, prey remains, and/or excrement. Surveying and mapping will be conducted by the approved biologist while walking transects throughout the entire project site plus all accessible areas within a 250-foot radius from the project site. The centerline of these transects will be no more than 50 feet apart and will vary in width to account for changes in terrain and vegetation that can preclude complete visual coverage of the area. For example, in hilly terrain with patches of tall grass, transects will be closer together, and in open areas with little vegetation, they can be 50 feet apart. This methodology is consistent with current survey protocols for this species (California Burrowing Owl Consortium 1993). Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. If suitable habitat is identified during the initial survey, and if the project does not fully avoid the habitat, pre-construction surveys will be required. Burrowing owl habitat is fully avoided if project-related activities do not impinge on a 250-foot buffer established by the approved biologist around suitable burrows. See Chapter 10 (of the SSHCP) for the process to conduct and submit survey information.*

- ***WBO-2 (Western Burrowing Owl Pre-Construction Surveys):*** *Prior to any Covered Activity ground disturbance, an approved biologist will conduct pre-construction surveys in all*

areas that were identified as suitable habitat during the initial surveys. The purpose of the pre-construction surveys is to document the presence or absence of burrowing owls on the project site, particularly in areas within 250 feet of construction activities. To maximize the likelihood of detecting owls, the pre-construction survey will last a minimum of 3 hours. The survey will begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total), or begin 2 hours before sunset and continue until 1 hour after sunset. Additional time may be required for large project sites. A minimum of two pre-construction surveys will be conducted (if owls are detected on the first survey, a second survey is not needed). All owls observed will be counted and their location will be mapped. Surveys will conclude no more than 2 calendar days prior to construction. Therefore, the Third-Party Project Proponent must begin surveys no more than 4 days prior to construction (2 days of surveying plus up to 2 days between surveys and construction). To avoid last-minute changes in schedule or contracting that may occur if burrowing owls are found, the Third-Party Project Proponent may also conduct a preliminary survey up to 15 days before construction. This preliminary survey may count as the first of the two required surveys as long as the second survey concludes no more than 2 calendar days in advance of construction.

- ***WBO-3 (Burrowing Owl Avoidance):*** *If western burrowing owl or evidence of western burrowing owl is observed on the project site or within 250 feet of the project site during pre-construction surveys, then the following will occur:*

  During Breeding Season: *If the approved biologist finds evidence of western burrowing owls within a project site during the breeding season (February 1 through August 31), all project-related activities will avoid nest sites during the remainder of the breeding season or while the nest remains occupied by adults or young (nest occupation includes individuals or family groups foraging on or near the site following fledging). Avoidance is establishment of a minimum 250-foot buffer zone around nests. Construction and other project-related activities may occur outside of the 250-foot buffer zone. Construction and other project-related activities may be allowed inside of the 250-foot non-disturbance buffer during the breeding season if the nest is not disturbed, and the Third-Party Project Proponent develops an avoidance, minimization, and monitoring plan that is approved by the Implementing Entity and Wildlife Agencies prior to project construction based on the following criteria:*

- *The Implementing Entity and Wildlife Agencies approve of the avoidance and minimization plan provided by the project applicant.*
- *An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline nesting and foraging behavior (i.e., behavior without construction).*
- *The same approved biologist monitors the owls during construction and finds no change in owl nesting and foraging behavior in response to construction activities.*

If there is any change in owl nesting and foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer. Construction cannot resume within the 250-foot buffer until any owls present are no longer affected by nearby construction activities, and with written concurrence from the Wildlife Agencies.

If monitoring by the approved biologist indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use, the non-disturbance buffer zone may be removed if approved by the Wildlife Agencies. The approved biologist will excavate the burrow in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl to prevent reoccupation after receiving approval from the Wildlife Agencies.

The Implementing Entity and Wildlife Agencies will respond to a request from the Third-Party Project Proponent to review the proposed construction monitoring plan within 21 days.

***During Non-Breeding Season:** During the non-breeding season (September 1 through January 31), the approved biologist will establish a minimum 250-foot non-disturbance buffer around occupied burrows. Construction activities outside of this 250-foot buffer will be allowed. Construction activities within the non-disturbance buffer will be allowed if the following criteria are met to prevent owls from abandoning over- wintering sites:*

- *An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline foraging behavior (i.e., behavior without construction).*
- *The same approved biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities.*
- *If there is any change in owl foraging behavior as a result of construction activities, the approved biologist will*

have authority to shut down activities within the 250-foot buffer.

- *If the owls are gone for at least 1 week, the Third-Party Project Proponent may request approval from the Implementing Entity and Wildlife Agencies that an approved biologist excavate usable burrows and install one-way exclusionary devices to prevent owls from re-occupying the site. After all usable burrows are excavated, the buffer zone will be removed and construction may continue.*

Monitoring must continue as described above for the non-breeding season as long as the burrow remains active.

- ***WBO-4 (Burrowing Owl Construction Monitoring):** During construction of Covered Activities, 250-foot construction buffer zones will be established and maintained around any occupied burrow. An approved biologist will monitor the site to ensure that buffers are enforced and owls are not disturbed. The approved biologist will also train construction personnel on avoidance procedures, buffer zones, and protocols in the event that a burrowing owl flies into an active construction zone.*

- ***WBO-5 (Burrowing Owl Passive Relocation):** Passive relocation is not allowed without the express written approval of the Wildlife Agencies. Passive owl relocation may be allowed on a case-by-case basis on project sites during the non-breeding season (September 1 through January 31) with the written approval of the Wildlife Agencies if the other measures described in this condition preclude work from continuing. Passive relocation must be done in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl. Passive relocation will only be proposed if the burrow needing to be removed or with the potential to collapse from construction activities is the result of a Covered Activity. If passive relocation is approved by the Wildlife Agencies, an approved biologist can passively exclude birds from their burrows during the non-breeding season by installing one-way doors in burrow entrances. These doors will be in place for 48 hours to ensure that owls have left the burrow, and then the biologist will excavate the burrow to prevent reoccupation. Burrows will be excavated using hand tools only. During excavation, an escape route will be maintained at all times. This may include inserting an artificial structure into the burrow to avoid having materials collapse into the burrow and trap owls inside. Other methods of passive relocation, based on best available science, may be approved by the Wildlife Agencies over the 50-year Permit Term.*

- ***WBO-6 (Burrowing Owl Timing of Maintenance Activities):*** *All activities adjacent to existing or planned Preserves, Preserve Setbacks, or Stream Setback areas will be seasonally timed, when safety permits, to avoid or minimize adverse effects on occupied burrows.*

- ***WBO-7 (Rodent Control):*** *Rodent control will be allowed only in developed portions of a Covered Activity project site within western burrowing owl modeled habitat. Where rodent control is allowed, the method of rodent control will comply with the methods of rodent control discussed in the 4(d) Rule published in the U.S. Fish and Wildlife Service's (2004) final listing rule for tiger salamander.*

4.2-5 Have a substantial adverse effect, either directly or through habitat modifications, on raptors and nesting birds. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The study area contains potential habitat for raptors and nesting birds that are protected by the MBTA. The following sections summarize available habitat within the study area for specific SSHCP Covered species and other non-covered species. Potential impacts to Swainson's hawk and tricolored blackbird are discussed separately under Impacts 4.2-6 and 4.2-7.

SSHCP Covered Species

According to SSHCP Modeled Species Habitat, the study area contains suitable habitat for raptors and nesting birds, as follows:

- The grassland and aquatic areas within the study area provide suitable foraging habitat for ferruginous hawk. Suitable nesting habitat is not present.
- The grassland within the study area provides suitable nesting and foraging habitat for loggerhead shrike and northern harrier and the aquatic features provide suitable foraging habitat for both species.
- The grassland and aquatic areas within the study area provide suitable foraging habitat for white-tailed kite. Suitable nesting habitat is not present.
- The grassland and trees within the study area provide suitable nesting habitat for yellow-billed magpie.

Thus, ferruginous hawk, loggerhead shrike, northern harrier, and yellow-billed magpie have potential to occur within the study area.

Other Special-Status Species

The project site provides winter foraging habitat for golden eagle, which is a CDFW fully protected species. The grassland within the study area provides suitable nesting habitat for grasshopper sparrow and suitable wintering habitat for merlin. Grasshopper sparrow is designated as a species of special concern per CDFW. Thus, golden eagle, grasshopper sparrow, and merlin have potential to occur within the study area.

Conclusion

Based on the above, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on raptors and nesting birds protected by the MBTA, including, but not limited to, ferruginous hawk, loggerhead shrike, northern harrier, white-tailed kite, yellow-billed magpie, golden eagle, grasshopper sparrow, and merlin. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.2-5(a) *Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs RAPTOR-2 through RAPTOR-4. Raptor surveys conducted per RAPTOR-2 shall include surveying for golden eagle although it is not a SSHCP Covered Species. If raptor species (including golden eagles) are found nesting within the survey area, RAPTOR-3 and RAPTOR-4 shall be implemented as required based on the results of surveys conducted per RAPTOR-2. The following AMMs do not apply to Swainson's hawk or burrowing owl, as specific AMMs have been developed for such covered raptor species and are included in separate mitigation measures.*

- ***RAPTOR-2 (Raptor Pre-Construction Surveys):*** *Pre-construction surveys will be required to determine if active nests are present with a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites are found during initial surveys and construction activities will occur during the raptor breeding season. An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities within the proposed project footprint and within 0.25 mile of the proposed project footprint to determine presence of nesting covered raptor species. Pre- construction surveys will be conducted during the raptor breeding season. If a nest is present, then RAPTOR-3 and RAPTOR-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.*

- ***RAPTOR-3 (Raptor Nest/Roost Buffer):*** *If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.25 mile temporary nest disturbance buffer around the active nest until the young have fledged.*

- ***RAPTOR-4 (Raptor Nest/Roost Buffer Monitoring):*** *If project-related Covered Activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then an approved biologist experienced with raptor behavior will be retained by the Third-Party Project*

Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the disturbance buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting raptors begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist/monitor will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a covered raptor species flies into an active construction zone (i.e., outside the buffer zone).

4.2-5(b) *A qualified biologist shall conduct a preconstruction nesting bird survey of all areas associated with construction activities, and a 100-foot buffer around such areas, within 14 days prior to commencement of construction if construction occurs during the nesting season (February 1 through August 31). If active nests are found for any SSHCP Covered Species, the applicable SSHCP AMM(s) TCB-3 through -5, SWHA-3 through -4, WBO-3 through-6, and RAPTOR-3 through-4 shall be implemented. If active nests are found for any other species, a no-disturbance buffer around the nest shall be established. The buffer distance shall be established by a qualified biologist in consultation with the CDFW. The buffer shall be maintained until the fledglings are capable of flight and become independent of the nest, to be determined by a qualified biologist. Once the young are independent of the nest, further measures are not necessary.*

4.2-6 Have a substantial adverse effect, either directly or through habitat modifications, on Swainson's hawk. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The grassland and aquatic areas within the study area provide suitable foraging habitat for Swainson's hawk according to SSHCP Modeled Species Habitat. In addition, a preliminary survey of potential habitat found several trees within the Survey Area and survey buffers that represent potential nesting habitat for the species. Thus, Swainson's hawk has potential to occur within the study area. The proposed project would include removal of a portion of the existing trees within the study area. In the event that Swainson's hawk is present within such trees during ground-disturbance or tree removal activities associated with the proposed project, the project could have a substantial adverse effect, either directly or through habitat modifications, on the species. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.2-6 *Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs SWHA-2 through SWHA-4. If Swainson's hawk nesting is found within the survey area during the pre-construction survey conducted per SWHA-2, then SWHA-3 and SWHA-4 shall be implemented as required based on the results of surveys conducted per SWHA-2.*

SWHA-2 (Swainson's Hawk Pre-Construction Surveys): *Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites were found during initial surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities to determine presence of nesting Swainson's hawk. Pre-construction surveys will be conducted during the breeding season (March 1 through September 15). If a nest is present, then SWHA-3 and SWHA-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.*

SWHA-3 (Swainson's Hawk Nest Buffer): *If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.25-mile disturbance buffer around the active nest until the young have fledged, with concurrence from the Wildlife Agencies.*

SWHA-4 (Swainson's Hawk Nest Buffer Monitoring): *If nesting Swainson's hawks are present within the project footprint or within 0.25 mile of any project-related Covered Activity, then an approved biologist experienced with Swainson's hawk behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting Swainson's hawks begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and*

protocols in the event that a Swainson's hawk flies into an active construction zone (i.e., outside the buffer zone).

4.2-7 Have a substantial adverse effect, either directly or through habitat modifications, on tricolored blackbird. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

According to SSHCP Modeled Species Habitat, the grassland within the study area provides suitable nesting and foraging habitat for tricolored blackbird, and the aquatic features provide suitable foraging habitat. In addition, a preliminary survey of potential habitat documented evidence of previous tricolored blackbird nesting within patches of bull thistle (*Cirsium vulgare*) in the central portion of the project site, and a small area of riparian habitat along Morrison Creek was determined to represent potential nesting habitat. Tricolored blackbirds were not observed nesting during a site visit on June 13, 2019. However, the species is nomadic and may return to the study area prior to initiation of project construction activities. Thus, tricolored blackbirds are considered to be present within the study area.

In the event that tricolored blackbird is present within the study area during ground-disturbance associated with project construction, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on the species. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.2-7 *Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs TCB-2 through TCB-5. If tricolored blackbirds are found within the survey area during the pre-construction survey conducted per TCB-2, then TCB-3 through TCB-5 shall be implemented as required based on the results of surveys conducted per TCB-2.*

- ***TCB-2 (Tricolored Blackbird Pre-Construction Surveys):*** *Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 500 feet of a project footprint if existing or potential nest sites were found during design surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and within 3 days of ground-disturbing activities, and within the proposed project footprint and 500 feet of the proposed project footprint to determine the presence of nesting tricolored blackbird. Pre-construction surveys will be conducted during the breeding season (March 1 through August 31). Surveys conducted in February (to meet pre-construction survey requirements for work starting in March) must be*

conducted within 14 days and 3 days in advance of ground-disturbing activities. If a nest is present, then TCB-3 and TCB-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and the Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

- ***TCB-3 (Tricolored Blackbird Nest Buffer):*** *If active nests are found within the project footprint or within 500 feet of any project-related Covered Activity, the Third-Party Project Proponent will establish a 500-foot temporary buffer around the active nest until the young have fledged.*

- ***TCB-4 (Tricolored Blackbird Nest Buffer Monitoring):*** *If nesting tricolored blackbirds are present within the project footprint or within 500 feet of any project-related Covered Activity, then an approved biologist experienced with tricolored blackbird behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place near the disturbance buffer. Work within the nest disturbance buffer will not be permitted. If the approved biologist determines that tricolored blackbirds are exhibiting agitated behavior, construction will cease until the buffer size is increased to a distance necessary to result in no harm or harassment to the nesting tricolored blackbirds. If the biologist determines that the colonies are at risk, a meeting with the Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will be held to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a tricolored blackbird flies into an active construction zone (i.e., outside the buffer zone).*

- ***TCB-5 (Timing of Pesticide Use and Harvest Timing on Agricultural Preserves):*** *On SSHCP Agricultural Preserves, pesticides (including herbicides) will not be applied from January 1 through July 15.*

4.2-8 Have a substantial adverse effect, either directly or through habitat modifications, on special-status bats. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Per the Biological Resources Assessment, some of the structures within the study area represent potential hibernacula for pallid bat. In addition, according to SSHCP Modeled Species Habitat, the grassland and wetland areas within the study area provide suitable foraging habitat for western red bat, and the Raymer Way Offsite

contains roosting-foraging habitat for the species. A preliminary survey of potential habitat identified some of the trees with cavities along Morrison Creek as potential hibernacula.

Implementation of the proposed project would require removal of existing structures and trees within the proposed development area. Should special-status bat species be present in structures or trees prior to removal, implementation of the proposed project could result in a loss of individual bats. Therefore, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on pallid bat and western red bat. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.2-8 *Prior to initiation of ground-disturbing activities, the project applicant shall comply with SSHCP AMMs BAT-2 through BAT-4. Winter hibernaculum surveys conducted per BAT-2 shall also include surveying for pallid bat although it is not an SSHCP Covered Species. If winter hibernacula of western red bat or pallid bat are found within the survey area, then BAT-3 through BAT-4 shall be implemented as required based on the results of surveys conducted per BAT-2.*

- ***BAT-2 (Winter Hibernaculum Pre-Construction Surveys):*** *If the Third-Party Project Proponent elects not to avoid potential winter hibernaculum sites within the project footprint plus a 300-foot buffer, additional surveys are required. Prior to any ground disturbance related to Covered Activities, an approved biologist will conduct a pre- construction survey within 3 days of ground-disturbing activities within the project footprint and 300 feet of the project footprint to determine the presence of winter hibernaculum sites. Pre-construction surveys will be conducted during the winter hibernaculum season (November 1 through March 31). If a winter hibernaculum is present, then BAT-3 and BAT-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.*

- ***BAT-3 (Winter Hibernaculum Buffer):*** *If active winter hibernaculum sites are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will establish a 300-foot temporary disturbance buffer around the active winter hibernaculum site until bats have vacated the hibernaculum and the Implementing Entity and Wildlife Agencies concur.*

- ***BAT-4 (Bat Eviction Methods):*** *An approved biologist will determine if non-maternity and non-hibernaculum day and*

night roosts are present on the project site. If necessary, an approved biologist will use safe eviction methods to remove bats if direct impacts to non-maternity and non-hibernaculum day and night roosts cannot be avoided. If a winter hibernaculum site is present, Covered Activities will not occur until the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to the Wildlife Agencies.

4.2-9 Have a substantial adverse effect, either directly or through habitat modifications, on American badger. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

The grassland and wetland areas within the study area provide suitable foraging habitat for American badger according to SSHCP Modeled Species Habitat. Thus, American badger has potential to occur within the study area. Implementation of the proposed project would require disturbance of existing grassland and wetland habitat within the study area. In the event that American badger occupies the project site prior to ground-disturbing activities associated with the proposed project, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on the species. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

4.2-9 *A qualified biologist shall conduct a preconstruction survey for American badger within 14 days prior to commencement of construction, and results of the survey shall be provided to the City's Community Development Department. If badgers or dens with signs of recent badger use are detected (i.e., fresh scat, claw marks), CDFW shall be consulted and a non-disturbance buffer shall be established around any active dens. The den(s) shall be monitored daily by the qualified biologist during construction. Work shall not occur within the non-disturbance buffer until the qualified biologist determines that the badger(s) have left the work area, or as determined in consultation with CDFW.*

4.2-10 Have a substantial adverse effect on riparian habitat or other sensitive natural community, or State or Federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As noted previously, per the Aquatic Resources Delineation and associated addendum, a total of 4.687 acres of aquatic resources have been mapped on the study

area, including 0.215-acre within the Raymer Way Offsite, which has not been verified (see Table 4.2-1 and Figure 4.2-4). The Rio Del Oro Offsite and North Douglas Offsites do not contain any mapped aquatic resources. The identified features include vernal pool, swale, and stream/creek land cover types. Vernal pool communities are the only sensitive natural community known to occur within the study area. With the exception of the Raymer Way Offsite, the aquatic resources identified within the study area have been verified by the USACE.

Per the Biological Resources Assessment, the vernal pools, swales, and stream/creek features within the study area flow directly or indirectly into Morrison Creek, or impoundments of Morrison Creek, along the northern boundary of the study area. Morrison Creek is a tributary to the Sacramento River. The USACE Sacramento District has identified the Sacramento River as Traditional Navigable Water (TNW). Therefore, the aquatic resources within the study area likely have a significant nexus with a downstream TNW, and are likely subject to regulation under Section 404 of the CWA.

The proposed project would include grading and development activities associated with the construction and operation of a residential subdivision, including necessary off-site improvements. The proposed development footprint would include all 4.687 acres of aquatic resources identified within the study area per the Biological Resources Assessment. Thus, the project would have the potential to involve the disturbance, removal, fill or hydrologic interruption of wetlands or other waters of the U.S or state regulated by the USACE, RWQCB and/or the CDFW.

Based on the above, implementation of the proposed project could have a substantial adverse effect on riparian habitat and/or other sensitive natural communities and/or have a substantial adverse effect on State or Federally protected aquatic resources (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal, filling, hydrological interruption, or other means. Thus, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.2-10(a) *Prior to approval of grading and improvement plans and prior to initiation of any groundbreaking activity associated with the proposed project, the project applicant shall ensure that authorization pursuant to Clean Water Act (CWA) Section 404 from the U.S. Army Corps of Engineers (USACE) and CWA Section 401 from the Central Valley Regional Water Quality Control Board (RWQCB) is obtained. CWA Section 404 authorization is anticipated to be obtained through a Letter of Permission issued by USACE under the SSHCP ARP, and CWA Section 401 authorization is anticipated to be obtained through an individual Water Quality Certification issued by the RWQCB under the SSHCP ARP.*

The construction contractor shall adhere to all conditions outlined in the permits. The project applicant shall ensure that the proposed project replaces, restores, or enhances on a "no net loss" basis (in accordance

with the USACE and the Central Valley RWQCB) the acreage of all wetlands and other waters of the U.S. that would be removed, lost, and/or degraded due to project implementation, either through the SSHCP In-Lieu Fee Program or by other methods agreeable to the USACE, the Central Valley RWQCB, and the City, as appropriate, depending on agency jurisdiction, and as determined during the Section 401 and Section 404 permitting processes.

4.2-10(b) *Prior to approval of grading and improvement plans and prior to initiation of any groundbreaking activity associated with the proposed project, the project applicant shall ensure that a CDFW 1602 Streambed Alteration Agreement has been obtained. The construction contractor shall adhere to all conditions outlined in the Streambed Alteration Agreement.*

4.2-10(c) *The project applicant shall comply with SSHCP AMM STREAM-2 and a 100-foot setback from Morrison Creek shall be established. Only allowed compatible uses described in the SSHCP shall be sited within the setback.*

- ***STREAM-2 (UDA Stream Setbacks):** A 100-foot setback measured from the top of the bank on both sides of the stream channel will be applied to all streams listed in Table 5-1 (see Table 4.2-3 below) (see also Figure 2-4 [of the SSHCP]). If a stream reach supports woody riparian vegetation, the setback will be equal to the riparian edge plus 25 feet or will be the setback defined above, whichever is greater. If trails are located within the Stream Setback, the nearest edge of the trail will be located at least 50 feet from the top of the bank.*

Table 4.2-3
Stream Setback Minimum Requirements in the Urban Development Area

Stream	Minimum Setback (from the Top of Bank Measured in Aerial Perspective) on Both Sides of the Stream
Elder Creek	100 feet
Frye Creek	100 feet or as depicted as part of the NewBridge development project hardline Preserve (see SSHCP Appendix K)
Gerber Creek	100 feet
Morrison Creek	100 feet
Central Paseo	100 feet or as depicted as part of the Cordova Hills development project hardline Preserve (see SSHCP Appendix K)
Sun Creek	100 feet or as depicted as part of the Sun Creek development project hardline Preserve (see SSHCP Appendix K)

4.2-10(d) *Implement Mitigation Measure 4.2-2(c).*

4.2-11 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 native wildlife nursery sites. Based on the analysis below, the impact is *less than significant*.

As noted previously, the study area does not fall within an Essential Habitat Connectivity area mapped by the CDFW. In addition, the study area is bordered to the east by Grant Line Road, and the area to the south of the study area is built out with residential uses. Such features limit the ability of wildlife to move through project vicinity. Per the Biological Resources Report, the permanently ponded open waters and the small patches of riparian habitat along the upper reach of Morrison Creek within the Morrison Creek Offsite may represent a marginal wildlife movement corridor. However, consistent with SSHCP AMM STREAM-2, the proposed project would maintain a 100-foot setback from Morrison Creek. Maintenance of the 100-foot setback would be verified through implementation of Mitigation Measure 4.2-9(c). Furthermore, the 185.3 acres of open space area within the northern portion of the site which would not be developed as part of the proposed project. Therefore, implementation of the proposed project would not have the potential to impede the use of a native wildlife nursery site.

Based on the above, the proposed project would not interfere substantially with the movement of any wildlife and a ***less-than-significant*** impact would result.

Mitigation Measure(s)
None required.

4.2-12 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Per Chapter 19.12, Preservation and Protection of Private Trees, of the City of Rancho Cordova Municipal Code, a tree removal permit is required prior to removal of any tree meeting the City's definition of a "protected tree". Protected tree is defined to include native oaks having a truck diameter of six inches or greater, any tree species other than a native oak with a diameter of 12 inches or greater on a nonresidential property, or any tree species other than a native oak with a diameter of 24 inches or greater on a residential property. The study area contains a total of 149 trees that have a dsh equal to or greater than 12 inches and therefore meet the definition of a Protected Tree as defined in the City's Tree Preservation Ordinance.

The proposed project would include the removal of 140 of the existing protected trees within the study area. The nine protected trees within the Morrison Creek Offsite would be preserved as part of the project. Considering that the proposed project would involve removal of 140 individual protected trees, the proposed project could conflict

with local policies and/or ordinances that protect biological resources, including tree resources. Therefore, a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.2-12 *Prior to removal of any protected trees (as defined by Chapter 19.12 of the City's Municipal Code) within the project site and off-site improvement areas, a tree removal permit shall be procured from the City. In addition, tree species that are native to the Central Valley and Sierra Nevada foothills such as interior live oak (Quercus wislizeni), valley oak (Quercus lobata), blue oak (Quercus douglasii), Fremont cottonwood (Populus fremontii), black walnut (Juglans hindsii), and western redbud (Cercis occidentalis) shall be incorporated into the planned landscaping design in public spaces such as open space, parks, and parkways. Enough plantings of such native trees shall be incorporated into the landscaping such that the number of surviving native trees after five years is equal to or greater than the number of non-native trees removed. Landscaping plans detailing the tree species to be planted shall be provided to the City for approval prior to tree removal.*

4.2-13 Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan. Based on the analysis below, the impact is *less than significant*.

The study area is covered by the SSHCP. As described above, the following SSHCP Covered Species have the potential to occur within the proposed development area: Ahart's dwarf rush, midvalley fairy shrimp, Ricksecker's water scavenger beetle, vernal pool fairy shrimp, western spadefoot, western pond turtle, burrowing owl, Swainson's hawk, tricolored blackbird, ferruginous hawk, loggerhead shrike, northern harrier, yellow-billed magpie, American badger, and western red bat. However, implementation of Mitigation Measures 4.2-1, 4.2-2, 4.2-3, 4.2-4, 4.2-5, 4.2-6, 4.2-7, 4.2-8, 4.2-9, which have been designed to incorporate applicable SSHCP AMMs, would reduce potential impacts to such species to less-than-significant levels. In addition, per Mitigation Measure 4.2-2, the project applicant would be required to submit a SSHCP permit application package to the City of Rancho Cordova to request that the incidental take coverage provided by City's SSHCP ITP be extended to the proposed activities. Mitigation Measure 4.2-10 would ensure compliance with applicable SSHCP AMMs related to protection of wetlands.

Based on the above, the proposed project would not conflict with any applicable provisions of the adopted SSHCP, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 5, Statutorily Required Sections of this EIR.

4.2-14 Cumulative loss of habitat for special-status species. Based on the analysis below and with implementation of mitigation, the impact is *less than cumulatively considerable*.

Implementation of the proposed project, in combination with other development within the City of Rancho Cordova, would result in a significant cumulative impact related to the loss of special-status species habitat, as well as take of special-status individuals. The General Plan EIR concluded that buildout of the City's Planning Area, including the study area, would result in the loss of biological resources in the region, and a significant and unavoidable impact would occur.

As discussed above, development of the proposed project could result in potential impacts to biological resources, including special-status plants, special-status wildlife species, riparian habitat and wetlands, and protected trees. However, all such impacts would be reduced to less-than-significant levels with implementation of the mitigation measures provided herein. Such mitigation measures include compliance with SSHCP requirements and all relevant AMMs set forth in the SSHCP Permit to be obtained for the proposed project. Per Mitigation Measure 4.2-2(a), the project applicant would be responsible for paying all SSHCP development fees associated with obtaining permit coverage from the City of Rancho Cordova. Payment of such fees, along with implementation of the SSHCP AMMs, would ensure that the project applicant provides a fair share contribution towards ongoing implementation of the SSHCP, including land and easement acquisition, monitoring, habitat management, habitat establishment, and funding for an agricultural enhancement program.

Nonetheless, without payment of applicable SSHCP fees and implementation of appropriate measures to avoid impacts to biological resources, the proposed project's incremental contribution to the significant cumulative impact to biological resources could be ***cumulatively considerable*** and ***significant***.

Mitigation Measure(s)

This Chapter contains mitigation measure sufficient to reduce all project-specific impacts to less-than-significant levels. With implementation of such measures, the project's incremental contribution toward the significant cumulative impact would be *less than cumulatively considerable*.

4.2-14 Implement Mitigation Measures 4.2-1 through 4.2-11.

4.3 Cultural and Tribal Resources

4.3. CULTURAL AND TRIBAL RESOURCES

4.3.1 INTRODUCTION

The Cultural and Tribal Resources chapter of the EIR addresses known historic and prehistoric cultural resources, including tribal cultural resources, in the vicinity of the project area. Cultural resources can be categorized into prehistoric or historic resources. Prehistoric resources are those sites and artifacts associated with indigenous, non-Euroamerican populations, generally prior to contact with people of European descent. Historic resources include structures, features, artifacts, and sites that date from Euroamerican settlement of the region. The chapter summarizes the existing setting with respect to cultural and tribal cultural resources, identifies thresholds of significance, evaluates project impacts to such resources, and sets forth mitigation measures as necessary. Information presented in the chapter is primarily drawn from the Cultural Resources Inventory Report prepared by ECORP Consulting, Inc. (see Appendix E),[1] as well as the City of Rancho Cordova General Plan[2] and the General Plan EIR.[3]

4.3.2 EXISTING ENVIRONMENTAL SETTING

The Central Valley of California contains a rich cultural resource heritage that includes archeological and historical sites and resources. According to the Rancho Cordova General Plan EIR, as of March 2006, a total of 23 historic resources, eight prehistoric sites, and one prehistoric/historic site were recorded in the City of Rancho Cordova. Given the rich heritage of the area, many archeological and historical sites and resources remain undiscovered.

The 279.3-acre project site contains two single-family residences and associated outbuildings on the southern portion of the site, within parcels 072-0300-002 and -005. An orchard is located within the northeastern portion of the site within and parcel 073-0010-011, and a third single-family residence and associated outbuildings are located on APN 072-0300-008. The remainder of the site consists primarily of non-native grasses, with scattered trees located in the vicinity of the existing residences and associated access roads. The site is characterized by moderate rolling hills and flatlands interspersed with seasonal drainage corridors and wetlands. Additionally, Morrison Creek runs northeast to southwest through the project site. The project site is located near the North Douglas Residential development to the south, as well as agricultural land and rural residential areas to the north, west, and east.

The following sections provide further details regarding the prehistoric overview, ethnographic overview, and historic overview of the project area, as well as a description of any identified cultural resources associated with the project site and a discussion of tribal cultural resources.

Prehistoric Overview

A recent summary by Rosenthal et al. of the prehistory of California's Sacramento Valley, Sacramento–San Joaquin Delta, and San Joaquin Valley is based on a compilation of previous

[1] ECORP Consulting, Inc. *Cultural Resources Inventory Report.* February 5, 2019.
[2] City of Rancho Cordova. *Rancho Cordova General Plan*. June 26, 2006.
[3] City of Rancho Cordova. *Rancho Cordova General Plan EIR*. March 13, 2006.

research. As devised by Rosenthal and others, and with the timeframes adjusted for modern calibration curves for radiocarbon dates, the chronological sequence for the Central Valley is: Paleo-Indian (11500 to 8550 cal [calibrated] B.C.), Lower Archaic (8550 to 5550 cal B.C.), Middle Archaic (5550 to 550 cal B.C.), Upper Archaic (550 cal B.C. to cal A.D. 1100), and Emergent or Late Prehistoric Period (cal A.D. 1100 to Historic Contact).

Paleo-Indian Period

The Paleo-Indian Period began when the first people started to inhabit what is now known as the California culture area. During the Paleo-Indian Period, the first people commonly survived on big game and minimally processed foods, (i.e., hunters and gatherers), presumably without trade networks. More recent research indicates these people may have been more sedentary, relying on processed foods and trade. Populations likely consisted of small groups traveling frequently to access plant and animal resources.

Archaic Period

The Archaic Period was characterized by an increase in plant exploitation for subsistence, more elaborate burial accoutrements, and an increase in trade network complexity. The period includes the three divisions outlined below.

Lower Archaic Period

In the Central Valley, the Lower Archaic Period is mainly represented by isolated finds, as the early landscape was buried by natural alluvial fan and floodplain deposition. Artifacts from this period include chipped stone crescents, early wide-stemmed points, marine shell beads, eastern Nevada obsidian, and obsidian from north Coast Ranges. The artifacts found on sites dating to the Lower Archaic Period indicate that trade was occurring in multiple directions. Communities relied on a variety of plant and animal species, including acorns, wild cucumber, and manzanita berries.

Middle Archaic Period

The Middle Archaic Period is characterized by a drier climate period. Past studies of the Middle Archaic Period have identified two distinct settlement/subsistence patterns: The Foothill Tradition and the Valley Tradition. Functional artifact assemblages consisting primarily of locally sourced flaked stone and groundstone cobbles characterize the Foothill Tradition, while the Valley Tradition was generally characterized by diverse subsistence practices and extended periods of sedentism.

Upper Archaic Period

The Upper Archaic Period is characterized by abrupt change to wetter and cooler environmental climate conditions. Much greater cultural diversity is evident from this period. More specialized artifacts, such as bone tools, ceremonial blades, polished and groundstone plummets, saucers, saddle Olivella shell beads, Haliotis shell ornaments, and a variety of groundstone implements are characteristic of this period.

Emergent Period

The Emergent Period is most notably marked by the introduction of the bow and arrow, the emergence of social stratification linked to wealth, and expansive trade networks. The Augustine pattern (the distinct cultural pattern of the Emergent Period) is characterized by the appearance of small projectile points (largely obsidian), rimmed display mortars, flanged steatite pipes, flanged

pestles, and chevron-designed bird-bone tubes. Large mammals and small seeded resources appear to have made up a larger part of the diet during this period.

The Windmiller Pattern of the Early Horizon, dates to the Middle Archaic and may be the most extensively studied of all the cultural patterns defined for the Central Valley. In fact, the similarity noted between elements of Windmiller and materials from other sites may have been the catalyst for early archaeologists identifying the material cultural "blending" of groups in the Central Valley during this period.

Further classification of the Middle Archaic into the Foothill Tradition and Valley Tradition helped to clarify the different types of cultural sequences which occurred during the time periods. Functional artifact assemblages consisting primarily of locally sourced flaked-stone and groundstone cobbles characterize the Foothills Tradition, with very few trade goods. Sites that represent the Valley Tradition are much fewer in number, and are generally characterized by much more diverse subsistence practices and extended periods of sedentism. Specialized tools, trade goods, and faunal refuse that indicate year-round occupation are evident on sites of the Valley Tradition. Distinct artifacts attributed to this tradition include one of the oldest dated shell bead lots in central California (4160 BP) and a particular type of pestle used with a wooden mortar. Paleobotanical analysis from sites of the Foothill Tradition confirm that acorns and pine nuts were preferred for subsistence. Sites in the project area associated with the Valley Tradition are rare in the early Middle Archaic but include the Reservation Road site, and two buried sites in the northern Diablo range. Sites associated with later portions of the Middle Archaic (post-2050 cal. BC) in the project area include elaborate material culture and diverse dietary and technological assemblages.

The next era in the region is identified as the Late Horizon, the Hotchkiss Culture, and the Augustine Pattern. The culture was formed by populations during the later Upper Archaic and Emergent periods, and ranges in age from around 550 cal. BC to contact (dates vary between the different models of prehistory developed for the region). The Upper Archaic, as discussed above, corresponds with the late Holocene change in environmental conditions to a wetter and cooler climate. The Emergent Period and Late Horizon are markedly represented by the introduction of bow-and-arrow technology, as well as more pronounced cultural diversity reflected in burial posturing, artifact styles, and material culture. Cultural patterns for this era are represented in the northern Sacramento Valley, namely within the Whiskeytown Pattern.

Despite the varying designations, this Emergent era is distinguished in the archaeological record by intensive fishing, extensive use of acorns, elaborate ceremonialism, social stratification, and cremation of the dead. Artifacts associated with the defined patterns (Augustine, Emergent, Hotchkiss) include bow-and-arrow technology (evidenced by small projectile points), mortars and pestles, and fish harpoons with unilaterally or bilaterally placed barbs in opposed or staggered positions. Mortuary patterns include flexed burials and cremations, with elaborate material goods found in association with prestigious individuals. A local form of pottery, Cosumnes brown ware, emerged in the lower Sacramento Valley. Sites contain this ceramic type in their artifact assemblage, as well as human animal effigies which are also a marker of this Emergent era around the project area.

Ethnographic Overview

Ethnographically, the project area is in the southwestern portion of the territory occupied by the Penutian-speaking Nisenan. Nisenan inhabited the drainages of the Yuba, Bear, and American

rivers, and also the lower reaches of the Feather River, extending from the east banks of the Sacramento River on the west to the mid to high elevations of the western flank of the Sierra Nevada to the east. The territory extended from the area surrounding the current City of Oroville on the north to a few miles south of the American River in the south. The Sacramento River bounded the territory on the west, and in the east, the territory extended to a general area located within a few miles of Lake Tahoe.

Nisenan practiced seasonal migration, a subsistence strategy involving moving from one area or elevation to another to harvest plants, fish, and hunt game across contrasting ecosystems that were in relatively close proximity to each other. Valley Nisenan generally did not range beyond the valley and lower foothills, while foothill and mountain groups ranged across a more extensive area. The area included jointly shared territory whose entry was subject to traditional understandings of priority of ownership and current relations between the groups.

Communally organized Nisenan task groups exploited a wide variety of resources. Communal hunting drives were undertaken to obtain deer, quail, rabbits, and grasshoppers. Bears were hunted in the winter when their hides were at their best condition. Runs of salmon in the spring and fall provided a regular supply of fish, while other fish such as suckers, pike, whitefish, and trout were obtained with snares, fish traps, or with various fish poisons such as soaproot. In addition, birds were caught with nooses or large nets, and were also occasionally shot with bow and arrow.

Like the majority of Native Californians, the Nisenan relied on acorns as a staple food, which were gathered in the fall and stored in granaries for use during the rest of the year. Although acorns were the staple of the Nisenan diet, the Nisenan also harvested roots like wild onion and “Indian potato,” which were eaten raw, steamed, baked, or dried and processed into flour cakes to be stored for winter use. Buckeye, pine nuts, hazelnuts, and other edible nuts further supplemented the diet. Key resources such as acorns, salmon, and deer were ritually managed through ceremonies to facilitate successful exploitation and equitable distribution of resources.

Nisenan groups managed many wild plants, primarily by controlled burning, which removed underbrush and encouraged growth of edible grasses, seed producing plants, and other useful plant resources (e.g., basketry materials). The use of fire for environmental modification and as an aid in hunting is frequently mentioned in the ethnographic literature relating to the Nisenan. In addition to removing underbrush, improving travel conditions, and facilitating plant growth, burning may also have improved areas of deer forage, potentially altering migratory patterns of deer populations by lessening their need to seek fresh forage on a seasonal basis.

The Nisenan experienced early contact with Spanish explorers arriving on the Central Coast of California in 1769. Much of the early contact with the Spanish explorer was limited to the peripheries of Nisenan territory, occurring mainly to the south on the lands of the Miwok, which had been explored by Jose Canizares in 1776, with only ephemeral explorations into Nisenan lands. Nisenan groups are not known to have been removed to missions; however, the Nisenan did receive escapees from the missions as well as pressure of displaced Miwok populations on their southern borders.

In 1833, a deadly epidemic (probably malaria) swept through the Sacramento Valley and had a devastating effect on Nisenan populations. Entire villages were lost, and surviving Nisenan retreated into the hills. An estimated 75 percent of the Nisenan population was wiped out, and only a handful were left to face the gold miners and settlers who were soon to follow. Captain



John Sutter settled in Nisenan territory in 1839, and through force and persuasion he coerced most of the remaining Valley Nisenan to be on peaceful terms.

The mountain Nisenan groups encountered Europeans in their territory, but were not adversely affected by the epidemics and early settlers. The discovery of gold, however, led to the Nisenan territory being overrun within a matter of a few years. The 1848 gold discovery was in the middle of Nisenan territory, and thousands of miners were soon living in the area. This dynamic led to widespread killing, destruction, and persecution of the Nisenan and their culture. The few survivors were relegated to working in agriculture, logging, ranching, or domestic pursuits. A native culture resurgence occurred around 1870 with influence from the Ghost Dance revival, but by 1890s the movement had all but ended in dissolution.

A few people still practiced Nisenan customs through the turn of the twenty-first century, but the old ways have been largely lost. Despite the hardships on their people through the past few centuries, many modern Native American populations participate in pan-Indian activities and celebrations. Nisenan descendants continue to be active in social movements and organizations that seek to improve the Native American situation in the dominant America culture.

Historic Overview

The following sections provide an overview of the Spanish, Mexican, and American Periods, as well as local history associated with the project area.

Spanish, Mexican, and American Periods

Post-contact history for the State of California is generally divided into the following three periods: the Spanish Period from 1769 to1822; the Mexican Period from 1822 to1848; and the American Period from 1848 to present. Although brief visits by Spanish, Russian, and British explorers occurred from 1529 to 1769, the beginning of Spanish settlement in California occurred in 1769 at San Diego. The Spanish and Franciscan Order established 21 missions between 1769 and 1823 along the coast between San Diego and San Francisco. The Spanish expeditions into the Central Valley in 1806 and 1808, led by Lieutenant Gabriel Moraga, explored along the main rivers, including the American, Calaveras, Cosumnes, Feather, Merced, Mokelumne, Sacramento, San Joaquin, and Stanislaus. Moraga is credited with naming the lower Sacramento River and valley region, “Sacramento” (“the Holy Sacrament”). In 1813, Moraga led another expedition in the lower portion of the Central Valley and named the San Joaquin River. The abundance of wildlife, such as waterfowl, fish, and fur-bearing animals, within or along the banks of the rivers attracted immigrants to the Central Valley region. The last Spanish expedition into California’s interior was led by Luis Arguello in 1817 and traveled up the Sacramento River, past the future site of the City of Sacramento to the mouth of the Feather River, before returning to the coast.

After the end of the Mexican Revolution (1810 to 1821), the Mexican Period is marked by extensive land grants, most of which were in the interior of the State, as well as by exploration by American fur trappers west of the Sierra Nevada Mountains. Most of the land grants to Mexican citizens in California (*Californios*) were in the interior because the Mexican Republic sought to increase the population away from the more settled coastal areas where the Spanish settlements had been concentrated. The largest land grants in the Sacramento Valley were awarded to John Sutter, who had become a Mexican citizen. In 1839, he founded a trading and agricultural empire called New Helvetia that was headquartered at Sutter’s Fort near the divergence of the Sacramento and American rivers in today’s City of Sacramento. Only a small portion of the

48,839-acre New Helvetia land grant was located in Sacramento County; the majority was located in today's Sutter and Yuba counties on the east and west sides of the Feather River.

The first American trapper to enter California, Jedediah Smith, explored along the Sierra Nevada in 1826 and in 1827, entered the Sacramento Valley, traveling along the American and Cosumnes rivers. In 1827, Smith also traveled through the San Joaquin Valley. Other trappers soon followed, including employees of the Hudson's Bay Company in 1832. Between 1830 and 1833, and again in 1837, diseases introduced by the non-indigenous explorers, trappers, and settlers, as well as relocation to the missions, military raids, and settlement by non-native groups, decimated native Californian populations, communities, and tribes in the Sacramento and San Joaquin valleys.

The end of the Mexican-American war, marked by the signing of the Treaty of Guadalupe Hidalgo in 1848, initiated the beginning of the American Period. In the same year, gold was discovered at Sutter's Mill on the American River in Coloma, and by 1849, nearly 90,000 people had journeyed to the gold fields. California became the 31st state in 1850, largely as a result of the Gold Rush, and in 1854, Sacramento became the State capital. In contrast to the economic prosperity and population growth associated with statehood, the loss of land and territory, including traditional hunting and gathering locales, as well as malnutrition, starvation, and violence, further contributed to the decline of indigenous Californians in the Central Valley and along the Sierra Nevada foothills.

Local History

The City of Rancho Cordova was incorporated in July 2003 with the desire for local government control over land uses and services. The City is centrally located in the Sacramento region with a strong workforce and growing population. The project area is located in the southeastern part of the 35,500-acre Rancho Rio de los Americanos land grant, issued by Manuel Micheltorena, the Mexican Governor of Alta California, to William Alexander Leidesdorff in October 1844. Leidesdorff acquired land for herding cattle on the bank of the American River. Following the death of Leidesdorff in 1848, his land was bought by Joseph Libby Folsom for $75,000. Folsom founded the town of Granite City on the land grant before the town was eventually renamed to Folsom after his death in 1855.

Later, the Natoma Water and Mining Company purchased more than 9,000 acres of the Rancho Rio de los Americanos land grant in 1857. At this point, with Mr. Folsom being deceased, the property was handled by Mr. Folsom's executors, a Mr. Halleck, and others. In 1857 the Surveyor General of the United States, John Coffee "Jack" Hays, ordered that the grant be surveyed, and the boundaries established. This survey, known as the Hays survey, was submitted to the Land Office in Washington for a patent. Disagreements within the Land Office over the survey results led to a second survey, known as the Mandeville survey, in 1858. In 1860, a legal battle ensued over which survey boundary was correct with the court upholding the boundaries of the Hays survey. Three years later an appeal was approved challenging the earlier ruling and upholding the Mandeville survey. The area owned by the Natomas Company (north of the project area) was later used for dredge mining and this area is now covered by dredge mining tailings.

Grant Line Road is a secondary road which, for much of its length, follows the boundaries of the Rancho Omochumnes and Rancho Rio de los Americanos Mexican land grants. The Rancho Omochumnes land grant is located south of the project area, containing more than 18,000 acres. The land was centered around the modern town of Wilton and along the south bank of the Cosumnes River. The portion of Grant Line Road that stretches from Jackson Road to Kiefer

Boulevard follows the northwestern boundary of the Rancho Omochumnes land grant. Grant Line Road follows this eastern boundary of the land grant for a short distance diagonally to the northeast until the road merges with the meandering White Rock Road. The precise date of construction of Grant Line Road is unclear, but unlabeled roads that appear to follow a similar alignment are partially present on the 1891 USGS Sacramento 1:125,000 scale topographical map.

Known Historic Resources

Archival research was carried out as part of the Cultural Resources Inventory Report prepared for the proposed project by ECORP Consulting, Inc., including review of available historic documents and a records search. On October 11, 2018, ECORP conducted a records search of the North Central Information Center (NCIC) of the California Historical Resources Information System (CHRIS) at California State University, Sacramento. In addition, ECORP conducted a field survey of the project area on October 15 and 16, 2018. As shown in Figure 4.3-1, the field survey covered an approximately 99.37-acre Area of Potential Effects (APE). The APE does not include the northern portion of the project site, which would not be developed as part of the proposed project. In addition, the APE for the field survey does not include the off-site improvements areas associated with the project. However, the off-site improvement areas were included in the records search conducted by ECORP.

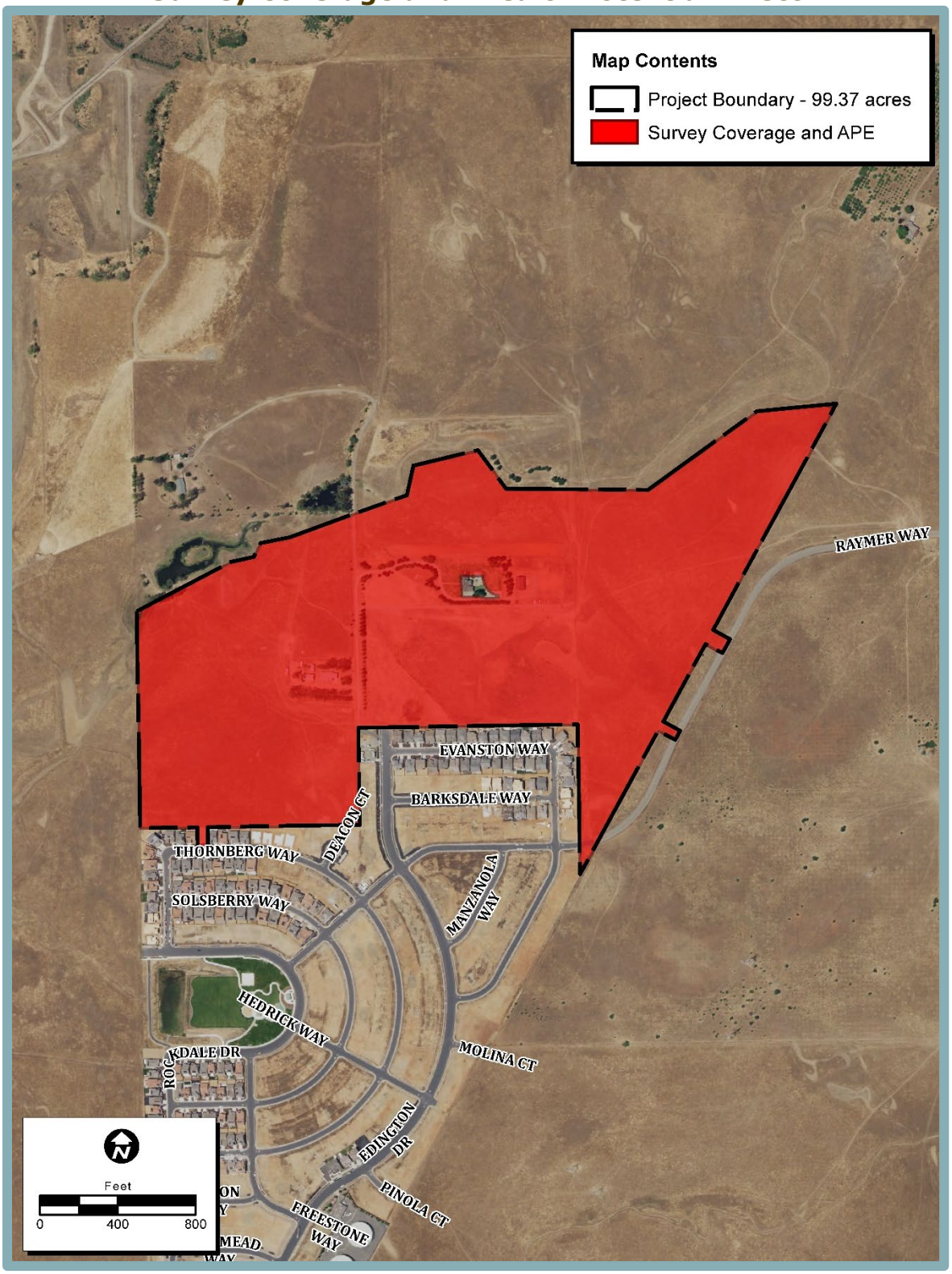
The records search determined that 13 cultural resource investigations have been conducted within 0.5-mile of the APE between 1982 and 2016, covering approximately 50 percent of the total area surrounding the APE within the record search radius. A total of three previously recorded historic-period cultural resources are located within 0.5-mile of the APE, consisting of the American River Mining District (P-34-335, CA-SAC-308), the Douglas Missile Test Facility (P-34-4137), and a historic dredge tailing landscape (P-34-4143). The American River Placer Mining District encompasses the APE; however, features associated with the district have not been identified within the APE. The remaining two resources (P-34-4137 and P-34-4143) are not located within the APE and, thus, are not discussed further. According to the Cultural Resources Inventory Report, the field survey did not find any previously recorded or new cultural resources within the APE.

American River Placer Mining District

The American River Placer Mining District (P-34-335) is considered a “Super District” that includes districts such as the Alder Creek Corridor Mining District, Prairie Diggings Mining District, and others which were originally grouped together arbitrarily to ensure proper consideration during a pulse of development in the region. The American River Placer Mining District includes thousands of acres of land that were subject to mining by hand and mechanical methods. The District also includes mining camps, established towns, cemeteries, tunnels, adits, water diversion systems, pump plant remains, and other features associated with dredging.

The American River Placer Mining District is referred to informally as a “paper district,” meaning that the designation as a “district” does not necessarily meet the technical or regulatory definition of the term. In addition, the American River Placer Mining District boundaries are arbitrarily set, encompassing an area approximately 15 miles long and 11 miles wide.

Figure 4.3-1
Survey Coverage and Area of Potential Effect



Source: ECORP Consulting, Inc., 2019

Tribal Cultural Resources

Based on a search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF), as described in further detail in the Method of Analysis section below, recorded Native American sacred sites or traditional cultural properties are not known to exist within the project site.

4.3.3 REGULATORY CONTEXT

Federal, State, and local governments have developed laws and regulations designed to protect significant cultural resources that may be affected by actions that they undertake or regulate. The following section contains a summary of basic federal, State, and local regulations governing preservation of historic and archaeological resources of national, regional, State, and local significance.

Federal Regulations

The following are the federal environmental laws and policies relevant to cultural resources.

National Historical Preservation Act of 1966

Federal regulations for cultural resources are governed primarily by Section 106 of the National Historical Preservation Act (NHPA) of 1966. Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties," are found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites, which are determined eligible for listing on the National Register of Historic Places (NRHP). The criteria for determining NRHP eligibility are found in 36 CFR Part 60. Amendments to the Act (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process. While federal agencies must follow federal regulations, most projects by private developers and landowners do not require this level of compliance. Federal regulations only come into play in the private sector if a project requires a federal permit or uses federal funding.

National Register of Historic Places

NRHP is the nation's master inventory of known historic resources. The NRHP includes listings of resources, including: buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, State, or local level. Resources over 50 years of age may be listed on the NRHP. However, properties under 50 years of age that are of exceptional significance or are contributors to a district may also be included on the NRHP. Four criteria are used to determine if a potential resource may be considered significant and eligible for listing on the NRHP. Potentially eligible resources include resources that:

A. Are associated with events that have made a significant contribution to the broad patterns of history; or
B. Are associated with the lives of persons significant in our past; or
C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded or may likely yield information important in prehistory or history.

A resource can be individually eligible for listing on the NRHP under any of the above four criteria, or can be listed as contributing to a group of resources that are listed on the NRHP.

A resource can be considered significant in American history, architecture, archaeology, engineering, or culture. Once a resource has been identified as significant and potentially eligible for the NRHP, the resource's historic integrity must be evaluated. Integrity is a function of seven factors: location, design, setting, materials, workmanship, feeling, and association. The factors closely relate to the resource's significance and must be intact for NRHP eligibility.

Historical buildings, structures, and objects are usually eligible under Criteria A, B, and C based on historical research and architectural or engineering characteristics. Archaeological sites are usually eligible under Criterion D, the potential to yield information important in prehistory or history. An archaeological test program may be necessary to determine whether the site has the potential to yield important data. The lead federal agency makes the determination of eligibility based on the results of the test program and seeks concurrence from the State Historic Preservation Officer (SHPO).

Effects to NRHP-eligible resources (historic properties) are adverse if the project may alter, directly or indirectly, any of the characteristics of an historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

State Regulations

The following are the State environmental laws and policies relevant to cultural resources.

California Environmental Quality Act and California Register of Historic Places

State historic preservation regulations affecting this project include the statutes and guidelines contained in CEQA (Public Resources Code [PRC] Sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA requires lead agencies to consider the potential effects of a project on historic resources and unique archaeological resources. A "historic resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (PRC Section 5020.1). Under Section 15064.5 of the CEQA Guidelines, a resource is considered "historically significant" if one or more of the following California Register of Historic Resources (CRHR) criteria have been met:

1. The resource is associated with events that have made a significant contribution to the broad patterns of California history;
2. The resource is associated with the lives of important persons from our past;
3. The resource 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 values; or
4. The resource has yielded, or may be likely to yield, important information in prehistory or history.

In addition, the resource must retain integrity. Cultural resources determined eligible for the NRHP by a federal agency are automatically eligible for the CRHR.

CEQA requires preparation of an EIR if a proposed project would cause a "substantial adverse change" in the significance of a historical resource. A "substantial adverse change" would occur if a proposed project would result in physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (CEQA Guidelines Section 15064.5[b][1]).

In addition to historically significant resources, which can include archeological resources that meet the criteria listed above, CEQA also requires consideration of "unique archaeological resources." If a site meets the definition of a unique archaeological resource, the site must be treated in accordance with the provisions of PRC Section 21083.2. Under PRC Section 20183.2(g), an archaeological resource is considered "unique" if it:

1) Is associated with an event or person of recognized significance in California or American history or recognized scientific importance in prehistory;
2) Can provide information that is of demonstrable public interest and is useful in addressing scientifically consequential and reasonable research questions;
3) Has a special kind or particular quality such as oldest, best example, largest, or last surviving example of its kind;
4) Is at least 100 years old and possesses substantial stratigraphic integrity; or
5) Involves important research questions that can be answered only with archaeological methods.

CEQA also includes specific guidance regarding the accidental discovery of human remains. Specifically, CEQA Guidelines Section 15064.5(e) requires that if human remains are uncovered, excavation activities must be stopped and that the county coroner be contacted. If the county coroner determines that the remains are Native American, the coroner must contact the NAHC within 24 hours. The NAHC identifies the most likely descendant, and that individual or individuals can make recommendations for treatment of the human remains under the procedures set forth in Section 15064.5 of the CEQA Guidelines.

The SHPO maintains the CRHR. Properties that are listed on the NRHP are automatically listed on the CRHR, along with State Landmarks and Points of Interest. The CRHR can also include properties designated under local ordinances or identified through local historical resource surveys.

Assembly Bill 52

Assembly Bill (AB) 52 adds tribal cultural resources to the categories of cultural resources in CEQA, which had formerly been limited to historic, archaeological, and paleontological resources. "Tribal cultural resources" are defined as either:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
(2) 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the

purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Under AB 52, a project that may cause a substantial adverse change in the significance of a Tribal Cultural Resource is defined as a project that may have a significant effect on the environment. Where a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document must discuss the impact and whether feasible alternatives or mitigation measures could avoid or substantially lessen the impact. AB 52 (PRC 21080.3.1) requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if they have requested notice of projects proposed within that area. If the tribe(s) requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe(s). Consultation may include discussing the type of environmental review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the tribe(s).

Senate Bill 18

SB 18, authored by Senator John Burton and signed into law by Governor Arnold Schwarzenegger in September 2004, requires local (city and county) governments to consult with California Native American tribes, when amending or adopting a general plan or specific plan, or designating land as open space, in order to aid in the protection of traditional tribal cultural places ("cultural places"). The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. The consultation and notice requirements apply to adoption and amendment of both general plans (defined in Government Code Section 65300 et seq.) and specific plans (defined in Government Code Section 65450 et seq.). The proposed project includes a General Plan Amendment, and, thus, is subject to SB 18 consultation requirements.

Local Regulations

The following are the local environmental laws and policies relevant to cultural resources.

City of Rancho Cordova General Plan

Goals and policies from the City's General Plan related to cultural resources are presented below.

Goal CHR.1: Identify and preserve the history of Rancho Cordova for future generations.

Policy CHR.1.3 Establish review procedures for development projects that recognize the history of the area in conjunction with State and federal laws.

South Sacramento Habitat Conservation Plan

The South Sacramento Habitat Conservation Plan (SSHCP) is intended to streamline federal and State permitting processes for SSHCP-covered development and infrastructure projects while protecting habitat, open space and agricultural lands.[4] The SSHCP plan area encompasses 317,656 acres that are bordered by US. Route 50 (US 50) on the north, San Joaquin County on

[4] South Sacramento Habitat Conservation Plan. *What is the South Sacramento HCP?* Available at: https://www.southsachcp.com/. Accessed July 2019.

the south, El Dorado County and Amador County to the east, and the Sacramento River to the west, including Galt and most of Rancho Cordova. The Rancho Cordova City Council adopted the SSHCP on October 15, 2018.

The SSHCP includes a specific process for permit applications which outlines requirements that must be satisfied by a project proponent prior to receiving permit coverage. A project proponent of a ground-disturbing activity, including habitat re-establishment or establishment in the Preserve System, must ensure that cultural resources potentially occurring in these areas are properly evaluated and protected. Per Section 10.4.2.7 of the SSHCP, permit applications are required to include a description of how the project complies with requirements for protection of cultural resources and tribal consultation.

4.3.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to cultural and tribal cultural resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, an impact related to cultural or tribal cultural resources is considered significant if the proposed project would:

- Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5;
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines, Section 15064.5;
- Disturb any human remains, including those interred outside of dedicated cemeteries; and/or
- Cause a substantial adverse change in the significance of a tribal cultural resource as defined in PRC, Section 21074.

Method of Analysis

The analysis presented within this chapter is based primarily on the Cultural Resources Inventory Report prepared for the proposed project. The Cultural Resources Inventory Report included a cultural resources literature search, archival research, consultation with the NAHC, and a field survey. The methods of analysis are described in further detail below, along with a discussion of the tribal consultation efforts conducted by the City pursuant to AB 52 and SB 18.

Records Search Methods

A cultural resources records search for the project area was completed at the NCIC of the CHRIS at California State University, Sacramento, on October 11, 2018. The records search was conducted to determine the extent of previous surveys within 0.5-mile radius of the proposed project location, and whether previously documented pre-contact or historic archaeological sites, architectural resources, or traditional cultural properties exist within the area. The archival searches of the archaeological and historical records, national and State databases, and historic maps included the following:

- California Register of Historical Resources;
- National Register Information System website;
- Historic Property Data File (HPDF) for Sacramento County (OHP 2012);
- California Inventory of Historical Resources (National Park Service 2018);
- Office of Historic Preservation, California Historical Landmarks website (OHP 2018);
- California Historical Landmarks (OHP 1996 and updates);
- California Points of Historical Interest (OHP 1992 and updates);
- Directory of Properties in the Historical Resources Inventory (1999);
- Caltrans Local and State Bridge Surveys (Caltrans 2018a and 2018b); and
- Historic Spots in California (Kyle 2002).

Other Cultural Archival Sources

ECORP searched the land patent records maintained by the Bureau of Land Management and reviewed historical maps and aerial photographs that were not available at the NCIC. The results of the reviews of historic maps and aerial photographs have been incorporated into the Local History section above. The following historic maps and aerial photographs were reviewed:

- 1856 GLO Plat for Township 8 North, Range 7 East;
- 1885 Official Map of Sacramento County;
- 1892 and 1929 USGS California, Sacramento Sheet (1:125,000);
- 1908 and 1916 USGS Buffalo Creek, California (scale 1:31,680);
- 1954 and 1967 USGS Buffalo Creek, California (7.5-minute); and
- 1967 photo revised 1980 USGS Buffalo Creek, California (7.5-minute).

In addition, ECORP contacted the NAHC on October 16, 2018 to request a search of the SLF to determine whether known tribal cultural resources are located within or near the project area. The SLF is populated by members of the Native American community who have knowledge about the locations of tribal resources. In requesting a search of the SLF, ECORP solicited information from the Native American community regarding tribal cultural resources; however, the responsibility to formally consult with the Native American community lies exclusively with the federal and local agencies under applicable State and federal law. A discussion of formal tribal outreach efforts conducted by the City pursuant to AB 52 and SB 18 is provided below.

Field Survey Methods

On October 15 and 16, 2018, ECORP subjected the project APE to an intensive-level pedestrian survey using transects spaced at 15 meters. The entirety of the visible ground surface within the project area was examined for indications of surface or subsurface cultural resources, such as circular depressions or ditches. Whenever possible, the locations of subsurface exposures caused by such factors as rodent activity, water or soil erosion, or vegetation disturbances were examined for artifacts or for indications of buried deposits. Subsurface investigations or artifact collections were not undertaken during the pedestrian survey.

Native American Tribal Consultation

In compliance with AB 52 (PRC Section 21080.3.1) and SB 18, project notification letters were distributed to the appropriate tribes in the project area. On October 29, 2019, the City sent AB 52 letters with offers to consult to the following tribes: Buena Vista Rancheria of Me-Wuk Indians, Colfax-Todds Valley Consolidated Tribe, Ione Band of Miwok Indians, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Shingle Springs Band of Miwok Indians, Tsi Akim Maidu, United

Auburn Indian Community of the Auburn Rancheria, and the Wilton Rancheria. The City received a response from the Wilton Rancheria on November 19, 2019, requesting formal consultation under AB 52 and to observe and participate in all cultural resource surveys, including initial pedestrian surveys for the project. Wilton Rancheria also requested copies of all environmental documentation for the proposed project related to cultural resources.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

4.3-1 Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5. Based on the analysis below, the impact is *less than significant*.

The proposed project would include subdivision of the project site to develop a total of 440 single-family lots and various associated improvements including, but not limited to, parks, open space areas, landscaping, circulation improvements, and utility installation. The proposed project would also include the demolition of existing on-site residences and associated outbuildings. However, in order to determine whether the residences and associated outbuildings are considered historically significant, the structures were evaluated using the NRHP and the CRHR eligibility criteria. In order to be listed on the NRHP or CRHR, the resource must be at least 50 years old, except in exceptional circumstances. The existing buildings to be demolished are less than 50 years old. Given that the existing structures are less than 50 years old, the existing structures within the site would not be considered eligible for listing under the NRHP or CRHR. In addition, according to the Cultural Resources Inventory Report, previously recorded or new cultural resources were not identified within the project site. Thus, the proposed project would not result in a substantial adverse change in the significance of a historical resource.

As part of the Cultural Resources Report, ECORP requested a records search of the CHRIS. The CHRIS search results indicate that boundaries of the American River Placer Mining District encompass the project's APE. Past studies have recommended that the American River Placer Mining District be considered eligible for the NRHP or the CRHR. An inquiry was made as to whether the California SHPO concurs with this eligibility finding; however, evidence of concurrence has not been found to date. Nevertheless, for the purposes of this analysis, the American River Placer Mining District is considered eligible for the NRHP and CRHR. However, physical features of the American River Placer Mining District do not exist within the project APE. Therefore, the proposed project would not alter, directly or indirectly, the integrity of any characteristics of the American River Placer Mining District that make the resource significant. As such, the proposed project would not result in a substantial adverse change in the significance of the American River Placer Mining District.

Based on the above, the existing structures on the project site would not be considered eligible for listing under the NRHP or CRHR. In addition, the proposed project would not adversely affect the historical significance of the American River Placer Mining District, which encompasses the project APE. Therefore, the proposed project would

not result in a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.3-2 Cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5 or disturb human remains, including those interred outside of dedicated cemeteries. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As part of the cultural resource investigation of the project site, ECORP conducted a pedestrian field survey, which did not reveal any evidence of archaeological resources. Given the project site's history of disturbance through agricultural use, as well as the grading and construction of roadways and residences in the area, the potential for buried archeological deposits to occur in the sediments underlying the project site is low. However, due to the presence of alluvium along Morrison Creek, and the likelihood of pre-contact archaeological sites to be located along waterways, the potential exists for previously unknown archaeological resources to exist in the project area.

In addition, the project area is in the southwestern portion of the territory once occupied by the Penutian-speaking Nisenan. While field surveys conducted by ECORP did not detect human remains, cultural sites, or artifacts of ceremonial significance within the project site, the potential for human remains to be discovered during construction cannot be eliminated due to the known prehistoric occupation of the project area by Native American tribes.

Although archeological resources have not been identified on the project site and, due to past ground disturbance, are not anticipated to occur, the possibility exists that previously unknown resources could be discovered within the project site or off-site improvement areas during construction activities. Therefore, construction activities associated with buildout of the proposed project, including off-site improvements, could uncover undocumented archaeological resources and/or human remains. As such, the proposed project could cause a substantial adverse change in the significance of a unique archeological resource pursuant to CEQA Guidelines, Section 15064.5 or disturb human remains, including those interred outside of dedicated cemeteries, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.3-2 The following requirements shall be included through a notation on all project improvement plans prior to the issuance of grading permits, to the satisfaction of the City Engineer.

In the event subsurface deposits believed to be cultural or human in origin are discovered during construction, all work shall halt within a 50-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for precontact and historic archaeologist, shall be retained to evaluate the significance of the find, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following notifications shall apply, depending on the nature of the find:

- *If the professional archaeologist determines that the find does not represent a cultural resource, work may resume immediately, and agency notifications are not required.*
- *If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, he or she shall immediately notify the City of Rancho Cordova and applicable landowner. The project applicant shall consult on a finding of eligibility and implement appropriate treatment measures, if the find is determined to be a Historical Resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines. Appropriate treatment measures that preserve or restore the character and integrity of a find may be, but are not limited to, processing materials for reburial, minimizing handling of historical objects, leaving objects in place within the landscape, construction monitoring of further construction activities, and/or returning objects to a location within the project area where they will not be subject to future impacts. Work shall not resume within the no-work radius until the applicant, through consultation, as appropriate, determines that the site either: 1) is not a historical resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines; or 2) that the treatment measures have been completed to the City's satisfaction.*
- *If the find includes human remains, or remains that are potentially human, he or she shall ensure reasonable protection measures are taken to protect the discovery from disturbance (Assembly Bill [AB] 2641). The archaeologist shall notify the City of Rancho Cordova and the Sacramento County Coroner (per Section 7050.5 of the Health and Safety Code). The provisions of Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California PRC, and AB 2641 shall be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner shall notify the NAHC, which then shall designate a Native American Most Likely Descendant (MLD) for the proposed project (Section 5097.98 of the PRC). The designated MLD shall have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC shall mediate (Section 5097.94 of the PRC). If an agreement is not reached, the landowner shall rebury the remains where they shall not be further disturbed*

(Section 5097.98 of the PRC). The burial shall also include either recording the site with the NAHC or the appropriate information center, using an open space or conservation zoning designation or easement, or recording a reinternment document with Sacramento County (AB 2641). Work shall not resume within the no-work radius until the City, through consultation as appropriate, determines that the treatment measures have been completed to their satisfaction.

4.3-3 Cause a substantial adverse change in the significance of a tribal cultural resource as defined in PRC Section 21074. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As part of AB 52 and SB 18 requirements, the City sent project notification letters with offers to consult to the necessary tribes in the project area on October 29, 2019. The City received a response from the Wilton Rancheria requesting formal consultation to observe and participate in all cultural resource surveys, including initial pedestrian surveys for the project. Wilton Rancheria also requested copies of all environmental documentation for the proposed project related to cultural resources.

As noted previously, records searches of the NAHC SLF did not indicate the presence of tribal cultural resources within the project site or the off-site improvement areas. Considering the results of the literature search and the prehistory and history of the area, the project site was determined by ECORP to have a low probability for prehistoric or historic cultural resources, which would include tribal cultural resources. Nonetheless, even though the likelihood is low, the possibility still exists that buried tribal cultural resources associated with local tribes could occur in the project site and the off-site improvement areas. Thus, ground-disturbing activities associated with the proposed project could cause a substantial change in the significance of a Tribal Cultural Resource as defined in PRC Section 21074, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.3-3(a) Implement Mitigation Measures 4.3-2.

4.3-3(b) Prior to initiation of ground-disturbing activities associated with the proposed project, a consultant and construction worker tribal cultural resources awareness brochure and training program for all personnel involved in project implementation shall be developed in coordination with interested Native American Tribes. The brochure shall be distributed and the training shall 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 shall 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 shall also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the project site and shall outline what to do and whom to contact if any potential tribal cultural resources are encountered. The program shall also underscore the requirement for confidentiality and culturally-appropriate treatment of any find of significance to Native Americans and behaviors, consistent with Native American Tribal values. Documentation of the brochure and training program (i.e., a sign-in sheet) shall be submitted along with all applicable reports to the City's Community Development Department.

4.3-3(c) Prior to the start of ground-disturbing activities associated with the proposed project, the project applicant and construction contractor(s) shall implement the following measures 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:

- *Native American monitors from culturally affiliated Native American Tribes shall 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 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 shall recommend appropriate treatment of such sites or objects.*

Compliance with the aforementioned measures shall be documented and submitted with applicable reports to the City's Community Development Department.

4.3-3(d) 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 shall 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 Representatives and Monitors from culturally affiliated Native American Tribes shall assess the significance of the find and make recommendations for further evaluation and treatment as necessary. These recommendations shall be documented in the project record.

If adverse impacts to tribal cultural resources, unique archeology, or other cultural resources occurs, then consultation with Wilton Rancheria regarding mitigation contained in the Public Resources Code Sections 21084.3(a) and (b) and CEQA Guidelines Section 15370 shall occur, in order to coordinate for compensation for the impact by replacing or providing substitute resources or environments.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

4.3-4 Cause a cumulative loss of cultural resources. Based on the analysis below, the cumulative impact is *less than significant*.

Generally, while some cultural resources may have regional significance, the resources themselves are site-specific, and impacts to them are project-specific. For example, impacts to a subsurface archeological find at one project site would not generally be made worse by impacts to a cultural resource at another site due to development of another project. Rather, the resources and the effects upon them are generally independent. A possible exception to the aforementioned general conditions would be where a cultural resource represents the last known example of its kind or is part of larger cultural resources such as a single building along an intact historic Main Street. For such a resource, cumulative impacts, and the contribution of a project to them, may be considered cumulatively significant.

As described throughout this Chapter, the project site is included within the American River Placer Mining District, which is considered eligible for listing in the NRHP and CRHR; however, because physical features of the American River Placer Mining District are not present within the project site, the proposed development would not result in adverse effects to the historical significance of the District. Furthermore, implementation of the project-specific mitigation measures set forth in this chapter (Mitigation Measures 4.3-2 and 4.3-3[a] through 4.3-3[c]) would ensure that potential impacts related to disturbance of unknown cultural or tribal cultural resources within the site are reduced to less-than-significant levels.

Similar to the proposed project, future development projects within the City would be required to implement project-specific mitigation to ensure any potential impacts to identified cultural resources are reduced to a less-than-significant levels. For example, General Plan Action CHR.1.3.1 requires historic resources and paleontological studies for all applicable discretionary projects, in accordance with CEQA. In addition, General

Plan Action CHR.1.3.2 requires that the Community Development Department be notified immediately if any cultural resources or human remains are uncovered during construction, with all construction in the vicinity of the find ceasing immediately and appropriate steps taken subsequent to the find to determine next steps. Given that cultural resource impacts are generally site-specific and each future project within the City would be required to adhere to City policies, any potential impacts associated with cumulative buildout of the planning area would not combine to result in a significant cumulative impact.

Based on the above information, implementation of the aforementioned mitigation measures would reduce all project-specific impacts to less-than-significant levels, and the potential for impacts related to a cumulative loss of cultural resources, to which implementation of the proposed project might contribute, would be ***less than significant.***

Mitigation Measure(s)

None required.

4.4 Geology and Soils/Mineral Resources

4.4 GEOLOGY AND SOILS/ MINERAL RESOURCES

4.4.1 INTRODUCTION

The Geology and Soils/Mineral Resources chapter of this EIR describes the geologic and soil characteristics of the project site and evaluates the extent to which implementation of the proposed project could be affected by unstable earth conditions and various geologic and geomorphic hazards. In addition, the chapter evaluates known mineral resources on the project site, any potential adverse effects of the proposed project on the availability of such resources, and any adverse impacts on paleontological resources.

Information presented within this chapter is primarily drawn from a Geology and Soils Report prepared by Youngdahl Consulting Group, Inc. and peer reviewed by Geocon Consultants, Inc. (see Appendix F),[1] the City of Rancho Cordova General Plan,[2] and the associated EIR.[3]

4.4.2 EXISTING ENVIRONMENTAL SETTING

Background setting information regarding the geology and soils, seismicity, mineral resources, and paleontological resources associated with the project site and the surrounding region is provided below.

Regional Setting

The project site is located within the Sacramento Valley, which, together with the San Joaquin Valley, comprises the Great Valley geomorphic province. The Great Valley is a forearc basin composed of thousands of feet of sedimentary deposits that has undergone periods of subsidence and uplift over millions of years. The Great Valley basin began to form during the Jurassic period as the Pacific oceanic plate was subducted underneath the adjacent North American continental plate. The subduction zone and associated trench shifted 80 miles seaward to the present location of the Coast Ranges, and a new trench formed offshore; buckling at the edge of the new continent creating a forearc basin. In the western portion of the Great Valley, Upper Jurassic to Upper Cretaceous rock sequences rest on Upper Jurassic oceanic crust sequences. In contrast, the eastern portion of the Great Valley is composed of shallow Pleistocene nonmarine deposits over a layer of Cretaceous marine/deltaic deposits, which rests on the metamorphic and igneous rocks of the Sierra Nevada, which is the western edge of the continental margin.

During the Jurassic and Cretaceous periods of the Mesozoic era, the Great Valley existed as a marine depositional environment. By the end of the Mesozoic, the northern portion of the Great Valley began to fill with considerable gigantic debris as tectonic forces caused uplift of the basin. Several formations were deposited during the Cenozoic Era, including but not limited to, the Ione Formation at the edge of inland sea, the Mehrten Formation and the Laguna Formation in the Sacramento Valley, and the Modesto Formation near stream channels. In the Holocene era, after

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1 Youngdahl Consulting Group, Inc. *Geology and Soils for The Preserve.* June 2019.
Geocon Consultants, Inc. *Subject: The Preserve, Grant Line Road and Raymer Way, Rancho Cordova, California. Geotechnical Peer Review*. March 24, 2020.

2 City of Rancho Cordova. *Rancho Cordova General Plan.* Adopted June 26, 2006.

3 City of Rancho Cordova. *Ranch Cordova General Plan Environmental Impact Report*. June 2006.

the last glaciation, stream flows dropped and streams became undersized compared to the valleys, with alluvium consisting of unconsolidated gravel, sand, silt, and clay, deposited along stream channels.

Most of the surface of the Great Valley is covered with Holocene and Pleistocene-age alluvium. The alluvium is composed of sediments from the Sierra Nevada to the east and the Coast Range to the west, which were carried by water and deposited on the valley floor. Siltstone, claystone, and sandstone are the primary types of sedimentary deposits.

Regional Seismicity

A fault is defined as a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side. A fault zone is a zone of related faults that is commonly braided and subparallel, but may be branching or divergent. Movement within a fault causes an earthquake. When movement occurs along a fault, the energy generated is released as waves that cause ground shaking. Ground shaking intensity varies with the magnitude of the earthquake, the distance from the epicenter, and the type of rock or sediment through which the seismic waves move.

The potential risk of fault rupture is based on the concept of recency and recurrence. The more recently a particular fault has ruptured, the more likely the fault would rupture again. The California Geological Survey defines an "active fault" as one that has had surface displacement within the past 11,000 years (Holocene). Potentially active faults are defined as those that have ruptured between 11,000 and 1.6 million years before the present (Quaternary). Faults are generally considered inactive if evidence of displacement is not present during the Quaternary. The Midland Fault and the Bear Mountain Fault Zones, considered the faults of greatest concern in Sacramento County due to their location and size, are older than 1.6 million years old.

The Foothills fault system is anticipated to have the greatest potential impact. The California Geologic Survey (CGS) identifies low, medium, and high severity earthquake zones within California. The General Plan places the City in Seismic Zone 3, which is an area that can expect to experience ground motion of low severity.[4] Based upon seismologic and geologic conditions, the maximum level of ground motion potentially experienced in the City would occur as a result of a 6.5 magnitude earthquake on the Foothills Fault zone or the Great Valley fault. Minor ground shaking can result in partial collapse of buildings, and extensive damage in poorly built or sub-standard structures.

Project Site Characteristics

The project site consists of approximately 279.3 acres located northwest of Raymer Way and Grant Line Road, within the Grant Line West Planning Area of the City. The project site is located on the southern edge of the Sacramento Valley, adjacent to the Sierra Nevada foothills. The topography of the area is generally flat with elevations ranging from approximately 220 feet above mean sea level to 225 feet above sea level. The CGS lists the project site and surrounding area as being underlain by the Pliocene Age Laguna Formation and some Quaternary Age Alluvium.

Currently, the 279.3-acre project site contains two single-family residences and associated outbuildings on the southern portion of the site, within parcels 072-0300-002 and -005. An orchard is located within the northeastern portion of the site within and parcel 073-0010-011, and a third

[4] City of Rancho Cordova. *Rancho Cordova General Plan Environmental Impact Report*. June 2006.

single-family residence and associated outbuildings are located on APN 072-0300-008. The remainder of the site consists primarily of non-native grasses, with scattered trees located in the vicinity of the existing residences and associated access roads. The site is interspersed with seasonal drainage corridors and wetlands, and Morrison Creek runs northeast to southwest through the site.

The geologic conditions on the project site are discussed below in further detail, including descriptions of existing site geology, soil conditions, seismicity and ground shaking, potential for earthquake-induced liquefaction, and expansive soils. In addition, this section includes a description of known mineral and paleontological resources within the project area.

Site Geology and Subsurface Conditions

Based on the Geology and Soils Report, subsurface soil conditions on the project site consist of a heterogeneous mixture of materials. Soils were observed to consist of clayey silty sands, clayey sands, clayey sandy silts, and silty sandy clays containing varying amounts of gravel from the surface to a depth of about two to four feet below the existing ground surface. In some areas, the soils extend to a depth of as much as 10 feet. Underlying the relatively fine-grained soils are clayey and silty, gravel and cobbles. According to the Department of Water Resources Water Data Library Web Site, the ground elevation of the water table on the project site is approximately 76 feet above sea level.

The soils in the area have been mapped by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (see Figure 4.4-1). The results of the Custom Soil Survey completed for the project site are summarized in Table 4.4-1 below.

Seismicity and Ground Shaking

Fault rupture hazards occur near active faults and tend to reoccur along the surface traces of previous fault movements. A total of eight faults and/or fault zones have been identified as potential seismic sources within a 100-kilometer (62.14-mile) radius of the project site. The fault zones expected to have the greatest impact to are the faults associated with the Foothills fault system. The Foothills fault system is located along the western flank of the Sierra Nevada Mountain range. The site does not include any active faults and is not located within an Alquist-Priolo Special Studies Zone.[5]

The intensity of ground shaking resulting from an earthquake is a function of the size of the earthquake, the duration of the energy release, the distance from the subject location, and the ability of the geologic materials to transmit the energy. In general, the greater the energy release and the closer the center of release to the site, the greater the intensity of the ground shaking. Per the Geology and Soils Report, the project site is in a region of California characterized by low historical seismic activity and a low ground-shaking hazard. According to the City's General Plan EIR, the City's Planning Area is considered to be in a relatively moderate ground shaking zone due to the distance to active faults

[5] California Department of Conservation. *EQ Zapp: California Earthquake Hazards Zone Application.* Available at: https://www.conservation.ca.gov/cgs/geohazards/eq-zapp. Accessed September 2020.

Figure 4.4-1
Soil Resource Report Map



Note: See corresponding map unit numbers in Table 4.4-1.

Table 4.4-1
Soil Characteristics On-Site

Soil Map Unit	Map Unit Symbol	Percent of Site	Shrink-Swell Potential	Permeability	Water Erosion Hazard	Runoff Rating
Hicksville gravely loam, 0 to 2 percent slopes	159	21.4	0.31	Moderately High	7	C/D
Red Bluff loam, 2 to 5 percent slopes	192	7.2	0.50	Moderately High	6	C
Red Bluff-Redding complex, 0 to 5 percent slopes	193	38.3	0.50	Moderately High	6	C
Redding gravelly loam, 0 to 8 percent slopes	198	33.1	0.99	Moderately High	6	D

[1] The NRCS online soil database uses 0-1 values to describe factors such as shrink-swell potential with 0 being very low and 1.0 being very high.

[2] NRCS Saturated hydraulic connectivity (Ksat) refers to the ease with which pores in a saturated soil transmit water based on NRCS class limits.

[3] Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms. The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/B, B/D, and C/D). The groups are defined as follows: Group A soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission. Group B soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission. Group C soils have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission. Group D soils have a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high-water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission. If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Source: Youngdahl Consulting Group, Inc.

Liquefaction and Subsidence

Liquefaction is the sudden loss of soil shear strength and sudden increase in porewater pressure caused by shear strains, as could result from an earthquake. Research has shown that saturated, loose to medium-dense sands with a silt content less than about 25 percent and located within the top 40 feet are most susceptible to liquefaction and surface rupture/lateral spreading. The CGS has designated certain areas within California as potential liquefaction hazard zones, which are areas considered at risk of liquefaction-related ground failure during a seismic event based upon mapped surficial deposits and the depth to the areal groundwater table.

Per the General Plan, subsidence is the gradual settling or sinking of surface soil deposits with little horizontal motion. Sacramento County is affected by five causes of land subsidence: 1) compaction of unconsolidated soils from earthquakes; 2) compaction by heavy structures; 3) erosion of peat soils; 4) peat oxidation; and 5) groundwater withdrawal.



The project site is not in a mapped liquefaction hazard zone. In addition, the depth to the groundwater table and aquifer system is generally greater than 50 feet. The potential for other secondary hazards (i.e., ground lurching, differential settlement, or lateral spreading) occurring during or after seismic events in the City of Rancho Cordova Planning Area is also considered to be low due to the distance of active faults. Therefore, the potential for liquefaction is considered low.

Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume change due to variation in moisture content. Compressible materials consisting of surficial organic material, loose soils, undocumented fills, debris, rubble, rubbish, etc., are considered unsuitable materials for support of proposed structures as such materials can differentially settle. Changes in soil moisture content can result from rainfall, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may cause unacceptable settlement of structures. The NRCS reports that shrink-swell potentials for on-site soils range from 0.31 to 0.99, using a scale of 0 to 1.0 where 1.0 represents a high potential (see Table 4.4-1). As shown in Table 4.4-1, the on-site soils with the highest expansive potential are located in the northern portion of the project site.

Groundwater

The project site is located within the Central Sacramento County Groundwater Basin (Central Basin). The Central Basin is roughly bordered to the north by the American River and the Cosumnes River to the south. Zone 40 is located within the Central Basin and includes the project site. Groundwater in the Central Basin is stored within a shallow aquifer in the Laguna or Modesto Formations, and in a deeper underlying aquifer zone in the Mehrten Formation. Overall, groundwater within the City of Rancho Cordova is anticipated to be found at depths greater than 50 feet.[6] The project site is primarily underlain by Mehrten features and, thus, groundwater is anticipated to be deeper than other regions of the City.

Mineral Resources

Department of Conservation maps were reviewed to examine the potential of a mine or prospect being located on the project site.[7] Maps contained in the Mineral Land Classification of the Folsom 15-Minute Quadrangle do not identify any documented mines or prospects on the project site or in the project vicinity. While the General Plan identifies mining operations to the north and east of the project site, the site does not contain any such operations. Furthermore, the California Division of Mines and Geology indicates that the project site is classified as either MRZ-3 or MRZ-4 for Placer gold, copper, zinc, and industrial minerals. MRZ-3 and MRZ-4 are considered areas where the significance of mineral deposits either cannot be evaluated from existing data or the data is inadequate for placement in any other mineral resource zone. According to the City's General Plan, the site is not listed as a locally important mineral resource recovery site.

Paleontological Resources

Paleontological resources include fossil remains, as well as fossil localities and formations, which have produced fossil material in other nearby areas. A search of the paleontological records on the University of California Museum of Paleontology (UCMP) database was performed by the City of Rancho Cordova in the General Plan EIR. According to the results of the records search, the

6 City of Rancho Cordova. *Rancho Cordova General Plan Environmental Impact Report*. June 2006.
7 Department of Conservation. *Mineral Land Classification Map Folsom 15-Minute Quadrangle*. May 30, 2018.

City does not appear sensitive for the presence of paleontological resources, and paleontological resources have not been identified in the City's Planning Area. However, fossils have been discovered from the Riverbank Formation. The finds have been dated to the late Pleistocene period and include fish, frogs, snakes, turtles, and plant species.

4.4.3 REGULATORY CONTEXT

The following section is a brief summary of the regulatory context under which geology and soils, mineral resources, and paleontological resources are managed at the federal, State, and local levels.

Federal Regulations

The following are the federal environmental laws and policies relevant to geology and soils, mineral resources, and paleontological resources.

Federal Earthquake Hazards Reduction Act

Passed by Congress in 1977, the Federal Earthquake Hazards Reduction Act is intended to reduce the risks to life and property from future earthquakes. The Act established the National Earthquake Hazards Reduction Program (NEHRP). The goals of NEHRP are to educate and improve the knowledge base for predicting seismic hazards, improve land use practices and building codes, and to reduce earthquake hazards through improved design and construction techniques.

International Building Code

The Uniform Building Code (UBC) was first published in 1927 by the International Council of Building Officials and is intended to promote public safety and provide standardized requirements for safe construction. The UBC was replaced in 2000 by the new International Building Code (IBC), published by the International Code Council (ICC), which is a merger of the International Council of Building Officials' UBC, Building Officials and Code Administrators International's National Building Code, and the Southern Building Code Congress International's Standard Building Code. The intention of the IBC is to provide more consistent standards for safe construction and eliminate any differences between the three preceding codes. All State building standard codes are based on the federal building codes.

Federal Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained through the National Pollutant Discharge Elimination System (NPDES) permit program or point sources are discrete conveyances such as pipes or man-made ditches.

National Pollutant Discharge Elimination System

The NPDES permit program addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. Created in 1972 by the Clean Water Act, the NPDES permit program is authorized to California's Regional Water Quality Control Board (RWQCB) by the U.S. Environmental Protection Agency (EPA) to perform many permitting, administrative, and enforcement aspects of the program. The terms of the NPDES permits implement pertinent



provisions of the Federal Clean Water Act to protect surface waters, including lakes, rivers, streams, bays, dry steam beds, wetlands, and storm sewers.

State Regulations

The following are the State environmental laws and policies relevant to geology and soils, mineral resources, and paleontological resources.

Alquist-Priolo Earthquake Fault Zoning Act

The 1972 Alquist-Priolo (AP) Earthquake Fault Zone Act was passed to prevent the new development of buildings and structures for human occupancy on the surface of active faults. The Act is directed at the hazards of surface fault rupture and does not address other forms of earthquake hazards. The locations of active faults are established into fault zones by the AP Fault Zone Act. Local agencies regulate any new developments within the appropriate zones in their jurisdiction.

The AP Fault Zone Act regulates development near active faults so as to mitigate the hazard of surface fault rupture. The AP Fault Zone Act requires that the State Geologist (Chief of the California Department of Mines and Geology [CDMG]) delineate “special study zones” along known active faults in California. Cities and counties affected by the special study zones must regulate certain development projects within the special study zones. The AP Fault Zone Act prohibits the development of structures for human occupancy across the traces of active faults. According to the AP Fault Zone Act, active faults have experienced surface displacement during the last 11,000 years. Potentially active faults are those that show evidence of surface displacement during the last 1.6 million years. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity sometimes is difficult to obtain and may not exist.

Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act of 1990 (California Public Resources Code Section 1690-2699.6) addresses non-surface rupture earthquake hazards, including liquefaction, induced landslides, and subsidence. A mapping program is also established by this Act, which identifies areas within California that have the potential to be affected by such non-surface rupture hazards. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

California Building Standards Code

The State of California regulates development within the State through a variety of tools that reduce or mitigate potential hazards from earthquakes or other geologic hazards. The 2019 California Building Standards Code (CBSC) (California Code of Regulations, Title 24) governs the design and construction of all building occupancies and associated facilities and equipment throughout California. In addition, the CBSC governs development in potentially seismically active areas and contains provisions to safeguard against major structural failures or loss of life caused by earthquakes or other geologic hazards. The California building standards include building standards in the national building code, building standards adapted from national codes to meet California conditions, and building standards adopted to address particular California concerns. It should be noted that the CBSC is updated on a triennial cycle. The 2019 CBSC, which contains new code changes, became effective on January 1, 2020.



Local Regulations

The following are the local environmental laws and policies relevant to geology and soils, mineral resources, and paleontological resources.

City of Rancho Cordova General Plan

Goals and policies from the City's General Plan related to geology and soils, mineral resources, and paleontological resources that are applicable to the proposed project are presented below:

Goal S.3 Reduce the risk of adverse effects to residents or businesses as a result of geologic or seismic instability.

- Policy S.3.1 Support efforts by federal, State, and local jurisdictions to investigate local seismic and geologic hazards and support those programs that effectively mitigate these hazards.
- Policy S.3.2 Ensure that new structures are protected from damage caused by geologic and/or soil conditions to the greatest extent feasible.

Goal NR.5 Protect the quantity and quality of the City's water resources.

- Policy NR.5.5 Minimize erosion to stream channels resulting from new development in urban areas consistent with State law.

City of Rancho Cordova Municipal Code

Sections of the Municipal Code related to geology and soils, mineral resources, and paleontological resources that are applicable to the proposed project are presented below.

Chapter 16.04, Building Code

Chapter 16.04, Building Codes, of the Rancho Cordova Municipal Code is meant to provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, and installation of all buildings within the City. Section 16.04.030 adopts Title 24 of the California Code of Regulations, and any rules and regulations incorporated within Title 24.

Chapter 16.44, Land Grading and Erosion Control

Chapter 16.44, Land Grading and Erosion Control, of the Rancho Cordova Municipal Code, includes definitions, conditions, and permit requirements for new development to minimize damage to surrounding properties and public rights-of-way, degradation of water quality, disruption of natural or City-authorized drainage flows caused by clearing, grading, filling, and excavating, and sediment and pollutant runoff.

4.4.4 IMPACTS AND MITIGATION MEASURES

This section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to geology and soils, mineral resources, and paleontological resources. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, a significant impact would occur if the proposed project would result in any of the following:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - 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 based on other substantial evidence of a known fault;
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction;
    - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- 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;
- Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property;
- 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;
- 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; and/or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Issues Dismissed in the Initial Study

The Initial Study prepared for the proposed project (see Appendix A) determined that development of the proposed project would result in a less-than-significant impact related to the following:

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

For the reasons cited in the Initial Study, the potential impacts associated with the use of septic tanks or alternative wastewater disposal systems are not analyzed further in this EIR.

Method of Analysis

The analysis of the proposed project's potential impacts related to geology, soils, and mineral resources is based primarily on the Geology and Soils Report prepared for the proposed project by Youngdahl Consulting Group, Inc. Information related to paleontological resources is sourced primarily from the City of Rancho Cordova General Plan.

Geology and Soils Report

The Geology and Soils Report prepared for the proposed project by Youngdahl Consulting Group, Inc. drew on information from previous studies, including a 2004 Geotechnical Engineering Report performed by Wallace-Kuhl & Associates, Inc., regional geologic maps and fault maps prepared by the California Department of Conservation's CGS, and soil maps and information provided by the USDA NRCS. Impacts related to geology, soils, and seismicity were evaluated based on

available data (maps, soil surveys, reports), and professional judgement. The analysis focuses on the proposed project's potential to result in the risk of personal injury, loss of life, and damage to property as a result of existing geologic and geotechnical conditions within the project area. The analysis of impacts assumes that the project applicant would conform to the latest stormwater pollution prevention requirements and all applicable policies, standards, and ordinances set forth by the County, City, and other agencies.

Mineral Resources

As part of the Geology and Soils Report, the proposed project's potential to affect mineral resources was evaluated by examining the project footprint in comparison to resource locations mapped by the CGS.

Paleontological Resources Analysis

The assessment of paleontological resources and the potential for discovery on the project site was based primarily on the General Plan EIR. The General Plan EIR included a search of the University of California, Berkeley, Museum of Paleontology collections database, as well as historical maps and aerial photographs.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

4.4-1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. Based on the analysis below, the impact is *less than significant*.

As discussed above, the project site is not located within an AP Fault Zone. Evidence of recent faulting within the project site area has not been detected, nor have any active faults been mapped at or near the project site.

The project site is located in an area of relatively low ground shaking hazard. However, a large earthquake on a nearby fault could cause minor ground shaking in the vicinity of the project, potentially resulting in an increased risk of structural loss, injury, or death. Liquefaction and related seismic hazards such as lateral spreading and differential settlement have the potential to compromise the structural integrity of the proposed residences. Despite the potential for seismic events to cause damage to the structures on the project site, all residences would be designed in accordance with the CBSC, and would be able to: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage, but with some non-structural damage; and 3) resist major earthquakes without collapse, but with some structural, as well as non-structural, damage.

As noted in the Geology and Soils Report, due to the absence of a permanently elevated groundwater table and the relatively low seismicity of the project area, the potential for seismically induced damage to the proposed structures due to

liquefaction, surface rupture, and settlement is minimal. Furthermore, because the project site does not contain any steep slopes, the risk of landslide the site would not be substantial.

Overall, the proposed residential development would not be subject to substantial risks related to fault rupture hazards. Due to the relatively low seismicity of the area, compliance with CBSC requirements related to seismic design, and the lack of substantial natural slopes on-site, the potential for the project to expose people or structures to the risk of loss, injury, or death involving rupture of an earthquake fault, strong ground shaking, ground failure, liquefaction, or landslides would be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.4-2 Result in substantial soil erosion or the loss of topsoil. Based on the analysis below, the impact is *less than significant*.

Erosion refers to the removal of soil from exposed bedrock surfaces by wind or water. Although naturally occurring, erosion is often accelerated by human activities that disturb soil and vegetation. Grading, excavation, removal of vegetation cover, and loading activities associated with construction could temporarily increase erosion, runoff, and sedimentation. Ground-disturbing activities associated with the proposed project could also result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential within the construction and staging areas. Ground-disturbing activities that would occur as part of the proposed project would occur within the portion of the site to the south of Morrison Creek. The 185.3 acres of open space area within the northern portion of the site would not be included in development of the proposed project.

NPDES permits are required for discharges of pollutants to waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, dry stream beds, wetlands, and storm sewers. The RWQCB issues permits in lieu of direct issuance by the Environmental Protection Agency. The terms of the NPDES permits implement pertinent provisions of the Federal Clean Water Act. In accordance with the NPDES General Construction Permit, a Stormwater Pollution Prevention Plan (SWPPP) is required for any project that disturbs at least one acre of soil. Given that the proposed project would disturb approximately 98.9 acres within the site, the project would be required to prepare a SWPPP and submit a Notice of Intent (NOI) to the RWQCB.

The SWPPP would be kept on site during construction activity and made available upon request to representative of the City of Rancho Cordova, the County of Sacramento, or the Central Valley RWQCB. The SWPPP would identify pollutant sources that may affect the quality of stormwater associated with construction activity, and identify stormwater pollution prevention measures to be implemented to reduce pollutants in stormwater discharges during and after construction. Therefore, the SWPPP would also include a description of potential pollutants and hazardous materials present on site during construction. The SWPPP would include details of

how the sediment and erosion control practices, also known as best management practices (BMPs) would be implemented. Implementation of the SWPPP would comply with County, State, and federal water quality requirements. Development of the SWPPP would include plans to treat stormwater runoff in accordance with the standards of the California Stormwater Management Practice New Development and Redevelopment Handbook and the Sacramento Stormwater Quality Partnership Municipal Stormwater Permit (MS4). The plan would include drainage design from all paved surfaces, including streets, parking lots, driveways, and roofs, as well as landscaping.

Furthermore, Chapter 16.44 of the City's Municipal Code regulates grading and erosion by requiring all projects that grade more than one acre of land submit an application for review by the City prior to approval of a grading permit. The application must include a grading and erosion plan which would be reviewed for safety of grading and potential for erosion. The project would be subject to compliance with Chapter 16.44 of the City's Municipal Code and the project applicant would be required to prepare a grading and erosion plan. The grading and erosion plan would include erosion control measures and sediment control measures to ensure the stability of the ground surface and soil within the project site during construction activities.

Based on the above, development of the proposed project would not result in substantial soil erosion or the loss of topsoil with the preparation of an SWPPP in accordance with the NPDES General Construction Permit and preparation of a grading and erosion plan in accordance with the City's Municipal Code. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.4-3 Be located on a geological 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, or be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Issues associated with unstable geologic units and/or soils, including expansive soils, landslide, lateral spreading, subsidence, liquefaction, and collapse are discussed below.

Landslide

Per the CGS the project site is not currently within a State of California Seismic Hazard Zone for seismically induced land sliding.[8] In addition, the project site is relatively

[8] Department of Conservation. *CGS Information Warehouse: Landslides*. Available at: http://maps.conservation.ca.gov/cgs/informationwarehouse/. Accessed April 2, 2020.

gently rolling to flat and does not have any steep slopes. Given that the project site is not mapped in a landslide zone and the site does not contain any slopes that could be subject to landslide risks, development of the southern portion of the project site with 440 single-family units and associated improvements would not result in on- or off-site landslide hazards.

Lateral Spreading

Lateral spreading is associated with terrain near free faces such as excavations, channels, or open bodies of water. The project site is relatively level with gentle undulation throughout the property. The Geology and Soils Report concluded that the soil materials at the site would not create any excavation difficulties, nor would the relatively shallow slopes present within the project site create any slope instability. Additionally, the proposed residences would be setback at least 100 feet from Morrison Creek within the project site. The setbacks would ensure that project development would not destabilize the channel or otherwise result in lateral spreading issues. Because the proposed project would establish appropriate setbacks from the Morrison Creek channel, and because the proposed development area does not contain any steep slopes or free faces, the proposed project would not be subject to substantial risks related to lateral spreading.

Liquefaction

Liquefaction occurs when saturated fine-grained sand and/or silts lose their physical strength temporarily during earthquake-induced shaking and behave as a liquid. The CGS has designated certain areas within California as potential liquefaction hazard zones; however, the project site is not currently mapped for potential liquefaction hazard by the CGS. Additionally, the Geology and Soils Report indicates that a low probability of liquefaction exists at the project site. Therefore, the proposed structures and associated improvements would not be subject to substantial risks associated with liquefaction.

Collapse

As discussed above, all structures constructed as part of the proposed project would be required to adhere to the provisions of the most recent version of the CBSC in effect at the time of building permit issuance. Structures built according to the seismic design provisions of current building codes would be able to resist major earthquakes without collapse, but with some structural, as well as non-structural damage. Given the project's adherence to the CBSC requirements, the proposed project would not be subject to substantial risks associated with building collapse.

Expansive Soils

According to the preliminary geotechnical evaluation performed by Wallace-Kuhl & Associates, the site contains soils made of clay with a moderately high expansion potential. As shown in Table 4.4-1 above, the shrink-swell potential of soils on the project site ranges from 0.31 to 0.99, on a scale of 0 to 1.0, where 1.0 represents a high potential. Expansive soils have the potential to compromise the structural integrity of project features, which could be a significant impact. However, in order to meet the CBSC Chapter 18 requirements, the project applicant's geotechnical engineer would be responsible for conducting final geotechnical evaluations of the on-site soils to further determine the extent of soils with adverse shrink-swell properties prior to

grading and construction activities. Based on subsurface conditions, the project applicant's geotechnical engineers would make recommendations for project element designs to accommodate for the effects of expansive soils. Corrective actions may include excavation of potentially problematic soils during construction and replacement with engineered backfill, ground treatment processes, and direction of surface water away from foundation soils. The applicants would select one or more of the measures in consultation with qualified engineers before grading activities begin. Therefore, with implementation of the aforementioned corrective actions, the proposed project would not be exposed to substantial risks related to expansive soils.

Conclusion

From a geotechnical standpoint, the project site is preliminarily considered suitable for the proposed construction. Thus, the proposed project would not likely be subject to issues associated with lateral spreading, subsidence, liquefaction, collapse, or expansive soils. However, implementation of recommendations included in a final geotechnical engineering report would be required in order to ensure adequate support of the proposed improvements. Because a final geotechnical engineering report has not yet been prepared, a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.4-3 *The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer for review and approval by the Rancho Cordova Community Development Department. The report shall address and make recommendations on the following:*

A. Road, pavement, and parking area design;
B. Structural foundations, including retaining wall design (if applicable);
C. Grading practices;
D. Erosion/winterization;
E. Special problems discovered on-site, (i.e., open bodies of water, expansive/unstable soils, etc.); and
F. Slope stability.

Once approved by the Rancho Cordova Community Development Department, two copies of the final report shall be provided to the Rancho Cordova Community Development Department and one copy to the Rancho Cordova Building and Safety Division for its use. It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

4.4-4 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 or of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Based on the analysis below, the impact is *less than significant*.

According to the Geology and Soils Report performed by Youngdahl Consulting, the project site does not contain any known mineral resources that would be of value to the region or the residents of the State. Furthermore, the City of Rancho Cordova General Plan does not list the project site as a locally-important mineral resource recovery site. The site has been previously designated for residential uses, and mineral resource extraction on the site would be incompatible with the existing residential development to the south of the site. Therefore, development of the proposed project would not 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, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.4-5 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

According to the City's General Plan EIR, paleontological resources have not been identified in the Planning Area. However, fossils have been recovered from the Riverbank Formation. The General Plan EIR concluded that build out of the City's General Plan could result in a significant impact to unknown cultural resources. With implementation of Policy CHR.3.3 and Action CHR.3.3.4 which require all new development projects to comply with established procedures upon discovery of unique paleontological resources, impacts related to disturbance of paleontological resources were determined to be less than significant.

Although the proposed project would not have the potential to result in the destruction of unique geological features, previously unknown paleontological resources could exist within the project site and off-site improvement areas. Therefore, ground-disturbing activity, such as grading, trenching, or excavating associated with implementation of the proposed project, could have the potential to disturb or destroy unknown paleontological resources. Thus, the proposed project could result in the direct or indirect destruction of a unique paleontological resources, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level

4.4-5 *Should construction or grading activities result in the discovery of unique paleontological resources, all work within the vicinity of the discovery shall cease. The City of Rancho Cordova Community Development Department shall be notified, and the resources shall be examined by a qualified paleontologist at the developer's expense, for the purpose of recording, protecting, or curating the discovery as appropriate. The paleontologist shall submit to the Community Development Department for review and approval a report of the findings and method of curation or protection of the resources. Work may only resume in the area of discovery when the preceding work has occurred.*

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 5, Statutorily Required Sections, of this EIR.

4.4-6 Cumulative impacts to geology and soils, mineral resources, and paleontological resources. Based on the analysis below, the cumulative impact is *less than significant*.

Impacts to geology and soils, mineral resources, and paleontological resources related to implementation of the proposed project are analyzed throughout this chapter. As discussed above, existing geological and soil conditions on the site would be adequate to support development of the proposed project. Mitigation Measure 4.4-3, which requires preparation and submittal of a final geotechnical report, would ensure that project-specific impacts related to soil stability would be reduced to less-than-significant levels.

While some geologic characteristics may affect regional construction practices, impacts and mitigation measures are primarily site-specific and project-specific. For example, impacts resulting from development on expansive soils at one project site are not worsened by impacts from development on expansive soils or undocumented fill at another project site. Rather, the soil conditions, and the implications of such conditions for each project, are independent.

As such, the potential for cumulative impacts related to geology, soils, seismicity, paleontological resources, and mineral resources, to which implementation of the proposed project might contribute, is ***less than significant***.

Mitigation Measure(s)

None required.

4.5 Hazards and Hazardous Materials

4.5. HAZARDS AND HAZARDOUS MATERIALS

4.5.1 INTRODUCTION

The Hazards and Hazardous Materials chapter of the EIR describes existing and potentially occurring hazards and hazardous materials within the project area. The chapter includes a discussion of potential impacts posed by such hazards to the environment. In addition, surrounding land uses are discussed in order to provide an assessment of whether the project could impact surrounding land uses. The question of whether surrounding land uses could impact the project's future residents is not a question requiring analysis under CEQA.[1]

The Hazards and Hazardous Materials chapter is primarily based on information drawn from a Phase I Environmental Site Assessment (ESA) (see Appendix G) prepared for the project site by Youngdahl Consulting Group, Inc.,[2] as well as the City of Rancho Cordova General Plan[3] and associated EIR.[4]

4.5.2 EXISTING ENVIRONMENTAL SETTING

The following section includes a definition of hazardous materials and descriptions of the existing conditions associated with the project site related to hazards and hazardous materials.

Hazardous Materials

The term hazardous substance refers to both hazardous materials and hazardous wastes. A material is defined as hazardous if the material appears on a list of hazardous materials prepared by a federal, State, or local regulatory agency or if the material has characteristics defined as hazardous by such an agency. The California Environmental Protection Agency (CalEPA), California Department of Toxic Substance Control (DTSC) defines hazardous waste, as found in the California Health and Safety Code Section 25141(b), as follows:

> […] its quantity, concentration, or physical, chemical, or infectious characteristics: (1) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; (2) pose a substantial present or potential hazard to human health or the environment, due to factors including, but not limited to, carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment, when improperly treated, stored, transported, or disposed of, or otherwise managed.

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1 Per the *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (*CBIA*), the California Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment – and not the environment's impact on the project – that compels an evaluation of how future residents or users could be affected by exacerbated conditions." (*Id.* at pp. 377-378.).

2 Youngdahl Consulting Group, Inc. *Phase I Environmental Site Assessment, The Preserve, Sacramento County APNs 072-0300-001, 002, -005, 008, -010, and 073-0010-011, Rancho Cordova, California.* June 2019.

3 City of Rancho Cordova. *General Plan*. Adopted June 26, 2006.

4 City of Rancho Cordova. *General Plan Environmental Impact Report.* 2006.

The following discussion focuses on the potential Recognized Environmental Conditions (RECs) associated with the project site. A REC indicates the presence or likely presence of any hazardous substances in, on, or at a property due to any release into the environment, under conditions indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment.[5]

Additionally, the following includes a discussion of historical RECs associated with the project site. A historical REC indicates a past release of hazardous substances or petroleum products that has occurred in connection with a property and has been addressed to the satisfaction of the applicable regulatory authority. A historical REC does not have any property use restrictions, and, thus, does not have any use limitations in respect to future activities on the property.

Project Area Conditions

The project site is comprised of multiple parcels identified by Assessor's Parcel Numbers (APNs) 072-0300-001, -002, -005, -008, and 073-0010-010, and -011. Morrison Creek runs northeast to southwest through the project site. Currently, the 279.3-acre project site contains two single-family residences and associated outbuildings on the portion of the site to the south of Morrison Creek, within parcels 072-0300-002 and -005. An orchard is located within the northeastern portion of the site within and parcel 073-0010-011, and a third single-family residence and associated outbuildings are located on APN 072-0300-008, north of Morrison Creek. The remainder of the site consists primarily of ruderal grasses. Currently, the undeveloped portions of the site are used for livestock grazing.

Surrounding land uses include the Camden at Somerset Ranch residential subdivision directly to the south, vacant agricultural lands and a Teichert Aggregates Aggregate/Asphaltic Concrete site across Grant Line Road to the east, two single-family residences and industrial/open space to the north, and vacant land approved for the development of the Rio Del Oro residential community immediately adjacent to the west. The area further to the north of the site contains known contamination areas associated with the Aerojet General Corporation National Priorities List Superfund Site. A monitoring well associated with the Superfund site is located within the project site.

The site is located within California's Great Valley Geomorphic Province, a geologically young, large, flat-lying alluvial plain in the central portion of California. The project site and the surrounding area is underlain by the Laguna Formation and a thin strip of Quaternary Alluvium along the central drainage feature within the site. The Laguna Formation consists of Tertiary age fluvial granitic sands and silts. According to Spring 2017 Department of Water Resources (DWR) well records, one irrigation well is located approximately 0.5-mile to the southeast of the site. The most recent data obtained from the well in October of 2018 shows a groundwater depth of 183 feet below the ground surface (bgs). Groundwater elevation contour maps produced in 2018 by Geosyntec Consultants show each groundwater layer flowing towards the southwest in the vicinity of the project site.

The potential hazards associated with the project area identified in the Phase I ESA prepared for the project site are described in further detail below. It should be noted that the 2019 Phase I ESA incorporates the findings of multiple prior Phase I ESAs that were completed for various portions of the project site between 2015 and 2018.

[5] ASTM International. *ASTM E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* 2013.

On-Site Recognized Environmental Conditions

Based on the Phase I ESA prepared for the project site, the site does not contain any polychlorinated biphenyl (PCB) containing equipment, substantial soil staining, or stressed vegetation. However, potential RECs were identified associated with groundwater contamination, soil vapor intrusion, an on-site underground storage tank (UST) and fuel storage vessels, asbestos, lead-based paint, and termiticides. In addition, the Phase I ESA noted the presence of domestic wells and septic systems within the site. Figure 4.5-1 provides an overview of the site features described in the Phase I ESA.

Groundwater Contamination

As noted above, the project site is located within the vicinity of known contamination areas associated with the Aerojet General Corporation National Priorities List Superfund Site. Past environmental sampling has identified a contaminant plume of trichloroethylene (TCE) associated with the Aerojet area. As part of the Phase I ESA prepared for the project site, the Fall 2018 iso-concentration maps prepared by Geosyntec Consultants depicting the extent of contamination of the Aerojet area for TCE, perchlorate, and N-Nitrosodimethylamine (NDMA) were reviewed.

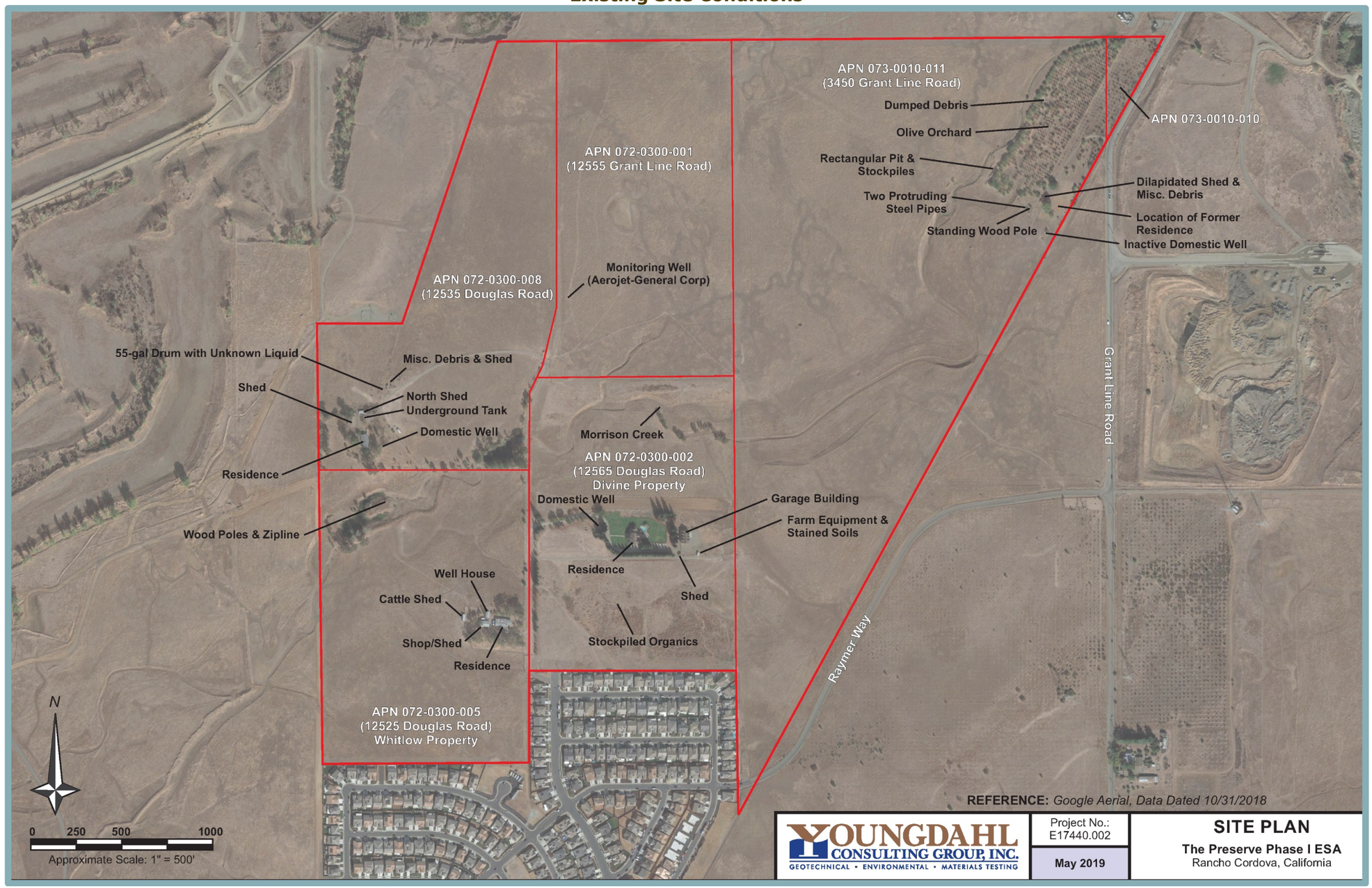
Per the maps, the NDMA contours do not intersect the project site. However, the maps show that the five parts per billion (ppb) contour for TCE in groundwater Layers C and D reach monitoring wells OS-10C1/OS-10C2 located in the southwest of parcel 072-0300-001 (12555 Grant Line Road), partially encroaches into parcel 072-0010-011, and continues west through parcel 072-0300-008 to the west adjacent parcel where an extraction well (#4757) is located. The 50 ppb contour for Layer C encroaches near the northern part of parcel 072-0300-001, near a monitoring well just outside the north property boundary (well OS-5C). The four ppb contour for perchlorate in Layer C intersects the subject property at the northeast corner of the site within parcels 072-0010-010 and -011.

The maximum contaminant level (MCL) for groundwater and drinking water established by the Environmental Protection Agency (EPA) is five ppb for TCE and six ppb for perchlorate. Perchlorate was found to be below the MCL at the subject property. In addition, perchlorate does not pose a soil vapor intrusion risk. The five ppb TCE contour does not intersect any domestic wells within the project site, but has potential to create a soil vapor intrusion scenario for future development on the site.

Vapor Encroachment

Vapor intrusion is the term used to describe the migration of volatile organic compounds (VOCs) through soil vapor from the sub-surface soil and/or groundwater upward into buildings, potentially causing unacceptable chemical exposure for building occupants. Soil vapor is one of the pathways of contamination to the subject property, along with ground water and soil. ASTM E1527-13 requires that vapor migration be treated no differently than contaminated groundwater. Thus, the soil vapor contaminant pathway needs to be considered in evaluation of RECs or other environmental concerns. The ASTM Standard Guide for Vapor Encroachment Screening (VES) on Property Involved in Real Estate Transactions (ASTM E2600-10) is the industry-accepted guidance for using Phase I ESA information to determine if a vapor encroachment condition (VEC) exists at a subject property. Per a VES conducted as part of the Phase I ESA, the Aerojet groundwater contamination plume was identified as having a potential to create a soil vapor intrusion scenario at the project site.

Figure 4.5-1
Existing Site Conditions



Underground Storage Tank and Fuel Storage Vessels

As part of a site reconnaissance survey conducted for the Phase I ESA, two steel pipes were observed protruding out of the ground within APN 073-0010-011 (3450 Grant Line Road). Per Youngdahl Consulting Group, Inc., the two protruding pipes have potential to be connected to an UST, which is considered an REC. In addition, the Phase I ESA identified an unknown underground system within APN 072-0300-008 adjacent to the shed located north of the residence. A 55-gallon drum was found northeast of the residence with an unknown liquid inside. Both the underground storage system and the drum are considered RECs if these vessels were used for fuel storage.

Asbestos-Containing Building Materials

Asbestos is a set of six naturally occurring silicate minerals used commercially for their desirable physical properties. The prolonged inhalation of asbestos fibers can cause serious illnesses including malignant lung cancer, mesothelioma, and asbestosis. In the industrialized world, asbestos was phased out of building products mostly in the 1970s, with most of the remainder phased out by the 1980s. For buildings constructed prior to 1980 (29 Code of Federal Regulations [CFR] 1926.11) all thermal system insulation and surface materials must be designated as presumed asbestos-containing building materials (ACBMs) unless proved otherwise through sampling. The residences and associated outbuildings within APN 072-0300-008 (12535 Douglas Road) were built sometime between 1975 and 1980; therefore, ACBM may be present within such structures. All other structures on the project site were found to have been built after 1980 and, thus, are unlikely to be contaminated with ACBMs.

Lead-Based Paint

Lead is considered to be a harmful environmental pollutant. Within the U.S., most homes and other buildings built before 1960 contain heavily leaded paint. Some homes built as recently as 1978 may also contain lead paint. Within the project site, the residence and outbuildings within APN 072-0300-008 (12535 Douglas Road) were built sometime between 1975 and 1980 and, thus, potentially contain lead-based paint. In addition, the Whitlow property (APN 072-0300-005, 12525 Douglas Road) contains a residence and associated outbuildings built sometime between 1980 and 1984; and the Divine property (APN 072-0300-002, 12565 Douglas Road) contains a residence that was built in 1994; while less likely, the potential exists for such structures to also contain lead-based paint.

Termiticides

Organochlorine termiticides (OC termiticides) are a group of persistent pesticides that were formerly used for termite control in and around wooden structures from the mid-1940s to the late 1980s. Such OC termiticides included chlordane, aldrin, dieldrin, heptachlor, and DDT. Chlordane and other organochlorine pesticides (OCPs) were commonly used as termiticides around structures until 1988. Above-ground use of chlordane was phased out between 1978 and 1983 by the U.S. Environmental Protection Agency (USEPA); although chlordane was used as a termiticide for wooden structures until it was prohibited in 1988. Due to the dates of construction, all wooden structures within the project site except for the Divine Property (APN 072-0300-002, 12565 Douglas Road) are at risk of having termiticides present, which is considered an REC.

Pesticides

Between the 1940s and 1970s, OCPs were commonly used in the U.S. for public health vector control, agricultural crop production, and pest control around structures. Although most OCPs were banned or withdrawn from use in the 1970s (including DDT), the compounds remain in the

environment where surface soils associated with historical agricultural and termite control pesticides are present. An orchard is visible starting in the 1984 historical aerial photo at the northeast corner of the subject site within APNs 073-0010-011 (3450 Grant Line Road) and 073-0010-010. The orchard is not shown in the 1980 topographic map. Per the Phase I ESA, due to the date in which the orchard was created, lead arsenate pesticides or OCPs are not likely to be present.

Domestic Wells and Septic Systems

Based on a records review conducted as part of the Phase I ESA, a domestic well was identified within the project site at 3450 Grant Line Road (073-0010-011). The well was permitted to be inactive in February 2015. Past sampling of the well for the Aerojet contamination plume showed that the well had trace levels of NDMA; the well did not contain any VOCs or perchlorate. The well was sealed in October 2014 and was planned for destruction; however, the well has not yet been destroyed at this time. Additional domestic wells were identified within APNs 072-0300-002, 072-0300-005, and 072-0300-008.

A septic system was identified within the lawn to the north of the existing residence at APN 072-0300-005. In addition, the Phase I ESA noted the possible presence of a septic tank adjacent to the northernmost shed on APN 072-0300-010.

Nearby Recognized Environmental Conditions

In an effort to fulfill due diligence requirements, Youngdahl Consulting Group, Inc. employed the services of Environmental Data Resources, Inc. (EDR) to identify sites listed on regulatory agency databases within approximate minimum search distances from the subject property with potential of existing environmental problems. The following sites were identified in the project vicinity:

- Aerojet General Corporation – U.S. Route 50 and Aerojet Road;
- North Douglas – Northeast of Douglas Road;
- American River Asphalt – 3417 Grant Line Road;
- Grantline Plant – 3417 Grant Line Road;
- Inactive Rancho Cordova Test Site (IRCT) – Nimbus Road;
- Automotive Importing MFG Inc. – 3920 Security Park Drive;
- General Electric Medical Systems – 3920 Security Park Drive.

With the exception of the groundwater plume associated with the Aerojet site, the Phase I ESA did not identify any potential risks to the project site associated with the above listed properties.

4.5.3 REGULATORY CONTEXT

The following discussion contains a summary of regulatory controls pertaining to hazardous substances, including federal, State, and local laws and ordinances.

Federal Regulations

Federal agencies that regulate hazardous materials include the USEPA, the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health (NIH). Prior to August 1992, the principal agency at the federal level regulating the generation, transport, and disposal of hazardous waste was the USEPA under the authority of the Resource Conservation and Recovery Act (RCRA). As of August 1, 1992, however, the California DTSC was authorized to implement the State's hazardous waste management program

for the USEPA. The USEPA continues to regulate hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The following federal laws and related regulations govern hazardous materials.

Occupational Safety and Health Act

Congress passed the Occupational and Safety Health Act (29 U.S.C. Section 651 et seq. [1970]) to ensure worker and workplace safety. Their goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. In order to establish standards for workplace health and safety, the Act also created the National Institute for Occupational Safety and Health (NIOSH) as the research institution for OSHA. OSHA is a division of the U.S. Department of Labor that oversees the administration of the Act and enforces standards in all 50 states. OSHA requires 40 hours of training for hazardous materials operators, as well as an annual eight-hour refresher course, which includes training regarding personal safety, hazardous materials storage and handling, and emergency response.

Comprehensive Environmental Response, Compensation, and Liability Act

The CERCLA (42 U.S.C. Section 9601 et seq. [1980]) provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, the USEPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. The USEPA cleans up orphan sites when potentially responsible parties cannot be identified or located, or when they fail to act. Through various enforcement tools, USEPA obtains private party cleanup through orders, consent decrees, and other small party settlements. The USEPA also recovers costs from financially viable individuals and companies once a response action has been completed. The USEPA is authorized to implement the Act in all 50 states and U.S. territories.

Superfund Amendments and Reauthorization Act of 1986

The Superfund Amendments and Reauthorization Act (SARA) of 1986, (Title III; Section 305(a)) reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions clarifications, and technical requirements were added to the legislation, including additional enforcement authorities. In addition, Title III of SARA authorized the Emergency Planning and Community Right-to-Know Act (EPCRA). SARA, Title III provides funding for training in emergency planning, preparedness, mitigation, response, and recovery capabilities associated with hazardous chemicals. Title III of SARA addresses concerns about emergency preparedness for hazardous chemicals, and emphasizes helping communities meet their responsibilities in preparing to handle chemical emergencies and increasing public knowledge and access to information on hazardous chemicals present in their communities.

Resource Conservation and Recovery Act

The RCRA (42 U.S.C. Section 6901 et seq. [1976]) gives USEPA the authority to control hazardous waste from the "cradle-to-grave," which includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled USEPA to address environmental problems that could result from underground tanks storing petroleum



and other hazardous substances. The federal Hazardous and Solid Waste Amendments (HSWA) are the 1984 amendments to RCRA that focused on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for USEPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program. States have the authority to implement individual hazardous waste programs in lieu of the RCRA as long as the state program is as stringent as federal RCRA requirements and is approved by the USEPA.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) of 1976 (15 U.S.C. Section 2601 et seq. [1976]) provides USEPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides. TSCA addresses the production, importation, use, and disposal of specific chemicals including PCBs, asbestos, radon, and lead-based paint.

U.S. Department of Transportation

Transportation of hazardous materials is regulated by the DOT's Office of Hazardous Materials Safety. The office formulates, issues, and revises hazardous materials regulations under the Federal Hazardous Materials Transportation Law. The hazardous materials regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications. The hazardous materials transportation regulations are codified in 49 CFR Parts 100–185.

The hazardous materials transportation regulations require carriers transporting hazardous materials to receive required training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections, use of vehicle controls and equipment including emergency equipment, procedures for safe operation of the transport vehicle, training on the properties of the hazardous material being transported, and loading and unloading procedures. All drivers must possess a commercial driver's license as required by 49 CFR Part 383. Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

Asbestos Hazard Emergency Response Act

The 1986 Asbestos Hazard Emergency Response Act (AHERA) was signed into law as Title II of the TSCA, requiring the Asbestos Model Accreditation Plan (MAP) for accrediting individuals conducting asbestos inspection and corrective-action activities in schools and public and commercial buildings. The MAP provides guidance on the minimum training requirements for accrediting asbestos professionals such as, procedural entry, exit, sampling, and monitoring, safety hazards, and relevant federal, state, and local regulatory standards.

Lead-based Paint Regulations

Lead pollutants are regulated by several laws administered by the USEPA, including the Toxic TSCA, the Residential Lead-Based Paint Hazard Reduction Act of 1992, the California Apartment Association (CAA), the California Waterfowl Association (CWA), the Safe Drinking Water Act (SDWA), the RCRA, and CERCLA. The aforementioned regulations address lead in paint, dust and soil, lead in air and water, and the disposal of lead wastes. Regulations specific to lead-based

paint include, but are not limited to, the Lead Renovation Repair and Painting Program Rule, the Lead Abatement Program, the residential Lead-based Paint Disclosure Program, and Residential Hazards of Lead in Paint, Dust and Soil. Such regulations require risk assessments, inspections, and work practices that work to minimize exposure to lead hazards.

State Regulations

The CalEPA and the State Water Resources Control Board (SWRCB) establish rules governing the use of hazardous materials and the management of hazardous waste. Within CalEPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the State agency, for the management of hazardous materials and the generation, transport, and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL). The following discussion contains the applicable State laws.

Regional Water Quality Control Board

The CalEPA and the Office of Emergency Services (OES) establish regulations governing the use of hazardous materials in California. Within CalEPA, DTSC has primary regulatory responsibility for hazardous waste management. Enforcement of regulations can be delegated to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the HWCL. Along with the DTSC, the Regional Water Quality Control Board (RWQCB) is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. The RWQCB's regulations are contained in Title 27 of the California Code of Regulations (CCR). The DTSC, RWQCB, and/or a local agency typically oversees investigation and cleanup of contaminated sites.

Department of Toxic Substances Control

The DTSC was established to protect California against threats to public health and degradation to the environment and to restore properties degraded by past environmental contamination. Through statutory mandates, DTSC cleans up existing contamination, regulates management of hazardous wastes, and prevents pollution by working with businesses to reduce hazardous waste and use of toxic materials in California. DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste in California. In addition, DTSC's Site Mitigation and Brownfields Reuse Program oversees the cleanup of State Superfund Sites. State Superfund sites are additionally known as Annual Workplan sites, listed sites, or Cortese List sites. Superfund sites demonstrate evidence of a hazardous substance release or releases that could pose a significant threat to public health and/or the environment. DTSC requires responsible parties to cleanup such sites. When responsible parties cannot be found or where they do not take proper and timely action, DTSC may use State funds to undertake the cleanup.

California Code of Regulations

Hazardous waste is characterized and defined in CCR, Title 22, Sections 66261.20-24. Soils that meet the descriptions of the characteristics of hazardous waste defined in Sections 66261.20-24 and contain contaminants above regulatory screening levels are considered hazardous waste and must be handled and disposed of as such. The CCR includes the California Health and Safety Code.

California Health and Safety Code

The handling and storage of hazardous materials is regulated on the federal level by the USEPA under CERCLA as amended by the SARA. Under SARA Title III, a nationwide emergency

planning and response program was established that imposed reporting requirements for businesses which store, handle, or produce significant quantities of hazardous or acutely toxic substances as defined under federal laws. SARA Title III required each state to implement a comprehensive system to inform federal authorities, local agencies, and the public when a significant quantity of hazardous, acutely toxic substances are stored or handled at a facility.

Ammonia is an example of an acutely hazardous material (AHM) that is regulated by the California Office of Emergency Services under the California Accidental Release Program (CalARP), the USEPA under the Risk Management Program (40 CFR 68), and the OSHA under the Process Safety Management Program (OSHA 1910.119). The CalARP and Risk Management Program require that all facilities that store, handle, or use AHMs above a minimum quantity, known as the threshold planning quantity, are required to develop a plan and prepare supporting documentation that summarizes the facility's potential risk to the local community and identifies safety measures to reduce potential risks to the public.

The HWCL, Chapter 6.5 of the California Health and Safety Code, is administered by the Cal-EPA to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until the USEPA approves the California program, both the State and federal laws apply in California. The HWCL lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills.

In California, the underground storage of hazardous materials is regulated by Chapter 6.7 of the California Health and Safety Code per the Underground Storage of Hazardous Substances Act. Under section 25280, the USTs used for the storage of substances hazardous to the public health and safety and to the environment are stored prior to use or disposal in thousands of underground locations in the State. The USTs are potential sources of contamination of the ground and underlying aquifers, and may pose other dangers to public health and the environment. Chapter 6.7 establishes orderly procedures that will ensure that newly constructed USTs meet appropriate standards and that existing tanks be properly maintained, inspected, tested, and upgraded so that the health, property, and resources of the people of the state will be protected.

California Vehicle Code Section 31303

The California Highway Patrol (CHP) and California Department of Transportation (Caltrans) are the enforcement agencies for hazardous materials transportation regulations. Hazardous materials and waste transporters are responsible for complying with all applicable packaging, labeling, and shipping regulations. California Vehicle Code Section 31303 regulates the transport of hazardous materials.

Emergency Response to Hazardous Materials Incidents

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local governments and private agencies. Response to hazardous material incidents is one part of this plan. The plan is managed by the Governor's OES, which coordinates the responses of other agencies, including CalEPA, CHP, California Department of Fish and Wildlife (CDFW), and the Central Valley RWQCB.

Unified Hazardous Materials Management Regulatory Program

On January 1, 1996, CalEPA adopted implementing regulations and implemented a unified hazardous waste and hazardous materials management regulatory program (Unified Program), to consolidate the administration of specified statutory requirements for the regulation of hazardous wastes and materials. The Unified Program is implemented at the local level by government agencies certified by the Secretary of CalEPA. The Certified Unified Program Agency (CUPA) is responsible for implementation of the Unified Program. CUPA is certified and responsible for oversight of the following consolidated programs: Hazardous Materials Release Response Plans and Inventories (Business Plans); California Accidental Release Program; Underground Storage Tank Program; Aboveground Petroleum Storage Act; Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs; and California Uniform Fire Code: Hazardous Materials Management Plans and Hazardous Material Inventory Statements.

Local Regulations

Relevant goals and policies from the County of Sacramento and the City of Rancho Cordova General Plan related to hazards and hazardous materials are discussed below.

Sacramento County

The County of Sacramento OES implements the State's Right-to-Know Ordinance that gives the OES the authority to inventory hazardous materials used by businesses. The County is also in the process of collecting information regarding existing and proposed locations of hazardous material disposal, storage, handling, and transportation facilities.

Additionally, the Sacramento County Environmental Management Department (EMD) is responsible for enforcing the State regulations on both the city and county level, governing hazardous waste generators, hazardous waste storage, underground storage tanks (including inspections, enforcement, and removals), and environmental health (including inspections and enforcement). Sacramento County's Environmental Management Department has been designated as the Sacramento region's CUPA by CalEPA. The Program is housed within Department's Environmental Compliance Division. CUPA Programs are administered throughout the County of Sacramento and its incorporated cities, including the City of Rancho Cordova.

EMD also regulates the use, storage, and disposal of hazardous materials in the County and abandonment of wells and septic systems in the County by issuing permits, monitoring regulatory compliance, investigating complaints, and other activities. EMD reviews technical aspects of hazardous waste site cleanups, and oversees remediation of certain contaminated sites resulting from leaking underground storage tanks. EMD is also responsible for providing technical assistance to public and private entities that seek to minimize the generation of hazardous waste.

Sacramento County Area Plan

The Sacramento County EMD established the Sacramento County Area Plan (SCAP) as a guideline for hazardous material related accidents or occurrences. The purpose of the SCAP is "to delineate responsibilities and actions by various agencies in Sacramento County required to meet the obligation to protect the health and welfare of the populace, natural resources (environment), and the public and private properties involving hazardous materials." The SCAP is used for making initial decisions at a hazardous materials incident. The SCAP uses Level I, Level II and Level III classifications for hazardous material incidents, which are determined by the following planning basis:

- Level of technical expertise required to abate the incident;
- Extent of Municipal, County, and State Government involved;
- Extent of evacuation of civilians; and
- Extent of injuries and/or deaths.

Sacramento County Multi-Hazard Disaster Plan

The Sacramento County Multi-Hazard Disaster Plan (SCMDP) was established to address a planned response to extraordinary emergency situations associated with natural disasters and technological incidents. The SCMDP focuses on operational concepts related to large-scale disasters, which can pose major threats to life and property requiring unusual emergency responses. The SCMDP was designed to include Sacramento County as part of the California Standardized Emergency Management System (SEMS), which assigns responsibilities to support implementation of the SCMDP and to ensure successful response during a major disaster.

City of Rancho Cordova General Plan

The following goals and policies from the City of Rancho Cordova General Plan related to hazards and hazardous materials are applicable to the proposed project:

Goal S.1: Establish Rancho Cordova as a safe community and environment for all persons.

Policy S.1.5 The City shall require written confirmation from applicable local, regional, state, and federal agencies that known contaminated sites have been deemed remediated to a level appropriate for land uses proposed prior to the City approving site development or provide an approved remediation plan that demonstrates how contamination will be remediated prior to site occupancy. This documentation will specify the extent of development allowed on the remediated site as well as any special conditions and/or restrictions on future land uses.

Goal S.5: Reduce the possibility of serious harm to residents, employees, or the environment as the result of an accidental release of toxic or hazardous substances.

Policy S.5.2 Consider the potential impact of hazardous facilities on the public and/or adjacent or nearby properties posed by reasonably foreseeable events. The City considers an event to be “reasonably foreseeable” when the probability of the event occurring is greater than one in one million per year.

Policy S.5.3 Regulate the storage of hazardous materials and waste consistent with State and Federal law.

Policy S.5.5 Separate hazardous or toxic materials from the public.

4.5.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to hazards and hazardous materials. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

In accordance with CEQA Guidelines Appendix G, an impact is considered significant if the proposed project would:

- Create a significant hazard to the public or the environment through the routine handling, transport, use, or disposal of hazardous materials; or
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.

Issues Not Discussed Further

The Initial Study prepared for the proposed project (see Appendix A) determined that development of the proposed project would result in no impact or a less-than-significant impact related to the following impacts:

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- 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;
- 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 or excessive noise for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- Expose people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires; and/or
- If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:
    - Substantially impair an adopted emergency response plan or emergency evacuation plan;
    - 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 a wildfire;
    - 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; or
    - 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.

Method of Analysis

Site conditions and impacts for this chapter are based primarily on the Phase I ESA prepared for the project site. The goal of a Phase I ESA is to identify whether RECs exist at a property, where RECs are defined by ASTM as "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. […]." The Phase I ESA meets or exceeds the requirements of the ASTM "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process E 1527-05."

The Phase I ESA included a review of federal, State, and local environmental databases for information regarding documented and suspected releases of regulated materials within the project site vicinity based upon reference to an environmental database search performed by EDR, an environmental database search firm. Additional historical use information regarding the project site and surrounding properties was pulled from the following sources:

- Aerial photographs;
- Fire insurance (Sanborn) maps;
- Building department records;
- Chain-of-title documents;
- City directory abstracts;
- Land use records; and
- U.S. Geological Survey (USGS) Topographic Maps.

Historical photographs of the project site dating to 1937 and historic topographic maps dating to 1891 were reviewed to provide a historical context of the project site. In addition, a site reconnaissance of the project site was conducted on May 9, 2019. The site reconnaissance consisted of walking the project site and driving by nearby adjacent properties from public vantages to observe apparent uses. Photographs of the site were taken during the site reconnaissance.

Project-Specific Impacts and Mitigation Measures

The project site conditions have been compared to the standards of significance presented above in order to determine the project's impact significance. If significant impacts are identified for the construction and operational phases of the proposed project, recommended mitigation measures have been included to reduce the identified impacts to less-than-significant levels.

4.5-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Based on the analysis below, the impact is *less than significant*.

A significant hazard to the public or the environment could result from the routine transport, use, or disposal of hazardous materials. Projects that involve the routine transport, use, or disposal of hazardous materials are typically industrial in nature. The proposed project would not be industrial in nature. Operations of the proposed 440-unit single-family residential project would not include any activities that would involve the routine transport, use, disposal, or generation of substantial amounts of hazardous

materials. During operations, hazardous material use would be limited to landscaping products such as fertilizer, pesticides, as well as typical commercial and maintenance products (cleaning agents, degreasers, paints, batteries, and motor oil). Proper handling and usage of such materials in accordance with label instructions would ensure that adverse impacts to human health or the environment would not result. Thus, operations of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Construction activities associated with implementation of the proposed project would involve the use of heavy equipment, which would contain fuels and oils, and various other products such as concrete, paints, and adhesives. The project contractor is required to comply with all California Health and Safety Codes and local County ordinances regulating the handling, storage, and transportation of hazardous and toxic materials. Pursuant to California Health and Safety Code Section 25510(a), except as provided in subdivision (b),[6] the handler or an employee, authorized representative, agent, or designee of a handler, shall, upon discovery, immediately report any release or threatened release of a hazardous material to the unified program agency (in the case of the proposed project, the Sacramento County EMD) in accordance with the regulations adopted pursuant to Section 25510(a). The handler or an employee, authorized representative, agent, or designee of the handler shall provide all State, city, or county fire or public health or safety personnel and emergency response personnel with access to the handler's facilities. In the case of the proposed project, the contractors are required to notify the Sacramento County EMD in the event of an accidental release of a hazardous material, who would then monitor the conditions and recommend appropriate remediation measures.

Based on the above, the project would not create a significant hazard to the public or the environment through the routine handling, transport, use, or disposal of hazardous materials. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

4.5-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

As discussed previously, the Phase I ESA identified various potential RECs and other hazards on the project site, including groundwater contamination/soil vapor intrusion, an on-site UST and other potential fuel storage vessels, asbestos, lead-based paint, and termiticides. In addition, the Phase I ESA noted the presence of domestic wells and septic systems within the site. The potential for development of the proposed

[6] Subdivision (a) does not apply to a person engaged in the transportation of a hazardous material on a highway that is subject to, and in compliance with, the requirements of Sections 2453 and 23112.5 of the Vehicle Code.

project to result in risks or hazards related to such existing environmental hazards is described below.

Groundwater Contamination

Per the Phase I ESA, a contaminant plume of TCE was discovered to encroach within portions of the northernmost parcels within the project site (APNs 072-0300-001, 072-0300-008, and 073-001-011. The five ppb contour of TCE (the maximum contaminant level) extends to onsite and adjacent monitoring wells, but does not extend to any domestic wells identified on the project site. Although existing domestic wells aren't necessarily impacted, the presence of TCE within project site has potential to create a soil vapor intrusion risk.

The proposed project would not include development of residential uses on any of the three potentially impacted parcels. Rather, the 185.3 acres of open space area within the northern portion of the site would not be disturbed, as this portion of the project site would not be included in development of the proposed project. Therefore, the proposed residential uses would not be subject to risks related to groundwater contamination or vapor intrusion. In addition, ground-disturbing activities associated with project construction would not have the potential to result in upset of contaminated soils. Thus, a less-than-significant impact would occur.

Underground Storage Tank and Other Fuel Storage Vessels

Within APN 073-0010-011, Youngdahl Consulting Group, Inc. identified two protruding steel pipes that have the potential to be connected to a UST, which is considered an REC. The California Health and Safety Code, the CCR, and the Sacramento County Code of Ordinances require that a UST owner or operator must obtain a permit from the Sacramento County EMD to remove a UST. In addition, the Phase I ESA identified an unknown underground system within APN 072-0300-008 adjacent to the shed located north of the residence, as well as a 55-gallon drum was found northeast of the residence with an unknown liquid inside. Development of the proposed project would require removal of the potential UST, the underground system on APN 072-0300-008, and the 55-gallon drum, all of which are considered potential RECs. Given that such RECs could pose a risk to workers during project construction, a significant impact could occur.

Asbestos and Lead-Based Paint

Per the Phase I ESA, ACBM may be present within the existing residences and associated outbuildings located within APN 072-0300-008. In addition, lead-based paint may be present within all of the on-site structures. The potential presence ACBMs and lead contamination is considered an REC. During demolition and ground-disturbing activities associated with the proposed project, construction workers could come into contact with, and be exposed to, ACBMs or lead-based paint materials present in the existing structures. Additionally, workers could potentially be exposed to elevated concentrations of lead in the soil in the vicinity of the structures. Collection and disposal of ACBMs and lead materials, including lead-based paint, by untrained personnel could cause asbestos and lead dust emissions to be transported off-site, resulting in the release of hazardous material into the environment. Thus, a significant impact could occur.

Termiticides

As discussed above, the soils in the vicinity of the wooden structures located on APN 072-0300-002 (12565 Douglas Road) and APN 072-0300-008 (12535 Douglas Road) are at risk of having termiticides present, which is considered an REC. Additional sampling is necessary to evaluate the potential presence of termiticides in the soils.

Domestic Wells and Septic Systems

The Phase I ESA identified existing wells located on APNs 073-0010-011, 072-0300-002, 072-0300-005, and 072-0300-008. Proper abandonment of these wells would need to occur in accordance with the standards set forth in Department of Water Resources Bulletin 74-81. As discussed in Part III of Bulletin 74-81, the top of the well or well casing shall be provided with a cover, that is secured by a lock or by other means to prevent its removal without the use of equipment or tools, to prevent unauthorized access, to prevent a safety hazard to humans and animals, and to prevent illegal disposal of wastes in the well. The cover shall be watertight where the top of the well casing or other surface openings to the well are below ground level, such as in a vault or below known levels of flooding.

All abandoned wells shall be destroyed. The objective of destruction is to restore as nearly as possible those subsurface conditions which existed before the well was constructed taking into account changes, if any, which have occurred since the time of construction. Destruction of a well shall consist of the complete filling of the well in accordance with Section 23 of Part III of Bulletin 74-81. As discussed further below, Mitigation Measure 4.5-2(e) is proposed to ensure any existing wells that need to be removed are abandoned in conformance with all applicable laws.

A septic system was identified within the lawn to the north of the existing residence at APN 072-0300-005. In addition, the Phase I ESA noted the possible presence of a septic tank adjacent to the northernmost shed on APN 072-0300-010. The proposed project would be required to properly abandon all existing septic systems prior to connection of the project to the existing County sewer infrastructure.

Conclusion

Based on the above, groundwater contamination would not pose a substantial risk to workers or residents on the project site. However, the potential UST, unknown underground storage system, and other potential fuel storage vessels located within APNs 073-0010-011 and 072-0300-008 could pose a risk to workers during project construction. In addition, the project site contains existing structures that were built prior to 1980 and 1970, and are likely to contain ACBMs and lead-based paints. Furthermore, the soils in the vicinity of the wooden structures located at APN 072-0300-002 and APN 072-0300-008 have the potential to be contaminated with termiticides.

Therefore, implementation of the proposed project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

4.5-2(a) *Prior initiation of demolition or construction activities associated with the proposed project, the project applicant shall complete and submit, for both the underground storage units identified on APNs 073-0010-011 and 072-0300-008, a Consolidated Application For Authority to Remove Under Ground Storage Tanks to the Sacramento County Environmental Management Department (EMD) for review. Upon issuance of a permit (Authority Letter to Remove) from the EMD, removal of the UST shall proceed in accordance with all permit conditions, including, but not limited to, inspection, testing, and plan/report submittal requirements.*

4.5-2(b) *Prior initiation of demolition or construction activities associated with the proposed project, the project applicant shall retain a licensed contractor to remove the existing 55-gallon drum located on APN 072-0300-008, to the northeast of the existing residence. The drum shall be disposed of in accordance with all applicable federal, State, and local regulations related to the handling, transport, and disposal of hazardous waste. Proof of safe disposal shall be provided to the Community Development Department.*

4.5-2(c) *Prior to issuance of a demolition permit for any on-site structures, the project applicant shall consult with certified Asbestos and/or Lead Risk Assessors to complete and submit for review to the Community Development Department an asbestos and lead survey. If asbestos-containing materials or lead-containing materials are not discovered during the survey, further mitigation related to asbestos-containing materials or lead containing materials shall not be required. If asbestos-containing materials and/or lead-containing materials are discovered by the survey, the project applicant shall prepare a work plan to demonstrate how the on-site asbestos-containing materials and/or lead-containing materials shall be removed in accordance with current California Occupational Health and Safety (Cal-OSHA) Administration regulations and disposed of in accordance with all CalEPA regulations, prior to the demolition and/or removal of the on-site structures. The plan shall include the requirement that work shall be conducted by a Cal-OSHA registered asbestos and lead abatement contractor in accordance with Title 8 CCR 1529 and Title 8 CCR 1532.1 regarding asbestos and lead training, engineering controls, and certifications. The applicant shall submit the work plan to the Community Development Department for review and approval. Materials containing more than one (1) percent asbestos that is friable are also subject to SMAQMD regulations. Removal of materials containing more than one (1) percent friable asbestos shall be completed in accordance with SMAQMD Rule 902.*

4.5-2(d) *Prior to issuance of a demolition permit for any on-site structures, the project applicant shall retain the services of a licensed environmental professional to prepared a Phase II Environmental Assessment (ESA) for the project site. The Phase II ESA shall evaluate, at a minimum, potential lead contamination in the soils in the vicinity of the structures located on APN 072-0300-008, as well as potential termiticide contamination in the soils in the vicinity of the wooden structures located on APN 072-0300-002 and APN 072-0300-008. In the event that the lead and/or termiticide contamination is determined to occur, the project applicant shall implement all recommended measures in the Phase II ESA necessary to address such hazards. Such measures may include, but shall not be limited to, capping contaminated soil in place and deed-restricting the subject property, excavation and off-haul of contaminated soils by a licensed contractor, or other appropriate methods deemed acceptable by the Sacramento County Environmental Management Department (EMD).*

4.5-2(e) *Prior to Improvement Plan approval, the applicant shall hire a licensed well contractor to obtain a well abandonment permit from the Sacramento County Environmental Management Department (EMD) for all on-site wells, and properly abandon the on-site wells, pursuant to Department of Water Resources Bulletin 74-81 (Water Well Standards, Part III), for review and approval by the EMD. In addition, prior to Improvement Plan approval, the project applicant shall ensure that any on-site septic systems are abandoned in compliance with applicable EMD standards. Verification of abandonment shall be ensured by the City of Rancho Cordova Community Development Department.*

4.5-2(f) *If unidentified or suspected contaminated soil or groundwater evidenced by stained soil, noxious odors, or other factors, is encountered during site preparation or construction activities at the project site, work shall stop in the area of potential contamination, and the type and extent of contamination shall be identified by a Registered Environmental Assessor (REA) or qualified professional. The REA or qualified professional shall prepare a report that includes, but is not limited to, activities performed for the assessment, summary of anticipated contaminants and contaminant concentrations, relevant environmental screening levels for identified contaminants, whether the contaminants exceed ESLs, thus warranting remediation, and recommendations for appropriate handling and disposal. Site preparation or construction activities shall not recommence within the contaminated areas until any necessary remediation identified in the report is complete. The report and verification of proper remediation and disposal shall be submitted to the City of Rancho Cordova Community Development Department for review and approval.*

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 5, Statutorily Required Sections, of this EIR.

4.5-3 Cumulative exposure to potential hazards and increases in the transport, storage, and use of hazardous materials. Based on the analysis below, the cumulative impact is *less than significant*.

As discussed, project-specific impacts associated with hazardous materials related to implementation of the proposed project were found to be less than significant with implementation of mitigation. Hazardous materials and other public health and safety issues are generally site-specific and/or project-specific, and would not be significantly affected by other development within the project area. Cumulative development projects would be subject to the same federal, State, and local hazardous materials management requirements as would the proposed project, which would minimize potential risks associated with increased hazardous materials use in the community. Therefore, cumulative impacts associated with hazardous materials transport, storage, and use associated with implementation of past, present, and reasonably foreseeable future projects, as well as the proposed project, would be ***less than significant***.

Mitigation Measure(s)

None required.

4.6 Hydrology and Water Quality

4.6. HYDROLOGY AND WATER QUALITY

4.6.1 INTRODUCTION

The Hydrology and Water Quality chapter of the EIR describes existing drainage patterns on the project site, current stormwater flows and stormwater infrastructure. The chapter also evaluates potential impacts of the proposed project with respect to increases in impervious surface area and associated stormwater flows, degradation of water quality, and increases in on- and off-site flooding. Information used for this chapter was primarily drawn from the Drainage Study prepared for the proposed project by Ruggeri-Jensen-Azar (see Appendix H),[1] as well as the City of Rancho Cordova General Plan[2] and associated EIR.[3] It should be noted that issues associated with water supply and availability are addressed in Chapter 4.9, Public Services and Utilities, of this EIR.

4.6.2 EXISTING ENVIRONMENTAL SETTING

The section below describes regional hydrology, the existing drainage patterns within the project site, including peak flows, existing water quality, and groundwater conditions.

Regional Hydrology

The City of Rancho Cordova is located within the 27,000 square mile Sacramento River watershed, which includes the Sacramento, American, and Cosumnes Rivers. The American River is located along the northern boundary of the City's Planning Area and the Cosumnes River is located to the south of the Planning Area. More specifically, the project site is located within the Morrison Creek Stream Group watershed, which covers 192 square miles, and includes the waterways of Elder, Rancho Cordova, Florin, Gerber, Laguna (and tributaries), Morrison, Strawberry, Union House, and Whitehouse Creeks, which generally flow in a southwesterly direction (see Figure 4.6-1). The Morrison Creek Stream Group watershed ultimately flows to the Sacramento River. The topography within the Planning Area includes gently rolling terrain, such as that found in the eastern Great Central Valley, interrupted by numerous seasonal creeks and streams. Such creeks and streams are largely ephemeral and intermittent, which is typical of areas that experience dry summers and cool, wet winters, as is the case for the project region.

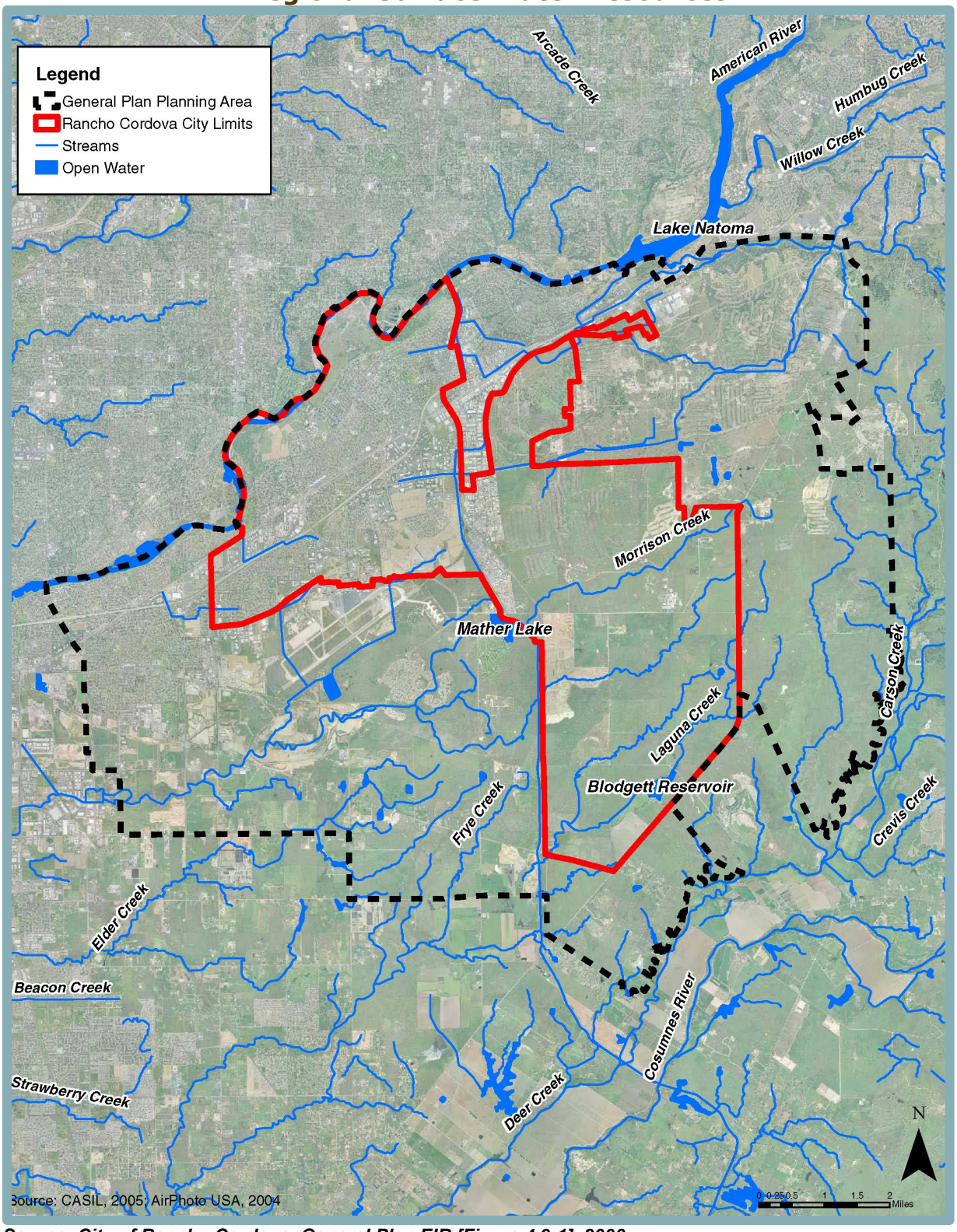
Project Site and Surrounding Area Drainage

Currently, the 279.3-acre project site contains two single-family residences and associated outbuildings on the southern portion of the site, within parcels 072-0300-002 and -005. An orchard is located within the northeastern portion of the site within parcel 073-0010-011, and a third single-family residence and associated outbuildings are located on APN 072-0300-008. The remainder of the site consists primarily of ruderal grasses. Morrison Creek conveys runoff from the east side of Grant Line Road at the project site's eastern boundary through the project limits to the western edge of the project site. Two man-made ponds are located along the reach of Morrison Creek near the northwestern portion of the project site. The existing on-site drainage conditions are shown in Figure 4.6-2.

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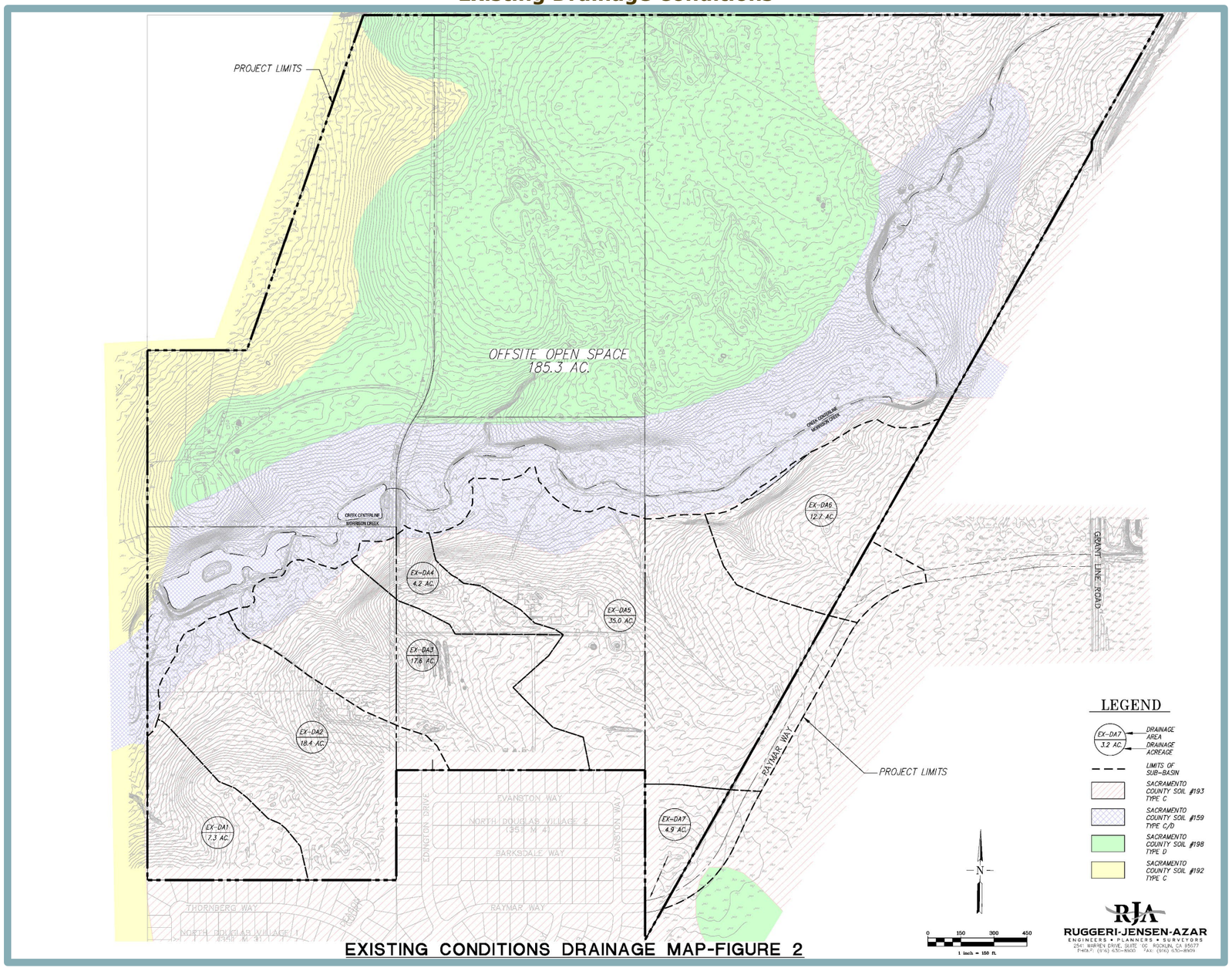
1 Ruggeri-Jensen-Azar. *Drainage Study for the Preserve*. Updated October 2019.
2 City of Rancho Cordova. *General Plan*. Adopted June 26, 2006.
3 City of Rancho Cordova. *General Plan Environmental Impact Report.* 2006.

Figure 4.6-1
Regional Surface Water Resources



Source: City of Rancho Cordova, General Plan EIR [Figure 4.9-1], 2006.

Figure 4.6-2
Existing Drainage Conditions



Source: Ruggeri-Jensen-Azar, 2019.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the project area, the entirety of the project site is located within Zone X, defined as an area of minimal flood hazard that is located outside of the designated 100-year floodplain.[4]

According to the Drainage Study prepared for the proposed project, the existing 10-year, 24-hour and 100-year, 24-hour storm flowrates for Morrison Creek are 194 cubic feet per second (cfs) and 361 cfs, respectively. The flowrates were developed for the Master Drainage Study (MDS) for the Rio Del Oro Specific Plan in August 2005 by Wood Rodgers and include a total drainage area of 1,003 acres consisting of the area identified within the MDS as US3 (Figure F from the MDS; included in Appendix H to this EIR), including the project site, which forms the western boundary of the US3 drainage area. It should be noted that the northwestern portion of the project site, which is included in drainage area US2 of the MDS, would not be developed as part of the proposed project and, thus, the drainage conditions in that shed are not discussed further herein.

As calculated at the location of the proposed stormwater outfall location into Morrison Creek, pre-development runoff rates from the project site are 79 cfs for the 10-year, 24-hour storm event and 134 cfs for the 100-year, 24-hour storm event.

Water Quality

Activities and/or conditions that have the potential to degrade water quality include but are not limited to, construction activities and urban stormwater runoff.

Construction activities have the potential to cause erosion and sedimentation associated with groundbreaking and clearing activities, which could cause unstabilized soil to be washed or wind-blown into nearby surface water. In addition, the use of heavy equipment during construction activities, especially during rainfall events, have the potential to cause petroleum products and other pollutants to enter nearby drainages.

Water quality degradation from urban stormwater runoff is primarily the result of runoff carrying pollutants from the land surface (i.e., streets, parking lots, etc.) to the receiving waters (i.e., streams and lakes). Pollutants typically found in urban runoff include facility maintenance and lawn-care/landscaping chemicals (insecticides, herbicides, fungicides and rodenticides), heavy metals (such as copper, zinc and cadmium), oils and greases from automobiles and other mechanical equipment, and nutrients (nitrogen and phosphorus).

Groundwater

The proposed project site is located within the South American Subbasin. The South American Subbasin is bounded on the east by the Sierra Nevada Mountains, on the west by the Sacramento River, on the north by the American River, and on the south by the Cosumnes and Mokelumne Rivers. As part of the South American Subbasin, the Rancho Cordova Planning Area covers a shallow unconfined aquifer system, known as the water table aquifer, approximately 200 hundred feet below ground surface, and a deeper confined groundwater aquifer system ranging from a few hundred feet to over 2,000 feet below ground surface. The deeper aquifer system that becomes confined with depth is separated from the shallow aquifer by a discontinuous clay layer, not completely impermeable.

[4] Federal Emergency Management Agency. *Flood Insurance Rate Map, Map Number 06067C0250H.* August 16, 2012.

The groundwater in the Central Basin portion of the South American Subbasin within which the project site is located is managed by the Sacramento Central Groundwater Authority (SCGA).[5] The SCGA was formed in 2006 through a joint powers agreement signed by the cities of Elk Grove, Folsom, Rancho Cordova, and Sacramento, and the County of Sacramento. SCGA was formed for several purposes including maintaining the long-term sustainable yield of the Central Basin, managing the use of groundwater in the Central Basin, and facilitating the implementation of a conjunctive use program. The SCGA Groundwater Management Plan, which was adopted in 2006, establishes a framework for maintaining sustainable groundwater resources in the Central Basin. The framework includes specific goals, objectives, and an action plan to manage the basin. The SCGA Groundwater Management Plan also prescribes a well protection program to protect existing private domestic well and agricultural well owners from declining groundwater levels resulting from increased groundwater pumping due to new development in the basin. The SCGA Groundwater Management Plan includes a detailed groundwater management implementation plan to comply with the requirements of their basin management objectives. Additionally, SCGA prepares a biennial report to evaluate progress on Groundwater Management Plan implementation and to report on basin conditions.

4.6.3 REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the review of hydrology and water quality under the CEQA process.

Federal Regulations

The following section includes federal environmental goals and policies relevant to the CEQA review process pertaining to the hydrology and water quality aspects of the proposed project.

Federal Emergency Management Agency

The FEMA is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps of Engineers (USACE) studies. FEMA is also responsible for distributing the FIRMs, which are used in the National Flood Insurance Program (NFIP). The FIRMs identify the locations of special flood hazard areas, including the 100-year floodplains.

FEMA allows non-residential development in the floodplain; however, construction activities are restricted within flood hazard areas, depending upon the potential for flooding within each area. Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations (CFR). These standards are implemented at the State level through construction codes and local ordinances; however, these regulations only apply to residential and non-residential structure improvements. Although roadway construction or modification is not explicitly addressed in the FEMA regulations, the California Department of Transportation (Caltrans) has also adopted criteria and standards for roadway drainage systems and projects situated within designated floodplains. Standards that apply to floodplain issues are based on federal regulations (Title 23, Part 650 of the CFR). At the State level, roadway design must comply with drainage standards included in Chapters 800-890 of the Caltrans Highway Design Manual. CFR Section 60.3(c)(10) restricts cumulative development from increasing the water surface elevation of the base flood by more than one foot within the floodplain.

[5] Sacramento County Water Agency. *2015 Urban Water Management Plan.* May 2016.

Federal Clean Water Act

The National Pollutant Discharge Elimination System (NPDES) permit system was established in the federal Clean Water Act (CWA) to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that the Environmental Protection Agency (EPA) must consider in setting effluent limits for priority pollutants.

Nonpoint sources are diffuse and originate over a wide area rather than from a definable point. Nonpoint pollution often enters receiving water in the form of surface runoff, but is not conveyed by way of pipelines or discrete conveyances. As defined in the federal regulations, such nonpoint sources are generally exempt from federal NPDES permit program requirements. However, two types of nonpoint source discharges are controlled by the NPDES program – nonpoint source discharge caused by general construction activities, and the general quality of stormwater in municipal stormwater systems. The 1987 amendments to the CWA directed the federal EPA to implement the stormwater program in two phases. Phase I addressed discharges from large (population 250,000 or above) and medium (population 100,000 to 250,000) municipalities and certain industrial activities. Phase II addresses all other discharges defined by EPA that are not included in Phase I.

Section 402 of the CWA mandates that certain types of construction activities comply with the requirements of the NPDES stormwater program. The Phase II Rule, issued in 1999, requires that construction activities that disturb land equal to or greater than one acre require permitting under the NPDES program. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the State Water Resources Control Board (SWRCB), implemented and enforced by the nine Regional Water Quality Control Boards (RWQCBs).

As of July 1, 2010, all dischargers with projects that include clearing, grading or stockpiling activities expected to disturb one or more acres of soil are required to obtain compliance under the NPDES Construction General Permit Order 2009-0009-DWQ. The General Permit requires all dischargers, where construction activity disturbs one or more acres, to take the following measures:

1. Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to include a site map(s) of existing and proposed building and roadway footprints, drainage patterns and stormwater collection and discharge points, and pre- and post- project topography;
2. Describe types and placement of Best Management Practices (BMPs) in the SWPPP that will be used to protect stormwater quality;
3. Provide a visual and chemical (if non-visible pollutants are expected) monitoring program for implementation upon BMP failure; and
4. Provide a sediment monitoring plan if the area discharges directly to a water body listed on the 303(d) list for sediment.

To obtain coverage, a SWPPP must be submitted to the RWQCB electronically and a copy of the SWPPP must be submitted to the City of Rancho Cordova. When project construction is completed, the landowner must file a Notice of Termination (NOT).

State Regulations

The following section includes the State regulations relevant to the CEQA review process pertaining to the hydrology and water quality aspects of the proposed project.

State Water Resources Control Board

The SWRCB and the RWQCBs are responsible for ensuring implementation and compliance with the provisions of the federal CWA and California's Porter-Cologne Water Quality Control Act. The project site is situated within the jurisdictional boundaries of the Central Valley RWQCB (CVRWQCB) (Region 5). The CVRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within their jurisdiction.

Central Valley Regional Water Quality Control Board

As authorized by the Porter-Cologne Water Quality Control Act, the CVRWQCB primary function is to protect the quality of the waters within its jurisdiction for all beneficial uses. State law defines beneficial uses of California's waters that may be protected against quality degradation to include, but not be limited to: domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

The CVRWQCB implements water quality protection measures by formulating and adopting water quality control plans (referred to as basin plans, as discussed below) for specific groundwater and surface water basins, and by prescribing and enforcing requirements on all agricultural, domestic, and industrial waste discharges. The CVRWQCB oversees many programs to support and provide benefit to water quality, including the following major programs: Agricultural Regulatory; Above-Ground Tanks; Basin Planning; CALFED; Confined Animal Facilities; Landfills and Mining; Non-Point Source; Spills, Leaks, Investigations, and Cleanups (SLIC); Stormwater; Total Maximum Daily Load (TMDL); Underground Storage Tanks (UST), Wastewater Discharges (including the NPDES); Water Quality Certification; and Watershed Management.

The CVRWQCB is responsible for issuing permits for a number of varying activities. Activities subject to the CVRWQCB permitting requirements include stormwater, wastewater, and industrial water discharge, disturbance of wetlands, and dewatering. Permits issued and/or enforced by the CVRWQCB include, but are not limited to, the NPDES Construction General Permit, NPDES Municipal Stormwater Permits, Industrial Stormwater General Permits, Clean Water Act Section 401 and 404 Permits, and Dewatering Permits.

Basin Plans and Water Quality Objectives

The Porter-Cologne Water Quality Control Act provides for the development and periodic review of water quality control plans (basin plans) that are prepared by the regional water quality control boards. Basin plans designate beneficial uses of California's major rivers and groundwater basins, and establish narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a water body (i.e., the reasons why the water body is considered valuable), while water quality objectives represent the standards necessary to protect and support those beneficial uses. Basin plans are primarily implemented through the NPDES permitting system and by issuing waste discharge regulations to ensure that water quality objectives are met.

Basin plans provide the technical basis for determining waste discharge requirements and taking regulatory enforcement actions if deemed necessary. The project site is located within the jurisdiction of the CVRWQCB. A basin plan has been adopted for the Sacramento and San Joaquin River Basin (Basin Plan), which covers all of the project area.

The Basin Plan sets water quality objectives for the surface waters in its region for the following substances and parameters: ammonia, bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, radioactivity, salinity, sediment, settleable material, suspended material, taste and odor, temperature, toxicity, turbidity, and pesticides. For groundwater, water quality objectives applicable to all groundwater have been set for bacteria, chemical constituents, radioactivity, taste, odors, and toxicity.

Senate Bill 5

In 2007, the State of California set the 200-year event as the Urban Level of Flood Protection (ULOP) for the State through a series of laws included in Senate Bill (SB) 5. Along with other related legislation, SB 5 established a mandate for local governments to amend their general plans and zoning codes to be consistent with State law on floodplain management. Specifically, SB 5 requires all cities and counties within the Sacramento-San Joaquin Valley, as defined in California Government Code Sections 65007(h) and (j), to make findings related to an ULOP or the national FEMA standard of flood protection before: (1) entering into a development agreement for any property that is located within a flood hazard zone; (2) approving a discretionary permit or other discretionary entitlement, or a ministerial permit that would result in the construction of a new residence, for a project that is located within a flood hazard zone; or (3) approving a tentative map, or a parcel map for which a tentative map was not required, for any subdivision that is located within a flood hazard zone. The primary purpose of the law is to ensure that appropriate flood protection is provided in urban and urbanizing areas.

A project would be subject to the requirements of SB 5 if the project would meet all of the following five criteria:

1. Located within an urban area that is a developed area, as defined by CFR Title 44, Section 59.1, with 10,000 residents or more, or an urbanizing area that is a developed area or an area outside a developed area that is planned or anticipated to have 10,000 residents or more within the next 10 years.
2. Located within a flood hazard zone that is mapped as either a special hazard area or an area of moderate hazard on FEMA's official (i.e., effective) FIRM for the NFIP.
3. Located within the Sacramento-San Joaquin Valley.
4. Located within an area with a potential flood depth above 3.0 feet, from sources of flooding other than localized conditions that may occur anywhere in a community, such as localized rainfall, water from stormwater and drainage problems, and water from temporary water and wastewater distribution system failure.
5. Located within a watershed with a contributing area of more than 10 square miles.

The proposed project would meet criteria 1, 3, and 5 above. However, per the FEMA FIRM for the project area, the entirety of the project site is located within Zone X, defined as an area of minimal flood hazard that is located outside of the designated 100-year floodplain. The proposed development footprint would not be located within an area with a potential flood depth above three feet. Thus, the project would not meet criteria 2 or 4. Thus, the proposed project would not be subject to the requirements of SB 5.

Local Regulations

Relevant goals and policies from the City of Rancho Cordova General Plan as well as various other local guidelines and regulations related to hydrology and water quality, are discussed below.

City of Rancho Cordova General Plan

The following goals and policies from the City of Rancho Cordova General Plan related to hydrology and water quality are applicable to the proposed project:

Goal NR.5: Protect the quantity and quality of the City's water resources.

Policy NR.5.3 Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.

Policy NR.5.4 Prevent contamination of the groundwater table and surface water, and remedy existing contamination to the extent practicable.

Policy NR.5.5 Minimize erosion to stream channels resulting from new development in urban areas consistent with State law.

Policy NR.5.6 Incorporate Storm Water, Urban Runoff, and Wetland Mosquito Management Guidelines and Best Management Practices into the design of water retention structures, drainage ditches, swales, and the construction of mitigated wetlands in order to reduce the potential for mosquito-borne disease transmission.

Policy NR.5.7 Continue to cooperate and participate with the County, other cities, and the Regional Water Quality Control Board regarding compliance with the joint National Pollutant Discharge Elimination System Permit (NPDES No. CAS082597) or any subsequent permit and support water quality improvement projects in order to maintain compliance with regional, state and federal water quality requirements.

Policy NR.5.8 The City shall require groundwater impact evaluations be conducted for the Grant Line West, Westborough, Aerojet, Glenborough, Mather and Jackson Planning Areas to determine whether urbanization of these areas would adversely impact groundwater remediation activities associated with Mather and Aerojet prior to the approval of large-scale development. Should an adverse impact be determined, a mitigation program shall be developed in consultation with applicable local, state, and federal agencies to ensure remediation activities are not impacted. This may include the provision of land areas for groundwater remediation facilities, installation/extension of necessary infrastructure, or other appropriate measures.

Goal S.2: Reduce the possibility of a flooding or drainage issue causing loss of life or damage to property.

Policy S.2.2 Manage the risk of flooding by discouraging new development located in an area that is likely to flood.

Policy S.2.4 Ensure that adequate drainage exists for both existing and new development.

City of Rancho Cordova NPDES Small Municipal Separate Storm Sewer System (MS4) General Permit

The NPDES Municipal Stormwater Permitting Program regulates stormwater discharges from separate storm sewer systems. NPDES Municipal Stormwater Permits are issued in two phases. Phase I regulates stormwater discharges from large- and medium-sized municipal separate storm sewer systems (those serving more than 100,000 persons). Most Phase I permits are issued to a group of co-permittees encompassing an entire metropolitan area. Phase II provides coverage for smaller municipalities, including nontraditional small storm sewer systems, which include governmental facilities such as military bases, public campuses, and prison and hospital complexes. The NPDES Municipal Stormwater Permits require the discharger to develop and implement a Stormwater Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable.

The CVRWQCB issued the NPDES General Permit No. CAS0085324, Order R5-2016-0040 Waste Discharge Requirements for Stormwater Discharges from Municipal Separate Storm Sewer Systems, which became effective in October 2016. An “MS4” is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) designed or used for collecting or conveying stormwater; (ii) which is not a combined sewer; and (iii) which is not part of a Publicly Owned Treatment Works (POTW). The City of Rancho Cordova is a Phase I MS4 permittee. Projects subject to the requirements of the Phase I MS4 NPDES permit must submit the appropriate Post-Construction Stormwater Plan based on the project type/development category. Regulated Projects include residential projects that create or replace one acre or more of impervious surface. Regulated Projects that create and/or replace one or more acres of impervious surface are subject to hydromodification management, treatment, low impact development, and trash capture requirements. The proposed project would create more than one acre of impervious area, and, thus, is considered a Regulated Project subject to the Phase I MS4 NPDES permit post-construction stormwater requirements.

Regulated Projects are required to divide the project area into Drainage Management Areas (DMAs) and implement and direct water to appropriately-sized Site Design Measures (SDMs) and applicable Post Construction Measures to each DMA to the Maximum Extent Practicable (MEP). Regulated Projects must additionally include Source Control BMPs where possible. SDMs and post construction measures include, but are not limited to:

- Rooftop and impervious area disconnection;
- Porous pavement;
- Rain barrels and cisterns;
- Vegetated swales;
- Bio-retention facilities;

- Green roofs; or
- Other equivalent measures.

A detailed description of the requirements for Regulated Projects, such as the proposed project, is included in the 2018 *Stormwater Quality Design Manual* for the Sacramento region.[6] Per Figure 5-2 of the *Stormwater Quality Design Manual*, the project site is located within an area that is subject to hydromodification management.

Rancho Cordova Municipal Code

The City's Municipal Code includes ordinances associated with hydrology and water quality. The applicable ordinances are discussed in further detail below.

Chapter 15.12: Storm Water Management and Discharge Control

The purpose of Chapter 15.12, Storm Water Management and Discharge Control, of the City's Municipal Code, is to protect and enhance the water quality of watercourses, water bodies, and wetlands within the City area in a manner consistent with the Federal Clean Water Act, the Porter-Cologne Water Quality Control Act, and Municipal Discharge Permit No. CA0085324 by controlling the contribution of urban pollutants to storm water runoff which enters the City's stormwater conveyance system. Per Section 15.12.040 of the Municipal Code, the provisions of Chapter 15.12 are applicable to all users and potential users located within the incorporated area of the City and all users that discharge either directly or indirectly into the County storm water conveyance system.

Land Grading and Erosion Control

The intent of Chapter 16.44, Land Grading and Erosion Control, is to minimize damage to surrounding properties and public rights-of-way, the degradation of the water quality of watercourses, and the disruption of natural or city-authorized drainage flows caused by the activities of clearing and grubbing, grading, filling and excavating of land, and sediment and pollutant runoff from other construction-related activities, and to comply with the provisions of the City's NPDES permit No. CA0085324, issued by the CVRWQCB. Except as provided by Sections 16.44.060, 16.44.065, or 16.44.070 of the Municipal Code, a grading and erosion control permit is required to (A) grade, fill, excavate, store or dispose of 350 cubic yards or more of soil or earthly material or (B) clear and grub one acre or greater of land within the City of Rancho Cordova.

4.6.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to hydrology and water quality. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, a significant impact would occur if the proposed project would result in any of the following:

- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality;

[6] City of Citrus Heights, City of Elk Grove, City of Folsom, City of Galt, City of Rancho Cordova, City of Sacramento, County of Sacramento. *Sacramento Region Stormwater Quality Design Manual.* July 2018.

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge;
- 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:
    - Result in substantial erosion or siltation on- or off-site;
    - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    - 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;
    - Impede or redirect flood flows;
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation;
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

The proposed project's impacts associated with erosion or siltation on- or off-site are discussed in Chapter 4.4, Geology and Soils/Mineral Resources, of this EIR.

Issues Not Discussed Further

The Initial Study prepared for the proposed project (see Appendix A) determined that development of the proposed project would result in no impact related to the following:

- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

For the reasons cited in the Initial Study, the potential impacts associated with the above are not analyzed further in this EIR.

Method of Analysis

The impacts analysis for this chapter is based primarily on the Drainage Study prepared for the proposed project by Ruggeri-Jensen-Azar.[7] The Drainage Study included hydrologic modeling for the proposed project (both pre-project and post-project conditions) using the HEC computer program. In particular, Ruggeri-Jensen-Azar used a combination of the HEC Hydrologic Modeling System (HEC-HMS) and HEC River Analysis System (HEC-RAS) software.

Hydrographs for the HEC-HMS program were developed using the Sacramento Method, which includes calculation of peak flows from the hydrographs produced. The hydrographs are developed based on a design storm, initial losses, constant losses, lag time, and land use. The major contributor in loss coefficients is soil type. Table 4.6-1 below, adopted from the Drainage Study, summarizes the hydrology coefficients applied to the SacCalc program, which was used to calculate the Sacramento Method.

[7] Ruggeri-Jensen-Azar. *Drainage Study for the Preserve.* Updated January 2020.

Table 4.6-1
Hydrology Coefficients

Land Use	Initial Loss (inches)	Constant Loss (inches/hour)	Percent Impervious	Precipitation Zone
Open Space (Grassland)	0.10	0.10	2	2
Recreation (Park)	0.10	0.10	5	2
Low Density Residential (6-8 units/acre)	0.10	0.10	50	2

Note: Constant losses are based on a combination of Type C and D soils.

Source: Ruggeri-Jensen-Azar, 2020.

The design storm selected for proposed project is the 100-year, 24-hour storm, which, according to the Drainage Study, is appropriate for an analysis of a hydromodification basin designed to reduce the peak flow from a developed condition to the existing condition peak flow and is consistent with County analysis standards. The 10-year, 24-hour storm was also evaluated for the developed condition for informational purposes. As part of the Drainage Study, the hydrograph created for the project using the Sacramento Method was applied to the HEC-HMS program to evaluate stormwater flows through the proposed LID drainage features. The modeling results are included in the appendices to the Drainage Study.

Furthermore, Ruggeri-Jensen-Azar performed a floodplain analysis of Morrison Creek under both existing and post-development conditions using the HEC-RAS program. The existing condition cross sections for the HEC-RAS model were developed from the existing topography for the project site and supplemental field survey points. The developed condition cross sections used the existing topography, survey points, and the preliminary grading plan for the proposed project. The developed condition 100-year water surface elevations from the HEC-RAS model were plotted on the proposed Tentative Subdivision Map.

The cross sections begin at the downstream end of the project site (western boundary) and continue upstream until the final cross section located east of Grant Line Road. The beginning water surface elevation at the downstream cross section is calculated based on a normal depth condition with a slope along the creek flowline at S=0.004. Along the way are two man-made ponds and an existing driveway. The two ponds are assumed full for the HEC-RAS analysis. The water surface for each pond is the lowest overflow elevation. The overflow elevation for the downstream pond is elevation 210.5 and the upper pond overflow elevation is 215.2. The existing driveway crosses the creek upstream of the upper pond. The typical Manning's 'n' Value used for the creek is 0.035. This value is appropriate for the grasses that grow along the creek. The 'n' values were increased to 0.04 at the overflows from the two ponds. The existing overflows from the two ponds show erosion and the output from the HEC-RAS model show higher velocities in both areas.

The City has reviewed the technical analysis prepared for the proposed project and preliminarily concurs with the methodology applied by Ruggeri-Jensen-Azar, as well as the conclusions provided therein.

Project Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in comparison with the standards of significance identified above.

4.6-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during construction. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Construction of the proposed project would include grading, excavation, trenching for utilities, and other construction-related activities that could cause soil at an accelerated rate during storm events. All such activities have the potential to affect water quality and contribute to localized violations of water quality standards if impacted stormwater runoff from construction activities enters Morrison Creek.

Soils exposed by the aforementioned types of construction activities have the potential to affect water quality in two ways: 1) suspended soil particles and sediments transported through runoff; or 2) sediments transported as dust that eventually reach local water bodies. Spills or leaks from heavy equipment and machinery, staging areas, or building sites also have the potential to enter runoff. Typical pollutants include, but are not limited to, petroleum and heavy metals from equipment and products such as paints, solvents, and cleaning agents, which could contain hazardous constituents. Sediment from erosion of graded or excavated surface materials, leaks or spills from equipment, or inadvertent releases of building products could result in water quality degradation if runoff containing the sediment or contaminants should enter receiving waters in sufficient quantities. Discharge of polluted stormwater or non-stormwater runoff could violate waste discharge requirements. However, in general, impacts from construction-related activities would generally be short-term and of limited duration.

Because the proposed project would require construction activities that would result in a land disturbance of over an acre, the project applicant would be required by the State to comply with the most current Construction General Permit requirements. Per the requirements, a SWPPP would be prepared for the overall project, which would include the site map, drainage patterns and stormwater collection and discharge points, BMPs, and a monitoring and reporting framework for implementation of BMPs, as necessary. In addition, a Notice of Intent (NOI) would be filed with CVRWQCB.

As discussed in further depth in Chapter 4.4, Geology and Soils/Mineral Resources, of this EIR, development of the SWPPP would include plans to treat stormwater runoff in accordance with the standards of the California Stormwater Management Practice New Development and Redevelopment Handbook and the MS4 Permit standards. The plan would include drainage design from all paved surfaces, including streets, parking lots, driveways, and roofs, as well as landscaping. In addition, the project would be subject to Chapter 16.44 of the City's Municipal Code and Section 11 of the City's Improvement Standards. Implementation of BMPs to control erosion, and, thus, sediment related pollution, is further mandated by Mitigation Measure 4.4-2 within Chapter 4.4 of this EIR.

Non-stormwater management and material management controls reduce non-sediment-related pollutants from potentially leaving the construction site to the extent practicable. The Construction General Permit prohibits the discharge of materials



other than stormwater and authorized non-stormwater discharges (such as irrigation and pipe flushing and testing). Non-stormwater BMPs tend to be management practices with the purpose of preventing stormwater from coming into contact with potential pollutants. Examples of non-stormwater BMPs include preventing illicit discharges, and implementing good practices for vehicle and equipment maintenance, cleaning, and fueling operations, such as using drip pans under vehicles. Waste and materials management BMPs include implementing practices and procedures to prevent pollution from materials used on construction sites. Examples of materials management BMPs include the following:

- Good housekeeping activities such as storing of materials covered and elevated off the ground, in a central location;
- Securely locating portable toilets away from the storm drainage system and performing routine maintenance;
- Providing a central location for concrete washout and performing routine maintenance;
- Providing several dumpsters and trash cans throughout the construction site for litter/floatable management; and
- Covering and/or containing stockpiled materials and overall good housekeeping on the site.

While the final materials management BMPs to be used during construction of the proposed project are currently unknown, the project would likely include a combination of the BMP examples listed above. Final BMPs for the proposed project construction would be chosen in consultation with the applicable California Stormwater Quality Association Stormwater BMP Handbooks and Section 11 of the City's Improvement Standards, and implemented by the project contractor.

In accordance with the Construction General Permit, the project site would also be inspected during construction before and after storm events and every 24 hours during extended storm events in order to identify maintenance requirements for the implemented BMPs and to determine the effectiveness of the implemented BMPs. As a "living document", the site-specific SWPPP that would be prepared for the proposed project would be modified as construction activities progress. A Qualified SWPPP Practitioner (QSP) would ensure compliance with the SWPPP through regular monitoring and visual inspections during construction activities. The QSP for the project would amend the SWPPP and revise project BMPs, as determined necessary through field inspections, to protect against substantial erosion or siltation on- or off-site.

Compliance with the State's Construction General Permit, Chapter 11 of the Improvement Standards, and Chapter 16.44 of the Rancho Cordova Municipal Code, as described above and required by Mitigation Measure 4.4-2 within this EIR, would minimize the potential degradation of stormwater quality and downstream surface water associated with construction of the proposed project. In addition, BMPs would be required to be designed in accordance with the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction and for New Development/Redevelopment and Chapter 11 of the Improvement Standards (or other similar source as approved by the City). In order to further minimize the

potential for, and effects from, accidental spills of hazardous, toxic, or petroleum substances during construction activities, Mitigation Measure 4.6-1(b) below requires the project to prepare and implement a Spill Prevention Countermeasure and Control Plan (SPCC). Without implementation of the aforementioned measures, the proposed project could result in a ***significant*** impact related to short-term construction-related water quality.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

4.6-1(a) *Implement Mitigation Measure 4.4-2.*

4.6-1(b) *Prior to the commencement of ground-disturbing activities, the project applicant shall submit, and obtain approval of, a Spill Prevention Countermeasure and Control Plan (SPCC) to the Sacramento County Environmental Management Department. The SPCC shall specify measures and procedures to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during all construction activities, and shall meet the requirements specified in the Code of Federal Regulations, Title 40, Part 112.*

4.6-2 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality during operations. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Development of the proposed project would result in the conversion of a rural area to single-family residential uses and associated amenities, such as parks and landscaping. Such new land uses could result in new stormwater pollutants being introduced to the project area. Pollutants associated with the operational phase of the proposed project could include nutrients, oil and grease, metals, organics, pesticides, bacteria, sediment, trash, and other debris. Nutrients that could be present in post-construction stormwater include nitrogen and phosphorous resulting from fertilizers applied to landscaping. Excess nutrients could affect water quality by promoting excessive and/or a rapid growth of aquatic vegetation, which reduces water clarity and results in oxygen depletion. Pesticides, which are toxic to aquatic organisms and can bioaccumulate in larger species, such as birds and fish, can potentially enter stormwater after application to landscaped areas within the project site. Oil and grease could enter stormwater from vehicle leaks, traffic, and maintenance activities. Metals could enter stormwater as surfaces corrode, decay, or leach. Clippings associated with landscape maintenance and street litter could be carried into storm drainage systems. Pathogens (from pets, wildlife, and human activities) have the potential to affect downstream water quality.

Development of the proposed project could also increase polluted non-stormwater runoff (e.g., car wash water, other wash water, and landscape irrigation runoff). Such non-stormwater runoff could flow down sidewalks, parking areas, and streets, and pick

up additional pollutants deposited on impervious surfaces prior to discharge into the storm drain system and surface waters. Discharge of polluted stormwater or non-stormwater runoff could violate waste discharge requirements.

Phase I MS4 Permit Requirements

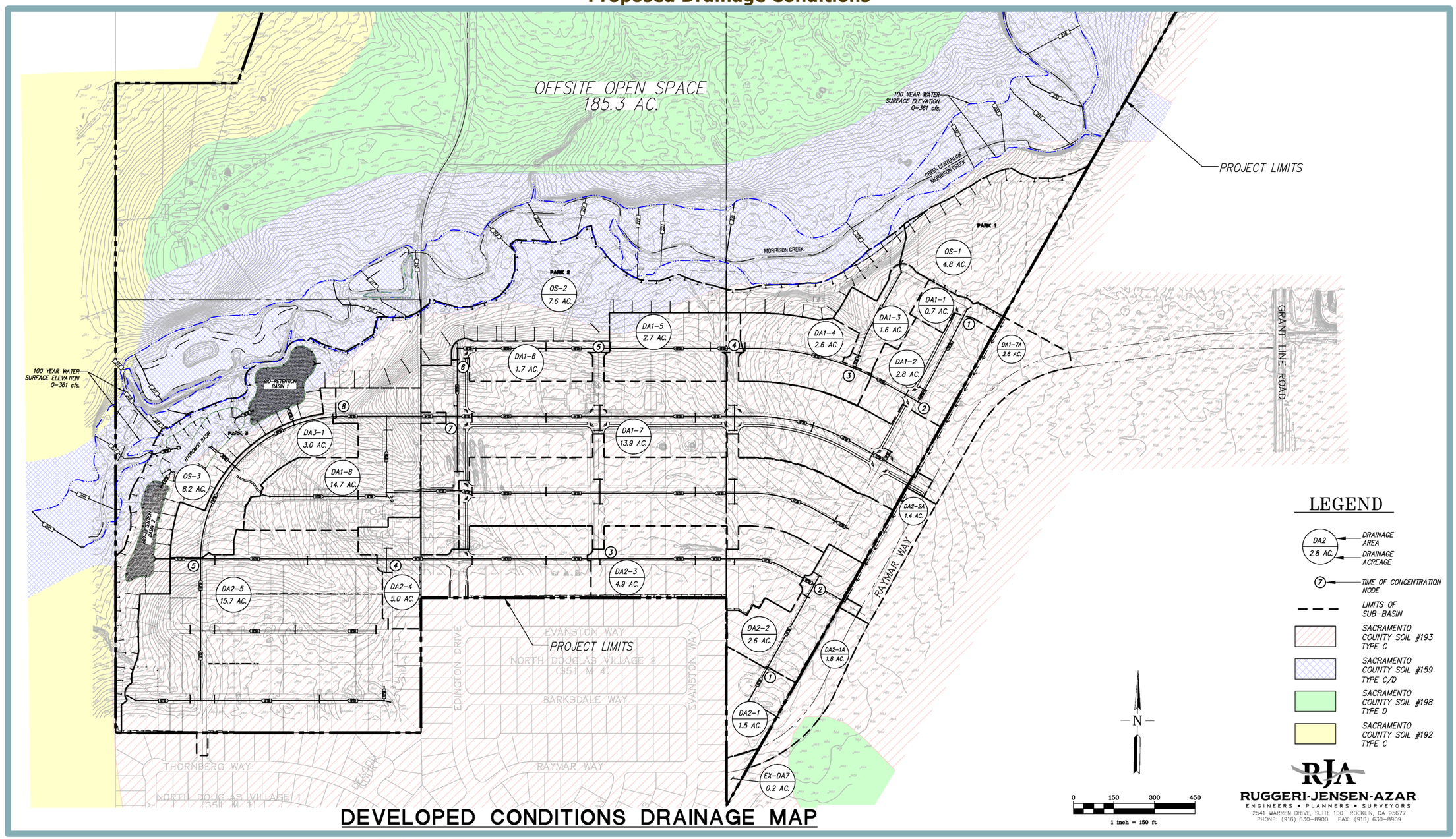
As discussed previously, the proposed project is located within the permit area covered by City's MS4 Permit (NPDES General Permit No. CAS0085324, Order R5-2016-0040 Waste Discharge Requirements for Stormwater Discharges from Municipal Separate Storm Sewer Systems), pursuant to the NPDES Phase I program. Project-related stormwater discharges are subject to all applicable requirements of said permit. Specifically, as noted above, regulated projects are required to divide the project area into DMAs and implement and direct water to appropriately-sized post construction stormwater quality measures to each DMA. Source control measures must be designed for pollutant-generating activities or sources consistent with recommendations from the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment, the Sacramento region *Stormwater Quality Design Manual*, or equivalent manual, and must be shown on the Improvement Plans. Additional details related to post construction stormwater quality requirements associated with the Phase I MS4 permit are discussed under Impact 4.6-4 below.

Proposed Storm Drain System

Per the Drainage Study prepared for the proposed project, the proposed project would include an on-site storm drain system composed of the following post construction stormwater quality measures: Low Impact Development (LID) components-dedication of open space, disconnected pavement, disconnected roof drains, interceptor trees, a hydromodification basin, and two bio-retention basins. Consistent with MS4 permit requirements and the Sacramento region *Stormwater Quality Design Manual*, the proposed development area and the Raymer Way off-site improvement area would be divided into DMAs. The portion of the project site located to the north of Morrison Creek, which would not be developed as part of the project, would not be included in the proposed stormwater management system.

Impervious surfaces proposed as part of the project include building roofs, driveways, and roadways. Runoff from such surfaces would be captured by a series of drain inlets located within the internal roadways and routed, through new underground 12- to 24-inch storm drains, to two bio-retention basins located within the northwest portion of the development area, as shown in Figure 4.6-3. Consistent with the *Stormwater Quality Design Manual*, the bio-retention basins would include a six-inch deep topsoil layer underlain by at least 18 inches of bio-retention soil media. A nine-inch gravel layer with a perforated underdrain would be located underneath the bio-retention soil media. In addition, each basin would include an overflow structure connected to the underdrain. Treated stormwater would be captured by the perforated underdrain and flow, through new 15-inch storm drains, to a hydromodification basin located in between the two bio-retention basins. During large storm events, excess stormwater in the bio-retention basins would flow directly through to the hydromodification basin. The hydromodification basin would allow for detention of captured runoff prior to discharging through a new 36-inch storm drain and outlet structure to Morrison Creek.

Figure 4.6-3
Proposed Drainage Conditions



The proposed bio-retention basins would be sized to treat the first flush, which includes a majority of the larger pollutants (sand, soil, silt, grease and trash), as well as smaller pollutants (sediment, nutrient, metals, pesticides and organics).

As demonstrated in Table 4.6-2 below, the proposed LID features would be sufficiently sized to meet the required storage volumes. Thus, project runoff entering Morrison Creek would be properly treated, and would not pollute downstream waterways.

Table 4.6-2
Proposed LID Control Sizing

Basin	Required Water Quality Volume (acre-feet)	Storage Volume Proposed (acre-feet)	Flow from Hydromodification Basin at Storage Volume (cfs)	Bio-Retention Area (sf)
Hydromodification Basin	1.73	1.73	1.6	-
Bio-Retention Basin 1	-	-	-	39,000
Bio-Retention Basin 2	-	-	-	26,700

Source: Ruggeri-Jensen-Azar, 2019.

Maintenance and Inspection

In order to ensure continued operation of the proposed LID control features, a detailed site-specific inspection and maintenance procedures plan should be implemented by the project applicant. For example, plants and vegetation within the bio-retention basins and hydromodification basin should be inspected monthly, and the basins should be inspected for the presence of standing water 72 hours after rain events. Required maintenance activity should include, but not necessarily be limited to, removal of debris from basins and removal of debris from outlets of basins. Without implementation of such measures, the basins could fail to ensure that polluted runoff would not enter downstream water bodies during the continued operation of the project.

Conclusion

Based on the above, the proposed project includes site design measures to ensure that stormwater runoff is properly treated prior to discharge to Morrison Creek. Thus, urban pollutants entering and potentially degrading local water quality would not be expected to occur as a result of the project. However, because a final BMP and water quality maintenance plan has not been prepared, ongoing maintenance of the proposed bio-retention basins and the incorporation of proper source control measures cannot be ensured. Should the project applicant fail to prepare and implement such documentation, the proposed project could result in a ***significant*** impact related to a violation of water quality standards or waste discharge requirements or otherwise substantial degradation of surface or ground water quality during operations.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.6-2 *Prior to approval of final project improvement plans, the project applicant shall submit a detailed Best Management Practice (BMP) and water quality maintenance plan to the City for review and approval. The BMP and water quality maintenance plan shall meet the standards of the City's NPDES Permit (No. CAS0085324), the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment, and the Stormwater Quality Design Manual for the Sacramento region. Site design measures, source control measures, hydromodification management, and Low Impact Development (LID) standards, as necessary, shall be incorporated into the design and shown on the improvement plans.*

4.6-3 *Prior to approval of final project improvement plans, the project applicant shall submit a maintenance covenant to the City for review and approval. The maintenance covenant shall be recorded with the property deed and executed following property ownership to ensure the long-term maintenance of stormwater quality measures.*

4.6-3 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Based on the analysis below, the impact is *less than significant*.

The proposed project would result in an increase in on-site impervious surfaces, which would reduce the infiltration of groundwater as compared to existing conditions. Groundwater relies on annual rainfall and percolation through pervious soils to recharge the system. The U.S. Soil Conservation Service (SCS) has classified soils into four hydrologic categories (A, B, C, and D) based on infiltration rates from prolonged wetting. Soil Type A has the highest infiltration rate and Type D has the lowest infiltration rate. According to the Drainage Study, the majority of the project site consists of Type C soils, while a small portion of the site along Morrison Creek consists of Type C/D soils. Because the majority of the site is characterized by Type C or D soils, the project site would not be considered an important groundwater recharge area. Furthermore, the proposed project would not include any development within the channel of Morrison Creek; thus, infiltration of water moving through the creek would continue to occur and contribute to groundwater recharge.

Given the limited recharge potential of the portion of the project site that would be developed with impervious surfaces, the proposed project would not interfere substantially with groundwater recharge. Furthermore, the groundwater subbasin within which the project site is located is not currently in a state of overdraft. As further discussed in Chapter 4.9, Public Services and Utilities, of this EIR, the water supply for the proposed project would only include groundwater sources during dry and critically dry years.

Considering that the project site is not considered an important groundwater recharge area, stormwater from the project site would continue to replenish groundwater through percolation into soils within Morrison Creek, and that the project would not involve substantially increased demand on groundwater supplies within an area in a state of overdraft, the proposed project would not create a conflict with, or impede the implementation of, a sustainable groundwater plan. Thus, impacts related to groundwater would be ***less than significant***.

Mitigation Measure(s)

None required.

4.6-4 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: substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or 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. Based on the analysis below, the impact is *less than significant*.

It should be noted that the potential for the proposed project to result in substantial additional sources of polluted runoff, including erosion, is addressed under Impacts 4.6-1 and 4.6-2 above. Further discussion regarding erosion is provided in Chapter 4.4, Geology and Soils/Mineral Resources, of this EIR.

Increases to peak runoff flows or volumes resulting from alterations to the existing drainage pattern of the site have the potential to result in exceedance of existing or planned stormwater drainage systems or flooding on- or off-site.

As discussed previously, runoff from impervious surfaces created as part of the proposed project would be routed to two new bio-retention basins in the northwest portion of the development area. The bio-retention basins would detain and treat runoff prior to discharging treated runoff to a hydromodification basin located in between the two bio-retention basins. The hydromodification basin would allow for metering of flows discharged to Morrison Creek. In addition to the bio-retention basins and hydromodification basin, the project would incorporate LID controls such as disconnected pavement, disconnected roof drains, and interceptor trees to help reduce stormwater runoff. Such strategies are consistent with the *Stormwater Quality Design Manual* for the Sacramento region.

To assess the changes in runoff volumes from the project site that could occur due to the proposed project, Ruggeri-Jensen-Azar calculated the pre- and post-construction peak flow runoff volumes at the location of the proposed stormwater outlet at Morrison Creek. Pre- and post-construction peak flows are presented in Table 4.6-3 below for the 10-year, 24-hour and 100-year, 24-hour storm events.

Table 4.6-3
Pre- and Post-Project Peak Flows

Project Condition	Combined Peak Flow at Outlet Location (cfs)	
	10-year, 24-hour	100-year, 24-hour
Pre-Project	79	134
Post-Project (without LID)	107	171
Post-Project (with LID)	65.9	116.7

Source: Ruggeri-Jensen-Azar, 2020.

As shown in the table, with inclusion of the proposed LID features, the proposed project would result in reduced peak flows relative to existing conditions for the design storm event, as well as during the 10-year, 24-hour storm event. Therefore, the proposed project would be consistent with applicable hydromodification requirements, and would not increase the rate or amount of runoff leaving the project site during the design storm event. In addition, the outlet invert elevation from the hydromodification basin would be above the 100-year water surface elevation calculated from the HEC-RAS model of Morrison Creek.

Therefore, the proposed project would result in a ***less-than-significant*** impact related to substantially altering the drainage pattern of the site or area, or increasing the rate or amount of surface runoff.

Mitigation Measure(s)
None required.

4.6-5 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 impede or redirect flood flows. Based on the analysis below, the impact is *less than significant*.

As discussed previously, per the FEMA FIRM for the project area, the entirety of the project site is located within Zone X, defined as an area of minimal flood hazard that is located outside of the FEMA-designated 100-year floodplain. In addition, per the Drainage Study prepared for the proposed project, under post-development conditions, the proposed residences would be located outside of the modeled 100-year floodplain associated with Morrison Creek. The proposed project would not include any grading activities within the 100-year floodplain. Furthermore, the outlet invert elevation from the hydromodification basin would be above the 100-year water surface elevation calculated from the HEC-RAS model of Morrison Creek.

Based on the above, the proposed project is not anticipated to result in the impediment or redirection of flood flows such that on- or off-site structures would be exposed to flood risk. Thus, a ***less-than-significant*** impact would occur related to alteration of the existing drainage pattern of the site or area, including through alteration of a course

of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 5, Statutorily Required Sections of this EIR. The cumulative setting for impacts related to hydrology and water quality would be the US3 drainage area identified within the MDS.

4.6-6 Cumulative impacts related to the violation of water quality standards or waste discharge requirements, groundwater quality, management, and recharge, and impacts resulting from the alteration of existing drainage patterns. Based on the analysis below, the cumulative impact is *less than significant*.

As noted previously, the proposed project is located within the drainage area identified as US3 in the MDS prepared for the Rio Del Oro Specific Plan. The northwestern portion of the project site, which is located within the drainage area identified in the MDS as US2, would not be developed as part of the project; thus, drainage conditions within US2 are assumed to remain unchanged for the purpose of this analysis.

The US3 drainage shed encompasses a total of 1,003 acres, including the project site. Excluding the project site, the remainder of the US3 drainage shed is located within unincorporated Sacramento County. The portions of the drainage shed within the unincorporated County are primarily undeveloped, with the exception of existing industrial mining operations within the central portion of the drainage shed and limited agricultural operations within the far eastern portion of the drainage shed. According to the Sacramento County General Plan, the existing mining operation area is currently designated Extensive Industrial, while the remainder of US3 is designated General Agriculture. Thus, the County has not anticipated any substantial new development within the US3 drainage shed under buildout of the County's General Plan. As such, drainage conditions within the reach of Morrison Creek located upstream of the project site within US3 are not anticipated to change substantially.

As discussed in Impacts 4.6-1 through 4.6-5 above, all identified project-level impacts would be reduced to less-than-significant levels with implementation of the mitigation measures set forth herein. In the absence of any additional planned or pending future development within the US3 drainage area, significant cumulative impacts related to

hydrology and water quality would not occur. Therefore, the cumulative impact would be considered ***less than significant***.

Mitigation Measure(s)

None required.

4.7 Land Use and Planning/Population and Housing

4.7. LAND USE AND PLANNING/ POPULATION AND HOUSING

4.7.1 INTRODUCTION

The purpose of the Land Use and Planning/Population and Housing chapter of the EIR is to examine the proposed project's compatibility with existing and planned land uses in the area and identify any incompatibilities with applicable land use plans, policies and regulations adopted by the City for the purpose of avoiding environmental effects, including the City of Rancho Cordova General Plan[1] and associated EIR.[2] In addition, the chapter assesses the compatibility of the proposed project with the surrounding land uses, both existing and proposed. Furthermore, the chapter includes discussion of the potential for the project to induce substantial population growth in the project area, either directly or indirectly. The reader is referred to the various environmental resource evaluations presented in the other technical chapters of this EIR for a discussion of potential physical/environmental effects that may result from the proposed land use changes.

4.7.2 EXISTING ENVIRONMENTAL SETTING

This section describes the existing land uses on the project site and within the surrounding area at the time the NOP was published, as well as the existing plans and policies that guide the development of the project site. In addition, the Existing Environmental Setting section describes current population and housing trends in the project region.

Project Site Characteristics and Surrounding Land Uses

The project site is located in the City of Rancho Cordova, northwest of Raymer Way and Grant Line Road. The site is located within the Grant Line West Planning Area of the City.

Currently, the 279.3-acre project site consists primarily of ruderal grasses, with two single-family residences and associated outbuildings located within the southern portion of the site, and a third single-family residence and associated outbuildings located in the northwestern portion of the site. A private road, identified as Douglas Road, leads from south of the project site to the two residences. Currently, the undeveloped portions of the site are used for livestock grazing.

Surrounding land uses include the Camden at Somerset Ranch residential subdivision directly to the south, vacant agricultural lands and a Teichert Aggregates Aggregate/Asphaltic Concrete site across Grant Line Road to the east, two single-family residences and industrial/open space to the north, and vacant land approved for the development of the Rio Del Oro residential community immediately adjacent to the west. The area further to the north of the site contains known contamination areas associated with the Aerojet General Corporation National Priorities List Superfund Site.

1 City of Rancho Cordova. *General Plan*. Adopted June 26, 2006.
2 City of Rancho Cordova. *General Plan Environmental Impact Report.* 2006.

Land Use and Zoning Designations

Per the City of Rancho Cordova General Plan, the project site is located within the Grant Line West Planning Area and is designated Natural Resources and Residential-Mixed Density. The site is zoned Agricultural (AG-80) and Industrial Reserve (IR).

Table 4.7-1 below provides a summary of the current General Plan land use and zoning designations of the properties adjacent to the project site. The land uses to the north of the site, as well as the areas east of the site beyond Grant Line Road, are located within unincorporated Sacramento County, but are included in the City's planning area and are assigned land uses per the City's General Plan. The adjacent areas to the south and west of the site are located within the City of Rancho Cordova.

Table 4.7-1
Summary of Adjacent Community Plan Land Use and Zoning Designations

Relationship to Project Site	Present Land Use	City General Plan Land Use Designation	Zoning Designation
North	Superfund site	Residential-Mixed Density	Interim-Agricultural Reserve (IR) *(Sacramento County)*
		Natural Resources	
South	Single-family residential	Residential-Mixed Density	Residential 5 (RD 5)
		Low Density Residential	Agricultural 80 (AG-80) *(Sacramento County)*
East	Industrial/vacant	Residential-Mixed Density	Agricultural 80 (AG-80) *(Sacramento County)*
West	Vacant	Residential-Mixed Density	Single Family Residential (SF) *(Rio Del Oro Specific Plan)*
		Natural Resources	Wetland Preserve (WP) *(Rio Del Oro Specific Plan)*

It should be noted that within the Grant Line West Planning Area, as well as other Planning Areas in the project vicinity, the land use designations provided by the City's General Plan are conceptual; detailed planning efforts are required in such areas prior to approval of development. In addition, while the General Plan contains conceptual land uses for each of the Planning Areas within the project vicinity, some of the Planning Areas are located outside the City limits. The land use designations endorsed by the General Plan for the Planning Areas located outside the City limits are merely advisory in nature. The General Plan does not change land use designations for land located outside of the City's jurisdiction.

Land Use Designation Definitions

The following sections provide definitions of the land use designations noted above, as summarized from the City's General Plan.

Residential-Mixed Density

The Residential-Mixed Density conceptual land use designation is intended to represent a mix of residential densities with target average densities in the medium density range.

Natural Resources
Land within the Natural Resources category is set aside as natural habitat and typically does not include any urban development.

Low Density Residential
The Low Density Residential land use category is intended to include traditional single-family neighborhoods with a majority of single-family detached homes. Per the City's General Plan, the Low Density Residential designation is the predominant land use category for the City's neighborhoods.

Zoning Designation Definitions
The following sections provide definitions of the zoning designations noted above, as summarized from the City of Rancho Cordova Zoning Code (Title 23 of the City's Municipal Code) and the Sacramento County Zoning Code.

City of Rancho Cordova Zoning Code
The City defines the IR, AG-80, RD-5, SF, and WP zoning designations as follows:

Industrial Reserve (IR)
Per the City's Zoning Code, properties zoned IR are considered "agricultural land" because general agricultural uses are allowed within the IR zone.

Agricultural 80 (AG-80)
Per the City's Zoning Code, the AG-80 zone district is intended to preserve land for agricultural use and operations and discourage the premature conversion of agricultural land to urban uses. The AG-80 zone is applied to areas of the City to accommodate a wide range of agricultural uses on parcels of land that are 80 acres or larger in size.

Residential 5 (RD-5)
The RD-5 district makes up the vast majority of residential development built within the City prior to incorporation. The zone allows for residential development in the 4.1 to 5.0 dwelling units per acre range, as well as other compatible neighborhood support facilities and public/quasi-public uses, such as parks, religious institutions, and community gathering facilities.

Single Family Residential (SF)
Within the Rio Del Oro Specific Plan area, the SF zoning designation is intended for residential development at densities ranging from 2.1 to 6.0 dwelling units per acre. The size and type of lots anticipated will range from one half-acre executive lots to moderately sized lots. Density ranges, permitted uses and development standards and design guidelines for all residential uses are provided in the Rio Del Oro Specific Plan Development Standards and Design Guidelines.

Wetland Preserve (WP)
The Rio Del Oro Specific Plan area includes a 510-acre WP-zoned area is located in the southern portion of the Specific Plan area, protecting Morrison Creek and approximately 52 percent of the existing vernal pools and associated upland habitat. Vernal pool creation, maintaining approximately 250-foot buffers from existing vernal pool features, will occur within the WP area.

Sacramento County Zoning Code

Sacramento County defines the IR and AG-80 zoning designations as follows:

Interim-Agricultural Reserve (IR)

Per the Sacramento Zoning Code, the IR zone district is an agricultural zoning district with a 20-acre minimum lot size. Single-family residential uses are allowed within the IR zone district. However, the purpose of the IR zone district is to allow for future development with industrial uses.

Agricultural 80 (AG-80)

Within unincorporated Sacramento County, the AG-80 zone district is an agricultural zoning district with an 80-acre minimum lot size. Single-family residential uses are allowed within the AG-80 zone district at a density of one unit per parcel, in addition to accessory dwellings for agricultural employees. The zone district is intended to promote long-term agricultural uses and discourage the premature and unnecessary conversion of agricultural land to urban uses.

Population and Housing

Population growth assumptions, average household sizes, and vacancy rates for the City of Rancho Cordova are discussed below.

Historical and Current Population

Per the City's General Plan, based on the Draft General Plan Land Use Map (see Section 3.0, Project Description) the City of Rancho Cordova Planning Area is anticipated to have a buildout capacity of 126,241 housing units and 310,568 persons. Buildout of the Grant Line West Planning Area, including the project site, has been anticipated to include a total of 3,393 dwelling units, 9,043 residents, 502,893 square feet (sf) of commercial uses, and 143,684 sf of office uses.[3] Maximum buildout is anticipated to occur after year 2030.

The City of Rancho Cordova was incorporated in July 2003. As shown in Table 4.7-2, the population within the city limits has increased steadily, from 53,572 persons in 2010 to 74,566 persons in 2019. As growth has occurred within the City, the average household size has increased, reaching a high of 2.81 in 2019.

Table 4.7-2
City of Rancho Cordova Population and Household Growth

Year	Population	Households	Persons Per Households
2000	53,572	19,909	2.69
2010	64,805	23,468	2.76
2019	74,566	26,559	2.81

Sources:
ESRI Business Analyst, 2010 Census Profile, November 2019.
ESRI Business Analyst, Comparison Report, City of Rancho Cordova, February 2019.

The observed population change within the City, presented in Table 4.7-2, remains well below the buildout estimates presented in the City's General Plan EIR.

[3] City of Rancho Cordova. *General Plan Environmental Impact Report* [Table 3.0-3]. 2006.

Projected Housing Growth

While Table 4.7-2 demonstrates that growth within the City has not reached the maximum growth buildout estimates, development within the City is anticipated to continue to grow as new development occurs within the undeveloped areas within southeastern portion of the City. The Sacramento Area Council of Governments (SACOG) has anticipated growth within the six-county Sacramento region through the 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS).[4] Per the 2020 MTP/SCS, the City is anticipated to grow to a total of 39,980 housing units by 2035 and 42,710 housing units by 2040.

Average Household Size

The average size of households is a function of the number of residents living in households within a given area divided by the number of occupied housing units within the given area. As shown in Table 4.7-3, as of 2019, the average household size within the City is approximately 2.81 persons per household, which is similar to average household sizes within Sacramento County but slightly smaller than the statewide average of 2.98 persons/household.

Table 4.7-3
Average Household Size (Persons Per Household)

Area	2019
California	2.98
Sacramento County	2.80
City of Rancho Cordova	2.81

Source: ESRI Business Analyst, Comparison Reports, City of Rancho Cordova, November 2019.

Regional Housing Needs Plan

The Regional Housing Needs Allocation (RHNA) is a minimum projection of additional housing units needed to accommodate projected household growth of all income levels by the end of the housing element's statutory planning period. Based on SACOG's adopted RHNA, each city and county must update the housing element of their General Plan to demonstrate how the jurisdiction will meet the expected growth in housing need over the planning period.

According to the U.S. Department of Housing and Urban Development (HUD), housing is classified as "affordable" if households do not pay more than 30 percent of income for payment of rent (including utilities) or monthly homeownership costs (including mortgage payments, taxes, and insurance). SACOG adopted their Regional Housing Needs Plan (RHNP) on September 20, 2012, which officially assigns the allocations to cities and counties in the six-county Sacramento region. SACOG's RHNP covers the planning period from January 1, 2013 through October 31, 2021, and defines the lower income unit categories as follows:

- Very Low-Income Unit: is one that is affordable to a household whose combined gross household income is at or lower than 50 percent of the Sacramento County median income.
- Low-Income Unit: is one that is affordable to a household whose combined gross household income is at or between 50 and 80 percent of the Sacramento County median income.

[4] Sacramento Area Council of Governments. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*. November 18, 2019.

On November 21, 2019, the SACOG Board of Directors approved RHNA Methodology Option C for the RHNA Methodology Cycle 6 (2021 through 2029 planning period).[5] This action provides the number of total housing units that each jurisdiction in the SACOG region must zone for during the eight-year period. Based on the approved RHNA Methodology Option C, the SACOG region requires a minimum of 38,999 new very low-income units and 23,503 new low-income units for the upcoming planning period.[6] The SACOG Board of Directors adopted the 2021-29 RHNP on March 19, 2020.

4.7.3 REGULATORY CONTEXT

Federal laws or regulations pertaining to land use and planning/population and housing are not applicable for this analysis. However, the existing State and local laws and regulations are listed below, as applicable.

State Regulations

The following are applicable State regulations related to land use and planning/population and housing.

Title 14 California Code of Regulations Section 15131

Title 14, California Code of Regulations (CCR) Section 15131 provides that economic or social information may be included in an EIR, but those economic or social effects shall not be considered significant effects on the environment. In an EIR, the lead agency is responsible for researching economic or social changes resulting from a project, which may eventually lead to physical changes in the environment. Such economic or social changes can be used to determine the significance of physical changes on the environment.

Regional Housing Needs Plan

California General Plan law requires each city and county to have land zoned to accommodate a fair share of the regional housing need. The share is known as RHNA and is based on a RHNP developed by councils of government. The state-mandated RHNA process (Government Code Sections 65580 et seq.) requires SACOG to develop a methodology that determines how to divide and distribute an overall allocation that the region receives from the State.

SB 330

California Senate Bill (SB) 330, "The Housing Crisis Act of 2019," was signed into law by Governor Newsom on October 9, 2019 and became effective January 1, 2020. The bill establishes a statewide housing emergency to be in effect until January 1, 2025. During the housing emergency period, cities and localities in urban areas, including the City of Rancho Cordova, are generally prohibited from rezoning actions or imposing new development standards that would reduce the zoned capacity for housing, or adopting new design standards that are not objective. In such jurisdictions, the demolition of existing housing units is only permitted if replacement units are provided. The demolition of existing low-income units is only permitted if certain conditions related to affordability and tenant protections are met.

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5 Sacramento Area Council of Governments. *Regional Housing Needs Allocation (RHNA) and Housing Issues.* Available at: https://www.sacog.org/regional-housing-needs-allocation-rhna. Accessed December 2019.

6 Sacramento Area Council of Governments. *Draft Regional Housing Needs Allocation Methodology Menu.* September 19, 2019.

Local Regulations

The following are the local regulations and standards relevant to the CEQA review process with respect to land use and planning/population and housing. Specific goals and policies from the City's General Plan are listed in Table 4.7-5 at the end of this chapter.

Sacramento Area Council of Governments

SACOG is responsible for the preparation of, and updates to, the MTP/SCS for the region and the corresponding Metropolitan Transportation Improvement Program (MTIP). The MTIP identifies short-term projects (seven-year horizon) in more detail.

Metropolitan Transportation Plan/Sustainable Communities Strategy

The 2020 MTP/SCS was adopted by the SACOG board on November 18, 2019.[7] The MTP/SCS is a long-range plan for transportation improvements in the region and provides a 20-year transportation vision and corresponding list of projects. The plan is based on projections for growth in population, housing, and jobs. SACOG determines the regional growth projections by evaluating baseline data (existing housing units and employees, jobs/housing ratio, and percent of regional growth share for housing units and employees), historic reference data (based upon five- and ten-year residential building permit averages and historic county-level employment statistics), capacity data (General Plan data for each jurisdiction), and current MTIP data about assumptions used in the most recent MTP/SCS. SACOG staff then meets with each jurisdiction to discuss and incorporate more subjective considerations about planned growth for each area. Finally, SACOG makes a regional growth forecast for new homes and new jobs, based upon an economic analysis provided by a recognized expert in order to estimate regional growth potential based on market analysis and related economic data, which is incorporated into the MTP/SCS.

4.7.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to land use and planning/ population and housing. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, a significant impact would occur if the proposed project would result in any of the following:

- 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 an environmental effect; or
- Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure).

Issues Not Discussed Further

The Initial Study prepared for the proposed project (see Appendix A) determined that development of the proposed project would result in no impact or a less-than-significant impact related to the following impacts:

[7] Sacramento Area Council of Governments. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*. November 18, 2019.

- Physically divide an established community; and
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Method of Analysis

The following section describes the method of analysis used to evaluate potential impacts of the proposed project related to land use and planning/population and housing.

Land Use and Planning

This chapter analyzes the compatibility of the proposed project with surrounding land uses and compliance of the proposed project with adopted plans and policies. Environmental impacts resulting from the proposed project are discussed in the respective environmental categories. This discussion complies with Section 15125(d) of the CEQA Guidelines, which requires that EIRs discuss inconsistencies with adopted local plans as part of the environmental setting. The ultimate determination of consistency rests with the City Council.

Compatibility with Existing Uses

The proposed project is evaluated for compatibility with the existing land uses adjacent to the project site. The evaluation considers the existing and planned type and intensity of uses in the project vicinity and those proposed for the project site. The analysis assumes the construction and implementation of the proposed project within the existing and planned environment to determine if the project is compatible with those existing and planned uses surrounding the project site.

Consistency with the Applicable Land Use Regulations

The proposed project is examined for consistency with the City's General Plan based on the relevant policies contained therein. The project's consistency with the City's Municipal Code is also discussed.

Population and Housing

The level of significance of the impacts related to population and housing is determined by evaluating whether the proposed project, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure), would induce substantial unplanned population growth in the project area.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above.

4.7-1 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 an environmental effect. Based on the analysis below, the impact is *less than significant*.

The General Plan Guidelines published by the State Office of Planning and Research defines consistency as, "An action, program, or project is consistent with the general plan if, considering all its aspects, it will further the objectives and policies of the

general plan and not obstruct their attainment." Therefore, the standard for analysis used in this EIR is based on general agreement with the policy language and furtherance of the policy intent (as determined by a review of the policy context). The determination that the project is consistent or inconsistent with the City of Rancho Cordova General Plan policies or other City plans and policies is ultimately the decision of the City Council. Furthermore, although CEQA analysis may identify some areas of general consistency with City policies, the City has the ability to impose additional requirements or conditions of approval on a project, at the time of its approval, to bring a project into more complete conformance with existing policies. A discussion of the project's general agreement with policy language and furtherance of policy intent is discussed in further detail below.

The General Plan and Zoning Code carry out the policies of the City of Rancho Cordova General Plan by classifying and regulating the uses of land and structures within the City, consistent with the General Plan. As noted previously, the project site is located within the Grant Line West Planning Area and is currently assigned the conceptual land use designations of Natural Resources and Residential-Mixed Density. The site is zoned Agricultural (AG-80) and Industrial Reserve (IR).

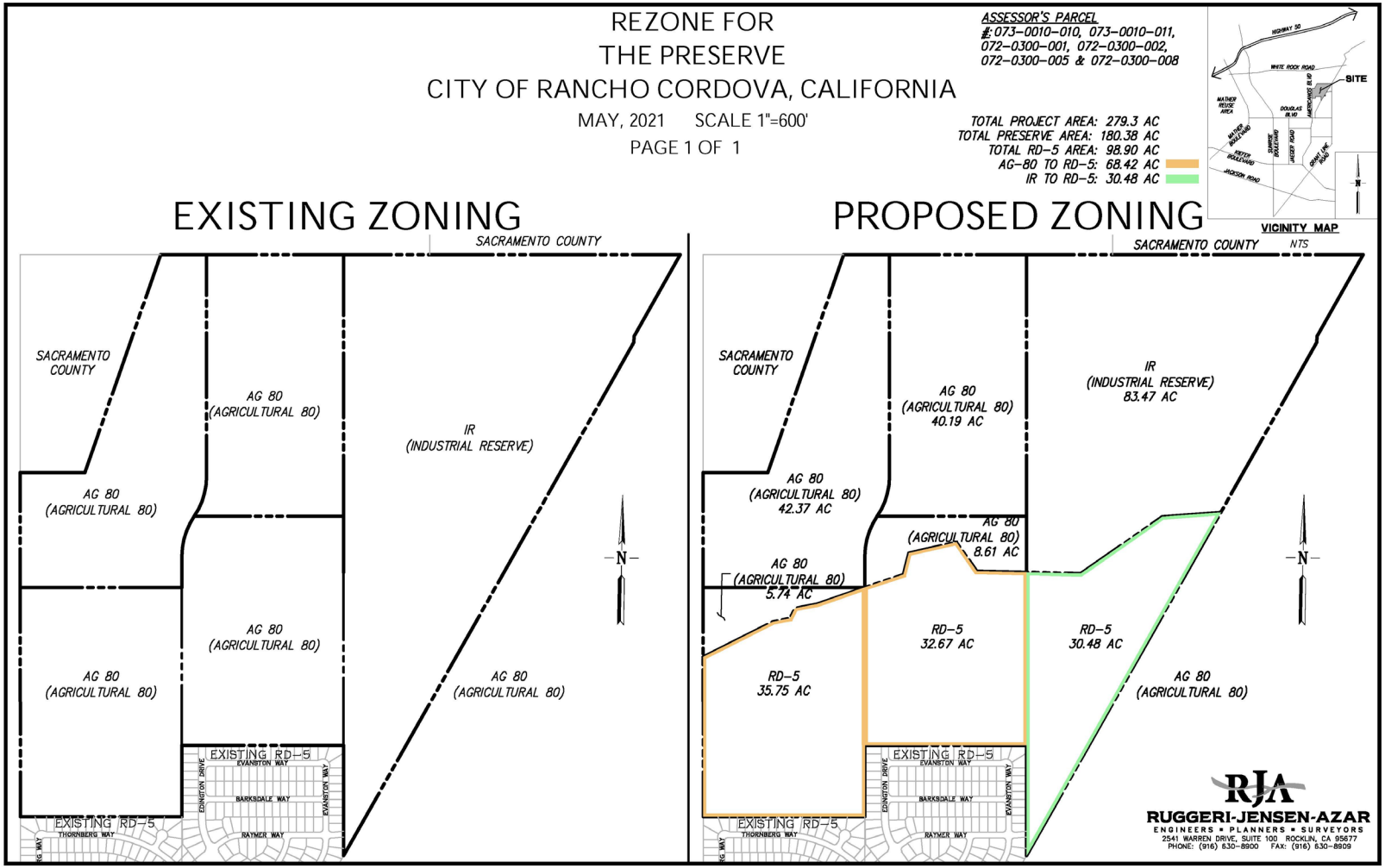
The proposed project would change the land use designation of the entire project site to Low Density Residential. The Low Density Residential designation is intended for single-family detached homes at a density of 2.1 to 6.0 dwelling units/acre. In addition, the project would include an amendment to the Circulation Element of the General Plan to remove the planned alignment of Centennial Drive in the project vicinity. Within the southern portion of the project site, the project would require a rezone to change a total of 68.42 acres of AG-80 zoned land and 30.48 acres of IR zoned land to Residential District (RD-5), which allows for residential development at a density of between 4.1 and 5.0 dwelling units/acre (see Figure 4.7-1). Table 4.7-4 below provides a comparison of the development potential of the project site under the existing and proposed General Plan land use and zoning designations.

Table 4.7-4
Project Site Development Potential

Scenario	Land Use Designation	Zoning	Development Potential
Existing	Natural Resources and Residential-Mixed Density	AG-80, IR	Four units allowable
Proposed	Low Density Residential	RD-5	440 units proposed

As discussed in Table 4.7-5, City of Rancho Cordova General Plan Policy Discussion, the project would be generally consistent with the applicable policies outlined in the General Plan. It should be noted that while potential inconsistencies with specific policies may indicate a significant physical impact, the inconsistency is not itself an impact. The physical impacts of the project are analyzed throughout Chapters 4.1 through 4.10 of this Draft EIR.

Figure 4.7-1
Existing and Proposed Zoning Designations



Approval of the General Plan Amendment and rezone are discretionary actions subject to approval by the City Council. Should the City Council approve the requested entitlements, the project would be rendered consistent with the County's General Plan and Municipal Code.

From a policy perspective, Table 4.7-5 at the end of this chapter demonstrates that the proposed project would be generally consistent with the policies in the General Plan adopted for the purpose of avoiding or mitigating an environmental effect.

Based on the above, the proposed project would not cause a significant environmental impact due to conflicts with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect (including the policies discussed in Table 4.7-5), and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.7-2 Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure). Based on the analysis below, the impact is *less than significant*.

Growth can be induced in a number of ways, including through the elimination of obstacles to growth or through the stimulation of economic activity within the region. Examples of projects likely to have growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or office complexes in areas that are currently only sparsely developed or are undeveloped. The following sections describe potential effects related to direct and indirect population growth associated with implementation of the proposed project.

Direct Population Growth

The proposed 440-unit single-family residential development would increase the available housing within the City of Rancho Cordova, which would be expected to increase population in the area. Using the 2.81 persons/household average household size for the City (see Table 4.7-3), the project would house an estimated 1,237 residents. However, to provide a more conservative assessment consistent with other technical chapters in this EIR, the analysis in this chapter assumes the proposed project would generate 1,333 residents, as estimated by the VMT analysis prepared for the proposed project.

As noted previously, the City has anticipated buildout of the Grant Line West Planning Area with a total of 3,393 dwelling units, 9,043 residents, 502,893 square feet (sf) of commercial uses, and 143,684 sf of office uses. Currently, the Grant Line West Planning Area is primarily vacant and undeveloped. Thus, population growth associated with the proposed 440-unit subdivision would be within the scope of what

has been anticipated for the project area per the General Plan. It should be noted that potential population growth impacts associated with development of the proposed project and other future cumulative development projects in the City, including the Grant Line West Planning Area, are considered in further depth within Impact 4.7-5 below. Furthermore, the SACOG 2020 MTP/SCS has anticipated the addition of 13,421 residential units to the City's housing stock by 2035. Thus, the proposed 440 units would be consistent with the growth projections included in the 2020 MTP/SCS.

Indirect Population Growth

The proposed project would result in an increase of the permanent population on the project site by approximately 1,333 residents. This new residential population would likely patronize local businesses and services in the area, fostering economic growth. While construction of the proposed project would result in increased employment opportunities in the construction field, which could potentially result in increased permanent population and demand for housing in the vicinity of the project site, employment patterns of construction workers is such that construction workers would not likely, to any significant degree, relocate their households as a result of the construction-related employment opportunities associated with the proposed project.

Although the project would provide short-term employment opportunities, which would likely be filled from the local employee base, with the possible exception of a few household and landscape maintenance jobs, no permanent jobs would be created by the proposed project. Therefore, the project would not result in long-term employment growth in the area. The residential population generated by the proposed project would also result in an increased demand for public services. However, as discussed in Chapter 4.9, Public Services and Utilities, the project's demand for public services could be accommodated by existing services and would not create a need for new or altered governmental facilities. The utility improvements included in the proposed project would be designed to serve the proposed residences only, and would not induce additional population growth within the Grant Line West Planning Area beyond what has been previously anticipated by the City.

Conclusion

Considering the above, the proposed project would include development that would result in direct on-site population growth. However, population growth resulting from the proposed project would be within the General Plan and SACOG growth estimates for the project area. Furthermore, the infrastructure included in the proposed project would be sized to accommodate only the development that had been previously planned for the project area. As a result, the proposed project would not be considered to induce substantial unplanned population growth, and a ***less-than-significant*** impact would result. It should be noted that potential impacts related to growth inducement are discussed further within Chapter 5, Statutorily Required Sections, of this EIR, consistent with Section 15126.2(d) of the CEQA Guidelines.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Additional detail regarding the cumulative setting for the proposed project is included in Chapter 5, Statutorily Required Sections, of this EIR.

4.7-4 Cause a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Based on the analysis below, the cumulative impact is *less than significant*.

A cumulative analysis of land use is not included because land use plans or policies and zoning generally do not combine to result in cumulative impacts. The determination of significance for impacts related to such issues is whether the project would 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 an environmental effect. Such a conflict is site-specific, and, thus, is only addressed on a project-by-project basis. As shown in Table 4.7-5 of this chapter, the proposed project would be generally consistent with relevant policies in the City of Rancho Cordova General Plan.

Therefore, the proposed project would not cause a significant cumulative environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, and the cumulative impact would be ***less-than-significant***.

Mitigation Measure(s)

None required.

4.7-5 Cumulative unplanned population growth. Based on the analysis below, the cumulative impact is *less than significant*.

Buildout of the City, including the Grant Line West Planning Area, was anticipated to result in population growth through the buildout of urban and rural developments throughout the City. Since approval of the General Plan, the Rio Del Oro Specific Plan and Sun Creek Specific Plans have been approved by the City, which resulted in a slight increase in the amount of residential development anticipated for the specific plan areas. In addition, several residential development projects have been completed, are underway, or approved within the City's planning area. The 2020 MTP/SCS, prepared by the SACOG, provides regional growth projections for the six-county Sacramento region, including the City of Rancho Cordova.

As discussed within Impact 4.7-3 above, the population growth related to implementation of the proposed project has been anticipated for the region by the 2020 MTP/SCS. Concurrently, the 2020 MTP/SCS explicitly anticipates growth within the Developing Communities shown in Figure 3.5 of the MTP/SCS, which include the Rio Del Oro Specific Plan and Sun Creek Specific Plan areas within the southeastern portion of the City of Rancho Cordova. Thus, the General Plan anticipated cumulative growth of the plan area, and increased urbanization within the General Plan area has been anticipated by regional planning such as the 2020 MTP/SCS. Because development of the project site and buildout of the City has been anticipated in regional development forecasts, buildout of the proposed project in combination with other approved developments within the project area would not result in a significant cumulative contribution to unplanned population growth within the project area or region.

It should be noted that population growth itself does not constitute a significant physical environmental effect. Rather, the determination of significance is based on whether population growth associated with a project has been previously planned for, and whether such growth could result in indirect impacts from associated development. As such, the cumulative analysis within each technical chapter of this EIR evaluates the physical environmental impacts of cumulative development.

Considering the above, implementation of the proposed project, in combination with future development occurring under buildout of the City's General Plan, would result in a ***less-than-significant*** cumulative impact related to unplanned population growth.

Mitigation Measure(s)

None required.

Table 4.7-5
City of Rancho Cordova General Plan Policy Discussion

Policy		Project Consistency
Policy LU.1.4	Promote high quality, efficient, and cohesive land utilization that minimizes negative impacts (e.g., traffic congestion and visual blight) and environmental hazards (e.g. flood, soil instability) on adjacent neighborhoods and infrastructure and preserve existing and future residential neighborhoods from encroachment of incompatible activities and land uses.	Adverse environmental effects and environmental hazards are evaluated throughout the technical chapters of this EIR. For each issue area, this EIR includes mitigation, as necessary, to reduce any identified impacts to the maximum extent feasible. The 185.3 acres of undeveloped land on the northern parcels within the project site would not be included in development of the proposed project, thereby avoiding potential flooding impacts associated with Morrison Creek. Furthermore, the proposed project would be compatible with the existing single-family residential development to the south of the site, as well as the planned Rio Del Oro residential community to the west of the site. Thus, the proposed project would be consistent with the policy.
Policy LU.2.7	Promote sustainable development that reduces the impact of projects on energy, water, and transportation systems. Encourage sustainable development to occur in ways that complement the built form.	Issues related to energy efficiency are discussed in Chapter 4.1, Air Quality, Greenhouse Gas Emissions, and Energy, of this EIR.
Policy C.1.2	Seek to maintain operations on all roadways and intersections at Level of Service D or better at all times, including peak travel times, unless maintaining this Level of Service would, in the City's judgment, be infeasible and/or conflict with the achievement of other goals. Congestion in excess of Level of Service D may be accepted in these cases, provided that provisions are made to improve traffic flow and/or promote nonvehicular transportation as part of a development project or a City-initiated project. Please see Policy C.1.3 for additional policy guidance related to this issue. Examples of system improvements which may be accepted when Level of Service D cannot be maintained include the following, where the improvement or funding is in excess of standard City requirements: • Development of on- or off-street bicycle or pedestrian circulation (not including sidewalks that are constructed as part of roadway improvements);	As detailed in Chapter 4.10, Transportation, of this EIR, the proposed project would be consistent with the City's acceptable LOS standard for all City roadways and intersections evaluated as part of the Transportation Impact Analysis, with the exception of the following intersections, during Existing Plus Project conditions: • SR 16/Grant Line Road intersection under Existing Plus Project conditions; • Grant Line Road/Raymer Way intersection under Existing Plus Project and Cumulative Plus Project conditions; Although, as a result of SB 743, local jurisdictions may no longer rely on LOS and similar measures related to delay as the basis for determining the significance of transportation impacts under CEQA, the City considers LOS as a matter of General Plan policy consistency. The City maintains full discretion to require a project to ensure General Plan consistency through project conditions of approval.

Table 4.7-5
City of Rancho Cordova General Plan Policy Discussion

Policy		Project Consistency
	• Providing or funding public transportation facilities or services; Other features as determined appropriate by the City.	Therefore, to address the proposed project's inconsistency with applicable LOS standards for the above intersections, the City will require the project to comply with the following conditions of approval: • The applicant shall pay a fair share of required improvements at the SR 16/Grant Line Road intersection and cumulative improvements through payment of City transportation fees; and • The applicant shall convert the Grant Line Road/Raymer Way intersection from side-street-stop-controlled to signalized along the existing Grant Line Road alignment. Satisfying such conditions of approval would ensure that all intersections identified in the TIA would operate in accordance with General Plan Policy C.1.2 under Existing Plus Project and Cumulative Plus Project conditions.
Policy C.1.7	Require the installation of traffic preemption devices for emergency vehicles (police and fire) at all newly constructed intersections and seek to retrofit all existing intersections to incorporate these features.	Per Sections 22.110.040 and 22.110.045 of the City's Municipal Code, the proposed project would be required to design collector streets and minor residential streets to provide rapid and efficient routes of access for emergency vehicles to residential areas. In addition, to ensure consistency with Policy C.1.7, the City will condition the project, if approved, to require installation of traffic preemption devices for emergency vehicles at all applicable intersections. Satisfying such conditions of approval would ensure preemption devices are installed at all applicable intersections in accordance with General Plan Policy C.1.7.
Policy C.1.8	Ensure that where traffic calming devices or techniques are employed, adequate access is provided for police and fire vehicles.	See response to Policy C.1.7 above.
Policy C.1.9	In an effort to reduce automobile traffic and congestion and increase use of other travel modes, support the use of trip reduction programs.	As discussed in Chapter 4.10, Transportation, of this EIR, the project applicant would construct a portion of the regional trail system in the project vicinity and pay a fair share contribution to provide monetary support for the City's CordoVan regional shuttle service. Such actions would ensure the proposed project is generally consistent with Policy C.1.9, to the maximum extent feasible.
Policy OSPT.1.1	Review all proposals for new residential development to ensure each project complies with the City's minimum	Per section 22.40 of the City's Municipal Code, the project would be required to dedicate at least 6.49 acres of parkland based on the inclusion of 440 units within the proposed project. The proposed project would satisfy

Table 4.7-5
City of Rancho Cordova General Plan Policy Discussion

Policy		Project Consistency
	standards for parkland dedication, and is consistent with Cordova Recreation and Park District goals.	the Municipal Code requirement, as the project would include dedication of two park areas totaling 8.65 acres. Thus, the proposed project would be consistent with the policy.
Policy ISF.2.1	Ensure the development of public infrastructure that meets the long-term needs of residents and ensure infrastructure is available at the time such facilities are needed.	As discussed in Chapter 4.9, Public Services and Utilities, of this EIR, the proposed project would connect to the existing 10-inch water main within Edington Drive and the existing eight-inch sewer lines within Edington Drive and Thornberg Way. The Sacramento County Water Agency's water conveyance infrastructure network would provide sufficient water pressure at the proposed residences. Additionally, sewer flows generated by the proposed project would be accommodated by the Sacramento Area Sewer District's (SASD) downstream wastewater conveyance system, and expansion of existing infrastructure would not be required to serve the project. The project site would receive natural gas and electricity service from PG&E and SMUD, respectively. The proposed project would connect to existing electrical, natural gas, and telecommunications infrastructure located to the south of the site within the neighboring subdivision. In addition, as required by the General Plan, the project applicant would be required to pay development impact fees, which would contribute towards the cost of future upgrades to public infrastructure and utilities. Because the proposed project would connect to existing public infrastructure in the project vicinity, and such infrastructure would be sufficient to handle the increase in demand associated with the proposed project, the proposed project would be consistent with Policy ISF.2.1.
Policy ISF.2.7	Minimize visual impacts and physical impediments of utility sites, infrastructure, and equipment.	The utility improvements necessary to serve the proposed project would generally be undergrounded, thereby limiting any potential adverse visual affects associated with such infrastructure. Thus, the proposed project would be consistent with the policy.
Policy NR.1.1	Protect rare, threatened, and endangered species and their habitats in accordance with State and federal law.	As discussed in Chapter 4.2, Biological Resources, of this EIR, implementation of Mitigation Measures 4.2-1, 4.2-2, 4.2-3, 4.2-4, 4.2-5, 4.2-6, 4.2-7, 4.2-8, 4.2-9, 4.2-10, and 4.2-11 would reduce all potential impacts to special-status species to less-than-significant levels. As described in Impact 4.2-13, the proposed project would not conflict with any applicable

Table 4.7-5
City of Rancho Cordova General Plan Policy Discussion

Policy		Project Consistency
		provisions of the SSHCP. Thus, the proposed project would be consistent with the policy.
Policy NR.1.7	Prior to project approval, the City shall require a biological resources evaluation for private and public development projects in areas identified to contain or possibly contain listed plant and/or wildlife species based upon the City's biological resource mapping provided in the General Plan EIR or other technical materials.	As discussed in Chapter 4.2, Biological Resources, of this EIR, a Biological Resources Assessment has been prepared for the proposed project by ECORP Consulting, Inc. The Biological Resources Assessment evaluated potential impacts to special-status plant and wildlife species, as well as other biological resources. Thus, the proposed project would be consistent with the policy.
Policy NR.1.9	The City shall require that impacts to riparian habitats be mitigated at a no net loss of existing function and value based on field survey and analysis of the riparian habitat to be impacted. No net loss may be accomplished by avoidance of the habitat, restoration of existing habitat, or creation of new habitat, or through some combination of the above.	Implementation of Mitigation Measures 4.2-9(a) through 4.2-9(d) would ensure that potential impacts to wetlands and other riparian habitat would be reduced to a less-than-significant level. For example, Mitigation Measure 4.2-9(a) requires that the proposed project replaces, restores, or enhances on a "no net loss" basis (in accordance with the U.S. Army Corps of Engineers and the Central Valley Regional Water Quality Control Board) the acreage of all wetlands and other waters of the U.S. that would be removed, lost, and/or degraded due to project implementation. Thus, the proposed project would be consistent with the policy.
Policy NR.2.1	Require mitigation that provides for "no net loss" of wetlands consistent with current State and federal policies.	See response to Policy NR.1.9 above.
Policy NR.2.2	Ensure that direct and indirect effects to wetland habitats are minimized by environmentally sensitive project siting and design, to the maximum extent feasible.	The 185.3 acres of undeveloped land on the northern parcels within the project site would not be included in the development of the proposed project the proposed project, thereby avoiding potential impacts to any existing wetlands located on such parcels. Thus, the proposed project would be consistent with the policy.
Policy NR.4.1	Conserve native oak and landmark tree resources for their historic, economic, aesthetic, and environmental value.	Mitigation Measure 4.2-11 would require acquisition of a tree removal permit from the City prior to removal of any protected trees, as defined by Chapter 19.12 of the City's Municipal Code. In addition, Mitigation Measure 4.2-11 requires that existing native tree species are incorporated into the planned landscaping design in public spaces such as open space, parks, and parkways.
Policy NR.4.4	Prior to the approval of any public or private development project in areas identified or assumed to contain trees, the City shall require that a determinate survey of trees species and size be performed. If any native oaks or other native trees six inches or more in diameter at breast height (dbh), multi-trunk	As discussed in Chapter 4.2, Biological Resources, of this EIR, the study area contains a total of 149 trees that meet the definition of a Protected Tree as defined in the City's Tree Preservation Ordinance. The proposed project would include the removal of 140 of the existing protected trees within the study area. The nine protected trees within the Morrison Creek

Table 4.7-5
City of Rancho Cordova General Plan Policy Discussion

Policy		Project Consistency
	native oaks or native trees of 10 inches or greater dbh, or non-native trees of 18 inches or greater dbh that have been determined by a certified arborist to be in good health are found to occur, such trees shall be avoided if feasible. If such trees cannot be avoided, the project applicant shall do one of the following: All such trees shall be replaced at an inch- for-inch ratio. A replacement tree planting plan shall be prepared by a certified arborist or licensed landscape architect and shall be submitted to the City of Rancho Cordova for approval prior to removal of trees; or, The project applicant shall submit a mitigation plan that provides for complete mitigation of the removal of such trees in coordination with the City of Rancho Cordova. The mitigation plan shall be subject to the approval of the City. If the City of Rancho Cordova adopts a tree preservation ordinance at any time in the future, any future development activities shall be subject to that ordinance instead.	Offsite would be preserved as part of the project. Implementation of Mitigation Measures 4.2-12 would reduce all potential impacts related to the City's tree protection standards to less-than-significant levels. Thus, the proposed project would be consistent with the policy.
Policy NR.5.3	Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.	As discussed under Impact 4.6-1 in Chapter 4.6, Hydrology and Water Quality, of this EIR, the project applicant would be required by the State to comply with the most current Construction General Permit requirements. Per the requirements, a Storm Water Pollution Prevention Plan would be prepared for the overall project, which would include the site map, drainage patterns and stormwater collection and discharge points, Best Management Practices (BMPs), and a monitoring and reporting framework for implementation of BMPs, as necessary. Mitigation Measure 4.4-2 requires the preparation and submittal of a SWPPP. In addition, a Notice of Intent (NOI) would be filed with Regional Water Quality Control Board (RWQCB). In order to further minimize the potential for, and effects from, accidental spills of hazardous, toxic, or petroleum substances during construction activities, Mitigation Measure 4.6-1(b) requires the project to prepare and implement a Spill Prevention Countermeasure and Control Plan (SPCC) prior to the commencement of ground-disturbing activities. The SPCC would specify measures and procedures to minimize the potential for, and

Table 4.7-5
City of Rancho Cordova General Plan Policy Discussion

Policy		Project Consistency
		effects from, spills of hazardous, toxic, or petroleum substances during all construction activities, and shall meet the requirements specified in the Code of Federal Regulations, Title 40, Part 112. Furthermore, Mitigation Measure 4.6-2 requires the project applicant to submit a detailed BMP and water quality maintenance plan to ensure the standards of the City's National Pollutant Discharge Elimination System Permit, the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and Redevelopment, and the Stormwater Quality Design Manual for the Sacramento region, are met by the proposed project during operation. Compliance with the aforementioned mitigation measures and regulations would ensure the proposed project is consistent with Policy NR.5.3.
Policy NR.5.4	Prevent contamination of the groundwater table and surface water, and remedy existing contamination to the extent practicable.	See response to Policy NR.5.3 above regarding the proposed project's prevention of groundwater and surface water contamination. As discussed in Chapter 4.5, Hazards and Hazardous Materials, of this EIR, groundwater contamination would not pose a substantial risk to workers or residents on the project site. However, the potential UST, unknown underground storage system, and other potential fuel storage vessels located within APNs 073-0010-011 and 072-0300-008 could pose a risk to workers during project construction. In addition, the soils in the vicinity of the wooden structures located at APN 072-0300-002 and APN 072-0300-008 have the potential to be contaminated with termiticides. However, Mitigation Measures 4.5-2(a), (b), (d), and (f) require appropriate procedures be followed in the event that soil or groundwater contamination is identified associated with such sufficient to ensure that any contamination would be adequately remedied and risks to people would not occur. Therefore, the proposed project would be consistent with Policy NR.5.4.
Policy NR.5.5	Minimize erosion to stream channels resulting from new development in urban areas consistent with State law.	Mitigation Measure 4.4-2 requires preparation and submittal of a SWPPP, which would be designed to control pollutant discharges using BMPs and technology to reduce erosion and discharge of sediments associated with project construction activities. In addition, runoff from impervious surfaces created as part of the proposed project would be routed to two bio-retention basins in the northwest portion of the development area, which would

Table 4.7-5
City of Rancho Cordova General Plan Policy Discussion

Policy		Project Consistency
		detain and treat runoff prior to discharging treated runoff to a hydromodification basin located in between the two bio-retention basins. The hydromodification basin would allow for metering of flows discharged to Morrison Creek. The project would also incorporate Low Impact Development (LID) controls such as disconnected pavement, disconnected roof drains, and interceptor trees to help reduce stormwater runoff, thereby ensuring that the project would not result in increased erosion of downstream waterways. Thus, the proposed project would be consistent with the policy.
Policy S.1.5	The City shall require written confirmation from applicable local, regional, state, and federal agencies that known contaminated sites have been deemed remediated to a level appropriate for land uses proposed prior to the City approving site development or provide an approved remediation plan that demonstrates how contamination will be remediated prior to site occupancy. This documentation will specify the extent of development allowed on the remediated site as well as any special conditions and/or restrictions on future land uses.	As noted in the Initial Study prepared for the proposed project, the project site has not been listed as a past or present hazardous materials site. The nearest hazardous materials site is a McDonnell Douglas test site, which is located approximately 0.80-mile from the project site. Furthermore, Mitigation Measures 4.5-2(a) through (f) in this EIR would ensure that all potential impacts associated with existing on-site hazards and hazardous materials would be reduced to less-than-significant levels. Thus, the proposed project would be consistent with the policy.
Policy S.3.2	Ensure that new structures are protected from damage caused by geologic and/or soil conditions to the greatest extent feasible.	As discussed under Impact 4.4-3 of this EIR, the project site geological and soil conditions are preliminarily considered suitable for the proposed construction. In addition, the required compliance with the California Building Standards Code would ensure that all proposed structures are designed appropriately. Nonetheless, implementation of Mitigation Measure 4.4-3, which requires preparation of and compliance with a final geotechnical engineering report, would ensure that new structures are protected from damage cause by geologic and/or soil conditions. As a result, the project would comply with Policy S.3.2.
Policy AQ.1.2	Evaluate projects for compliance with State and federal ambient air quality standards and the Sacramento Metropolitan Air Quality Management District's (SMAQMD) thresholds of significance. (Refer to Table AQ-3 in this Element for ambient air quality standards.)	Impacts 4.1-1 and 4.1-2 within this EIR compare project-generated emissions to the SMAQMD's threshold of significance. As noted therein, the project would not result in emissions which exceed such standards and, therefore, the project would be in compliance with State and federal AAQS. As a result, the project would comply with Policy AQ.1.2.
Policy AQ.2.5	Utilize the guidelines in the California Air Resources Control Board Air Quality and Land Use Handbook: A Community Health Perspective when evaluating new development	The EIR includes an evaluation of toxic air contaminant (TAC) emissions under Impact 4.1-3. As noted therein, the proposed project would not involve any land uses or operations that would be considered major

Table 4.7-5
City of Rancho Cordova General Plan Policy Discussion

Policy		Project Consistency
	requests that either would generate toxic air contaminant emissions near sensitive receptors or locate new sensitive receptors near existing sources of air toxic emissions or order to minimize health hazards, and implement all feasible best available control technology, as required by SMAQMD.	sources of TACs. In addition, consistent with the California Air Resources Control Board's Air Quality and Land Use Handbook, construction of the proposed project would not generate substantial TAC emissions that would adversely affect nearby sensitive receptors. As a result, the project would comply with Policy AQ.2.5.
Policy N.1.2	Ensure that the indoor and outdoor areas of new projects will be located, constructed, and/or shielded from noise sources in compliance with the City's noise standards to the maximum extent feasible.	Impacts related to noise are addressed in Chapter 4.8 of this EIR. As discussed under Impact 4.8-2, the project is not located in an area subjected to substantial ambient noise. However, exterior traffic noise and park-related noise at the proposed residences could exceed the City's noise level standards. In order to ensure that the noise levels would be reduced sufficient to comply with the City's standards, the City will require solid noise barriers to be constructed as a condition of approval. As a result, the project would comply with Policy N.1.2.
Policy N.1.4	Mitigate noise created by proposed non-transportation noise sources to comply with the City's noise standards to the maximum extent feasible.	As discussed in Chapter 4.8 of this EIR, considering the project primarily consists of single-family residences, the proposed project is not anticipated to generate substantial non-transportation noise. As a result, the project would comply with Policy N.1.4.
Policy N.1.7	To the extent feasible and appropriate, the City shall require the use of temporary construction noise control measures for public and private project that may include the use of temporary noise barriers, temporary relocation of noise-sensitive land uses or other appropriate measures.	Construction-related noise is addressed under Impact 4.8-1 of this EIR. As noted under Impact 4.8-1, construction noise is exempt from the City's Noise Ordinance during allowable hours, which would be enforced through Mitigation Measure 4.8-1. As a result, the use of additional noise control measures is not warranted during construction of the proposed project, and the project would generally comply with Policy N.1.7.

4.8 Noise

4.8 NOISE

4.8.1 INTRODUCTION

The Noise chapter of the EIR describes the existing noise environment in the project vicinity, and identifies potential impacts and mitigation measures related to noise and vibration associated with construction and operation of the proposed project. The method by which the potential impacts are analyzed is discussed, followed by the identification of potential impacts and the recommended mitigation measures designed to reduce significant noise and vibration impacts to less-than-significant levels, if required. The Noise chapter is primarily based on the Environmental Noise & Vibration Assessment prepared for the proposed project by Bollard Acoustical Consultants, Inc. (see Appendix I),[1] the City of Rancho Cordova General Plan,[2] and the associated EIR.[3]

It is noted that the Environmental Noise & Vibration Assessment was prepared when a prior iteration of the project included only 434 residential units, as compared to the currently-proposed 440 units. Bollard Acoustical Consultants prepared an update memorandum confirming that the changes in noise levels associated with the six additional units would not change the conclusions presented in the Environmental Noise & Vibration Assessment.[4] As a result, all conclusions presented within this chapter remain applicable.

4.8.2 EXISTING ENVIRONMENTAL SETTING

The Existing Environmental Setting section provides background information on noise and vibration, a discussion of acoustical terminology and the effects of noise on people, existing sensitive receptors in the project vicinity, existing sources and noise levels in the project vicinity, and groundborne vibration.

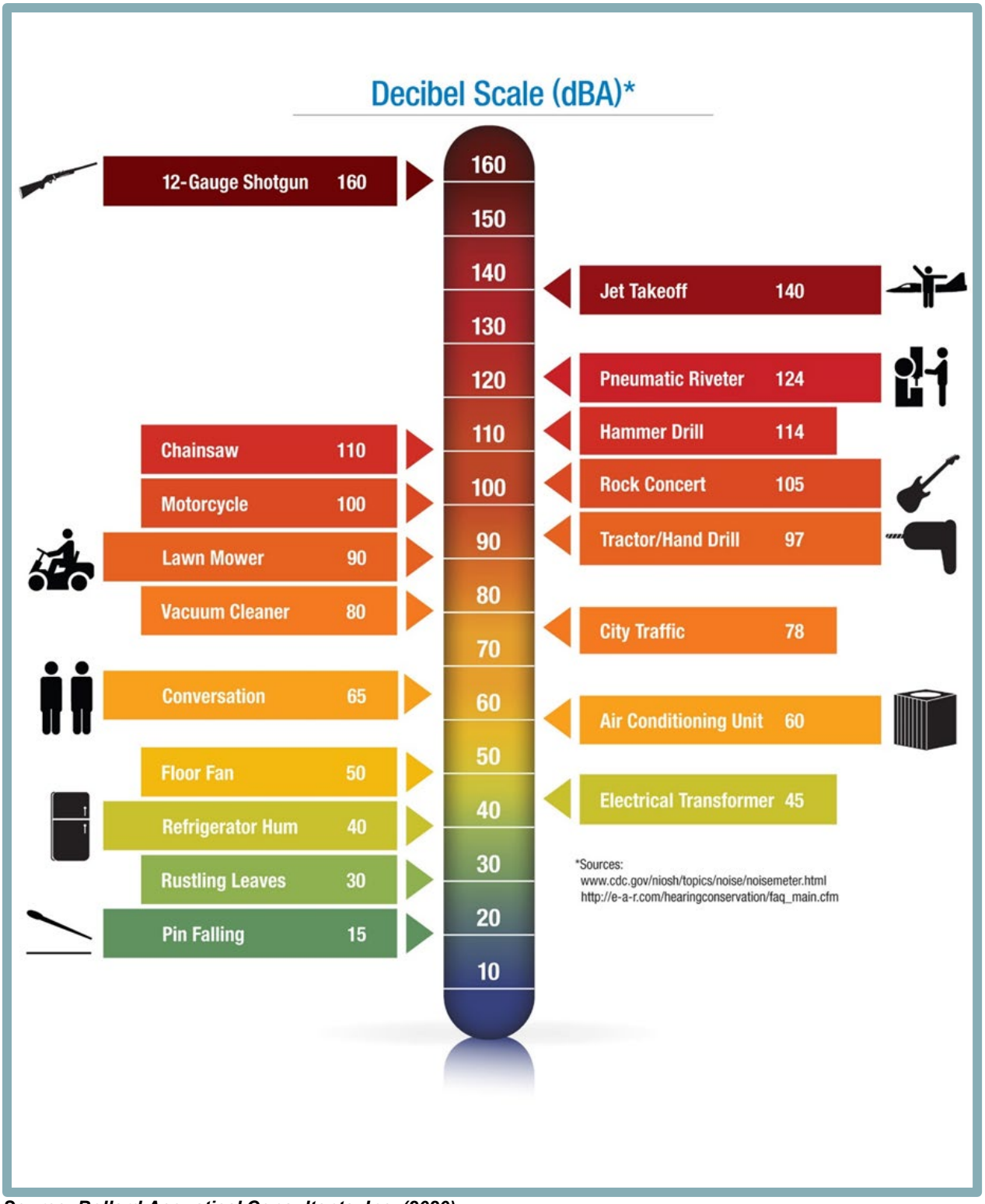
Fundamentals of Noise and Vibration

Decibels (dB) are logarithmic units that compare the wide range of sound intensities to which the human ear is sensitive. The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the typical range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and the use of A-weighted sound level, expressed as dBA, has become the standard tool of environmental noise assessment. Noise levels associated with common noise sources are provided in Figure 4.8-1.

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1 Bollard Acoustical Consultants, Inc. *Environmental Noise & Vibration Assessment, The Preserve Residential Development.* September 3, 2020.
2 City of Rancho Cordova. *General Plan*. Adopted June 26, 2006.
3 City of Rancho Cordova. *General Plan Environmental Impact Report.* 2006.
4 Bollard Acoustical Consultants, Inc. *Changes in noise levels associated with the addition of six (6) units for the proposed Preserve Residential Development in Rancho Cordova, California*. January 5, 2021.

Figure 4.8-1
Noise Levels Associated with Common Noise Sources



Source: Bollard Acoustical Consultants, Inc. (2020).

Community Noise Equivalent Level (CNEL), which can be used to compare the noise level of neighborhoods, is the weighted average noise level over time, presented in dB. Community noise is also commonly described in terms of the ambient noise level, which is defined as the overall noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day-night average noise descriptor, or L_{dn}, and represents a correlation with community response to noise.

The L_{dn} is based on the average noise level over a 24-hours, with an additional 10 dB weighting applied to noise that occurs during nighttime hours (10:00 PM to 7:00 AM). The 10 dB nighttime penalty is applied to account for the assumption that people are more sensitive to nighttime noise exposures as compared to daytime noise exposures.

Stationary sources of noise, including construction equipment, attenuate at a rate of 6.0 to 7.5 dB per doubling of distance from the source depending on ground absorption. Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, increase the efficacy of noise attenuation that occurs by distance alone.

Vibration is similar to noise in that both involve a source, a transmission path, and a receiver. However, while noise is generally considered to be pressure waves transmitted through air, vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency.

A person's perception to the vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating. Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration levels in terms of peak particle velocities (PPV) in inches per second (in/sec). Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

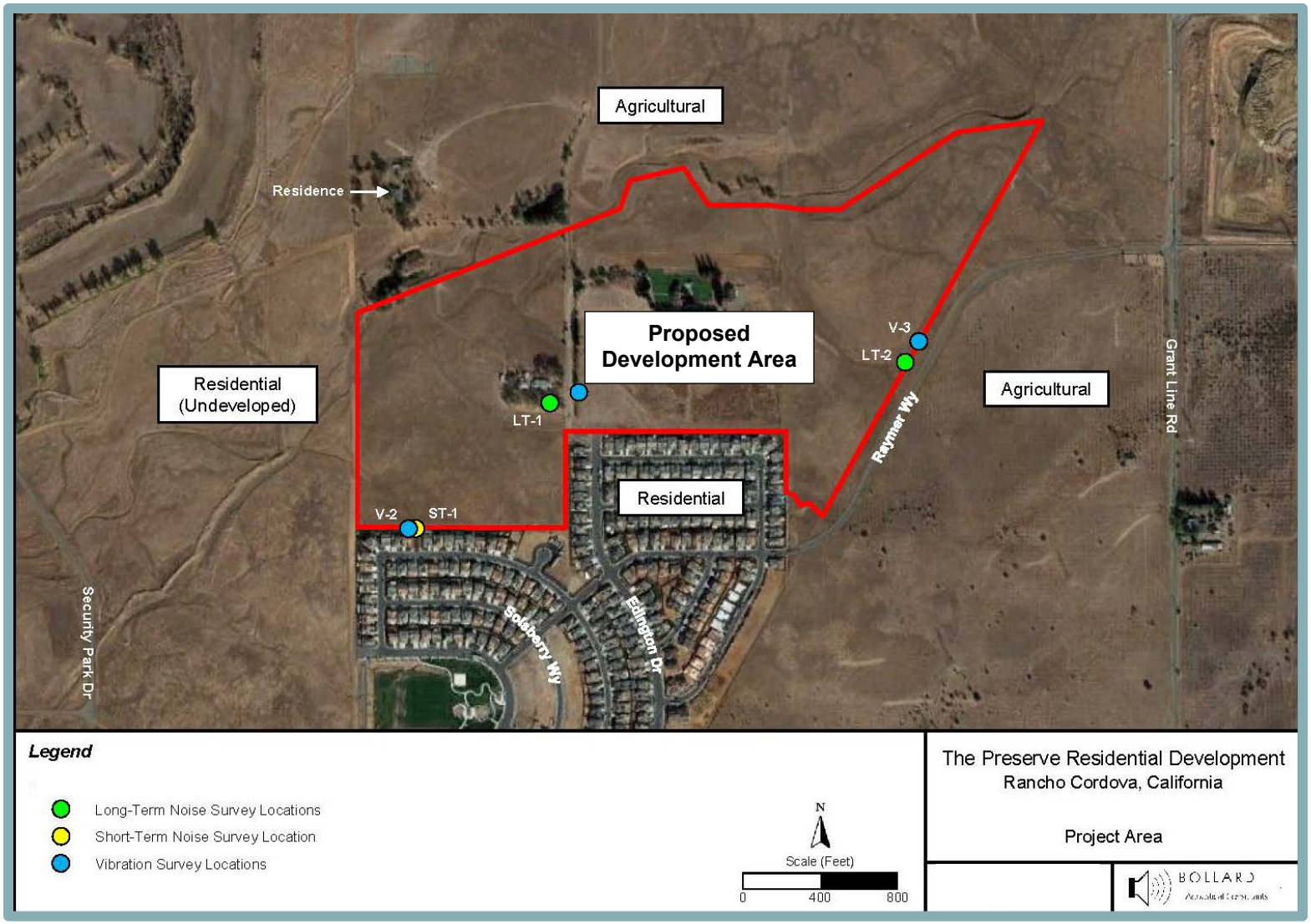
Existing Sensitive Receptors

Certain land uses are more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and shielding from noise sources) and the type of activities typically involved. Noise sensitive land uses typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, retirement homes, and recreation areas. Sensitive receptors in the project vicinity include the single-family residential subdivision located directly south of the site and the existing single-family residence located within the northern portion of the project site. The nearest residence is approximately 25 feet south of the project site boundary.

Existing Noise Sources and Ambient Noise Levels

Per the Environmental Noise & Vibration Assessment, the existing ambient noise environment within the project area is defined primarily by noise from traffic on Grant Line Road and Raymer Way. To quantify existing ambient noise levels in the project vicinity, Bollard Acoustical Consultants conducted two long-term (48-hour) ambient noise surveys from July 10 to 12, 2019 and one short-term (15-minute) ambient noise survey on July 10, 2019. The results of the long-term and short-term noise measurements are summarized in Table 4.8-1 and Table 4.8-2, respectively. The locations of the noise measurement sites are shown in Figure 4.8-2.

Figure 4.8-2
Noise Measurement Locations



Source: Bollard Acoustical Consultant, Inc. (2020).

Table 4.8-1
Long-Term Noise Level Measurement Results[1]

Site[2]	Description	Date	L_{dn}	Average Measured Hourly Noise Levels, dB			
				Daytime[3]		Nighttime[4]	
				L_{eq}	L_{max}	L_{eq}	L_{max}
LT-1	Centrally located on project site, near terminus of Edington Drive	7/10-7/11	47	45	62	40	51
		7/11-7/12	47	45	60	39	53
LT-2	Eastern end of project site, approximately 90 feet from centerline of Raymer Way	7/10-7/11	55	50	69	49	65
		7/11-7/12	55	51	72	48	65

Notes:
[1] Detailed summaries of the noise monitoring results are provided in Appendices D and E of the project-specific Environmental Noise & Vibration Assessment (Appendix I of this EIR).
[2] Noise monitoring locations are identified in Figure 4.8-2.
[3] Daytime hours: 7:00 AM to 10:00 PM.
[4] Nighttime hours: 10:00 PM to 7:00 AM.

Source: Bollard Acoustical Consultants, Inc. (2020).

Table 4.8-2
Short-Term Noise Level Measurement Results

Site[1]	Description	Time of Day	Measured Noise Levels, dB	
			L_{eq}	L_{max}
ST-1	Southwestern end of the project site	12:23 PM	42	58

Notes:
[1] Noise monitoring location is identified in Figure 4.8-2.

Source: Bollard Acoustical Consultants, Inc. (2020).

Existing Traffic Noise Levels

Traffic volumes for existing conditions were obtained from the traffic study prepared for the proposed project by Kimley-Horn & Associates, Inc. The traffic noise levels at 100 feet away from the roadway centerline were calculated based on the traffic volume data and the Federal Highway Administration (FHWA) Model. For this analysis, 88 roadway segments were evaluated. Modeled noise levels at 100 feet from each roadway centerline ranged between 37 and 72 L_{dn}. The modeled traffic noises for each roadway segment are summarized in Table 1 of the Environmental Noise & Vibration Assessment.

Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. In addition, existing sensitive receptors within the project vicinity are located varying distances from the roadway centerline. Nonetheless, the 100-foot reference distance is used for the purposed of this analysis to provide a reference position for comparisons between existing and anticipated future traffic noise levels with and without implementation of the proposed project.

Existing Ambient Vibration Levels

To quantify existing vibration levels at the project site, Bollard Acoustical Consultants conducted short-term (15 minute) vibration measurements at the project site on July 10, 2019. The measured

average vibration levels within the project area were less than 0.001 in/sec PPV, as shown in Table 4.8-3.

Table 4.8-3
Ambient Vibration Monitoring Results – July 10, 2019

Site[1]	Description	Time	Average Measured Vibration Level, PPV (in. sec)
V-1	Eastern end of the project site	11:36 AM	<0.001
V-2	Centrally located on the project site	12:23 PM	<0.001
V-3	Southwestern end of the project site	12:58 PM	<0.001

Notes:
[1] Noise monitoring location is identified in Figure 4.8-2.

Source: Bollard Acoustical Consultants, Inc. (2020).

4.8.3 REGULATORY CONTEXT

In order to limit exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. Applicable federal laws or regulations pertaining to noise or vibration do not exist. The following provides a general overview of the existing State and local regulations that are relevant to the proposed project.

State Regulations

The following are the State environmental laws and policies relevant to noise.

California State Building Codes

The State Building Code, Title 24, Part 2 of the State of California Code of Regulations (CCR), establishes uniform minimum noise insulation performance standards to protect persons within new buildings which house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings.

Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L_{dn} or CNEL in any habitable room. Title 24 also mandates that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

Local Regulations

The following are the local environmental goals and policies relevant to noise.

City of Rancho Cordova General Plan

The relevant goals and policies from the City of Rancho Cordova General Plan related to noise are presented below.

Goal N.1. Ensure that all new development will be free of noise disturbances.

Policy N.1.1 Establish standards and policies consistent with those in Table 4.8-4 and Table 4.8-5 [General Plan Tables N-1 and N-2] to govern maximum sound levels in new development.

Table 4.8-4
City Noise Standards:
Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Noise Sources

Stationary Noise Sources	Noise Level Descriptor	Daytime Maximum (7 AM to 10 PM)	Nighttime Maximum (10 PM to 7 AM)
Typical	Hourly, L_{eq}, dB	55	45
Tonal, impulsive, repetitive or consist primarily of speech or music	Hourly, L_{eq}, dB	50	40

Note: The City may impose noise level standards which are more or less restrictive than those specified above based upon determination of existing low or high ambient noise levels.

Source*: *Rancho Cordova General Plan, June 2006.

Table 4.8-5
Maximum Transportation Noise Exposure

Land Use	Outdoor Activity Areas[1] L_{dn}/CNEL, dB	Interior Spaces	
		L_{dn}/CNEL, dB	L_{eq}, dB[2]
Residential	60[3]	45	--
Residential subject to noise from railroad tracks, aircraft overflights, or similar noise sources with produce clearly identifiable discrete noise events (e.g., the passing of a single train)	60[3]	40[5]	--
Transient lodging	60[4]	45	--
Hospitals, nursing homes	60[3]	45	--
Theaters, auditoriums	--	--	35
Churches, meeting halls	60[3]	--	40
Office buildings	--	--	45
Schools, libraries, museums	--	--	45
Playgrounds, neighborhood parks	70	--	--

Notes:
1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.
4. In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.
5. The intent of this noise standard is to provide increased protection against sleep disturbance for residences located near railroad tracks.

Source*: *Rancho Cordova General Plan, June 2006.

Policy N.1.2 Ensure that the indoor and outdoor areas of new projects will be located, constructed, and/or shielded from noise sources in compliance with the City's noise standards to the maximum extent feasible.

Policy N.1.4 Mitigate noise created by proposed non-transportation noise sources to comply with the City's noise standards to the maximum extent feasible.

Policy N.1.5 Mitigate noise created by the construction of new transportation noise sources to the maximum extent feasible to comply with the City's standards.

Policy N.1.6 Ensure that comfortable noise levels and adequate privacy are maintained in higher density development.

Policy N.1.7 To the extent feasible and appropriate, the City shall require the use of temporary construction noise control measures for public and private project that may include the use of temporary noise barriers, temporary relocation of noise-sensitive land uses or other appropriate measures.

Rancho Cordova Noise Ordinance

Chapter 6.68 of the Rancho Cordova Municipal Code establishes interior and exterior noise level standards for noise-sensitive receptors. The purpose of the Noise Ordinance is to assess complaints of noises alleged to exceed the ambient noise levels. Relevant provisions of the Noise Ordinance are presented below.

6.68.070 Exterior noise standards.

A. The following noise standards [see Table 4.8-6], unless otherwise specifically indicated in this chapter, shall apply to all properties within a designated noise area:

Table 4.8-6
Rancho Cordova Municipal Code Exterior Noise Standards

Noise Area	City Zoning Districts	Time Period	Exterior Noise
1	RE-1, RD-1, RE-2, RD-2, RE-3, RD-3, RD-4, R-1-A, RD-5, R-2, RD-10, R-2A, RD-20, R-3, RD-30, RD-40, RM-1, RM-2, A-1-B, AR-1, A-2, AR-2, AR-5	7:00 AM – 10:00 PM	55 dBA
		10:00 PM – 7:00 AM	50 dBA

Source: Rancho Cordova Municipal Code, Chapter 6.68, Code Section 6.68.070(A).

B. It is unlawful for any person at any location within the city to create any noise which causes the noise levels on an affected property, when measured in the designated noise area, to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by [see Table 4.8-7]:

Table 4.8-7
Rancho Cordova Municipal Code Allowable Duration of Intrusive Sound

Cumulative Duration of the Intrusive Sound	Allowable Decibels
Cumulative period of 30 minutes per hour	0
Cumulative period of 15 minutes per hour	+5
Cumulative period of 5 minutes per hour	+10
Cumulative period of 1 minute per hour	+15
Level not to be exceeded for any time per hour	+20
Source: Rancho Cordova Municipal Code, Chapter 6.68, Code Section 6.68.070(B).	

C. Each of the noise limits specified in subsection (B) of this section shall be reduced by 5 dBA for impulsive or simple tone noises, or for noises consisting of speech or music.

D. If the ambient noise level exceeds that permitted by any of the first four noise-limit categories specified in subsection (B) of this section, the allowable noise limit shall be increased in 5 dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

6.68.090 Exemptions.

The following activities shall be exempted from the provisions of this chapter:

E. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of 8:00 PM and 6:00 AM on weekdays and Friday commencing at 8:00 PM through and including 7:00 AM on Saturday, Saturdays commencing at 8:00 PM through and including 7:00 AM on the next following Sunday, and on each Sunday after the hour of 8:00 PM; provided, however when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after 8:00 PM, and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner.

As shown above, the maximum allowable exterior noise level for residential districts is 55 dB between the hours of 7:00 AM and 10:00 PM, and 50 dB between the hours of 10:00 PM and 7:00 AM. Construction noise is exempt from the Noise Ordinance if construction activities occur between 6:00 AM and 8:00 PM on weekdays and 7:00 AM and 8:00 PM on weekends.

4.8.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to noise and vibration. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Impacts of the environment on a project (as opposed to impacts of a project on the environment) are beyond the scope of required California Environmental Quality Act (CEQA) review. "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the

significant effects of the environment on the project." (*Ballona Wetlands Land Trust v. City of Los Angeles,* (2011) 201 Cal.App.4th 455, 473 (*Ballona*).) The impacts discussed in this section of the EIR relate both to noise that may be caused by the proposed project (e.g. construction noise and operational traffic added to surrounding streets) as well as effects of existing environmental noise sources on future residents of the project (e.g. background traffic on surrounding streets). The California Supreme Court recently held that "CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents. What CEQA does mandate… is an analysis of how a project might exacerbate existing environmental hazards." (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 392; see also *Mission Bay Alliance v. Office of Community Investment & Infrastructure* (2016) 6 Cal.App.5th 160, 197 ["identifying the effects on the project and its users of locating the project in a particular environmental setting is neither consistent with CEQA's legislative purpose nor required by the CEQA statutes"], quoting *Ballona*, *supra*, 201 Cal.App.4th at p. 474.) Therefore, for the purposes of the CEQA analysis, the relevant inquiry is not whether the proposed project's future residents will be exposed to preexisting environmental noise-related hazards, but instead whether project-generated noise will exacerbate the pre-existing conditions. Nonetheless, for informational purposes, this chapter considers the proposed project's contribution to the existing noise environment on both existing sensitive receptors and future residents of the proposed project.

Standards of Significance

Consistent with Appendix G of the CEQA Guidelines, the effects of a project are evaluated to determine if they would result in a significant adverse impact on the environment. For the purposes of this EIR, an impact is considered significant if the proposed project would result in any of the following:

- 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; or
- Generation of excessive groundborne vibration or groundborne noise levels.

Issues Dismissed in the Initial Study

The nearest airport to the project site is the Mather Airport, located approximately five miles to the west of the project site. Therefore, the following impact was dismissed in the Initial Study (Appendix A):

- 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.

Accordingly, the above impact is not analyzed further in this EIR.

Summary of Applicable Noise Standards

Applicable noise level standards related to noise and vibration are summarized below.

Applicable Non-Transportation Noise Criteria

The Noise Element of the General Plan sets forth performance standards for non-transportation sources, as represented in Table 4.8-4. The proposed project would be required to comply with the noise standards presented therein. As such, noise generated by typical stationary noise sources shall not exceed 55 dB L_{eq} during daytime hours or 45 dB L_{eq} during nighttime hours, and noise generated by speech or music sources shall not exceed 50 dB L_{eq} during daytime hours or 40 dB L_{eq} during nighttime hours. In addition, Table 4.8-6 presents the Municipal Code noise standards for areas zoned residential. Considering the nearest noise-sensitive receptors to the project site are residential land uses, the proposed project must not generate noise that would exceed 55 dBA during daytime hours or 50 dBA during nighttime hours at the nearby residences.

Applicable Transportation Noise Criteria

The proposed project would be subject to the Residential Land Use transportation noise exposure limits set forth in the Noise Element of the General Plan. As noted therein, and as shown in Table 4.8-5, the maximum transportation noise at the closest residences must be limited to 60 dB L_{dn} at outdoor activity spaces and 45 dB L_{dn} at indoor spaces.

Substantial Increase Criteria

Generally, a project may have a significant effect on the environment if the project will substantially increase the ambient noise levels for adjoining areas or expose people to measurably severe noise levels. In practice, a noise impact may be considered significant if the project would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in transportation noise associated with the proposed project is a factor in determining significance.

The City of Rancho Cordova does not have an adopted policy for assessing noise impacts associated with increases in ambient noise levels from project-generated traffic within the project vicinity. As a result, the federal noise criteria established by the Federal Interagency Commission on Noise (FICON) was applied to the project. Table 4.8-8 was developed by FICON as a means of developing thresholds for identifying project-related noise level increases. The rationale for the graduated scales is that test subject's reactions to increases in noise levels vary depending on the starting level of noise. Specifically, in lower ambient noise environments, such as those below 60 dB L_{dn}, a larger increase in noise levels was required to achieve a negative reaction as compared to the change in noise levels that was necessary in environments where noise levels were already elevated. The approach to assessing the significance of increases in off-site traffic noise is consistent with other local EIRs and is considered to be the industry-standard approach.

Table 4.8-8
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Without Project, dB	Increase Required for Significant Impact
<60	+5.0 dB or more
60-65	+3.0 dB or more
>65	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON).

Vibration

The City of Rancho Cordova does not have specific policies or standards pertaining to vibration levels. However, vibration levels associated with construction activities and project operations are

addressed as potential vibration impacts associated with project implementation. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events.

Construction activities have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations involved. Table 4.8-9 indicates that, per California Department of Transportation (Caltrans) standards, the threshold for vibration damage to new residential structures is 1.00 in/sec PPV for transient sources and 0.50 in/sec PPV for continuous sources. For older residential structures, the threshold for damage is 0.50 in/sec PPV for transient sources and 0.30 in/sec PPV for continuous sources.

Table 4.8-9
Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (inches/second)	
	Transient Sources	Continuous/ Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2013).

In addition, as shown in Table 4.8-10, humans are able to perceive vibrations from transient sources at a threshold of 0.40 in/sec PPV and from continuous sources at a threshold of 0.01 in/sec PPV. Transient sources of vibrations of 0.25 in/sec PPV, or greater, and continuous vibrations of 0.04 in/sec PPV, would likely cause annoyance to sensitive receptors.

Method of Analysis

Below are descriptions of the methodologies utilized to measure background and ambient noise and estimate future traffic noise, construction noise, and vibration associated with the project. Further modeling details and calculations are provided in Appendix I to this EIR. The results of the noise and vibration impact analyses were compared to the standards of significance discussed above in order to determine the associated level of impact.

To predict existing noise levels due to traffic, Bollard Acoustical Consultants used the FHWA Traffic Noise Model (FHWA-RD-77-108) to develop existing noise contours expressed in terms of L_{dn} for the major roadways within the project vicinity. The FHWA model is based upon the noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle

volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

Table 4.8-10
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (inches/second)	
	Transient Sources	Continuous/ Frequent Intermittent Sources
Barely perceptible	0.40	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2013).

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict L_{dn}/CNEL values, determination of the day/night distribution of traffic and adjustment of the traffic volume input data is necessary to yield an equivalent hourly traffic volume. The FHWA model was used in conjunction with traffic volumes provided by Kimley-Horn & Associates to analyze the potential impact of the proposed project and project-generated traffic under Existing Plus Project conditions and future Cumulative Plus Project conditions.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used to conduct the noise level measurement surveys on the project site. The meters were calibrated before use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements, and the equipment met all specifications of the American National Standards Institute requirements for Type 1 sound level meters. An LDL Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the ambient vibration measurements.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the baseline and standards of significance identified above.

4.8-1 Generation of a substantial temporary 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. Based on the analysis below and with implementation of mitigation, the impact is *less than significant.*

Construction activities associated with the proposed project, including off-site improvements, would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., backhoes, bulldozers, excavators, front loaders) and other construction equipment (e.g., compactors, scrapers, graders).

Construction worker traffic and construction-related material haul trips could result in temporary noise level increases along local haul routes, depending on the number of haul trips made and types of vehicles used.

The noise levels generated by construction equipment vary depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment and the prevailing wind direction. Table 4.8-11 presents typical maximum noise levels for commonly-used construction equipment at a distance of 50 feet. In addition, the table presents the anticipated maximum noise levels that would be experienced by the nearest sensitive receptors, which are located approximately 25 feet away.

Table 4.8-11
Typical Construction Equipment Noise Levels

Equipment Type	Maximum Noise Level at 50 Feet (dBA)	Predicted Maximum Noise Levels at 25 Feet (dBA)
Air compressor	80	86
Backhoe	80	86
Compactor	82	88
Concrete mixer	85	91
Crane, mobile	83	89
Dozer	85	91
Excavator	85	91
Generator	82	88
Grader	85	91
Loader	80	86
Paver	85	91
Pneumatic tool	85	91
Pump	77	83
Saw	76	82
Scraper	85	91
Shovel	82	88
Truck	84	90

Source: Federal Transit Administration Noise and Vibration Impact Assessment Manual, 2018.

As shown in Table 4.8-11, maximum noise levels generated by various types of construction equipment can range from 82 to 91 dBA at 25 feet. Considering the nearest noise-sensitive receptors are located approximately 25 feet away from the proposed development area, such receptors could be exposed to noise levels ranging from approximately 82 dB to 91 dB, which would exceed the applicable Rancho Cordova General Plan noise level limits (see Table 4.8-4).

Given that construction equipment would operate at various portions of the project site at any one time and most construction activity would occur farther than 25 feet from the nearest sensitive receptors, project construction noise at nearby sensitive receptors would likely be lower than the reference levels presented in Table 4.8-11. In addition, on-site construction activities would be temporary in nature and would be limited to the following time periods per Section 6.68.090 of the City's Municipal Code: between 6:00 AM and 8:00 PM on weekdays and 7:00 AM and 8:00 PM on weekends. Per Section 6.68.090 of the Municipal Code, construction noise that occurs during

such hours is exempt from the noise level standards included in the City's Noise Ordinance.

Nonetheless, if construction activities were to occur outside of the exempted hours, construction activity would generate noise levels that would exceed the noise standards set forth in the City's General Plan and Municipal Code. As such, implementation of the project could result in the generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, and a ***significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

4.8-1 *The following criteria shall be noted on project Improvement Plans. Improvement Plans shall be submitted to the City's Community Development Department for review and approval.*

- *Consistent with Section 6.68.090 of the Rancho Cordova Municipal Code, noise-generating construction activities shall be limited to the hours of 6:00 AM to 8:00 PM on weekdays and 7:00 AM to 8:00 PM on weekends.*

4.8-2 Generation of a substantial 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. Based on the analysis below, the impact is *less than significant.*

The primary noise sources associated with development of the proposed 440-unit single-family subdivision would be noise associated with use of the proposed on-site public park areas and traffic noise associated with increased traffic volumes on the local roadway network. Both noise sources are discussed below with respect to future noise levels at the proposed residences and at existing noise-sensitive receptors in the project vicinity.

Noise Levels at the Proposed Residences

As noted previously, CEQA does not require an analysis of the environment's impact on the project; however, noise-related impacts to future residents of the proposed project is evaluated for informational purposes and to consider consistency with the policies set forth in the City's General Plan.

Park Noise at the Proposed Residences

The proposed project would include development of two public parks adjacent to the proposed residences in the northern portion of the development area, next to Morrison Creek. Noise generated by park activities would primarily consist of human speech (i.e., shouting and cheering during activities) and, thus, would be subject to the

General Plan's more restrictive noise standards (see Table 4.8-4). For this analysis, it is assumed that public park use would be restricted to daytime hours (7:00 AM to 10:00 PM). In addition, to provide a conservative estimate of park noise, this analysis assumed that the proposed public parks would have active uses (i.e., play structures, playing fields) rather than passive uses (i.e., picnic tables, sitting areas).

According to the Environmental Noise & Vibration Assessment, parks consisting of active uses/playing fields typically generate noise levels between 50 dB L_{eq} and 70 dB L_{max} at a distance of 100 feet. The nearest proposed residential uses would be located approximately 70 feet from the center of the park areas. Based on the reference noise levels and standard noise attenuation, park activity noise exposure at the nearest proposed residences was calculated to be approximately 53 dB L_{eq}, which would exceed the applicable Rancho Cordova General Plan daytime hourly average noise level standard of 50 dB L_{eq} for tonal, speech, or music noise sources.

Exterior Traffic Noise at the Project Site

The FHWA Model was used with future traffic data to predict future exterior traffic noise levels at the proposed residential and park uses. The future (Cumulative Plus Project) average daily traffic (ADT) volumes for Grant Line Road and Raymer Way were calculated using data provided in the project traffic impact analysis prepared by Kimley-Horn & Associates, Inc. By using traffic data from Cumulative Plus Project Conditions, as opposed to Existing Plus Project Conditions, this analysis presents a worst-case scenario. The predicted future Grant Line Road and Raymer Way traffic noise levels at the nearest proposed residential and park uses are summarized in Table 4.8-12.

As indicated in Table 4.8-12, predicted future combined Grant Line Road and Raymer Way traffic noise level exposure at the nearest proposed park use would satisfy the applicable Ranch Cordova General Plan exterior noise level standard of 70 dB L_{dn} for playgrounds and neighborhood park uses. However, at the nearest residential backyards, future combined traffic noise level exposure is predicted to exceed the General Plan exterior noise level standard of 60 dB L_{dn} for residential uses.

Interior Traffic Noise at the Project Site

With regard to interior noise levels, modern construction typically provides a 25 dB exterior-to-interior noise level reduction with windows closed and a 15 dB reduction with windows open. The 25 dB level of noise reduction would be adequate to reduce future traffic noise levels within all proposed residences to below the City's General Plan interior noise level standard of 45 dB L_{dn}. Therefore, additional interior noise control measures would not be required in order to reduce traffic noise exposure.

Noise Level Increases at Existing Sensitive Receptors

Traffic data for the Existing and Existing Plus Project conditions in the project area were obtained from the project-specific Transportation Impact Analysis completed by Kimley-Horn & Associates, Inc. Traffic noise levels under Existing and Existing Plus Project conditions are summarized in Table 4.8-13 below.

Table 4.8-12
Future Traffic Noise Levels at Proposed Uses[1]

Roadway[2]	Location	Distance from Centerline (ft)[3]	Future Exterior L_{dn} (dB)[4]
Grant Line Road	Nearest park (Park 1)	1,080	57
	Nearest residential backyards	1,050	57
	Nearest first-floor residential facades	1,060	57
	Nearest upper-floor residential facades	1,060	59
Raymer Way	Nearest park (Park 1)	450	53
	Nearest residential backyards	110	63
	Nearest first-floor residential facades	120	62
	Nearest upper-floor residential facades	120	64
Combined Roadways	Nearest park (Park 1)	--	59
	Nearest residential backyards	--	64
	Nearest first-floor residential facades	--	63
	Nearest upper-floor residential facades	--	65

Notes:
1 A complete listing of FHWA Model inputs and results are provided in Appendix G of the Environmental Noise & Vibration Assessment (see Appendix I to this EIR).
2 Locations of proposed uses are shown on Figure 4.8-2.
3 Distances measured from said locations to the roadway centerline.
4 A +2 dB offset was applied to upper-floor facades for reduced ground absorption of sound at elevated locations.

Source: Bollard Acoustical Consultants, Inc. (2020).

Table 4.8-13
Traffic Noise Modeling Results
Existing vs. Existing Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (L_{dn})		
			Existing	Existing + Project	Change
1	1- Mather Field Rd/ US 50 WB Ramp	North	67.6	67.6	0.0
2		South	68.8	68.8	0.0
3		East	70.1	70.1	0.0
4		West	63.6	63.6	0.0
5	2- Mather Field Rd/ US 50 EB Ramp	North	68.8	68.8	0.0
6		South	69.7	69.7	0.0
7		East	65.0	65.0	0.0
8		West	69.8	69.8	0.0
9	3- Mather Field Rd/ International Dr	North	--	--	--
10		South	60.4	63.0	2.6
11		East	66.8	66.8	0.0
12		West	68.4	69.7	1.3
13	4- Zinfandel Dr/ US 50 WB Ramp	North	68.5	68.5	0.0
14		South	70.0	70.0	0.0
15		East	71.1	71.2	0.1
16		West	64.4	64.4	0.0
17	5- Zinfandel Dr/	North	70.1	70.1	0.0

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Table 4.8-13
Traffic Noise Modeling Results
Existing vs. Existing Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (L_{dn})		
			Existing	Existing + Project	Change
18	US 50 EB Ramp	South	70.3	70.3	0.0
19		East	69.5	69.5	0.0
20		West	71.0	71.0	0.0
21	6- Zinfandel Dr/ White Rock Rd	North	70.3	70.3	0.0
22		South	67.9	67.9	0.0
23		East	65.2	65.4	0.2
24		West	64.8	64.8	0.0
25	7- Zinfandel Dr/ International Dr	North	67.0	67.0	0.0
26		South	66.6	66.6	0.0
27		East	65.0	65.0	0.0
28		West	65.8	65.8	0.0
29	8- Sunrise Blvd/ Zinfandel Dr	North	71.4	71.5	0.1
30		South	71.6	71.6	0.0
31		East	52.6	52.6	0.0
32		West	59.6	59.6	0.0
33	9- Sunrise Blvd/ US 50 WB Ramp	North	71.6	71.6	0.0
34		South	70.8	70.8	0.0
35		East	68.5	68.5	0.0
36		West	69.1	69.1	0.0
37	10- Sunrise Blvd/ US 50 EB Ramp	North	70.8	70.9	0.1
38		South	70.2	70.3	0.1
39		East	64.3	64.3	0.0
40		West	70.9	70.9	0.0
41	11- Sunrise Blvd/ Folsom Blvd	North	70.2	70.2	0.0
42		South	69.7	69.7	0.0
43		East	65.2	65.3	0.1
44		West	65.1	65.1	0.0
45	12- Sunrise Blvd/ White Rock Rd	North	68.6	68.6	0.0
46		South	68.5	68.5	0.0
47		East	65.5	65.8	0.3
48		West	65.7	65.9	0.2
49	13- Zinfandel Dr/ Douglas Rd	North	65.3	65.3	0.0
50		South	58.8	58.8	0.0
51		East	65.3	65.3	0.0
52		West	63.7	63.7	0.0
53	14- Sunrise Blvd/ Douglas Rd	North	68.3	68.2	-0.1
54		South	69.5	69.5	0.0
55		East	64.2	64.2	0.0
56		West	65.3	65.3	0.0
57	15- Americanos Blvd/ Douglas Rd	North	53.4	54.2	0.8
58		South	--	--	--
59		East	60.0	60.0	0.0

(Continued on next page)

Table 4.8-13
Traffic Noise Modeling Results
Existing vs. Existing Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (L_{dn})		
			Existing	Existing + Project	Change
60		West	61.3	61.5	0.2
61	16- Sunrise Blvd/ Jackson Rd/SR 16	North	68.8	68.8	0.0
62		South	67.6	67.6	0.0
63		East	66.4	66.4	0.0
64		West	64.9	64.9	0.0
65	17- Grant Line Rd/ Jackson Rd/SR 16	North	64.9	65.2	0.3
66		South	64.2	64.5	0.3
67		East	66.5	66.5	0.0
68		West	66.5	66.5	0.0
69	18- Grant Line Rd/ Keifer Blvd	North	65.8	66.1	0.3
70		South	64.9	65.2	0.3
71		East	57.5	57.9	0.4
72		West	37.5	37.5	0.0
73	19- Grant Line Rd/ Douglas Rd	North	66.4	66.7	0.3
74		South	65.7	66.0	0.3
75		East	--	--	--
76		West	60.1	60.1	0.0
77	20- Grant Line Rd/ Raymer Wy	North	67.6	67.8	0.2
78		South	66.7	67.0	0.3
79		East	--	--	--
80		West	56.1	57.7	1.6
81	21- Grant Line Rd/ White Rock Rd	North	68.4	68.7	0.3
82		South	67.0	67.8	0.8
83		East	--	--	--
84		West	61.3	62.2	0.9
85	22- Prairie City Rd/ White Rock Rd	North	65.6	66.0	0.4
56		South	--	--	--
87		East	64.6	64.8	0.2
88		West	66.3	66.6	0.3

Source: Bollard Acoustical Consultants, Inc. (2020).

Based on the FICON standards described above, where ambient noise conditions are between 60 and 65 dB, a three dB increase is considered to be the applicable standard of significance. In areas where ambient noise levels are less than 60 dB, a five dB increase is considered the threshold applicable threshold of significance. As shown in Table 4.8-13, the largest change in noise levels between the Existing and Existing Plus Project conditions would be 2.6 dB. All other changes in noise levels would be less than 2.6 dB, with the majority being less than one dB.

All project-related traffic noise increases would be below the applicable FICON thresholds shown in Table 4.8-8. Thus, project traffic noise level increases at existing

sensitive receptors under the Existing Plus Project conditions would be less than significant.

Park Noise at Existing Sensitive Receptors

According to the Environmental Noise & Vibration Assessment, parks consisting of active uses/playing fields typically generate noise levels between 50 dB L_{eq} and 70 dB L_{max} at a distance of 100 feet. Because public park use is typically limited to daytime hours, the General Plan daytime hourly average noise level standard of 50 dB L_{eq} was applied at the nearest residences. Based on the aforementioned reference noise levels and standard spherical noise attenuation, park activity noise exposure at the nearest existing single-family residences was calculated and is presented in Table 4.8-14.

Table 4.8-14
Predicted Public Park Activity Noise Levels at Nearest Existing Noise-Sensitive Uses

Noise-Sensitive Receptor[1]	Nearest Park[2]	Distance (ft)[3]	Predicted Noise Levels, L_{eq} (dB)[4]	General Plan Daytime Noise Standard, L_{eq} (dB)
Residences in Subdivision – South	Park 2	1,000	<20	**50**
Residence on Ag. Property – Northwest	Park 2	1,300	28	

Notes:
[1] Locations of existing noise-sensitive receptors are shown on Figure 1 of the Environmental Noise & Vibration Assessment.
[2] Locations of proposed park areas are shown on Figure 2 of the Environmental Noise & Vibration Assessment.
[3] Distances measured from center of nearest park area to receptors.
[4] Predicted park activity noise levels at the nearest residences in the subdivision to the south of the project take into consideration the shielding that would be provided by proposed intervening structures of the development (residences), have been conservatively adjusted by -15 dB to account for this screening.

Source: Bollard Acoustical Consultants, Inc. (2020).

As shown in the table, park noise at the existing sensitive receptors would comply with the City's 50 dB L_{eq} daytime noise standard. Thus, a less-than-significant impact would occur.

Conclusion

Based on the above, exterior traffic noise and park-related noise at the proposed residences could exceed the City's noise level standards. However, such an effect would not be considered an impact under CEQA. In order to address this concern, the City would require the following condition of approval to ensure consistency with the City's General Plan noise levels standards:

- Prior to building permit issuance for proposed residential lots, the Improvement Plans shall show that solid noise barriers measuring a minimum of six feet in height (relative to backyard elevation) shall be constructed. The noise barriers

may take the form of masonry wall, earthen berm, or a combination of the two, to the satisfaction of the Community Development Department. Other materials may be acceptable but should be reviewed by an acoustical consultant prior to use. The locations of the required noise barriers shall be consistent with alignments shown in Figure 4.8-3 of this EIR.

Existing sensitive receptors would not experience traffic-related or park-related noise levels in excess of the City's applicable noise level standards. Therefore, a ***less-than-significant*** impact would occur related to generation of a substantial 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.

Mitigation Measure(s)

None required.

4.8-3 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Based on the analysis below, the impact is *less than significant*.

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction activities. Project construction would utilize typical construction equipment and would not require significant sources of vibration such as pile driving or blasting. Table 4.8-15 below shows the typical vibration levels produced by construction equipment.

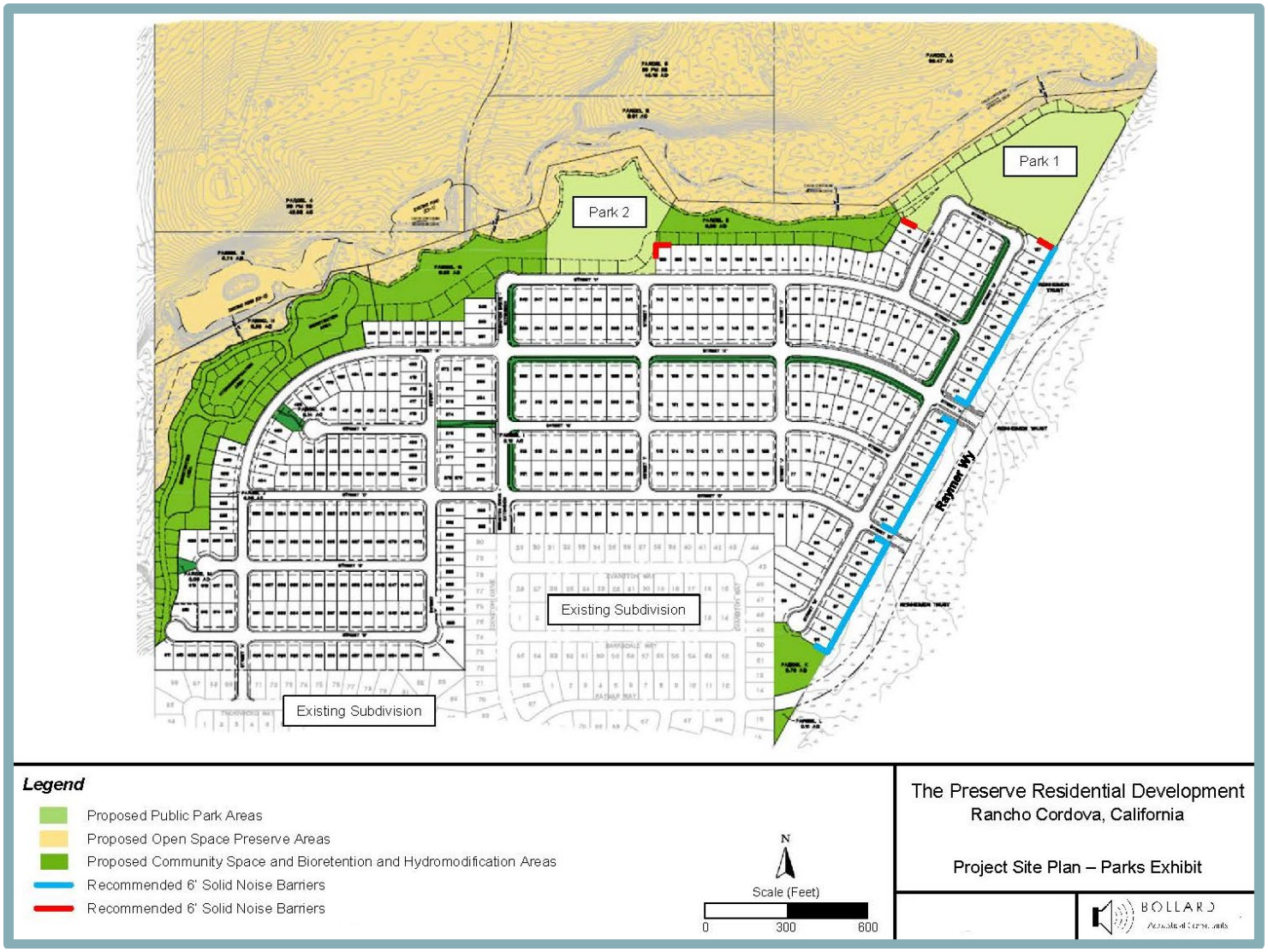
Table 4.8-15
Typical Construction Equipment Vibration Levels

Equipment Type	Maximum PPV (inches/second)	
	Maximum PPV at 25 Feet[1]	Predicted PPV at 30 Feet[1]
Large bulldozer	0.089	0.068
Hoe ram	0.089	0.068
Caisson drilling	0.089	0.068
Loaded trucks	0.076	0.058
Backhoe	0.051	0.039
Excavator	0.051	0.039
Grader	0.051	0.039
Loader	0.051	0.039
Jackhammer	0.035	0.027
Small bulldozer	0.003	0.002

Notes:
[1] Reference vibration level obtained from the Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (2018).

Source: Bollard Acoustical Consultants, Inc. (2020).

Figure 4.8-3
Noise Barrier Locations



Source: Bollard Acoustical Consultants, Inc. (2020).

As shown in the table, vibration levels generated from on-site construction activities at the nearest existing residence located approximately 25 feet away are predicted to be below the Caltrans thresholds for human annoyance (0.1 in/sec PPV) and damage to residential structures (0.2 in/sec PPV) (see Table 4.8-9).

In addition, the majority of construction activities would occur farther than 25 feet from the nearest receptors, and the average construction-generated groundborne vibration levels at the existing residences would be lower than the levels presented in the table above. Furthermore, construction activities would be temporary in nature. Therefore, construction vibrations associated with the project are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors.

Based on the above, the proposed project would not result in the generation of excessive groundborne vibration or groundborne noise levels, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 5, Statutorily Required Sections, of this EIR.

4.8-4 Generation of a substantial permanent increase in ambient noise levels associated with cumulative development of the proposed project in combination with future buildout of the General Plan. Based on the analysis below, the cumulative impact is *less than significant*.

Future development projects within the City of Rancho Cordova, including the proposed project, would incrementally affect the future cumulative ambient noise environment. As part of the Environmental Noise & Vibration Assessment, cumulative traffic noise impacts due to traffic increases on the local roadway network were evaluated for Cumulative and Cumulative Plus Project Conditions. The resulting noise levels are summarized in Table 4.8-16.

As shown in Table 4.8-16, the addition of project traffic to Cumulative (no project) traffic volumes would result in noise level increases of 0.3 dB or less along the study roadway segments. Thus, project-generated traffic would not result in a substantial increase in traffic noise levels on the local roadway network relative to the FICON significance criteria identified in Table 4.8-8. Therefore, under Cumulative Plus Project Conditions,

the proposed project would not result in a substantial 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. Accordingly, the cumulative traffic noise impact would be ***less than significant***.

Mitigation Measure(s)

None required.

Table 4.8-16
Traffic Noise Modeling Results
Cumulative vs. Cumulative Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (L_{dn})		
			Cumulative	Cumulative + Project	Change
1	1- Mather Field Rd/ US 50 WB Ramp	North	69.5	69.5	0.0
2		South	70.8	70.8	0.0
3		East	72.0	72.0	0.0
4		West	65.9	65.9	0.0
5	2- Mather Field Rd/ US 50 EB Ramp	North	70.4	70.4	0.0
6		South	71.2	71.2	0.0
7		East	66.0	66.0	0.0
8		West	70.5	70.5	0.0
9	3- Mather Field Rd/ International Dr	North	--	--	--
10		South	62.0	62.0	0.0
11		East	70.6	70.6	0.0
12		West	71.4	71.4	0.0
13	4- Zinfandel Dr/ US 50 WB Ramp	North	69.5	69.5	0.0
14		South	71.1	71.1	0.0
15		East	72.5	72.5	0.0
16		West	64.8	64.8	0.0
17	5- Zinfandel Dr/ US 50 EB Ramp	North	70.8	70.8	0.0
18		South	71.0	71.0	0.0
19		East	69.9	69.9	0.0
20		West	71.9	72.0	0.1
21	6- Zinfandel Dr/ White Rock Rd	North	71.4	71.4	0.0
22		South	69.3	69.3	0.0
23		East	66.7	66.8	0.1
24		West	65.8	65.8	0.0
25	7- Zinfandel Dr/ International Dr	North	69.8	69.8	0.0
26		South	70.9	70.9	0.0
27		East	69.7	69.7	0.0
28		West	70.7	70.7	0.0
29	8- Sunrise Blvd/ Zinfandel Dr	North	72.3	72.3	0.0
30		South	72.4	72.5	0.1
31		East	53.2	53.2	0.0
32		West	60.1	60.1	0.0
33	9- Sunrise Blvd/ US 50 WB Ramp	North	72.4	72.4	0.0
34		South	71.8	71.7	-0.1

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Table 4.8-16
Traffic Noise Modeling Results
Cumulative vs. Cumulative Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (L_{dn})		
			Cumulative	Cumulative + Project	Change
35		East	69.5	69.0	-0.5
36		West	69.6	69.6	0.0
37	10- Sunrise Blvd/ US 50 EB Ramp	North	71.7	71.7	0.0
38		South	71.3	71.3	0.0
39		East	65.2	65.2	0.0
40		West	71.0	71.0	0.0
41	11- Sunrise Blvd/ Folsom Blvd	North	70.7	70.7	0.0
42		South	70.3	70.3	0.0
43		East	66.3	66.3	0.0
44		West	66.4	66.4	0.0
45	12- Sunrise Blvd/ White Rock Rd	North	69.5	69.5	0.0
46		South	69.4	69.4	0.0
47		East	68.6	68.7	0.1
48		West	68.2	68.3	0.1
49	13- Zinfandel Dr/ Douglas Rd	North	69.6	69.6	0.0
50		South	65.6	65.6	0.0
51		East	69.3	69.3	0.0
52		West	66.7	66.7	0.0
53	14- Sunrise Blvd/ Douglas Rd	North	70.8	70.8	0.0
54		South	71.8	71.8	0.0
55		East	68.3	68.3	0.0
56		West	69.2	69.2	0.0
57	15- Americanos Blvd/ Douglas Rd	North	61.5	61.8	0.3
58		South	60.2	60.2	0.0
59		East	65.2	65.2	0.0
60		West	65.8	66.0	0.2
61	16- Sunrise Blvd/ Jackson Rd/SR 16	North	72.1	72.1	0.0
62		South	71.0	71.0	0.0
63		East	69.0	69.0	0.0
64		West	69.0	69.0	0.0
65	17- Grant Line Rd/ Jackson Rd/SR 16	North	70.2	70.3	0.1
66		South	68.7	68.7	0.0
67		East	68.8	68.8	0.0
68		West	69.0	69.0	0.0
69	18- Grant Line Rd/ Keifer Blvd	North	70.1	70.1	0.0
70		South	69.7	69.8	0.1
71		East	59.1	59.1	0.0
72		West	58.2	58.3	0.1
73	19- Grant Line Rd/ Douglas Rd	North	71.0	71.2	0.2
74		South	70.7	70.8	0.1
75		East	59.4	59.7	0.3
76		West	65.3	65.3	0.0

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Table 4.8-16
Traffic Noise Modeling Results
Cumulative vs. Cumulative Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (L_{dn})		
			Cumulative	Cumulative + Project	Change
77	20- Grant Line Rd/ Raymer Wy	North	72.2	72.4	0.2
78		South	71.4	71.6	0.2
79		East	60.6	60.6	0.0
80		West	61.0	62.3	1.3
81	21- Grant Line Rd/ White Rock Rd	North	73.4	73.4	0.0
82		South	72.2	72.4	0.2
83		East	--	--	--
84		West	68.1	68.3	0.2
85	22- Prairie City Rd/ White Rock Rd	North	69.7	69.7	0.0
56		South	--	--	--
87		East	70.2	70.3	0.1
88		West	71.3	71.4	0.1

Source: Bollard Acoustical Consultants, Inc. (2020).

4.9 Public Services and Utilities

4.9 PUBLIC SERVICES AND UTILITIES

4.9.1 INTRODUCTION

The Public Services and Utilities chapter summarizes the existing setting related to public services and utilities and identifies potential new demands resulting from the proposed project on fire and police protection services, schools, water supply, wastewater systems, solid waste disposal, and gas, electric, and telecommunications infrastructure. Information for this section was drawn primarily from the Water Study[1] and Sewer Study[2] prepared for the proposed project by Ruggeri-Jensen-Azar & Associates, as well as the Unit Count Increase Memorandum prepared by Ruggeri-Jensen-Azar & Associates in January 2021 (see Appendix J).[3] This section also draws on Sacramento County Water Agency's (SCWA) 2015 Urban Water Management Plan (UWMP),[4] the Zone 40 Water Supply Master Plan,[5] and the City of Rancho Cordova General Plan[6] and associated EIR.[7]

4.9.2 EXISTING ENVIRONMENTAL SETTING

The following section describes the existing fire and police protection services, schools, and other public facilities in the area, as well as existing utilities, including water supply, wastewater conveyance and treatment, solid waste, and gas, electric, and telecommunications infrastructure.

Fire Protection

The project site is currently located within the jurisdiction of the Sacramento Metropolitan Fire District (SMFD). The SMFD provides fire suppression, inspection, plan checking, emergency transportation and medical services, public education, advanced life support, and rescue services in the City of Rancho Cordova. SMFD serves a population of 745,000 in a 359 square mile area in the southern portion of Sacramento County. SMFD operates 42 fire stations with approximately 700 paid personnel on staff. The SMFD includes 39 engine companies, 5 truck companies, 12 medic transportation units, eight historical fire apparatus, five crash/rescue units, and various watercraft response units.[8] Within Rancho Cordova, the SMFD has seven fire stations. Station 68, at 4381 Anatolia Drive, is the closest station to the project site, located 2.8 miles southwest of the project site.

The Emergency Medical Services (EMS) Division oversees the SMFD's emergency related services and personnel, including EMT-Paramedics. The SMFD deploys ten 24-hour Advanced Life Support ambulances. The majority of the fire stations within Rancho Cordova are equipped with an ambulance and paramedic combination.

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1 Ruggeri-Jensen-Azar & Associates. *Water Study for The Preserve.* September 2018.
2 Ruggeri-Jensen-Azar & Associates. *Sewer Study for The Preserve.* June 2020.
3 Ruggeri-Jensen-Azar & Associates. *The Preserve – Unit Count Increase on Sewer and Water Studies.* January 2021.
4 Sacramento County Water Agency. *Draft 2015 Urban Water Management Plan*. May 2016.
5 Sacramento County Water Agency. *Zone 40 Water Supply Master Plan.* February 2005.
6 City of Ranch Cordova. *Rancho Cordova General Plan*. June 26, 2006.
7 City of Ranch Cordova. *Rancho Cordova General Plan Environmental Impact Report.* June 2006.
8 *Ibid.*

The Insurance Services Office (ISO) rating is the recognized classification for a fire department or district's ability to defend against major fires. According to the ISO, newly developing urban areas should have a fire station opened within 2.5 miles from all residential development when build-out exceeds 20 percent of the City. A rating of ten generally indicates inadequate protection, while an ISO rating of one indicates high firefighting capability. The SMFD has an ISO rating of three for areas containing water flow and established hydrants, and class eight for areas lacking water sources and hydrants. The SMFD has established a goal for a response time of five minutes or less for 80 percent of the time in the urbanized portions of the City. Currently, the SMFD has a response time of five minutes for emergency calls, where staffing levels are adequate.[9]

The SMFD is funded through property taxes and grant funding. The funding and expenditures for the SMFD are facilitated through the Capital Improvement Program. In addition, development impact fees account for a portion of funding for the SMFD. The Capital Fire Facilities Fee was established through Assembly Bill 1600, which provides the authority for SMFD to fund the full cost of providing new fire services and facilities through fees levied on new development within the SMFD service area.

Police Protection

The City of Rancho Cordova Police Department (RCPD) is contracted through the Sacramento County Sheriff's Department (SCSD) Patrol Services. The SCSD is staffed with 2,332 people, consisting of 1,789 officers and 543 nonsworn members. The SCSD also has a reserve force of 168 officers and approximately 621 community volunteers.[10]

The RCPD is comprised of 55 sworn officers and seven non-sworn staff.[11] The Rancho Cordova Police Station is located at 2897 Kilgore Road in the City of Rancho Cordova, approximately 6.7 miles from the project site by way of White Rock Road. The City's goal for staffing standards is one officer per 1,000 residents and one support staff member for every three officers. The RCPD's goal is also to maintain an average response time for Priority One calls for service of five minutes or less. A Priority One call is defined as a call regarding violent crime or requiring immediate life-saving response.

The RCPD is organized into three components:

- *Administration Services Bureau*: The Administration Services Bureau includes the budget coordinator, equipment manager, and volunteer coordinator.
- *Investigations and Community Services Bureau*: The Investigations and Community Services Bureau includes the detective unit, problem-oriented police unit, traffic enforcement, and crime prevention center.
- *Patrol Operations Bureau*: The Patrol Operations Bureau provides first-line emergency response to crimes in progress, accidents, and tactical situations.

The SCSD and the RCPD are funded through Sacramento County tax revenues and special Federal and local grants. The SCSD and the City of Rancho Cordova have agreed that funding for the RCPD will occur using revenues from the City's General Fund, which is the primary source of revenue for law enforcement services.

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9 AECOM, Inc. *SunCreek Specific Plan Project DEIR/DEIS*. October 2012.
10 City of Ranch Cordova. *Rancho Cordova General Plan Environmental Impact Report.* June 2006.
11 Ranch Cordova Police Department. *About Us*. Available at: https://www.ranchocordovapd.com/about-us. Accessed September 2020.

Schools

The project site is located within the boundaries of the Folsom Cordova Unified School District (FCUSD), which encompasses approximately 98 square miles in eastern Sacramento County, including the City of Folsom and the majority of the City of Rancho Cordova. The FCUSD is comprised of two preschools, 23 elementary schools, nine middle schools, and eight high schools. The closest schools to the project site are Navigator Elementary School, located 4.5 miles west of the project site, W.E. Mitchell Middle School, located 4.7 miles northwest of the site, and Cordova High School, located six miles west of the site. Table 4.9-1 below presents the existing school enrollment and facility capacity of the schools in the project vicinity. The City of Rancho Cordova falls within the School Facilities Improvement District 1 (SFID 1).

Table 4.9-1
Project Vicinity Schools Enrollment and Optimal Loading

School Facility	2019-2020 Enrollment[1]	District Optimal Loading Capacity[2]
Navigator Elementary School	374	558
W.E. Mitchell Middle School	885	843
Cordova High School	1,851	1,951

Sources:
[1] California Department of Education. District Profile: Folsom-Cordova Unified. Available at: https://www.cde.ca.gov/sdprofile/details.aspx?cds=34673300000000. Accessed March 2021.
[2] Folsom Cordova Unified School District. Facility Master Plan. November 2013.

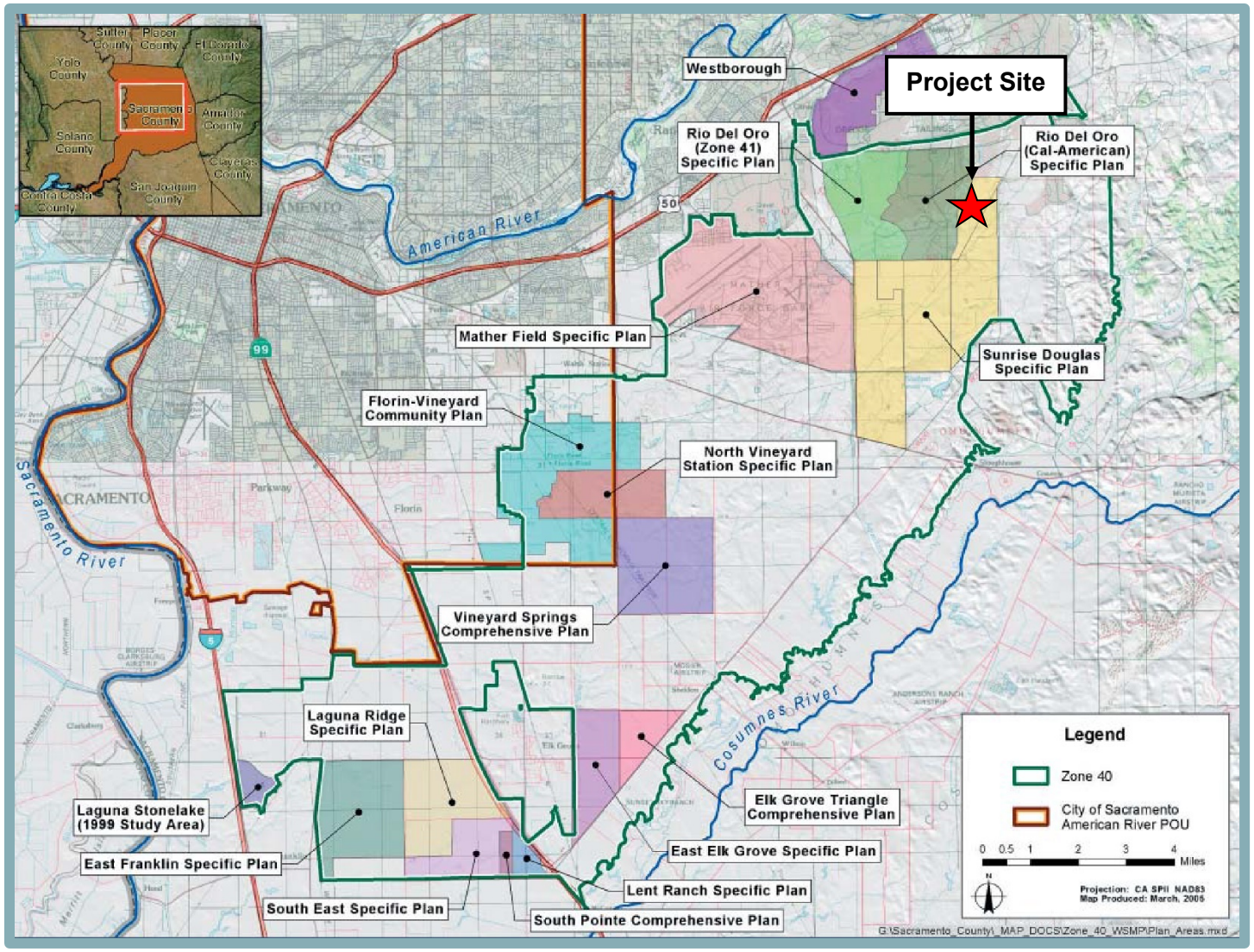
Water Supply

The City of Rancho Cordova is not a water provider, but contracts with four water purveyors to provide water service to residences within the City. The City uses two private water companies, Golden State Water and California American Water, and two public agencies, SCWA and City of Folsom Water District. The project site would be served by the SCWA through the Zone 40 conjunctive-use water supply system (see Figure 4.9-1).

Zone 40 was formed as a result of SCWA Resolution No. 663, which established exact zone boundaries and set goals for future water service projects. SCWA has engaged in a long-term water supply planning process through participation in the regional Water Forum planning process and the adoption of the 2015 UWMP and the Zone 40 Water Supply Master Plan (WSMP).

The Zone 40 WSMP was prepared by the SCWA in 2005 to ensure provision of a reliable and safe water supply to the region's economic health and planned development through the year 2030, and to preserve the fishery, wildlife, recreation, and aesthetic values of the lower American River. The Zone 40 WSMP states that water supply sources within the City include groundwater, surface water, and purchased recycled water. The use of each is discussed in further detail below.

Figure 4.9-1
Zone 40 Water Distribution Area



Groundwater

Three groundwater sub-basins exist under Sacramento County; Zone 40 lies entirely within the Central Sacramento County Groundwater Basin (Central Basin) (see Figure 4.9-2). The Central Basin is considered a shallow aquifer zone, and extends approximately 200 to 300 feet below the ground surface. Recharge to the aquifer system occurs along active river and stream channels, particularly along the American, Cosumnes, and Sacramento River channels. Additional recharge occurs from the percolation of precipitation and applied surface water. Groundwater from the Central Basin is generally high quality, and is treated for the removal of iron, manganese, arsenic, and radon.

The groundwater in the Central Basin is managed by the Sacramento Central Groundwater Authority (SCGA), which was formed in 2006 through an agreement signed by the cities of Elk Grove, Folsom, Rancho Cordova, and Sacramento. The SCGA Groundwater Management Plan, which was adopted in 2006, establishes a framework for maintaining sustainable groundwater resources in the Central Basin. This framework includes specific goals, objectives, and an action plan to manage the basin.

The SCGA Groundwater Management Plan also prescribes a well protection program to protect existing private domestic well and agricultural well owners from declining groundwater levels resulting from increased groundwater pumping due to new development in the basin.

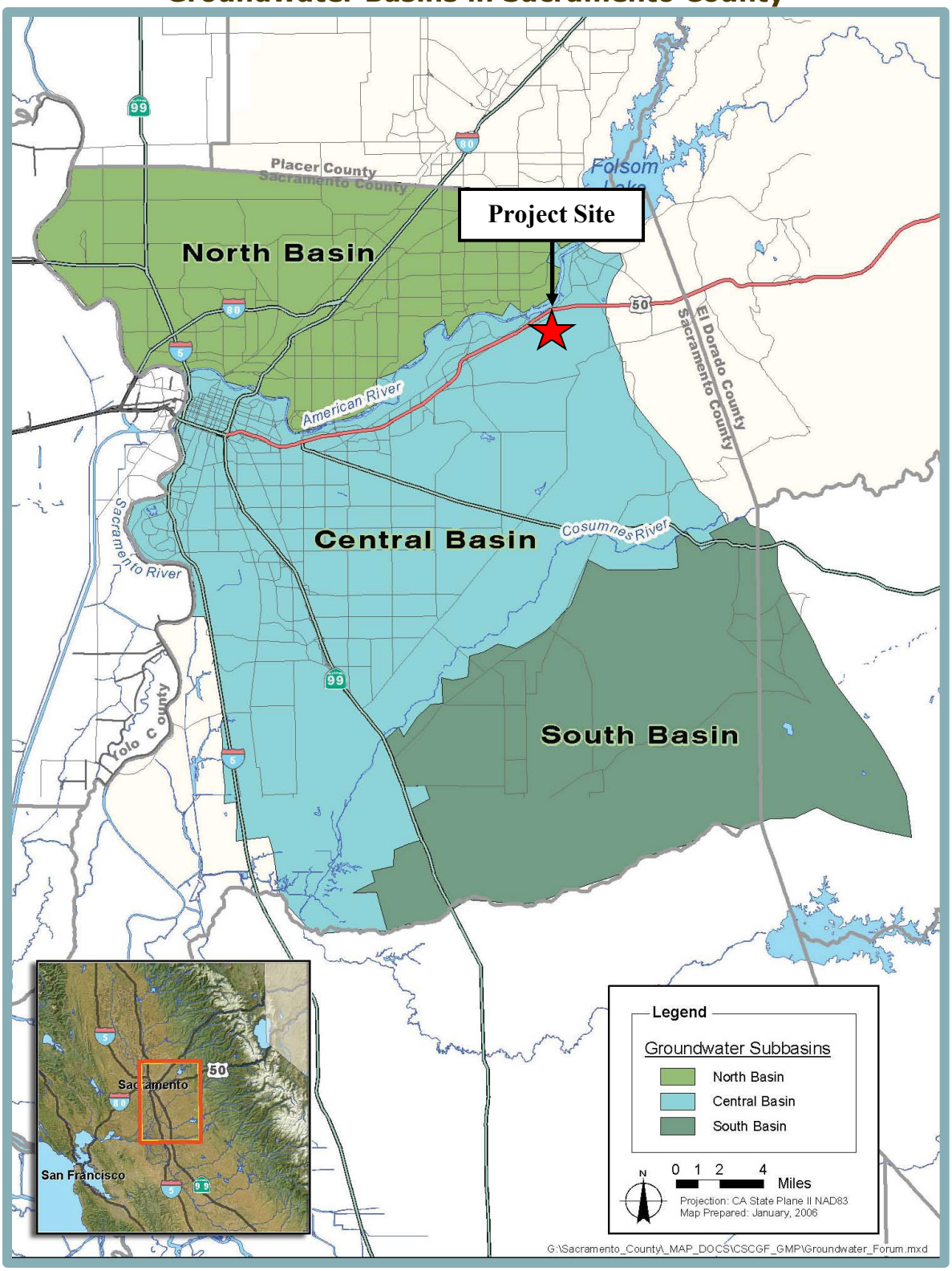
Groundwater is supplied by SCWA's system of groundwater wells and remediated groundwater that is extracted by others. Groundwater pumping was developed to provide sufficient capacity to meet projected maximum day demands and meet conjunctive use objectives. SCWA is obligated to provide groundwater to Sacramento Municipal Utility District (SMUD) in dry and critically dry years. Groundwater is considered to be the last priority in meeting water demands after surface water entitlements and surface water treatment capacity are used. Variability in groundwater use is a result of the conjunctive use program, dry year deliveries to SMUD, and the variability in the availability of surface water supplies. Based on the average of the five years presented within the SCWA's 2015 UWMP, the SCWA pumps approximately 29,230 acre-feet per year (AFY) of groundwater. In 2015, groundwater supplies accounted for approximately 73 percent of total SCWA water supplies.

SCWA also has a remediated groundwater supply of approximately 8,900 AFY per the 2010 agreement, "Agreement between Sacramento County, SCWA, and Aerojet-General Corporation with Respect to Transfer of GET Water." The remediated groundwater is pumped from the northern portion of the South American Subbasin and discharged into the American River from Aerojet's Groundwater Extraction and Treatment (GET) facilities, located in the Rancho Cordova area.

Surface Water

Surface water is defined by the California Department of Water Resources (DWR) as self-supplied water that is drawn from streams, lakes, and reservoirs. SCWA has an appropriative water supply consisting of self-supplied surface water that is drawn from the American and Sacramento rivers. In February 2008, the State Water Resources Control Board (SWRCB) approved SCWA's appropriate right permit application to divert water from the American and Sacramento rivers. The amount of appropriated water for use could range up to 71,000 AFY in wet years, primarily during the winter months. Because SCWA's demands are low in the winter months, the potential exists for not all of the supply to be utilized.

Figure 4.9-2
Groundwater Basins in Sacramento County



Source: Sacramento County Water Agency, 2015 Urban Water Management Plan [pg 64], May 2016.

Surface water is diverted at the Freeport diversion on the Sacramento River, and at or near the mouth of the American River. Water quality at these sources is considered good, and the water is treated with conventional filtration processes. SCWA relies on two sources of purchased surface water, as described below.

Central Valley Project

A majority of SCWA's water supplies are provided to the City of Rancho Cordova by the Central Valley Project (CVP), in accordance with an agreement between SCWA and SMUD. SCWA has entered into two three-party agreements with the City of Sacramento and SMUD for the assignment to SCWA of a total of 30,000 AFY of water from SMUD's existing contract.[12] In 1999, SCWA entered into a contract with the U.S. Bureau of Reclamation for 22,000 AFY of CVP supplies from the American River, pursuant to Public Law 101-514. The contract, often referred to as "Fazio Water," requires that 7,000 AFY be subcontracted to the City of Folsom for diversion from Folsom Lake, with 15,000 FY available for SCWA through the Freeport diversion or Franklin intertie. Most of the CVP water is diverted at the Freeport diversion on the Sacramento River and treated at the Vineyard Surface Water Treatment Plant (SWTP).

SCWA's total CVP supply is subject to reductions in dry years. The water supply allocations are defined by the Bureau of Reclamation on a year-to-year basis and are expressed as a percentage of either the contract amount or amount of average use.

City of Sacramento's American River Place of Use

Part of Zone 40 falls within Sacramento's American River Place of Use (POU), which refers to an area where the City of Sacramento has water rights. The amount of water available to serve the POU within Zone 40 is approximately 9,300 AFY. However, when American River flows are less than applicable requirements (Hodge Flow Criteria), POU water is not available to SCWA. Given the uncertainty of the availability of POU water during dry years, the SCWA 2015 UWMP allocates zero percent water supply from the POU during dry years.

Recycled Water

Recycled water use within the City is a component of tertiary treated wastewater for non-potable use. The uses are primarily landscape irrigation at parks, schools, and rights-of-way. Recycled water is purchased by SCWA from the Sacramento Regional County Sanitation District (SRCSD). Recycled water is not currently used within the project area.

Water Use

The UWMP has identified regional water demand in normal, single dry, and multiple dry years in five-year increments. The projections are based on buildout of the Zone 40 area per the City's General Plan land use designations, with full buildout of Zone 40 anticipated to occur after the year 2040. The projected retail water demands for the project area are based on the projections included in the Zone 40 Water System Infrastructure Plan Update (WSIP).[13] It should be noted that, per the anticipated land use at buildout, the project site would be agriculture on the western half and non-irrigated on the eastern half. As such, water demand from buildout of the proposed project would not have been accounted for in the WSIP.

[12] Sacramento County Water Agency. *Draft 2015 Urban Water Management Plan*. May 2016.
[13] Sacramento County Water Agency. *Zone 40 Water System Infrastructure Plan Update*. September 2016.

Table 4.9-2 and Table 4.9-3 show the projected water supply and demand totals during a normal year and during a single dry year, respectively. Table 4.9-4 shows the projected supply and demand totals under multiple dry year conditions for the first, second, and third years. The multiple dry year scenario mimics the water supply conditions of 2013 to 2015 when CVP allocations were 100 percent, 75 percent, and 25 percent of the average use of supplies during the previous three years. The demands presented in this table are the same as the normal year demands, but the second- and third-year demands might be lower if demand reduction mandates are imposed by the State. Determining the amount of CVP supplies available in the dry years requires first a projection of the use of the CVP supply in normal years. The CVP dry year allocation is determined based on a percentage of the previous three years of use. During dry years SCWA would seek to supplement its reduced CVP supplies with the use of other surface water supplies

Table 4.9-2
Supply and Demand Assessment: Normal Year (AFY)

	2020	2025	2030	2035	2040
Supply totals	82,900	82,900	87,900	97,900	97,900
Demand totals	48,121	55,490	63,288	71,143	79,278
Difference	*34,779*	*27,410*	*24,612*	*26,757*	*18,622*

Source: Sacramento County Water Agency, 2015 Urban Water Management Plan, May 2016.

Table 4.9-3
Supply and Demand Assessment: Single Dry Year (AFY)

	2020	2025	2030	2035	2040
Supply totals	70,200	70,500	74,600	83,600	83,800
Demand totals	48,121	55,490	63,288	71,143	79,278
Difference	*22,079*	*15,010*	*11,312*	*12,457*	*4,522*

Source: Sacramento County Water Agency, 2015 Urban Water Management Plan, May 2016.

Table 4.9-4
Supply and Demand Assessment: Multiple Dry Years (AFY)

		2020	2025	2030	2035	2040
1st Year	Supply Totals	77,900	77,900	81,900	90,900	90,900
	Demand Totals	48,121	55,490	63,288	71,143	79,278
	Difference	*29,779*	*22,410*	*18,612*	*19,757*	*11,622*
2nd Year	Supply Totals	77,900	77,900	81,900	90,900	90,900
	Demand Totals	48,121	55,490	63,288	71,143	79,278
	Difference	*29,779*	*22,410*	*18,612*	*17,757*	*11,622*
3rd Year	Supply Totals	70,200	70,500	74,600	83,600	83,800
	Demand Totals	48,121	55,490	63,288	71,143	79,278
	Difference	*22,079*	*15,010*	*11,312*	*12,457*	*4,522*

Note: Per the UWMP, based on the selected base years, the first year would be normal year supplies, the second year is based on a 75 percent allocation of CVP water, and the third year is the same as the single dry year with a 25 percent CVP allocation.

Source: Sacramento County Water Agency, 2015 Urban Water Management Plan, May 2016.

Wastewater

Sanitary sewer service for the proposed project would be provided by the Sacramento Area Sewer District (SASD) and SRCSD; SASD operates and maintains the main line pipes for wastewater conveyance and collection from the source to the regional interceptors, and SRCSD is

responsible for collection by interceptors and for wastewater treatment in Sacramento County. The SRCSD owns, operates, and is responsible for the collection, trunk, and interceptor sewer systems throughout Sacramento County, as well as the Sacramento Regional Wastewater Treatment Plant (SRWTP) located near Elk Grove. The City of Rancho Cordova Planning Area falls within County Sanitation District 1 (CSD-1).

Within the SASD's sewer system, sewage from customers' homes and businesses enter the system through sewage collecting pipes 10-inches or smaller in diameter. Once in the main line, sewage flows into a system of larger pipes called trunk lines, which are 12-inches or larger in diameter. Trunk lines function as conveyance facilities to transport collected wastewater flows to the SRCSD interceptor system, which carries wastewater directly to the SRWTP. As of 2010, the SRWTP receives and treats an average of 141 million gallons per day (mgd) of wastewater, and, under NPDES NO. CA0077682, is permitted to treat 181 mgd average dry weather flow.[14]

The SRCSD evaluated the environmental impacts of constructing turn and interceptor sewers that would serve the Sacramento region at a program level in the EIR for the Sacramento Regional County Sanitation District Interceptor Master Plan.[15] In addition, the SRCSD developed the Sacramento Regional Wastewater Treatment Plant 2020 Master Plan in order to provide a phased program of recommended wastewater treatment facilities and management programs to accommodate planned growth and to meet existing and anticipated regulatory requirements through the year 2020. The 2020 Master Plan addresses both public and health and environmental protection issues while ensuring reliable service at affordable rates for SRCSD customers. The key goals of the 2020 Master Plan are to provide sufficient capacity to meet growth projections and an orderly expansion of SRWTP facilities, to comply with applicable water quality standards, and to provide for the most cost-effective facilities and programs from a watershed perspective.

Solid Waste

The City of Rancho Cordova's residential solid waste and recycling services are provided by Republic Services, Inc. Sacramento County owns and operates the Kiefer Landfill, which is the primary solid waste disposal facility that would be used to service the project site. The Kiefer Landfill is located at 12701 Keifer Boulevard, approximately four miles south of the project site. Kiefer Landfill is classified as a Class III municipal solid waste landfill facility and is permitted to accept general residential, commercial, and industrial refuse for disposal, including municipal solid waste, construction and demolition debris, green materials, agricultural debris, and other nonhazardous designated debris.

The landfill is permitted to accept a maximum of 10,815 tons per day of solid waste, with a maximum capacity of 117,400,000 cubic yards. As of 2020, the Kiefer Landfill has a remaining capacity of 112,900,000 cubic yards, and is therefore operating below permitted capacity. The estimated closure date of the Kiefer Landfill is anticipated to be 2064.[16] Per the CalRecycle Jurisdiction Diversion/Disposal Rate Summary for Rancho Cordova, the most recent (2018) annual per capita disposal rate is 4.2 pounds per day (PPD) per resident.

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[14] De Novo Planning Group. *Environmental Impact Report for The Ranch Project (SCH: 2018072011)* [pg. 3.14-3]. August 2019.

[15] Sacramento County. *Environmental Impact Report for the Sacramento Regional County Sanitation District Interceptor Master Plan 2002 (SCH: 1995012061).* November 2002.

[16] California Department of Resources Recycling and Recovery (CalRecycle). SWIS Facility Detail: Sacramento County Landfill (Kiefer) (34-AA-0001). Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2070?siteID=2507. Accessed October 2020.

Electricity and Natural Gas

The City of Rancho Cordova receives electricity from SMUD and natural gas services from Pacific Gas & Electric (PG&E). SMUD has provided electricity throughout Sacramento County since 1946, and is responsible for the combination of resources used to generate electricity for its customers. For example, SMUD is in the process of implementing the Statewide Renewable Portfolio Standard (RPS) to increase the proportion of renewable energy within its energy portfolio. PG&E owns and operates approximately 42,141 miles of natural gas distribution pipelines throughout California.[17] PG&E would provide natural gas to the project site through underground transmission lines. Existing electricity and natural gas infrastructure is undergrounded to the south of the project site.

Telecommunications

Residents in the City of Rancho Cordova subscribe to a mix of wireline providers and resellers including AT&T of California, Consolidated Communications, Frontier, Xfinity, T-Mobile, and more. Cable internet fibers are generally co-located and installed concurrently with other utility infrastructure. Within new development projects, such infrastructure is primarily installed underground. Telephone facilities in the City's Planning Area include both aerial and underground fiber and copper transmission lines. Most of the underground and aerial telephone transmission lines are generally co-located with other utilities on poles or underground trenches and are constructed in public and roadway rights-of-way.

4.9.3 REGULATORY CONTEXT

The following discussion contains a summary review of regulatory controls pertaining to public services and utilities, including federal, State, and local laws and ordinances.

Federal Regulations

The following are the federal environmental laws and policies relevant to public services and utilities.

Safe Drinking Water Act (SDWA)

The federal SDWA, which was enacted in 1974, gives the United States Environmental Protection Agency (EPA) the authority to set standards for contaminants in drinking water supplies. The EPA was required to establish primary regulations for the control of contaminants that affected public health and secondary regulations for compounds that affect the taste, odor, and aesthetics of drinking water. Accordingly, the EPA set a maximum contaminant level or treatment technique for each of the 83 contaminants in drinking water listed in the SDWA. Under the provisions of SDWA, the California Department of Health Services (DHS) has the primary enforcement responsibility. Title 22 of the California Administrative Code establishes DHS authority, and stipulates State drinking water quality and monitoring standards.

State Regulations

The following are the State environmental laws and policies relevant to public services and utilities.

[17] Pacific Gas and Electric. *Company Profile*. Available at: https://www.pge.com/en_US/about-pge/company-information/profile/profile.page. Accessed October 2020.

California Fire Code

The California Fire Code contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The Fire Code contains specialized technical regulations related to fire and life safety.

California Health and Safety Code

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, include regulations for building standards (as also set forth in the California Building Standards Code [CBSC]), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

Senate Bill 610

The California Water Code requires coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted and that planned water supplies are adequate to meet both existing demands and the demands of planned development.

Water Code Sections 10910 – 10915 (inclusive), sometimes referred to as Senate Bill (SB) 610, require land use lead agencies: 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" (WSA). The purposes of the WSA are (a) to describe the sufficiency of the purveyors' water supplies to satisfy the water demands of the proposed development project, while still meeting the current and projected water demands of customers, and, (b) in the absence of a currently sufficient supply to describe the purveyor's plans for acquiring additional water. Water Code Sections 10910 through 10915 delineate the specific information that must be included in the WSA.

As stated in CEQA Guidelines Section 15155, which reflects SB 610 requirements, any development with water demand exceeding the equivalent demand associated with 500 dwelling units is considered a "water-demand project" and is required to prepare a WSA. The proposed project would include development of 440 single-family lots and, thus, preparation of a WSA is not required for the proposed project.

Water Conservation in Landscaping Act

The Water Conservation in Landscaping Act of 2006 (Assembly Bill [AB] 1881) enacts many, but not all of the recommendations reported to the Governor and Legislature in December 2005 by the California Urban Water Conservation Council Landscape Task Force. AB 1881 requires DWR, not later than January 1, 2009, by regulation, to update the model ordinance in accordance with specified requirements, reflecting the provisions of AB 2717. AB 1881 requires local agencies, not later than January 1, 2010, to adopt the updated model ordinance or equivalent or it will be automatically adopted by statute. The bill also requires the Energy Commission, in consultation with the department, to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission

devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), adopted in 2014, requires the formation of local groundwater sustainability agencies (GSAs) that must assess conditions in their local water basins and adopt locally-based management plans. The SGMA provides substantial time (20 years) for GSAs to implement plans and achieve long-term groundwater sustainability. The DWR and the SWRCB are the two lead State agencies implementing the SGMA. The responsibilities required under the SGMA include the following:

1) Developing regulations to revise groundwater basin boundaries;
2) Adopting regulations for evaluating and implementing Groundwater Sustainability Plans (GSPs) and coordination agreements;
3) Identifying basins subject to critical conditions of overdraft;
4) Identifying water available for groundwater replenishment; and
5) Publishing best management practices for the sustainable management of groundwater.

California Integrated Waste Management Act

To minimize the amount of solid waste that must be disposed of by transformation (i.e., recycling) and land disposal, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties are required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. Solid waste plans are required to explain how each city's AB 939 plan will be integrated within the respective county plan. The plans must promote (in order of priority) source reduction, recycling and composting, and environmentally safe transformation and land disposal. Cities and counties that do not meet this mandate are subject to $10,000-per-day fines.

Senate Bill 1016

In 2007, SB 1016 amended portions of AB 939, which allows the California Integrated Waste Management Board (CIWMB) to use per capita disposal as an indicator in evaluating compliance with the requirements of AB 939. Jurisdictions track and report their per capita disposal rates to CalRecycle.

Solid Waste Reuse and Recycling Access Act

The Solid Waste Reuse and Recycling Access Act (AB 1327) requires jurisdictions to adopt ordinances requiring development projects to provide adequate storage area for collection and removal of recyclable materials.

Local Regulations and Policies

The following are applicable local regulations relevant to public services and utilities.

City of Rancho Cordova General Plan

Goals and policies from the City's General Plan related to public services and utilities are presented below.

Goal NR.8: Promote waste reduction, reuse, recycling, and composting efforts.

Policy NR.8.5: Meet state mandates for solid waste reduction and recycling. Increase recycling efforts beyond those required by state law through supporting businesses that buy and sell re-used materials, such as materials exchange centers.

Policy NR.8.7: Maintain contact with Sacramento County and Allied Waste (or its successor) regarding the capacity projections of Kiefer Landfill and Lockwood Landfill to ensure an adequate capacity in their disposal facilities for the long-term disposal needs of Rancho Cordova.

Goal NR.5: Protect the quantity and quality of the City's water resources.

Policy NR.5.1: Promote water conservation within existing and future urban uses.

Policy NR.5.3: Protect surface and ground water from major sources of pollution, including hazardous materials contamination and urban runoff.

Policy NR.5.4: Prevent contamination of the groundwater table and surface water, and remedy existing contamination to the extent practicable.

Policy NR.5.5: Minimize erosion to stream channels resulting from new development in urban areas consistent with State law.

Policy NR.5.6: Incorporate Storm Water, Urban Runoff, and Wetland Mosquito Management Guidelines and Best Management Practices into the design of water retention structures, drainage ditches, swales, and the construction of mitigated wetlands in order to reduce the potential for mosquito-borne disease transmission.

Policy NR.5.8: The City shall require groundwater impact evaluations be conducted for the Grant Line West, Westborough, Aerojet, Glenborough, Mather and Jackson Planning Areas to determine whether urbanization of these areas would adversely impact groundwater remediation activities associated with Mather and Aerojet prior to the approval of largescale development. Should an adverse impact be determined, a mitigation program shall be developed in consultation with applicable local, state, and federal agencies to ensure remediation activities are not impacted. This may include the provision of land areas for groundwater remediation facilities, installation/extension of necessary infrastructure, or other appropriate measures.

Goal ISF.2: Ensure the development of quality infrastructure to meet community needs at the time they are needed.

Policy ISF.2.1: Ensure the development of public infrastructure that meets the long-term needs of residents and ensure infrastructure is available at the time such facilities are needed.

Policy ISF.2.3: Ensure that adequate funding is available for all infrastructure and public facilities, and make certain that the cost of improvements is equitably distributed.

Policy ISF.2.4: Ensure the development of public infrastructure that meets the long-term needs of residents and ensure infrastructure is available at the time such facilities are needed.

Policy ISF.2.6: Ensure that sewage conveyance and treatment capacity are available in time to meet the demand created by new development, or are guaranteed to be built by bonds or other sureties.

Goal S.7: Design neighborhoods and buildings in a manner that prevents crime and provides security and safety for people and property.

Policy S.7.1: Use Crime Prevention Through Environmental Design (CPTED) principles in the design of projects and buildings.

Goal S.9: Reduce the probability of fire damage to all of the City's structures.

Policy S.9.2: Provide infill development with adequate off-site improvements to meet onsite fire flow requirements.

Urban Water Management Plan

In 2016, the SCWA prepared the 2015 UWMP as required by the Urban Water Management Planning Act of 1983. The UWMP serves as a long-term planning document for sustainable water supply, and includes a description of water sources, historical and projected water use, and a comparison of water supply and demand during normal and dry years. The UWMP was prepared in compliance with California Water Code, Division 6, Part 2.6, Sections 10610 through 10656, which requires every urban water supplier that provides water to over 3,000 connections to adopt and submit a management plan every five years to the DWR. The UWMP also discusses the conservation and efficient use of water in the service area, and the development and implementation of plans to assure reliable water service in the future. The UWMP contains projections for future water use, discusses the reliability of the SCWA's water supply, describes the SCWA's water treatment system, and contains a water shortage contingency plan. In addition, the UWMP contains best management practices for efficient water use.

City of Rancho Cordova Municipal Code

The City's Municipal Code standards related to public services and utilities that are applicable to the proposed project are presented below.

Title 6: Health and Sanitation

Chapter 6.32, Sanitary Sewage Systems, requires that a drainage system connect to a public sanitary sewer in every building where persons reside, congregate, or are employed. A permit is

required in order to construct, alter, or relocate a sewage disposal system in the City. Section 6.32.170 mandates that,

> "The city council shall establish a special revolving fund to be designated as the sewage connection fund. Payments shall be made out of the fund upon the demand of the director of public works to defray the costs and expenses which may be incurred by the city in doing or causing to be done the necessary work for sewage connections."

Title 15: Water and Sewers

Chapter 15.04, Sewer Use, sets standards to control the quantity and quality of wastewater that enters the public system and assure efficient operation and maintenance of sewerage facilities. The chapter also includes regulations for what discharge types are allowable in sanitary sewers. Public sewer cannot be used until a connection permit is acquired.

Title 16: Buildings and Construction

Chapter 16.83, Development Impact Fees to Finance Cost of Public Facilities, requires that development fees be charges to fund the cost of certain public facilities, such as those related to roadways, transit, parks, and libraries.

Chapter 16.92, Construction and Demolition Debris, declares the following:

> "1. The California Integrated Waste Management Act of 1989 (AB 939) requires each local jurisdiction in the state to divert a minimum of 50 percent of discarded materials away from disposal in landfills.
> 2. CALGreen requires, as part of the California Green Building Standards Code, Title 24, California Code of Regulations, that 50 percent of nonhazardous construction and demolition (C&D) debris be diverted. The diversion requirement imposed by CALGreen is subject to change.
> 3. AB 939 requires jurisdictions to submit an annual report summarizing their progress in diverting solid waste from disposal.
> 4. Senate Bill 1374 requires the annual report to include a summary of progress made in the diversion of C&D debris.
> 5. C&D debris accounts for a significant portion of the waste stream generated in the city. These materials have significant potential for waste reduction and recycling.
> 6. The reuse and recycling of C&D debris will reduce the amount of waste transported for disposal in landfills and return these materials into the economic mainstream, thereby conserving natural resources and stimulating markets for recycled and salvage materials."

In compliance with Chapter 16.92, projects must establish recycling requirements for construction debris in an effort to reduce landfill waste. Developers are required to complete and submit a Waste Management Plan and pay an applicant fee to the City's Building and Safety Division.

Title 17: Fire Prevention

Chapter 17.04 of the Municipal Code establishes and adopts the Fire Code, which is included in the 2019 CBSC, Title 24, California Code of Regulations, Part 9 (California Fire Code), incorporating the International Fire Code, 2015 Edition, with errata. The Chapter mandates that, "all construction, alteration, moving, demolition, repair, and use of any building or structure within the City shall be made in conformance with the state code and any rules and regulations promulgated pursuant thereto, including the IFC and the appendix." The SMFD has authority to enforce the Code and issue citations for any violations.

Title 22: Land Development

Chapter 22.40, Park and Recreation Dedication and Fees, mandates that a certain area of parkland shall be dedicated per number of dwelling units. The area of dedicated parkland is equal the number of dwelling units multiplied by a conversion factor that varies per dwelling type. The multiplication factor for single-family dwelling units, such as those proposed by the project, is equal to 0.01475.

If a project does not meet the parkland ratio, the developer shall be required to pay an in-lieu fee equal to the amount of land (acres) required for dedication multiplied by the fair market value (dollars/acre) of the subject property.

4.9.4 IMPACTS AND MITIGATION MEASURES

The section below describes the standards of significance and methodology utilized to analyze and determine the proposed project's potential project-specific impacts related to public services and utilities. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact related to public services and utilities is considered significant if the proposed project would:

- 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:
    - Fire protection;
    - Police protection;
    - Schools;
    - Parks; or
    - Other public facilities.
- 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;
- Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years;
- 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;
- 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; or
- Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Impacts related to storm drainage facilities are addressed in Chapter 4.6, Hydrology and Water Quality, of this EIR.

Issues Dismissed in the Initial Study

The Initial Study prepared for the proposed project (see Appendix A) determined that development of the proposed project would result in no impact or a less-than-significant impact related to resulting 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 the following public services:

- Parks; and
- Other public facilities.

For the reasons cited in the Initial Study, such impacts are not analyzed further in this EIR.

Method of Analysis

The following sections describe the methodologies employed in the Water Study and Sewer Study prepared for the proposed project by Ruggeri-Jensen-Azar & Associates, as well as the methods used to analyze impacts related to electricity, natural gas, telecommunications facilities, and solid waste. Impacts to public services (i.e., fire protection, police protection, and schools) were based primarily on the City's General Plan EIR.

Water Supplies

The Water Study prepared for the proposed project evaluated the availability of existing water supply conveyance infrastructure in the project area to serve the original 434-unit count proposed by the project. In addition, the Water Study prepared modeling to demonstrate what sized system would appropriately accommodate the resulting flows and pressures that are anticipated for the proposed project. The water system design criteria used for the model were determined using the Zone 40 Water System Infrastructure Plan Update (WSIP), which considers of the following components: water demand, peaking factors, water system materials and sizes, and water system performance criteria.

The Zone 40 WSIP determined that the average daily water demand per single-family residence in Zone 40 is 490 gallons per day (gpd)/connection. Based on the WSIP demand factors, the average daily water demand for the proposed project was estimated to by approximately 212,688 gpd (490 gpd/connection X 434 connections = 212,688 gpd), or 148 gallons per minute (gpm). Such water demand values were split and applied throughout the nodes in the model as the Average Day Demand (ADD). Based on the information presented within the WSIP, a Maximum Day Demand (MDD) peaking factor of 2.0 ADD and Peak Hour Demand peaking factor of 2.0 MDD was applied to the model.

The *Sacramento County Water Agency's 2018 Improvement Standards* specify that water distribution pipes be made of cement-lined pipe, polyvinyl chloride pipe, or ductile iron pipe. As such, the aforementioned materials were used for the modeling conducted in the Water Study. The minimum size for all distribution pipes was assumed to be eight inches in diameter.

The full water distribution system, shown in Figure 4.9-3, was modeled using Bentley WaterCAD V8i software, and the modeled outputs were compared to the County's water distribution performance goals.

Figure 4.9-3
Proposed Water Distribution System Layout



Existing pipelines that were modeled to be connected to the new system included the distribution mains in Edington Way, Thornberg Way, and Raymer Way. Water pressures were modeled at ground level, and building heights were not considered.

Wastewater

The Sewer Study prepared for the proposed project evaluated the wastewater generation associated with the project, as well as the capacity of downstream wastewater conveyance infrastructure.

The proposed project is located within the BR East Rancho Area 1 Trunk Shed area, and would receive wastewater treatment services from the Aerojet Interceptor Section 2S. The 185.3 acres of open space were not incorporated in the study because the land is not anticipated to be developed.

The project would include two points of connection to the existing wastewater system, and offsite upstream areas that would contribute to the flows produced by the proposed project do not exist.

As part of the Sewer Study, a detailed collection system was established, the major sewer sheds were defined, and the major sewer sheds were split into sub-sheds to define that areas that would contribute flows to specific nodes in the collection system. To estimate sewage flows, the area of land to be developed was multiplied by the average number of Equivalent Single-Family Dwelling Units (ESDs) per acre. The predicted volume of wastewater flows per land use area is used to determine the total number of ESDs entering each pipe system.

Sewage flows used in the model were estimated per the 2019 Sacramento Area Sewer District Standards and Specifications methodology. The model used a minimum plan density of RD-6 to assume approval of the General Plan Amendment (GPA)/Rezone. The assumptions applied in the model are presented in Table 4.9-5.

Table 4.9-5
Sewer Study Design Criteria

Category	Conditions
Development Density	Planned Development Density
Flow Generation	310 gpd/ESD
Peaking Factor	$3.5 - 1.8Q_a^{0.05}$
Velocity Criteria	Minimum 2 fps at Peak Wet Weather Flow
Hydraulic Grade Line	Maximum HGL at crown of pipe, Peak Wet Weather Flow
Friction Factor	N = 0.013
Minimum Depth	6.3’ at periphery of plan 6.3’ minimum depth at last line manhole
Minimum Slope	0.007

Source: Ruggeri-Jensen-Azar & Associates. Sewer Study for The Preserve. June 2020.

Solid Waste

Solid waste generated by the proposed project was estimated and considered with respect to the anticipated capacity at the solid waste facilities that would serve the proposed project. Sources of solid waste generation for the proposed project include demolition waste, construction material waste, and waste associated with long-term operations of the proposed residences. The U.S. EPA’s report, *Estimating 2003 Building-Related Construction and Demolition Materials Amounts*,

was used to calculate solid waste generation associated with construction and demolition of the proposed project.[18] Operational solid waste generation was calculated using the 2018 CalRecycle Jurisdiction Diversion/Disposal Rate Summary for Rancho Cordova.[19]

Natural Gas and Electricity

The natural gas and electricity discussion evaluates whether new or expanded natural gas and electrical infrastructure would be necessary to serve the proposed project. Gas and electricity demand for the project are estimated and provided separately in Chapter 5, Statutorily Required Sections, of this EIR.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

4.9-1 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection services. Based on the analysis below, the impact is *less than significant*.

The proposed project would include the development of 440 single-family residences and various associated improvements including, but not limited to, parks, landscaping, circulation improvements, and utility installation. By introducing new residences to the project area, the proposed project could increase the demand for fire protection services within the City.

The relevant CEQA threshold is whether new or physically altered stations are needed to meet response times or other performance objectives, the construction of which could cause environmental impacts. As noted previously, Rancho Cordova is serviced by the SMFD. The nearest station is Station 68, located 2.8 miles southwest of the project site. The ISO recommends that new urban developments have a fire station within 2.5 miles from residential projects when build-out exceeds 20 percent of the City. Thus, the distance between the proposed development and Station 68 would only slightly exceed the ISO-recommended distance. The SMFD has a response time goal of five minutes or less for 80 percent of calls in the City. The SMFD currently meets this goal, and the response time goal is anticipated to be feasible for servicing the proposed project given the proximity of project site to the nearest fire stations.

All structures constructed as part of the proposed project would be designed in compliance with Title 17 of the Municipal Code and all applicable provisions of the California Fire Code. Buildings would be required to include features such as smoke

[18] U.S. Environmental Protection Agency. *Estimating 2003 Building-Related Construction and Demolition Materials Amounts.* 2009.

[19] CalRecycle. *Jurisdiction Diversion/Disposal Rate Summary (2007 – Current).* Available at: https://www2.calrecycle.ca.gov/LGCentral/DiversionProgram/JurisdictionDiversionPost2006. Accessed October 2020.

alarms, fire hydrants, and fire department access to reduce potential fire hazards. The SMFD has authority to enforce the California Fire Code and issue citations for any violations. Compliance with the aforementioned standards would reduce the demand for fire protection services associated with the proposed development.

The SMFD is currently funded through development impact fees, taxes, and grants from the Capital Improvement Program. The proposed project would be subject to payment of the SMFD's Capital Fire Facilities Fee, which was established through AB 1600. The Capital Fire Facilities Fee provides the authority for SMFD to fund the full cost of providing new fire services and facilities to new development within the SMFD service area. Required payment to the SMFD would ensure that adequate fire protection facilities are available to serve the project.

For the above-discussed reasons, the proposed project would not result in substantial adverse physical effects associated with the provision of new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts. Thus, the proposed project would have a ***less-than-significant*** impact.

Mitigation Measure(s)

None required.

4.9-2 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection services. Based on the analysis below, the impact is *less than significant*.

Police protection for the project site would be provided by the RCPD, which is headquartered approximately 4.3 miles northwest of the project site. As noted previously, the project is expected to generate approximately 1,333 new residents, which could, in turn, increase demand for police protection services. The project applicant would be required to pay the City's applicable Community Facility Fees, which are used to fund new and expanded public service facilities, including police facilities, within the City's Planning Area. Payment of the Community Facility Fees would ensure that adequate police protection facilities are available to serve the project. Staff at the RCPD have confirmed that, given payment of applicable development impact fees, impacts related to police protection are not anticipated.[20]

Furthermore, the proposed project would be designed in accordance with the Safety Element of the City's General Plan. Policy S.7.1 requires that neighborhoods use CPTED principles to provide security and safety for people and property. CPTED principles include strategies such as natural surveillance and access control, which are implemented by using: adequate outdoor lighting, door and windows that look out onto streets, distinguishing property lines, including window licks and dead bolts, etc.

[20] Jeff Rodrigues, Crime Analyst, Rancho Cordova Police Department. Personal communication [phone] with Joe Baucum, Associate, Raney Planning and Management, Inc. May 11, 2021

The inclusion of the aforementioned design features would help to reduce the project's demand on police services.

Because the proposed development would be designed in compliance with Policy S.7.1 and would include payment of the applicable development impact fees, the proposed project would not result in substantial adverse effects associated with for the provision of new or physically altered police protection facilities, the construction of which could cause significant environmental impacts. Therefore, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.9-3 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools. Based on the analysis below, the impact is *less than significant*.

The project site falls within the boundaries of the FCUSD, which is comprised of two preschools, 23 elementary schools, nine middle schools, and eight high schools. As of the 2018-2019 school year, the total enrollment is 20,487 students across the FCUSD.[21] Based on the 2019 School Facility Needs Analysis, the FCUSD has a current capacity of 25,529 students.[22]

The proposed project would include residential development, and, thus, would increase the number of students attending local school facilities. The student generation estimates presented in Table 4.9-6 are based on the rates provided in the FCUSD's School Facility Needs Analysis.[23]

Table 4.9-6
Student Generation Estimates

Housing Type	# of Units	K-5 Students		6-8 Students		9-12 Students	
		Rate	New Students	Rate	New Students	Rate	New Students
Single Family	440	0.33	145	0.14	62	0.17	75
						Total New Students	**282**

Source: Folsom Cordova Unified School District Department of Facilities and Planning, 2019 School Facility Needs Analysis [pg 9], April 2019.

[21] Department of Education, California School Dashboard. *District Performance Overview: Folsom-Cordova Unified.* 2019.

[22] Folsom Cordova Unified School District Department of Facilities and Planning. *2019 School Facility Needs Analysis.* April 2019.

[23] Folsom Cordova Unified School District Department of Facilities and Planning. *2019 School Facility Needs Analysis* [pg 9]. April 2019.

As shown in the table, the proposed project is expected to result in 282 new students, which would bring the total enrollment in the FCUSD to 20,769 students (20,487 + 282 = 20,769).

The Rancho Cordova General Plan EIR concluded that the, FCUSD is operating at or near capacity for elementary and high schools, and that the school district has experienced considerable growth in the past few years. However, according to more recent data, the district is currently operating at 80.2 percent capacity, and implementation of the proposed project would bring enrollment up to 81.3 percent capacity. As such, the FCUSD has the capacity to support the increase in students resulting from the proposed project.

The project applicant would be subject to required payment of the FCUSD's development impact fees, which are used to fund new and expanded school facilities.[24] Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any "[…] legislative or adjudicative act…involving …the planning, use, or development of real property" (Government Code 65996(b)). Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be "full and complete mitigation."

Based on the above, the proposed project would not be likely to result in new capacity exceedances within FCUSD schools. In addition, the project would be subject to payment of applicable development impact fees for school facilities. Thus, the proposed project would not result in substantial adverse effects associated with the provision of new or physically altered school facilities, the construction of which could cause significant environmental impacts. Therefore, the impact would be ***less than significant***.

Mitigation Measure(s)

None required.

4.9-4 Require or result in the relocation or construction of new or expanded water, wastewater treatment, or electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. Based on the analysis below, the impact is *less than significant*.

The following sections describe the water, wastewater treatment, electric power, natural gas, and telecommunications facilities improvements that would be necessary to serve the proposed project.

Water Conveyance Infrastructure

The proposed project would include connection of new eight-inch water mains to an existing 10-inch water main located within Edington Drive. The new water lines would

[24] Folsom Cordova Unified School District. *Development Impact Fees*. Available at: https://www.fcusd.org/Page/2291. Accessed October 2020.

run throughout the drive aisles with the proposed residential development and would service all units.

The design of the new water lines would be required to comply with all *Sacramento County Water Agency's 2018 Improvement Standards*. Sacramento County sets performance standards for water distribution systems, presented in Table 4.9-7 below.

As part of the Water Study, the proposed project was modeled to evaluate the ability of the existing and proposed water conveyance infrastructure to serve the proposed project. As shown in Table 3 of the Water Study (see Appendix J), all of the County's operating goals would be met throughout the water distribution system under all conditions that were tested.

Table 4.9-7
Performance Goals for SCWA Water Distribution Systems

Operating Goal	Requirement
Peak Hour Minimum Pressure	35 pounds per square inch (psi)
Peak Hour Maximum Pressure	65 psi
Average Day Maximum Velocity	5 foot-pound-second (fps)
Peak Hour Maximum Velocity	7 fps
Peak Hour Maximum Unit Headloss	3 ft/1,000 ft
Maximum Day Demand + Fire Flow Minimum Pressure	20 psi
Maximum Day Demand + Fire Flow Maximum Velocity	10 fps

Source: Ruggeri-Jensen-Azar & Associates, Water Study, September 2018.

The modeling results demonstrate that the water conveyance infrastructure network would provide sufficient water pressure at the proposed residences. Although the Water Study primarily analyzed the water distribution system using the original unit count of 434, Ruggeri-Jensen-Azar & Associates determined that an additional six lots (a 1.4 percent increase in unit count) would have a negligible impact on the water model; therefore, the water distribution system would continue to have sufficient water pressure even with the six-unit increase, and the conclusion remains applicable.

Wastewater Infrastructure

The proposed project would include new eight-inch sanitary sewer connections to the existing eight-inch sewer lines within Edington Drive and Thornberg Way.

As part of the Sewer Study (see Appendix J), the proposed project was modeled to evaluate the ability of the existing and proposed wastewater conveyance infrastructure to serve the proposed project. Per the Sewer Study, the proposed project is expected to generate approximately 310 gpd of wastewater per dwelling unit and result in a combined Peak Wet Weather Flow of 0.365 mgd. Upstream sewer sheds do not exist. Per the modeling conducted as part of the Sewer Study, 0.210 mgd would leave the site at Node WP/MH-1, 0.155 mgd would leave the site at Node WP-6/MH-26A, and all wastewater would ultimately flow through Node DR-4 in Douglas Road. Node DR-4 has a capacity of 6.697 mgd. The proposed project would increase flows at Node DR-4 from 5.442 mgd to 5.927 mgd. As such, the wastewater generated by the

proposed project could be adequately accommodated by the existing sewer infrastructure.

Based on the results of the modeling, sewer flows generated by the proposed project would be accommodated by the downstream wastewater conveyance system, and expansion of existing infrastructure would not be required to serve the proposed project.

Electricity, Natural Gas, and Telecommunications

The project site would receive natural gas and electric service from PG&E and SMUD, respectively. The proposed project would connect to existing electrical, natural gas, and telecommunications infrastructure located to the south of the site within the neighboring subdivision.

Although the proposed project would increase the demand for natural gas service on the project site, the increase in demand would be relatively small in comparison to overall demand within the City of Rancho Cordova, and PG&E is anticipated to have adequate capacity to handle the increase in natural gas demand resulting from the proposed project. Furthermore, pursuant to the 2019 CBSC, the proposed residences would be required to include on-site renewable energy systems sufficient to meet 100 percent of the project's electricity demands; thus, any increase in electricity demand is anticipated to be met by on-site sources of electricity.

Several purveyors provide internet, telephone and other cable-related services to the City. While implementation of the proposed project would result in population growth and require the expansion of these services, most of the underground and aerial telecommunication transmission lines are generally co-located with other utilities on poles or underground trenches. As such, the existing telecommunication infrastructure would be sufficient to serve the proposed project and a need to upsize or upgrade the existing dry utilities is not anticipated.

Conclusion

Based on the above, the proposed project would not require or result in the relocation or construction of new or expanded water, wastewater treatment, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. In addition, as required by the General Plan, the project applicant would be required to pay development impact fees which would contribute towards the cost of future upgrades to public infrastructure and utilities. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.9-5 Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. Based on the analysis below, the impact is *less than significant*.

Development of the proposed residential subdivision would result in increased demand for water supplies relative to existing conditions. As noted previously, per the WSIP and the 2015 UWMP, the SCWA has not previously anticipated domestic water demands associated with the project site, given that the City's General Plan designates the site for agricultural uses.

Based on the Water Study, the proposed project is expected to result in an overall maximum day domestic water demand of 212.688 gpd, or 148 gpm, which is equivalent to approximately 239 AFY. As shown in Table 4.9-2, Table 4.9-3, and Table 4.9-4 above, per the 2015 UWMP, the SCWA has projected a surplus of at least 4,522 AFY for average year, single dry year, and multiple dry year conditions. Given the SCWA's surplus of at least 4,522 AFY, the proposed project's estimated increase in water demand, even with an additional six units included in the water model, could be accommodated by the SCWA's water supplies without new or expanded entitlements.

Based on the above, sufficient water supply would exist to serve the proposed project's operational water demand and reasonably foreseeable future development during normal, dry, and multiple dry years. In addition, as required by the General Plan, the project applicant would be required to pay development impact fees which would contribute towards the cost of future upgrades to public infrastructure and utilities, including water supply systems. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

4.9-6 Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. Based on the analysis below, the impact is *less than significant*.

Wastewater services for the proposed project would be provided by CSD-1 of the SRCSD, and wastewater from the project would be treated at the SRWTP. Based on the Sewer Study, the proposed project is expected to generate an Average Dry Weather Flow (ADWF) of 0.136 mgd (310 gpd/unit x 440 units = 136,540 gpd) and a combined Peak Wet Weather Flow of 0.365 mgd. The existing permitted capacity at the SRWTP is 181 mgd ADWF.[25] Per the SRWTP's NPDES Permit (No. CA0077682), adopted in April of 2016, the ADWF at that time was approximately 120 mgd.[26] As

[25] Sacramento Regional Community Services District. *Final Executive Summary: Sacramento Regional Wastewater Treatment Plant* [pg 7]. May 2008.
[26] California Regional Water Quality Control Board, Central Valley Region. *Order No. R5-2016-0020-01 NPDES No. CA0077682* [pg I-7]. April 2016.

such, the SRWTP was operating at approximately 63 percent of permitted capacity. Therefore, adequate capacity exists to treat the additional 0.136 mgd of ADWF that would be generated by the proposed project.

Furthermore, the project applicant would be required to pay sewer impact fees to the City, which would contribute towards the cost of future upgrades of the City's wastewater conveyance system and the SRWTP. Impact fees are intended to fund system improvements and maintenance, and new residential projects are required to pay a connection fee.[27] Required payment of sewer impact fees would ensure that the SRWTP receives adequate funding for necessary future improvements.

Based on the above, the proposed project would not result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. In addition, as required by the General Plan, the project applicant would be required to pay development impact fees which would contribute towards the cost of future upgrades to public infrastructure and utilities, including wastewater treatment systems. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required

4.9-7 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, or conflict with federal, state, and local management and reduction statutes and regulations related to solid waste. Based on the analysis below, the impact is *less than significant*.

Solid waste generated from the proposed project would be disposed of at the Kiefer Road Landfill. The landfill is located at 12701 Kiefer Boulevard, near the intersection of Kiefer Boulevard and Grant Line Road. According to the City's General Plan EIR, the Kiefer Road Landfill has a total capacity of 117 million cubic yards and is permitted to accept a maximum of 10,815 tons per day, or 3.9 million tons per year, of solid waste. The Kiefer Road Landfill is operating below permitted capacity and has a current anticipated closure date of 2064.

The proposed project would require demolition of the two on-site single-family residences and associated outbuildings in the southern portion of the project site. Such structures total approximately 12,000 square feet (sf). According to the U.S. EPA's report, *Estimating 2003 Building-Related Construction and Demolition Materials Amounts*, residential demolition results in an average of 127 pounds of waste per sf.[28] Considering the project would require demolition of 12,000 sf, the demolition activities

[27] City of Rancho Cordova. *Development Related Processes and Fees*. May 2018.
[28] U.S. Environmental Protection Agency. *Estimating 2003 Building-Related Construction and Demolition Materials Amounts.* 2009.

would generate approximately 1,524,000 lbs of solid waste. In addition, the proposed project would include construction of approximately 781,200 sf of single-family residential uses. Per the same report from the U.S. EPA, residential construction activities generate an average of 4.39 lbs/sf of waste. As such, the proposed construction activities would produce approximately 3,429,468 lbs of waste. In total, construction and demolition would generate approximately 2,406 tons of solid waste.

The construction debris estimate presented above represents a conservative analysis of the maximum potential waste production from the construction process. Under Sections 4.408 and 5.408 of the 2019 California Green Building Standards Code, applicable projects to divert at least 65 percent of all construction and demolition debris through recycling, reuse and/or waste reduction. As such, a minimum of 1,564 tons of waste would be diverted away from landfill disposal during construction.

Waste generated by the construction process would be spread over approximately two years. However, in order to provide a conservative analysis, the total estimated waste that would be generated by construction was assumed to occur during only one year. Therefore, the project's anticipated total construction waste of 600 tons was compared to the Kiefer Road Landfill's total yearly capacity and remaining yearly capacity. With the conservative assumption that construction waste occurs in a single year, the estimated waste generation would equal approximately 0.02 percent (600 tons/3,947,475 tons X 100 = 0.015) of the Landfill's total remaining annual capacity. Thus, construction waste associated with the proposed project could be accommodated by the Kiefer Road Landfill.

Once constructed, the proposed residences would generate solid waste. Per the CalRecycle Jurisdiction Diversion/Disposal Rate Summary for Rancho Cordova, the most recent (2018) annual per capita disposal rate is 4.2 PPD per resident. Given that the proposed project would house approximately 1,333 future residents, operation of the proposed project would generate approximately 5,599 lbs of waste per day (2.8 tons).

Operational waste generation of 2.8 tons per day would equal approximately 0.03 percent (2.8 tons/10,815 tons X 100 = 0.0237) of the Kiefer Road Landfill's remaining daily capacity. Therefore, the proposed project's operational waste generation could be accommodated by the existing capacity of the Kiefer Road Landfill.

It should be noted that in 2016, California achieved a Statewide residential waste diversion rate of 61 percent.[29] The diversion rate represents the percentage of the State's solid waste stream that is diverted from landfills and recycled or composted. Assuming a similar diversion rate for the City of Rancho Cordova, approximately 623.42 tons of waste (1,022 tons X 0.61 diversion rate = 623.42 tons) generated by operation of the proposed project would be diverted from the Kiefer Road Landfill annually.

[29] California Department of Resources Recycling and Recovery (CalRecycle). *California's Estimated Statewide Diversion Rates Since 1989*. Available at: http://www.calrecycle.ca.gov/lgcentral/goalmeasure/disposalrate/Graphs/EstDiversion.htm. Accessed July 2019.

Based on the above, the proposed project would not exceed the permitted capacity of the Kiefer Road Landfill in the project's construction and/or operational phases. Additionally, the proposed project would be required to abide by all aforementioned local, State, and federal regulations. As a result, the proposed project would be serviced by a landfill with adequate capacity and would not violate any relevant statutes related to solid waste disposal. Therefore, a ***less-than-significant*** impact related to solid waste would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in combination with other proposed and pending projects in the region. Refer to Chapter 5, Statutorily Required Sections, of this EIR for more detail.

4.9-8 Cumulative impacts to fire and police protection services. Based on the analysis below, the cumulative impact is *less than significant*.

The proposed project would be provided police protection services by the RCPD, and fire protection services by SMFD. The environmental effects of construction of fire and police facilities in the planning area have been considered in the technical analyses of the General Plan EIR as part of overall development of the Planning Area. The General Plan EIR concluded that buildout of the City of Rancho Cordova would result in a less-than-significant impact related to increased demand on fire protection services, provided that the proposed project complies with all existing SMFD and Sacramento County standards and guidelines. With regard to police protection services, impacts were similarly determined to be less than significant.

The proposed project would have the potential to result in increased demands for fire and police protection services at the project site. However, as discussed under Impacts 4.9-1 and 4.9-2 above, although new or physically altered facilities are not anticipated to be required, the proposed project would be subject to the payment of development impact fees to ensure that any required expansion of facilities or staffing numbers can occur. The proposed structures would be designed in compliance with all applicable provisions of the California Fire Code and would include features, such as smoke alarms, to reduce potential fire hazards. In addition, the proposed project would be designed in accordance with the safety element of the City's General Plan. Policy S.7.1 requires that certain design features be included in building and neighborhood designs to prevent crime and provide safety and security. Furthermore, the proposed project would be subject to payment of the City's applicable Community Facility Fees to support adequate provision of fire and police facilities and equipment. Similar to the proposed project, other future development projects within the City would be required by the City to pay their fair-share fees toward the provision of adequate public services and facilities.

Based on the above, a ***less than cumulatively considerable*** impact would occur related to resulting in a need for new or expanded fire and police protection facilities, the construction of which could cause significant environmental impacts.

Mitigation Measure(s)
None required.

4.9-9 Cumulative impacts to public schools. Based on the analysis below, the cumulative impact is *less than cumulatively considerable.*

Buildout of the project area would result in an increase in population and a subsequent increase in demand for public schools. As noted in the Ranch Cordova General Plan EIR, implementation of the General Plan in combination with other reasonably foreseeable regional developments proposed in eastern Sacramento County would result in a cumulative increase in student enrollment. In order to accommodate the increase in student enrollment, the FCUSD would require additional schools and related facilities.

However, SB 50 funding would partially mitigate impacts to public schools. In addition, the existing funding mechanisms, bond measures within the school district, and implementation of the Sacramento County General Plan and proposed Rancho Cordova General Plan policies and associated action items would reduce the cumulative impacts on public school facilities. Additionally, pursuant to State law, payment of statutory impact fees represents full and complete school facilities mitigation. As such, although cumulative regional development would result in an increased demand for public schools, payment of impact fees and implementation of General Plan policies would ensure that impacts would remain less than significant.

Based on the above, a ***less than cumulatively considerable*** impact would occur related to a need for new or expanded public school facilities, the construction of which could cause significant environmental impacts.

Mitigation Measure(s)
None required.

4.9-10 Cumulative impacts to utilities and service systems. Based on the analysis below, the project's incremental contribution to this cumulative impact would be *less than cumulatively considerable*.

A discussion of potential cumulative impacts on utility systems is provided below.

Water Supply
The Rancho Cordova General Plan EIR analyzed cumulative impacts to water supply and water conveyance infrastructure under Impact 4.12.3.2. As noted therein, the land uses associated with buildout of the Rancho Cordova General Plan would require considerable modifications and improvements to the existing water supply delivery

system to meet the projected water demands. Additional water treatment, storage capacity, and the extension of the existing water system, including pipelines and other transmission and conveyance infrastructure, would be required to meet the demand for the General Plan growth and other anticipated regional growth. The General Plan concluded that impacts related to water supply utilities would be cumulatively considerable and significant and unavoidable.

According to the WSIP, the Zone 40 service area would be fully built out in the year 2052. At full buildout, the water demand for Zone 40 would be 102,400 AFY. According to WSIP Table 4-3, Zone 40 has a long-term average water supply of 121,418 AFY, which would be sufficient to meet the projected water demand. Even after three dry years, the SCWA would have approximately 11,800 AFY excess water supply after meeting the demand from cumulative buildout of the service area. As such, sufficient water supplied exist to meet the demand of the proposed project in conjunction with cumulative buildout of the region.

The WSIP identifies a Capital Improvement Plan to provide the necessary infrastructure improvements throughout Zone 40 as buildout occurs. Implementation of the Capital Improvement Plan may result in environmental impacts. However, the Water Study concluded that the proposed project would not adversely affect the downstream system, and the existing infrastructure is sufficient to serve the proposed project. As such, the proposed project's incremental contribution to the cumulative impact would be less than cumulatively considerable.

Based on the above, the water conveyance infrastructure is adequately sized to accommodate cumulative development within the SCWA service area, including the proposed project, and sufficient water supplies are available to serve such cumulative development. Therefore, the project's incremental contribution to cumulative impacts related to water conveyance and water supplies would be less than cumulatively considerable.

Wastewater

The Rancho Cordova General Plan EIR analyzed cumulative impacts to wastewater treatment capacity and conveyance infrastructure under Impact 4.12.4.2. Development under the General Plan and other development planned in Sacramento County and SRCSD's service area would substantially increase cumulative demands for wastewater services and related facilities. While planned improvements to the wastewater infrastructure network have been analyzed in the General Plan EIR, future growth may require modification and expansion of currently planned wastewater facility improvements. Overall, the General Plan EIR concluded that impacts related to cumulative wastewater service demands are less than cumulatively considerable, but impacts related to infrastructure/facility expansion are cumulatively considerable and significant and unavoidable.

As discussed under Impact 4.9-4 above, wastewater generation associated with buildout of the project site was modeled by Ruggeri-Jensen-Azar & Associates. Based on the results of the modeling in the Sewer Study, implementation of the proposed project would not adversely affect the downstream sewage system, and the existing infrastructure is sufficient to serve the proposed project. The Sewer Study considered

cumulative development in the area, and noted that future upstream areas would not be served through the project site. Therefore, considering the wastewater conveyance system can adequately accommodate flows from the proposed project, and future upstream areas would not be served through the same conveyance system, it follows that the wastewater conveyance system would be able to accommodate cumulative development in the area. Any new additional development upstream of the proposed project would be subject to subsequent environmental review. Overall, the proposed project's incremental contribution to the cumulative impact would be less than cumulatively considerable.

The SRWTP currently has a permitted capacity of 181 mgd for ADWF and 400 mgd of Average Wet Weather Flows (AWWF). The SRCSD is in the process of expanding the SRWTP to accommodate 250 ADWF and maintain the 400 mgd for AWWF.[30] Per the City's General Plan EIR, projected wastewater generation rates by year 2030 are estimated to be 36.5 mgd and under buildout conditions 42.2 mgd. As such, wastewater generated from the proposed project (0.136 mgd) would constitute 0.3 percent of the wastewater treatment demand at buildout of the City's planning area. The wastewater treatment projections used in the General Plan, presented above, were determined based on population growth estimates, and land use designations were not considered. As such, even though the proposed project includes a change in land use designation, the project would be included as part of the City's planned regional growth estimated. Therefore, impacts to wastewater treatment facilities have been anticipated in the General Plan EIR. While the General Plan EIR concluded that impacts related to infrastructure/facility expansion would be cumulatively considerable and significant and unavoidable, the proposed project would be subject to payment of development fees to fund the planned Capital Improvement Program, and the project's increment contribution to the impact would be less than cumulatively considerable.

Solid Waste

The Rancho Cordova General Plan EIR analyzed cumulative impacts related to solid waste under Impact 4.12.5.2. Using the per capita solid waste generation identified and assuming implementation of mandatory reduction and diversion programs, cumulative development associated with the General Plan would generate approximately 111,804 tons of solid waste per year. The Kiefer Landfill, the Forward Landfill in Manteca, and the Lockwood Regional Landfill in Nevada would accommodate the City's Planning Area solid waste disposal demands. Such landfills would have adequate capacity to accommodate projected population growth and subsequent solid waste generation in the City's Planning Area at buildout under the General Plan. As such, the General Plan EIR concluded that implementation of the Rancho Cordova General Plan would not require additional landfill capacity, and impacts would be less than cumulatively considerable.

The proposed project would contribute construction, demolition, and operational waste to the Kiefer Landfill. As discussed above, numerous State and federal regulations exist regarding the composition and volume of solid waste being directed to landfills, as well as the amount of solid waste being diverted for recycling or reuse programs. The Kiefer Landfill currently has remaining capacity of 112 million cubic yards, and the

[30] City of Rancho Cordova. *City of Rancho Cordova General Plan Environmental Impact Report* [pg 4.12-47]. June 2006.

current permitted capacity is anticipated to allow operation of the landfill to continue until the year 2064. The solid waste attributable to the proposed project would not be considered substantial considering the landfill's existing capacity of 800 tons per day and the remaining capacity of 112 million cubic yards. Therefore, the proposed project in combination with future buildout of the City's Planning Area would not result in a significant cumulative impact related to solid waste.

Energy, Natural Gas, and Telecommunications

The Rancho Cordova General Plan EIR analyzed cumulative impacts related to electrical, telephone, and cable services under Impact 4.12.8.2. As noted therein, the local Cosumnes Power Plant and Upper American River Project would ensure a guaranteed and adequate long-term energy supply to meet buildout conditions in the City's Planning Area. In addition, PG&E has also indicated that it has adequate natural gas supply and would extend infrastructure, as needed, to serve the growth anticipated under cumulative conditions. Overall, the General Plan EIR concluded that impacts related to energy, natural gas, and telecommunications would be less than cumulatively considerable.

The project would receive electricity from SMUD and natural gas from PG&E. Energy use associated with operation of the proposed project would be typical of residential uses requiring electricity and natural gas for interior and exterior building lighting, heating, ventilation, and air condition (HVAC), electronic equipment, machinery, appliances, security systems, and more.

The 2019 CBSC requires that new single-family residences include solar panels sufficient to generate 100 percent of the residents' electricity demand. As such, the operational demand for grid energy from SMUD associated with the proposed project would be zero kWh/hr. Thus, the project would not result in a net increase in electricity demand, and would not contribute to electricity demand associated with cumulative development under the General Plan.

Based on the air quality modeling prepared as part of Chapter 4.1, Air Quality, Greenhouse Gas Emissions, and Energy, of this EIR, the project's natural gas consumption would total approximately 10,654,300 kBTU/yr, or 106,568 therms. The Countywide consumption of natural gas in 2018 was 194 million therms.[31] Thus, the project would account for less than one percent of the County's total usage. Because the proposed project would increase natural gas demand by a relatively nominal percentage, the proposed project's incremental increase in natural gas consumption would not result in a cumulatively considerable increase in demand in combination with future buildout of the City.

While cumulative development within the City of Rancho Cordova would increase demand on the City's telecommunications service providers (i.e., Comcast, AT&T, etc.), such services are readily scalable and would be expanded as necessary to accommodate future growth. Thus, cumulative impacts related to electricity, natural gas, and telecommunications would be less than significant.

[31] California Energy Commission. *Gas Consumption by County: Sacramento County, Residential Sector, Year 2018*. Available at: https://ecdms.energy.ca.gov/gasbycounty.aspx. Accessed January 24, 2020.

Conclusion

The proposed project, in conjunction with buildout of the City's Planning Area, would increase demand on utilities in the area and have the potential to result in a significant cumulative impact. However, this analysis has demonstrated that the proposed project's incremental contribution to this cumulative impact would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)

None required.

4.10 Transportation

4.10 TRANSPORTATION

4.10.1 INTRODUCTION

The Transportation chapter of the EIR addresses the existing and cumulative transportation conditions associated with the development of the proposed project. The analysis includes consideration of vehicle traffic impacts on roadway capacity, circulation, transit, and bicycle and pedestrian facilities, as well as vehicle miles travelled (VMT). Where development of the proposed project would conflict with applicable policies or guidelines, mitigation measures are identified. The information contained within this chapter is primarily based on the Traffic Impact Analysis (TIA),[1] Vehicle Miles Traveled (VMT) Evaluation,[2] Supplemental Analysis,[3] and The Preserve Centennial Drive Considerations Memorandum (Centennial Drive Memorandum)[4] prepared for the proposed project by Kimley-Horn (see Appendix K), as well as the City of Rancho Cordova General Plan,[5] and the City of Rancho Cordova General Plan EIR.[6]

4.10.2 EXISTING ENVIRONMENTAL SETTING

The following setting information provides an overview of the existing conditions of the project site and surrounding area in relation to the existing transportation system within the project region, including the roadway network, transit, bicycle and pedestrian facilities.

Regional Setting

The project region is primarily characterized by a rural setting. The region includes agricultural areas, grasslands, wetlands, and valley oaks. Surrounding land uses include the Camden at Somerset Ranch residential subdivision directly to the south, vacant agricultural lands and a Teichert Aggregates Aggregate/Asphaltic Concrete site across Grant Line Road to the east, two single-family residences and industrial/open space to the north, and vacant land approved for the development of the Rio Del Oro residential community immediately adjacent to the west.

Regional access to the project area is provided by U.S. Route 50 (US 50). The portion of US 50 that runs through the City of Rancho Cordova connects to the City of Sacramento to the west and the County of El Dorado to the east.

Project Setting

Currently, the 279.3-acre project site contains two single-family residences and associated outbuildings on the southern portion of the site. An orchard is located within the northeastern portion of the site. A third single-family residence and associated outbuildings is located in the northwestern portion of the site. The remainder of the site consists primarily of non-native grasses, with scattered trees located in the vicinity of the existing residences and associated access roads. The site is characterized by moderate rolling hills and flatlands interspersed with seasonal

1 Kimley-Horn. *Traffic Impact Analysis for The Preserve, City of Rancho Cordova, California.* November 4, 2020.
2 Kimley-Horn. *The Preserve, Vehicle Miles Traveled (VMT) Evaluation*. August 16, 2021.
3 Kimley-Horn. *Supplemental Analysis for Six Additional Units.* February 8, 2021.
4 Kimley-Horn. *Memorandum: The Preserve Centennial Drive Considerations*. August 16, 2021.
5 City of Rancho Cordova. *Rancho Cordova General Plan*. Adopted June 26, 2006.
6 City of Rancho Cordova. *Rancho Cordova General Plan Environmental Impact Report*. June 2006

drainage corridors and wetlands. Additionally, Morrison Creek runs northeast to southwest through the project site. The elevation of the site ranges from 210 to 250 feet above mean sea level.

Access to the project site is provided by way of Raymer Way and the neighborhood roadways associated with the Camden at Somerset Ranch residential subdivision directly to the south. The following are descriptions of the primary roadways in the vicinity of the project site.

United States Route 50

US 50 is an east-west interstate facility located approximately five miles from the proposed project. US 50 connects the City of Rancho Cordova to the City of Sacramento to the west and the County of El Dorado to the east. Primary access to the project site from US 50 is provided at the Sunrise Boulevard, Zinfandel Drive and Mather Field Road interchanges. Near Zinfandel Drive, US 50 carries approximately 180,000 vehicles per day with five lanes in each direction and a speed limit of 65 miles per hour (mph) within the project vicinity.

State Route 16

State Route (SR) 16 is an expressway connecting the County of Amador and County of Sacramento, along the southern edge of the City of Rancho Cordova limits and connects with US 50 west of the project site. The expressway is also designated as Jackson Road in the project vicinity; however, for the purposes of this chapter, the roadway is cited as SR 16. South of the project site, between Sunrise Boulevard and Grant Line Road, SR 16 carries approximately 13,000 vehicles per day with one lane in each direction and a speed limit of 55 mph within the project vicinity.

Sunrise Boulevard

Sunrise Boulevard is a north-south arterial, connecting the project site to north Rancho Cordova and the County of Placer. Sunrise Boulevard is a six-lane roadway with a speed limit of 45 mph within the project vicinity.

Zinfandel Drive

Zinfandel Drive is a north-south arterial, connecting the project site to US 50, as well as the commercial, industrial, and residential areas northwest of the project site. Zinfandel Drive is a four-lane roadway with a speed limit of 45 mph within the project vicinity.

Raymer Way

Raymer Way is a local roadway adjacent to the project site and provides access to Grant Line Road to the east. Raymer Way is a two-lane roadway.

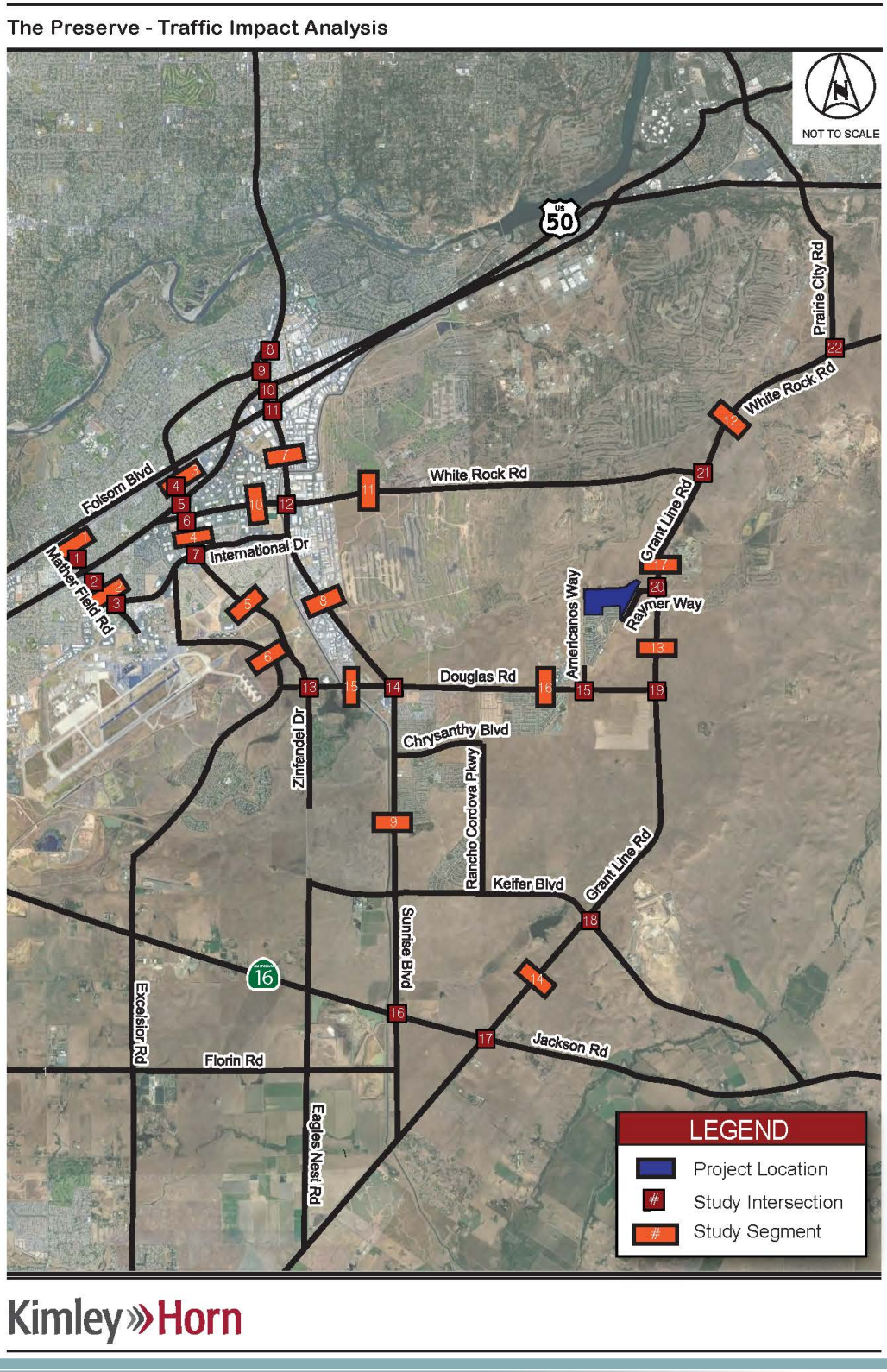
Americanos Boulevard

Americanos Boulevard is a local roadway that would provide access to the project site from the south. The roadway is a two-lane roadway that would serve as a connection between the project site and Douglas Road.

Study Area

The following intersections and roadway segments were selected for analysis in the TIA based on the project location, estimates of project-generated traffic, and locations of planned roadways in the project vicinity (see Figure 4.10-1).

Figure 4.10-1
Study Area



Intersections

1. Mather Field Road/US 50 Westbound Ramps;
2. Mather Field Road/US 50 Eastbound Ramps;
3. Mather Field Road/International Drive;
4. Zinfandel Drive/US 50 Westbound Ramps;
5. Zinfandel Drive/US 50 Eastbound Ramps;
6. Zinfandel Drive/White Rock Road;
7. Zinfandel Drive/International Drive;
8. Sunrise Boulevard/Zinfandel Drive;
9. Sunrise Boulevard/US 50 Westbound Ramps;
10. Sunrise Boulevard/US 50 Eastbound Ramps;
11. Sunrise Boulevard/Folsom Boulevard;
12. Sunrise Boulevard/White Rock Road;
13. Douglas Road/Zinfandel Drive;
14. Douglas Road/Sunrise Boulevard;
15. Douglas Road/Americanos Boulevard;
16. SR 16/Sunrise Boulevard;
17. SR 16/Grant Line Road;
18. Grant Line Road/Kiefer Boulevard;
19. Grant Line Road/Douglas Road;
20. Grant Line Road/Raymer Way;
21. Grant Line Road/White Rock Road; and
22. White Rock Road/Prairie City Road.

Roadway Segments

1. Mather Field Road, between Folsom Boulevard and US 50 Westbound Ramps;
2. Mather Field Road, between US 50 Eastbound Ramps and International Drive;
3. Zinfandel Drive, between Folsom Boulevard and US 50 Westbound Ramps;
4. Zinfandel Drive, between White Rock Road and International Drive;
5. Zinfandel Drive, between International Drive and Douglas Road;
6. Mather Boulevard, between Femoyer Street and Douglas Road;
7. Sunrise Boulevard, between Folsom Boulevard and White Rock Road;
8. Sunrise Boulevard, between White Rock Road and Douglas Road;
9. Sunrise Boulevard, between Douglas Road and SR 16;
10. White Rock Road, between Zinfandel Drive and Sunrise Boulevard;
11. White Rock Road, between Sunrise Boulevard and Grant Line Road;
12. White Rock Road, between Grant Line Road and Prairie City Road;
13. Grant Line Road, between Raymer Way and Douglas Road;
14. Grant Line Road, between Douglas Road and SR 16;
15. Douglas Road, between Mather Boulevard and Sunrise Boulevard;
16. Douglas Road, between Sunrise Boulevard and Grant Line Road; and
17. Grant Line Road, between White Rock Road and Raymer Way.

Vehicle Miles Traveled

Per the CEQA Guidelines, VMT is the primary metric used to identify transportation impacts under CEQA. VMT is a measure of the total amount of vehicle travel occurring on a given roadway system.

In 2013, Senate Bill (SB) 743 was passed to amend Sections 65088.1 and 65088.4 of the Government Code, amend Sections 21181, 21183, 21186, 21187, 21189.1, and 21189.3 of the Public Resources Code (PRC), to add Section 21155.4 to the PRC, to add Chapter 2.7 (commencing with Section 21099) to Division 13 of the PRC, to add and repeal Section 21168.6.6 of the PRC, and to repeal and add Section 21185 of the PRC, relating to environmental quality. As a result of SB 743, as discussed in further detail below, local jurisdictions may no longer rely on vehicle level of service (LOS) and similar measures related to delay as the basis for determining the significance of transportation impacts under CEQA. Thus, consistent with the CEQA Guidelines, VMT is the primary metric used to identify transportation impacts to roadway systems within this chapter.

For residential development projects requiring a detailed evaluation of VMT, this analysis relied on guidance from the California Governor's Office of Planning and Research (OPR) to establish the threshold for determination of a significant VMT impact as 15 percent below the regional average VMT per capita. The VMT analysis prepared for the proposed project included the existing average VMT per capita for the entire Sacramento Area Council of Governments (SACOG) region. The existing VMT per capita average for the SACOG region was calculated using the same methodology used to calculate the proposed project's average VMT per capita, which is discussed in the Method of Analysis section. As shown Table 4.10-1, the existing average VMT per capita in the SACOG region is 23.2.

Table 4.10-1
Existing VMT per Capita in the SACOG Region

Trip Type	Internal VMT	External VMT	Total VMT
Origin	18,765,997	8,788,214	27,554,210
Destination	18,765,997	8,788,214	27,554,210
Total	**37,531,994**	**17,576,427**	**55,108,421**
Total Population			**2,376,311**
VMT per Capita			**23.2**

Source: Kimley-Horn. The Preserve, Vehicle Miles Traveled (VMT) Evaluation. August 16, 2021.

Transit System

Sacramento Regional Transit (SRT) offers multiple transit services with stops in the City of Rancho Cordova. SRT's Light Rail trains begin operation at 4:00 AM with service every 15 minutes during the day Monday through Friday and every 30 minutes in the evening and weekends. SRT has four stops in the City on the Gold Line, which runs along Folsom Boulevard Folsom to Downtown Sacramento and connects with the Green and Blue lines for easy access to other areas in the Sacramento region. The Gold and Blue lines operate until midnight on weekdays, and 10:30 PM on weekends. The Green Line only operates Monday through Friday.

SRT's Bus Service also runs through the City and includes five bus routes. The routes connect to the cities of Carmichael, Fair Oaks, Citrus Heights, and Rosemont. All bus routes connect with light rail stops. The routes nearest to the project site include Route 175, running along Douglas Road and Sunrise Boulevard; Route 176, running along Rancho Cordova Parkway, Kiefer Boulevard, and Sunrise Boulevard; and Route 177, running along Zinfandel Drive.

Bicycle and Pedestrian System

Per the City of Rancho Cordova Bicycle Master Plan,[7] the City has 235 miles of roadways, 17 miles of on-street bikeways, and 14 miles of off-street paths. Key regional connections include the American River Parkway Bicycle Trail that runs along the river at the north edge of the City, extending 31 miles from the Discovery Park in Sacramento to the Folsom Reservoir.

The Bicycle Master Plan classifies bike paths throughout the City into three types:[8]

- Class I – Off-street facilities dedicated exclusively for use by bicyclists, pedestrians, and in some cases, equestrians and other non-motorized travel such as roller skating and skateboarding;
- Class II – Delineated bike lanes, which comprise a portion of a street and are meant for bicyclists; and
- Class III – Bike routes, where the travel lane is shared by drivers and bicyclists and are generally designated on roadways with low levels of motor vehicle traffic where bicyclists may share the travel lane.

Due to the rural nature of the project site, existing bicycle and pedestrian facilities are minimal in the immediate vicinity of the site. US 50 does not offer paths designed to accommodate bikes or pedestrians, as the roadway's purpose is to serve high-speed vehicular travel. SR 16 includes shoulders on both sides of the expressway that could accommodate bicyclists; however, the expressway is not officially designated as a bike path in the Bicycle Master Plan. Sunrise Boulevard features sidewalk paths on both sides for pedestrian use; however, the roadway does not include officially designated bike paths. Within the stretch of roadway inside the City limits, Zinfandel Drive serves as a Class II bike path and offers shoulders outside the City limits that could accommodate bicyclists. Raymer Way does not include bike paths or sidewalks. The small stretch of Americanos Boulevard that connects to Edington Drive includes bike paths along both sides of the roadway, and the roadway also includes a sidewalk on the northbound side.

4.10.3 REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the review of transportation under the CEQA process.

Federal Regulations

Federal regulations applicable to transportation within the project area do not exist.

State Regulations

The following are the State environmental laws and policies relevant to transportation.

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining all State-owned roadways in Sacramento County.

[7] City of Rancho Cordova. *City of Rancho Cordova Bicycle Master Plan*. Available at: https://www.cityofranchocordova.org/home/showdocument?id=11416. Accessed January 2021.

[8] While not described in the City of Rancho Cordova Bicycle Master Plan, a Class IV Bikeway, or a separated bikeway or cycle track, is a bikeway for the exclusive use of bicycles and includes a separation between bicycles and vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the State highway system within the County need to be approved by Caltrans. The County does not have the ability to unilaterally make improvements to the State highway system. The Caltrans Traffic Analysis Framework and Focused Transportation Impact Study Guide outlines when a VMT impact study is needed and what should be included in the scope of the study. US 50 and SR 16 are the facilities within the project vicinity that are under the oversight of Caltrans.

Caltrans has completed transportation or route concept reports for a number of State freeways and highways in the County. The reports identify long-range improvements for specific State freeway and highway corridors and establish the "concept," or desired, LOS for specific corridor segments. The reports also identify long-range improvements needed to bring an existing facility up to expected standards needed to adequately serve 20-year traffic forecasts. Additionally, the reports identify the ultimate design concept for conditions beyond the immediate 20-year design period.

Senate Bill 743

SB 743 (Stats. 2013, ch. 386) requires the Governor's Office of Planning and Research (OPR) to establish new metrics for determining the significance of transportation impacts of projects within transit priority areas (TPAs) and allows OPR to extend use of the metric beyond TPAs. In response, OPR released the *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which identified VMT as the preferred transportation impact metric. OPR applied their discretion to require the use of VMT statewide. SB 743 requires that as of April 27, 2019, vehicle LOS and similar measures related to delay shall not be used as the sole basis for determining the significance of transportation impacts. Determination of impacts based on VMT is required Statewide as of July 1, 2020.

CEQA Guidelines Section 15064.3

Section 15064.3 of the CEQA Guidelines was added in 2018 to address the requirements of SB 743 and the OPR's *Technical Advisory on Evaluating Transportation Impacts in CEQA*. Section 15064.3 states the following:

> (a) Purpose.
>
> This section describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, "vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact.
>
> (b) Criteria for Analyzing Transportation Impacts.
>
> (1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared

to existing conditions should be presumed to have a less than significant transportation impact.

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

(c) Applicability.

The provisions of this section shall apply prospectively as described in section 15007. A lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide.

Technical Advisory on Evaluating Transportation Impacts in CEQA

The OPR's *Technical Advisory on Evaluating Transportation Impacts in CEQA* includes potential significance thresholds for different types of land use projects and transportation projects. Distinct threshold recommendations are provided for residential, office, and retail projects. Such uses tend to have the greatest influence on VMT. Lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types. In developing thresholds for other project types, the *Technical Advisory on Evaluating Transportation Impacts in CEQA* directs lead agencies to consider the purposes described in Section 21099 of the PRC and regulations in the CEQA Guidelines on the development of thresholds of significance (e.g., CEQA Guidelines Section 15064.7). The *Technical Advisory on Evaluating Transportation Impacts in CEQA* suggests that lead agencies may screen out VMT impacts using project size, map-based approaches to low-VMT areas, transit availability, and provision of affordable housing.

Local Regulations

The following are the regulatory agencies and regulations pertinent to the proposed project on a local level.

Sacramento Area Council of Governments VMT Threshold

SACOG has two recommended methods for developing a project-specific VMT estimation:

- Method 1: Use of a "regional" transportation model, either by running the model directly to estimate VMT with and without the project (for large projects) or through use of screening methodologies (for small projects). The transportation model used for VMT estimation could either be the SACOG regional model (SACSIM19) or one of the many variants of the regional model developed by local agencies to provide more detailed analysis within their jurisdictions. If one of the local models is used, it should be sufficiently documented and maintained; or
- Method 2: Use of a customized spreadsheet or web-based tool for a specific study area or jurisdiction that uses information from a regional transportation model to provide VMT analysis.

VMT per capita includes all vehicle "tours" (both work/commute vehicle tours and non-work vehicle tours) that start and end at residential units. The VMT from these tours are grouped and summed to the home location of those tours. The VMT for each home is then summed for all homes in a particular area and divided by the total population of that area to arrive at VMT per capita.

SACSIM19 model is a "tour-based" Travel Demand Model (TDM). The vehicle tours estimated by SACSIM19 that begin and end at home include intermediate stops. For example, a work/commute vehicle tour could include stops on the way to work to drop a child at school and get coffee and a stop on the way home to go to a gym or get groceries. A non-work vehicle tour that begins and ends at home can also include more than one stop. The VMT from these tours must include the full mileage of the entire round-trip tour including all stops based on the City's focused version of the SACSIM19 model, both for Method 1 or Method 2 described above.

Tours made by a household resident that do not begin or end at home (called "business tours") are not included in the VMT per capita estimate. Such tours that begin and end at a work site can include trips for lunch or personal business but also job-related tours, such as deliveries, business meetings etc. These "business tours" are not included for the following reasons:

- The amount of business tours made by individuals can vary more based on their job type than their residential location. In the regional model, the number and length of those tours can vary greatly;
- Including business tours would require that all projects, including small to medium size residential projects, be evaluated using SACSIM19. Excluding business tours from VMT per capita allows use of Method 2 described above. Such methods can involve use of typical Institute of Transportation Engineers-based trip generation estimates (adjusted for relevant factors) along with full tour lengths from SACSIM19 that can be provided by the City for traffic analysis zone (TAZ); and
- The trip generation aspect of the selected method is equivalent to use of only "home-based trips," which is recommended by the OPR Technical Advisory when the regional model is "trip-based". However, by using the full length of home-based tours from SACSIM19, the selected method provides a more accurate estimate of VMT.

Using the State's guidance, absent other substantial evidence, thresholds should be set to 15 percent below the average VMT per capita. Per the VMT Evaluation prepared for the proposed

project, the average VMT per capita in the SACOG region, calculated using the same methodology used to determine the project's average VMT per capita, is 23.2. Therefore, the applicable threshold for project-specific VMT within the SACOG region would be 19.7 VMT per capita.

City of Rancho Cordova General Plan

The following goals and policies related to transportation are applicable to the proposed project:

Goal C.1 Develop a roadway system that accommodates future land uses at the City's desired level of service, provides multiple options for travel routes, protects residential areas from excessive traffic, coexists with other travel modes, and contributes to the quality of the City's residential, commercial, office, and industrial areas.

Policy C.1.1 Implement the Circulation Plan with the Roadway System and Sizing Diagram, shown as Figure C-1 (in the General Plan), as a modified grid network.

Policy C.1.2 Seek to maintain operations on all roadways and intersections at Level of Service D or better at all times, including peak travel times, unless maintaining this Level of Service would, in the City's judgment, be infeasible and/or conflict with the achievement of other goals. Congestion in excess of Level of Service D may be accepted in these cases, provided that provisions are made to improve traffic flow and/or promote non-vehicular transportation as part of a development project or a City-initiated project.

Policy C.1.3 Recognize that regional traffic beyond the City's control, as well as circulation system decisions made prior to incorporation or by other agencies, will make it infeasible to achieve the City's desired Level of Service on all roadways. Subject development projects which affect these roadways to the provisions of Policy C.1.2 to provide offsetting improvements to the vehicular and/or non-vehicular transportation system.

Policy C.1.4 Discourage the creation of private roadways, except when the roadways are constructed to public roadway standards and private maintenance is assured, or are used in an affordable residential development.

Policy C.1.5 Design the circulation system serving the City's industrial areas to safely accommodate heavy truck traffic.

Policy C.1.6 Strongly discourage the use of cul-de-sacs on local roads, except where they are necessary due to site-specific concerns, such as habitat areas, that preclude construction of through routes. When cul-de-sacs are used, they should include bicycle and pedestrian connections to trail systems or adjacent major or connector streets.

Policy C.1.7 Require the installation of traffic pre-emption devices for emergency vehicles (police and fire) at all newly constructed intersections and seek to retrofit all existing intersections to incorporate these features.

Policy C.1.8 Ensure that where traffic calming devices or techniques are employed, adequate access is provided for police and fire vehicles.

Policy C.1.9 In an effort to reduce automobile traffic and congestion and increase use of other travel modes, support the use of trip reduction programs.

Policy C.1.10 Encourage maximum block lengths that provide multiple vehicular paths and increase pedestrian circulation around the City at the neighborhood level. The City's preferred block length is less than 600 feet. Block lengths between 600 and 800 feet may be acceptable on a case-by-case basis, and block lengths greater than 800 feet are generally considered unacceptable.

Goal C.2 Establish an extensive, complete, smooth, interconnected, and continuous pedestrian and bicycle network that is a safe and attractive option for local or regional trips or recreation and that connects to the City's neighborhoods, parks and schools, employment areas, and retail centers.

Policy C.2.1 Create a system of on- and off-street trails and multi-use paths, as generally illustrated on Figure C-2 (in the General Plan), that are used for walking and bicycling and that are attractive, natural, and safe transportation corridors.

Policy C.2.3 In designing development projects, design for the pedestrian first.

Policy C.2.4 Provide sidewalks throughout the City. Meandering sidewalks are discouraged, except where necessary to accommodate site-specific features such as trees or habitat.

Policy C.2.5 Provide safe and convenient bicycle access to all parts of the community.

Policy C.2.6 Provide on-street bike lanes along all connector roadways and on local and major roadways when necessary to provide for interconnected routes. On-street bike routes may be provided on local, connector, and major roadways as deemed necessary by the City.

Policy C.2.8 Promote bicycling and walking as a safe and attractive activity. Educate all road users to share the road and interact safely.

Policy C.2.10 Create safe and efficient at-grade crossings of roadways for pedestrian and bicyclists.

Goal C.3 Establish a viable transit system that connects all parts of the City and links with regional destinations.

Policy C.3.1 Advocate and develop transit services which meet the needs of residents and employees in Rancho Cordova.

Policy C.3.2 Maintain and improve access and mobility for seniors, youth, and the disabled with programs that meet their mobility needs.

Policy C.3.3 Promote the integration of transit facilities into new development.

Goal C.5 Fund the circulation system adequately to provide all desired services.

Policy C.5.2 Require proposed new development projects to analyze their contribution to increased traffic and to implement improvements necessary to address their impact on facilities not covered by a fee program.

Policy C.5.3 Assess fees sufficient to cover the fair share portion of all new development impacts on the local and regional transportation system.

Goal C.6 Provide a circulation system that is properly maintained and maximizes safety for all users.

Policy C.6.1 Maintain and repair streets, trails, and other circulation components according to priorities established on an annual basis.

City of Rancho Cordova Capital Improvement Plan

The 2019-2024 Capital Improvement Plan (CIP) represents the fiscal year (FY) 2019-2020 and FY 2020-2021 Capital Improvement Budgets and the three-year plan for FY 2021-2022 to FY 2023-2024. The CIP provides program summary information for the City's various capital improvement funding programs, as well as project summary information (revenue and expenditures) for the specific projects selected for implementation during the CIP period.

The currently adopted CIP allocated a total of $98.483 million in FY 2019-2020 and $35.455 million in FY 2020-2021. The amounts consist of new funding and reallocated funds for existing projects that are crossing fiscal years. Some of the funding allocated to FY 2018-2019 is expected to be needed to be reallocated (rolled over) to FY 2019-2020 as capital projects usually cross fiscal years. The reallocation of prior funding is to the same projects previously approved. Some of the projects are currently under construction and estimates have been made as to how much will be carried over to the next fiscal year. Funding for current planned projects from FY 2019/20 through Post FY 2023/24 total $495.568 million.

City of Rancho Cordova Transportation Impact Guidelines

The City's *Transportation Impact Guidelines* document establishes protocol for transportation impact studies and reports. At the time of this study, the City had not formally revised its guidelines

to address the requirements of SB 743. As such, Kimley-Horn relied heavily on OPR's *Technical Advisory on Evaluating Transportation Impacts in CEQA* for this analysis.

The requirements to prepare a CEQA transportation VMT analysis apply to all land development projects, except for those that meet at least one of the VMT-related criteria described in OPR's guidance.

4.10.4 IMPACTS AND MITIGATION MEASURES

The standards of significance to be used in identifying transportation impacts are presented below. The standards are based on OPR guidance. In addition, the methods used to analyze the impacts of the project on the roadway, bicycle, pedestrian, and transit systems are provided in this section. A discussion of the project's impacts, as well as mitigation measures where necessary, are also presented.

Standards of Significance

The significance criteria used for this analysis were developed from Appendix G of the CEQA Guidelines. A transportation impact is considered significant if the proposed project would:

- Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;
- Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b);
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- Result in inadequate emergency access.

Method of Analysis

Documents referenced to prepare this chapter include a TIA and VMT Evaluation prepared for the project by Kimley-Horn. The methodology used within both documents is summarized below.

Level of Service

Pursuant to CEQA Guidelines, VMT is the primary metric used to identify transportation impacts to roadway systems within this chapter. However, in order to analyze the proposed project's compliance with a program, plan, ordinance, or policy addressing the circulation system as outlined in the General Plan's Circulation Element, the analysis below will incorporate LOS. LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity.

The TIA's analysis of LOS was performed in accordance with the County of Sacramento's traffic study guidelines and standards established by the Circulation Element of the City's General Plan. The TIA based its conclusions on the following thresholds of significance:

- Roadways/Signalized Intersections: A project is considered to have a significant effect if it would:
    - Result in a roadway or a signalized intersection operating at an acceptable LOS to deteriorate to an unacceptable LOS; or
    - Increase the V/C ratio by more than 0.05 at a roadway or at a signalized intersection that is operating at an unacceptable LOS without the project.

- Unsignalized Intersections: A project is considered to have a significant effect it if would:
    - Result in an unsignalized intersection movement/approach operating at an acceptable LOS to deteriorate to an unacceptable LOS, and also cause the intersection to meet a traffic signal warrant; or
    - For an unsignalized intersection that meets a signal warrant, increase the delay by more than five seconds at a movement/approach that is operating at an unacceptable LOS without the project.

It should be noted that the TIA's analysis was based on subdivision of the project site into 434 lots. Subsequent to the preparation of the TIA, the applicant modified the project to include six additional lots. A Supplemental Analysis was prepared for the proposed project with the additional six units, which determined that the proposed project's 440 lots would not compromise or deteriorate LOS to an extent that would alter the conclusions in the TIA. Therefore, the TIA's analysis remains applicable. Further information on the methodology incorporated as part of the LOS analysis is included in the TIA (see Appendix K).

Project Vehicle Miles Travelled

Section 15064.3 of the CEQA Guidelines provides specific considerations for evaluating a project's transportation impacts. Per Section 15064.3, analysis of VMT attributable to a project is the most appropriate measure of transportation impacts. While changes to driving conditions that increase intersection delay are an important consideration for traffic operations and management, the method of analysis does not fully describe environmental effects associated with fuel consumption, emissions, and public health. Section 15064.3(3) changes the focus of transportation impact analysis in CEQA from measuring impact to drivers to measuring the impact of driving.

OPR's *Technical Advisory on Evaluating Transportation Impacts in CEQA* provided recommendations on many aspects of conducting a CEQA transportation analysis using VMT; however, OPR's guidance was not comprehensive and some key decisions were left for lead agencies to determine. In the absence of formally adopted thresholds and screening criteria, this study followed OPR's technical advisory to the greatest extent.

For residential development projects requiring a detailed evaluation of the VMT produced by the project, the threshold for determination of a significant VMT impact of 15 percent below the regional average of VMT per capita was applied. Consistent with OPR guidance, residential development projects exceeding the threshold carry a significant impact.

Calculating VMT per Capita

VMT per capita is determined using the City's adopted TDM, which is a focused version of SACOG's adopted SACSIM19 regional model. As part of the "SB 743 Implementation Tools Project," SACOG has two recommended methods for project-specific VMT estimation: Method 1 and Method 2, described above.

The VMT Evaluation for the proposed project used the City's version of SACOG's SACSIM19 model with a base year of 2016. A TAZ representing the project area with no other land use was used to isolate the proposed project from all surrounding land uses. The 440 residential units, as planned for the proposed project, were added to the project's TAZ to represent the project. Using socioeconomic characteristics of developments in the immediate vicinity of the project to develop

a profile of the households and persons expected to inhabit the proposed project, a population of 1,333 was estimated.

Using the output trip table from the TDM, automobile trips either starting or ending in the proposed project were selected. These trips were factored based on the auto occupancy; single-occupancy trips were multiplied by one, two-person vehicle trips were multiplied by 0.5, and three-or-more-person trips were multiplied by 0.3. Each trip was multiplied by the model-determined distance based on the model's skim matrix determining the distance between each TAZ during the peak periods to determine the trip's VMT. Each trip's VMT was totaled to determine the total internal-internal VMT related to the proposed project. External-internal and internal-external VMT was calculated based on the methodologies outlined in OPR's guidance. A script file provided by SACOG and included in SACOG's model for VMT post-processing was run, which determined the VMT for trips that either started or ended outside of the model area by TAZ. As the project was separated into its own TAZ, the VMT for the project's TAZ was added to the internal-internal total VMT to determine the total VMT associated with the proposed project. The total VMT was then divided by the population of the proposed project to determine a VMT per capita associated with the proposed project.

VMT Thresholds

As discussed above, the OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA* recommends that lead agencies establish project-specific thresholds for VMT analysis. Per Section 15064.3(b)(3) of the CEQA Guidelines, a lead agency has discretion to choose the most appropriate methodology to evaluate a project's VMT, including whether to express the change in absolute terms, per capita, per household or in any other measure.

The VMT per capita average for the SACOG region was calculated using the same methodology used to calculate the proposed project's average VMT per capita. As detailed in Table 4.10-1, the average VMT per capita in the SACOG region is 23.2. Using the State's guidance, absent other substantial evidence, thresholds should be set 15 percent below the average VMT per capita. Thus, the threshold for the SACOG region is 19.7 VMT per capita.

Cumulative VMT Analysis

Increasingly, the comparison of Existing and Existing Plus Project VMT analysis scenarios has been recognized to result in an evaluation of the worst-case scenario. Such a result is a byproduct of the fact that cumulative analyses include additional developments, which typically have the effect of shortening trips, as the proximity of complementary land uses improves with increasing densities (i.e., houses are closer to shopping opportunities, houses are closer to employment opportunities, etc.). According to State guidelines, when a significant impact is determined under Existing Plus Project conditions, a Cumulative analysis may be required. Therefore, a Cumulative VMT analysis was also performed for the proposed project, the details of which are discussed under Impact 4.10-6.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts related to transportation is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above.

4.10-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and

pedestrian facilities. Based on the analysis below, the impact is *less than significant*.

The proposed project would include subdivision of the 279.3-acre project site into 440 lots, new entry points along Raymer Way, connection to the existing Camden at Somerset Ranch subdivision through an extension of Edington Drive, a new connection to Thornburg Way, and associated improvements. The proposed project's internal circulation system would consist of several drive aisles with circulation to all residences within the subdivision. The project would include construction of five-foot attached sidewalks and three-foot gutters along the majority of internal streets. Six-foot margins along the sides of each street would allow for street parking. Additionally, 0.45-acre of the project site would be designated green infrastructure which would include enhanced landscaped areas and trails with connection to surrounding parks. The following discussions evaluate whether the proposed project would result in inconsistencies with the City's LOS standard or impacts from modifying Centennial Drive or to existing or planned pedestrian, bicycle, or transit facilities and services within the project vicinity.

Consistency with LOS Standard

As detailed above, as a result of SB 743, local jurisdictions may no longer rely on vehicle LOS and similar measures related to delay as the basis for determining the significance of transportation impacts under CEQA. However, because the City considers LOS a matter of General Plan policy, a nexus exists for requiring a project to ensure General Plan consistency through project conditions of approval. Per General Plan Policy C.1.2, the City seeks to maintain operations on all roadways and intersections at LOS D or better, including peak travel times, unless maintaining LOS D would, in the City's judgement, be infeasible and/or conflict with the achievement of other goals. For the purposes of the TIA's analysis, inconsistency with applicable LOS standards under Existing Plus Project conditions is determined if a roadway or signalized intersection previously operating at an acceptable LOS deteriorates to an unacceptable level or if the volume-to-capacity ratio (v/c ratio) increases as a result of the proposed project by more than 0.05 at a roadway or signalized intersection already operating at unacceptable LOS. For unsignalized intersections, inconsistency with applicable LOS standards is determined if the intersection under Existing Plus Project conditions deteriorates from an acceptable to an unacceptable LOS or if the intersection meets a traffic signal warrant and would have an increase in delay by more than five seconds.

The TIA analyzed 17 roadway segments in the project vicinity and concluded LOS of 15 segments under Existing Plus Project conditions would continue at acceptable conditions. The remaining two roadway segments (Sunrise Boulevard, between Douglas Road and SR 16; and Grant Line Road, between Raymer Way and Douglas Road) already operate below the applicable standard at LOS F and E, respectively. Under Existing Plus Project conditions, neither segments' v/c ratio would increase by more than 0.05. Therefore, the TIA determined LOS of all roadway segments following implementation of the proposed project would be consistent with applicable LOS standards.

However, out of the 22 intersections analyzed in the TIA, two intersections would operate at unacceptable LOS under Existing Plus Project conditions: the SR 16/Grant Line Road intersection and the Grant Line Road/Raymer Way intersection (see Table 4.10-2).

Table 4.10-2
Existing Plus Project Unacceptable Intersection LOS

ID	Intersection	Control	Peak Hour	Delay (sec)	LOS
Existing Conditions					
17	SR 16/Grant Line Road	Signal	AM	90.9	F
			PM	108.5	F
20	Grant Line Road/Raymer Way	SSSC	AM	2.2 (37 EB)	E
			PM	0.7 (28.1 EB)	D
Existing Plus Project					
17	SR 16/Grant Line Road	Signal	AM	103.7	F
			PM	120.4	F
20	Grant Line Road/Raymer Way	SSSC	AM	146.3 (606 EB)	F
			PM	84.1 (545 EB)	F

Source: Kimley-Horn. Traffic Impact Analysis for The Preserve, City of Rancho Cordova, California. November 4, 2020.

Therefore, to ensure the aforementioned intersection's consistency with the City's acceptable LOS standard set forth in the General Plan, the City shall require the project, if approved, to implement the following conditions of approval:

- The applicant shall pay a fair share of required improvements to the the SR 16/Grant Line Road intersection through payment of City transportation fees; and
- The applicant shall convert the Grant Line Road/Raymer Way intersection from side-street-stop-controlled to signalized along the existing Grant Line Road alignment.

Satisfying such conditions of approval would ensure all intersections identified in the TIA operate in accordance with General Plan Policy C.1.2 under Existing Plus Project conditions.

Centennial Drive

The Centennial Drive Memorandum prepared for the proposed project assessed the potential impacts that could result from modifying Centennial Drive, a future roadway included in the General Plan and depicted in the Circulation Element's Circulation Plan with Roadway System and Sizing map (see Figure 4.10-2). If constructed as portrayed, Centennial Drive would consist of four lanes and run through the project site in an east-west direction. As noted in the Circulation Element, the City's future circulation system, of which Centennial Drive would be a part, has been designed to create a complete transportation network that links together all parts of the City's Planning Area through a variety of interconnected and overlapping modes and travel options.

However, as part of the proposed project's General Plan Amendment (GPA), the stretch of Centennial Drive previously planned to run through the project site would not be constructed. Therefore, the Centennial Drive Memorandum evaluates the potential effects of eliminating the portion of Centennial Drive that would have run through the project site.

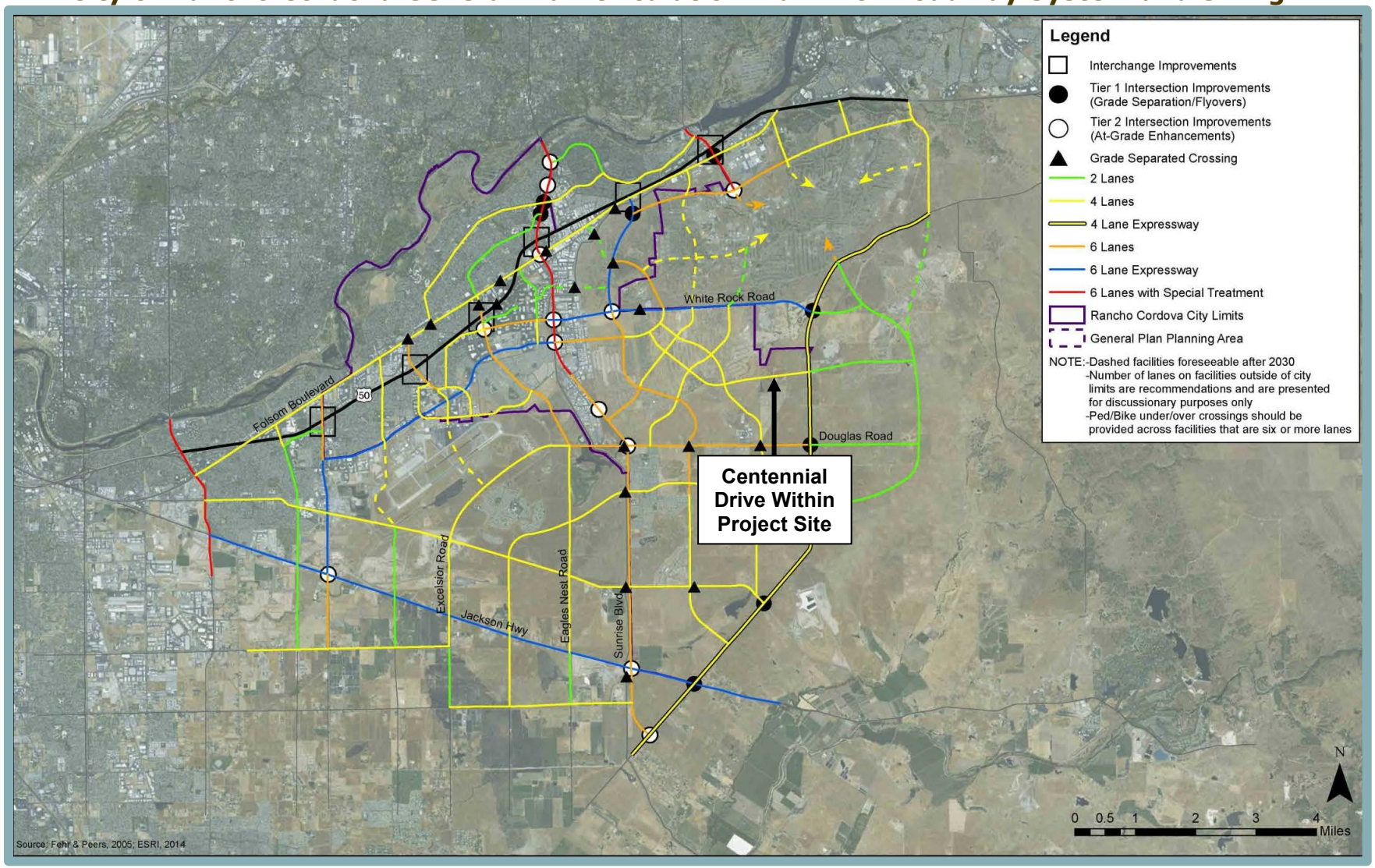
As part of analyzing the effects of modifying Centennial Drive, two versions of the City's TDM were run to predict 2035 traffic volumes along project vicinity roadways, the first version of the model without modifications to Centennial Drive and the second version with the stretch of Centennial Drive between Americanos Boulevard and Grant Line Road removed. The resulting volumes from the two model runs were compared. The largest daily volume increase as a result of modifying Centennial Drive would occur along White Rock Road, immediately west of Grant Line Road. The largest daily volume decrease would be along the stretch of Centennial Drive that would still be constructed, immediately west of Americanos Boulevard. Minimal daily volume differences would occur along Sunrise Boulevard and Rancho Cordova Parkway. As shown in Figure 4.10-3, volumes are expected to fluctuate between increasing by almost 6,500 daily vehicles along White Rock Road to decreasing by 6,600 daily vehicles along Centennial Drive. However, the Centennial Drive Memorandum concluded the change in daily volumes would not noticeably affect operations along any roadway segment.

Additionally, the Centennial Drive Memorandum included an LOS analysis for select roadways in the vicinity of Centennial Drive, both with and without the Centennial Drive connection between Americanos Boulevard and Grant Line Road. Based on the evaluation, roadways are expected to operate in accordance with applicable LOS standards, both with and without the Centennial Drive connection between Americanos Boulevard and Grant Line Road. The results of the LOS analysis are included in Table 4.10-3. Furthermore, the Centennial Drive Memorandum included a follow-up LOS analysis of previously analyzed roadway segments from the Rio del Oro Specific Plan EIR[9] (see Table 4.10-4) to determine to what extent modifying Centennial Drive would affect the previously evaluated roadways' consistency with applicable LOS standards. The evaluation included analysis of SR 16. Based on the results (see Table 4.10-5), the modification of Centennial Drive would not result in any new inconsistencies with applicable LOS standards from what was previously identified in the Rio del Oro Specific Plan EIR.

Finally, the Centennial Drive Memorandum included a VMT assessment that specifically addresses the impact of modifying Centennial Drive (potential VMT impacts from implementing the proposed project are discussed in further detail under Impact 4.10-2). The assessment included the regional (SACOG) VMT for the model runs with and without the Centennial Drive extension and found that VMT was reduced by 6,820 without the Centennial Drive extension; however, it should be noted that the difference reflects a 0.008-percent difference in regional VMT. The model used to perform the analysis includes an iterative process for assigning traffic to the model network. As such, an inherent randomness was introduced, and, thus, the difference should be considered as indication that the removal of Centennial Drive would result in a negligible difference to regional VMT.

9 EDAW, Inc. *Rio del Oro Specific Plan Project Final EIR*. June 24, 2010.

Figure 4.10-2
City of Rancho Cordova General Plan Circulation Plan with Roadway System and Sizing



Source: City of Rancho Cordova. City of Rancho Cordova General Plan. June 26, 2006.

Figure 4.10-3
2035 Daily Volume Change Without Centennial Drive

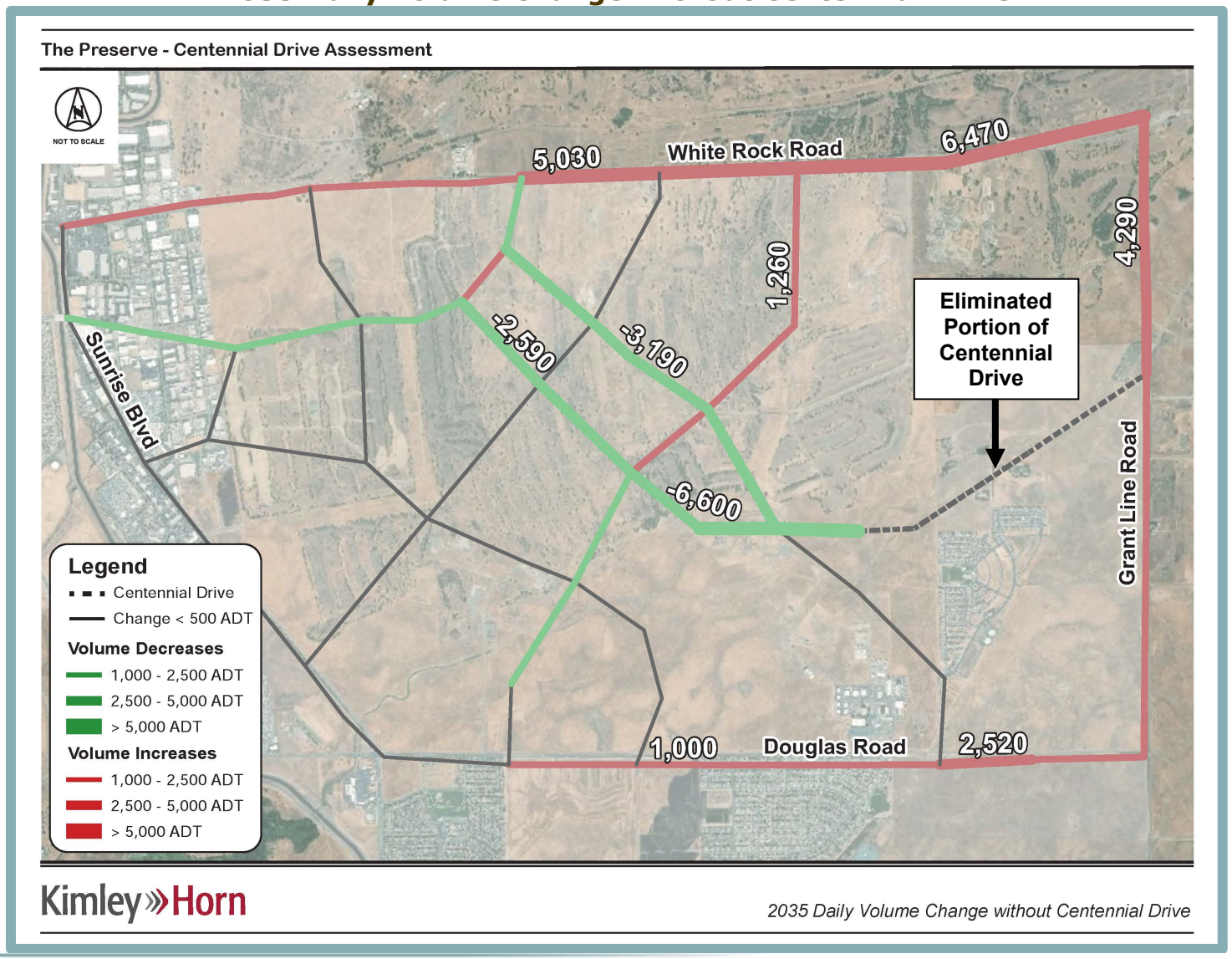


Table 4.10-3
2035 Centennial Drive Modification LOS Analysis

ID	Roadway	Segment	Daily Volume	V/C Ratio	LOS
With Centennial Drive					
1	Douglas Road	Mather Blvd. to Sunrise Blvd.	36,880	0.68	B
2	Douglas Road	Rancho Cordova Pkwy. to Americanos Blvd.	17,550	0.49	A
3	Douglas Road	Americanos Blvd. to Grant Line Road	15,770	0.44	A
4	White Rock Road	Sunrise Blvd. to Rancho Cordova Pkwy.	31,510	0.58	A
5	White Rock Road	Americanos Blvd. to Grant Line Road	22,940	0.42	A
6	White Rock Road	Grant Line Road to Prairie City Road	59,900	0.83	D
7	Sunrise Blvd.	White Rock Road to Douglas Road	47,780	0.88	C
8	Grant Line Road	White Rock Road to Douglas Road	48,230	0.67	B
9	Rancho Cordova Pkwy.	White Rock Road to Rio Del Oro Pkwy.	33,170	0.61	B
10	Rancho Cordova Pkwy.	Rio Del Oro Pkwy. To Douglas Road	17,680	0.49	A
11	Americanos Blvd.	International Road to Centennial Drive	11,170	0.62	B
12	Americanos Blvd.	Centennial Drive to Douglas Road	10,070	0.56	A
Without Centennial Drive					
1	Douglas Road	Mather Blvd. to Sunrise Blvd.	36,840	0.68	B
2	Douglas Road	Rancho Cordova Pkwy. to Americanos Blvd.	18,230	0.51	A
3	Douglas Road	Americanos Blvd. to Grant Line Road	17,250	0.48	A
4	White Rock Road	Sunrise Blvd. to Rancho Cordova Pkwy.	32,080	0.59	A
5	White Rock Road	Americanos Blvd. to Grant Line Road	27,500	0.51	A
6	White Rock Road	Grant Line Road to Prairie City Road	52,540	0.73	C
7	Sunrise Blvd.	White Rock Road to Douglas Road	47,760	0.88	C
8	Grant Line Road	White Rock Road to Douglas Road	51,600	0.72	C
9	Rancho Cordova Pkwy.	White Rock Road to Rio Del Oro Pkwy.	33,170	0.61	B
10	Rancho Cordova Pkwy.	Rio Del Oro Pkwy. To Douglas Road	17,790	0.49	A
11	Americanos Blvd.	International Road to Centennial Drive	8,330	0.46	A
12	Americanos Blvd.	Centennial Drive to Douglas Road	10,240	0.57	A

Source: Kimley-Horn. Memorandum: The Preserve Centennial Drive Considerations. August 16, 2021.

Table 4.10-4
LOS of Rio del Oro Specific Plan EIR Roadways Without Modification to Centennial Drive

ID	Roadway	From	To	Lanes	Daily Volume	LOS Standard	V/C Ratio	LOS	LOS Standard
1	SR 16	Excelsior Rd.	Eagles Nest Road	2	12,900	18,000	0.72	C	D
2	SR 16	Sunrise Blvd.	Grant Line Road	2	17,500	18,000	0.97	E	E
3	Kiefer Blvd.	Grant Line Rd.	SR 16	2	2,100	17,000	0.12	B	E
4	Mather Blvd.	Femoyer St.	Douglas Road	2	20,500	18,000	1.14	F	D
5	Douglas Rd.	Mather Blvd.	Sunrise Blvd.	2	25,400	18,000	1.41	F	D
7	International Dr.	White Rock Rd.	Zinfandel Dr.	4	17,800	36,000	0.49	A	D
8	International Dr.	Zinfandel Dr.	Kilgore Road	4	14,200	36,000	0.39	A	D
9	White Rock Rd.	Zinfandel Dr.	Sunrise Blvd.	6	45,100	54,000	0.84	D	D
10	White Rock Rd.	Sunrise Blvd.	Grant Line Road	2	20,900	18,000	1.16	F	D
11	Zinfandel Dr.	White Rock Rd.	International Dr.	6	23,200	54,000	0.43	A	D
12	Sunrise Blvd.	Gold Country Blvd.	Coloma Rd.	6	92,500	54,000	1.71	F	D
13	Sunrise Blvd.	Coloma Rd.	US 50	6	102,500	54,000	1.90	F	D
14	Sunrise Blvd.	US 50	Folsom Blvd.	6	82,900	54,000	1.54	F	D
15	Sunrise Blvd.	Folsom Blvd.	White Rock Rd.	6	77,300	54,000	1.43	F	D
16	Sunrise Blvd.	White Rock Rd.	Douglas Road	4	65,600	36,000	1.82	F	D
18	Sunrise Blvd.	SR 16	Grant Line Road	2	22,400	18,000	1.24	F	E
19	Grant Line Road	White Rock Rd.	Douglas Road	2	10,500	18,000	0.58	A	D
20	Grant Line Road	Douglas Rd.	SR 16	2	7,800	18,000	0.43	A	D
21	Grant Line Road	SR 16	Sunrise Blvd.	2	6,200	18,000	0.34	A	E
22	Douglas Rd.	Sunrise Blvd.	Jaeger Rd.	4	29,700	36,000	0.83	D	D
23	Douglas Rd.	Americanos Blvd.	Grant Line Road	2	6,500	18,000	0.36	A	D
24	Sunrise Blvd.	Douglas Rd.	Keifer Blvd.	4	39,900	36,000	1.11	F	D
25	Sunrise Blvd.	Keifer Blvd.	SR 16	4	33,800	36,000	0.94	E	D

Source: Kimley-Horn. Memorandum: The Preserve Centennial Drive Considerations. August 16, 2021.

Table 4.10-5
LOS of Rio del Oro Specific Plan EIR Roadways with Modification to Centennial Drive

ID	Roadway	From	To	Lanes	Daily Volume	Volume Difference	V/C Ratio	LOS	LOS Standard
1	SR 16	Excelsior Rd.	Eagles Nest Road	2	12,950	50	0.72	C	D
2	SR 16	Sunrise Blvd.	Grant Line Road	2	17,550	50	0.98	E	E
3	Kiefer Blvd.	Grant Line Rd.	SR 16	2	2,100	0	0.12	B	E
4	Mather Blvd.	Femoyer St.	Douglas Road	2	20,590	90	1.14	F	D
5	Douglas Rd.	Mather Blvd.	Sunrise Blvd.	2	25,350	-50	1.41	F	D
7	International Dr.	White Rock Rd.	Zinfandel Dr.	4	14,800	-3,000	0.41	A	D
8	International Dr.	Zinfandel Dr.	Kilgore Road	4	13,700	-500	0.38	A	D
9	White Rock Rd.	Zinfandel Dr.	Sunrise Blvd.	6	45,500	400	0.84	D	D
10	White Rock Rd.	Sunrise Blvd.	Grant Line Road	2	27,370	6,470	1.52	F	D
11	Zinfandel Dr.	White Rock Rd.	International Dr.	6	22,700	-500	0.42	A	D
12	Sunrise Blvd.	Gold Country Blvd.	Coloma Rd.	6	92,440	-60	1.71	F	D
13	Sunrise Blvd.	Coloma Rd.	US 50	6	102,470	-30	1.90	F	D
14	Sunrise Blvd.	US 50	Folsom Blvd.	6	82,960	60	1.54	F	D
15	Sunrise Blvd.	Folsom Blvd.	White Rock Rd.	6	77,450	150	1.43	F	D
16	Sunrise Blvd.	White Rock Rd.	Douglas Road	4	65,540	-60	1.82	F	D
18	Sunrise Blvd.	SR 16	Grant Line Road	2	22,450	50	1.25	F	E
19	Grant Line Road	White Rock Rd.	Douglas Road	2	15,290	4,790	0.85	D	D
20	Grant Line Road	Douglas Rd.	SR 16	2	8,100	300	0.45	A	D
21	Grant Line Road	SR 16	Sunrise Blvd.	2	6,210	10	0.35	A	E
22	Douglas Rd.	Sunrise Blvd.	Jaeger Rd.	4	30,500	800	0.85	D	D
23	Douglas Rd.	Americanos Blvd.	Grant Line Road	2	9,020	2,520	0.50	A	D
24	Sunrise Blvd.	Douglas Rd.	Keifer Blvd.	4	40,020	120	1.11	F	D
25	Sunrise Blvd.	Keifer Blvd.	SR 16	4	33,870	70	0.94	E	D

Source: Kimley-Horn. Memorandum: The Preserve Centennial Drive Considerations. August, 2021.

Based on the above information, the modification of Centennial Drive as depicted in the General Plan's Circulation Element would not significantly impact the roadway network. Therefore, the proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, and the project would result in a less-than-significant impact.

Pedestrian, Bicycle, and Transit Facilities

Due to the rural nature of the project site, existing bicycle and pedestrian facilities are minimal in the immediate vicinity of the project site. Raymer Way does not include bike lanes or sidewalks. The small stretch of Americanos Boulevard that connects to Edington Drive south of the project site includes bike lanes along both sides of the roadway and also features a sidewalk on the northbound side. Nevertheless, the proposed project includes bicycle and pedestrian facilities, consistent with policies contained in the General Plan's Circulation Element. The proposed project would also implement the Morrison Creek Trail, which was identified in the City's Bicycle Master Plan as a future improvement in the project vicinity and would generally be located to the north of the project site, where the Bicycle Master Plan previously planned for a Class I Bike Path to be located. The Morrison Creek Trail would start at Grant Line Road and generally proceed in an east-to-west direction along Raymer Way before connecting to the north of the project site's neighborhood parks, where the trail would then shift in a southern direction and end at the project site's southwestern corner. As previously discussed, the project site's internal street would also include sidewalks, consistent with applicable standards.

Transit services would not be available within the project site; however, from the proposed project's extension of the Edington Drive stub street, the nearest SRT bus stop would be only 1.5 miles to the southeast, near the Borderlands Drive/Canyonlands Drive intersection, providing residents of the proposed project access to SRT Route 175.

Based on the above information, the proposed project would not conflict with any programs, plans, ordinances, or policies addressing transit, bicycle, or pedestrian facilities, and a less-than-significant impact would occur.

Conclusion

Based on the above information, the aforementioned conditions of approval would ensure the proposed project is consistent with applicable LOS standards; the modification of Centennial Drive as depicted in the General Plan's Circulation Element would not create inconsistencies with the roadway network LOS standards; and the proposed project's bicycle and pedestrian facilities would be consistent with policies contained in the General Plan's Circulation Element and the long-range vision depicted in the City's Bicycle Master Plan. Additionally, the proposed project would be located only 1.5 miles from the nearest SRT bus stop. Therefore, the proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

4.10-2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) under Existing Plus Project conditions. Based on the analysis below, even with implementation of mitigation, the impact is *significant and unavoidable*.

Section 15064.3 of the CEQA Guidelines states that generally, VMT is the most appropriate measure for evaluating the transportation impacts of a project. Per Section 15064.3(b), VMT exceeding an applicable threshold of significance may indicate a significant impact. As mentioned above, for residential development projects requiring a detailed evaluation of the VMT produced by the project, consistent with OPR guidance, this study established the threshold for determination of a significant VMT impact as 15 percent below the regional average VMT per capita, which is 19.7 VMT per capita for the project region. Residential development projects exceeding the threshold would be considered to result in a significant impact. According to the VMT Evaluation prepared for the proposed project, implementation of the project's 440 residential units would result in a VMT per capita of 23.3 (see Table 4.10-6). Thus, the proposed project would exceed the applicable threshold of 19.7.

Table 4.10-6
Project VMT Per Capita

Trip Type	Internal VMT	External VMT	Total VMT
Origin	15,157	610	15,767
Destination	14,677	604	15,281
Total	29,834	1,214	31,048
Total Population			1,333
VMT Per Capita			**23.3**
Threshold			**19.7**
Exceeds Threshold?			**Yes**

Source: Kimley-Horn. The Preserve, Vehicle Miles Traveled (VMT) Evaluation. August 16, 2021.

As detailed in the VMT Evaluation, mitigation strategies were considered to reduce the project's VMT per capita below the applicable threshold. However, as the project site is located in a developing area with only vacant land and other residential communities, the area offers only limited alternatives to driving for work or shopping needs and restrictions are not placed on parking. In addition, the area's limited access to transit and the inability to implement strategies related to employment and commuting further restricts the proposed project's ability to reduce VMT per capita. Without sufficient mitigation, the impact would be considered ***significant***.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact but not to a less-than-significant level. Therefore, the impact would remain *significant and unavoidable*.

4.10-2(a) *Prior to approval of Improvement Plans, the project applicant shall include in the Improvement Plan submittal a Trail System Plan detailing the applicant's construction of a portion of the regional trail system in the vicinity of the project site. The Trail System Plan shall be subject to*

review and approval by the City of Rancho Cordova Community Development Department.

4.10-2(b) *Prior to the recording of a Final Map, the project applicant shall pay a fair share contribution to provide monetary support for the City's transportation services, as determined by the City of Rancho Cordova Community Development Department. The charges for residential and non-residential development will fund these transportation services as determined appropriate by the City Council. Supplemental transportation services may include, but are not limited to, the following:*

- *Transit Shuttle – shuttle for residents and/or employees between residential areas, employment centers, shopping and service centers and light rail stations and/or other public transit options;*
- *Guaranteed Ride Home – free taxi rides and rental cars for ride sharers in case of an emergency;*
- *Transit Subsidies – financial assistance to encourage residents and employees to use transit or other alternative transportation measures;*
- *Transportation Plans for employers and/or resident groups – plans which guide employers and resident groups on the implementation of trip reduction programs, such as ride share matching or other similar programs;*
- *Education Programs – various programs such as education of transit options, home office set up, alternative commute opportunities;*
- *Infrastructure Support – additional bike racks and lockers, transportation alternative and ride share informational boards/kiosks, and transit facilities;*
- *Transportation Coordinator Training and Support – instruction in mobility (transportation alternatives) for residential groups and work site coordinators; and*
- *Bicycle and Alternative Fuel Vehicle Incentives – incentives for purchasing new bicycles or alternative fuel vehicles.*

4.10-3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). Based on the analysis below, the impact is *less than significant*.

The proposed project would include new entry points along Raymer Way, connection to the existing Camden at Somerset Ranch subdivision through an extension of Edington Drive, a new connection to Thornburg Way, and associated improvements. The proposed project's internal circulation system would consist of several drive aisles with circulation to all residences within the subdivision. The project would include construction of sidewalks and gutters per applicable standards along the internal streets. Six-foot margins along the sides of each street would allow for street parking. Additionally, 0.45-acre of the project site would be designated green infrastructure

which would include enhanced landscaped areas and trails with connection to surrounding parks.

The proposed project's street frontage, roadways, and access points would be designed in accordance with all applicable standards established in the City's Municipal Code. Such standards would include, but not be limited to, Section 12.03.020, which includes requirements related to street improvements; Section 12.12.010 and Section 12.12.020, which pertain to prohibited obstructions at private driveways, public streets, and public street intersections; Section 22.25.050, which establishes provisions for filing a complete application for a tentative map; Section 22.110.040 and Section 22.110.045, which include design standards for primary and minor residential streets; and Section 23.141.020, which pertains to major design review requirements for single-family subdivisions. As such, all designs of the proposed project related to transportation would be required to meet City regulations, which would ensure the proposed project does not substantially increase danger from hazardous roadway design features.

Additionally, the proposed project, through the City's approval of a General Plan Amendment and Rezone, would be compatible with land uses surrounding the site. As such, the project would not be anticipated to increase hazards through incompatible uses. While equipment and vehicles related to construction activities would be present during the construction period of the project, such vehicles and equipment would only be temporarily on-site and would be clearly marked by warning signs and barriers to prevent hazardous interactions with members of the public.

Based on the above information, the proposed project would not conflict with any design standards protecting against transportation-related hazards, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

4.10-4 Result in inadequate emergency access. Based on the analysis below, the impact is *less than significant*.

As mentioned above, the proposed project's street frontage, roadways, and access points would be required to be designed in accordance with all applicable standards established in the City's Municipal Code. Such standards would include, but not be limited to, Section 22.110.040 and Section 22.110.045, which include standards related to street design of primary and minor residential streets such that emergency vehicles and police patrol would not be compromised from adequately accessing a residential subdivision. As such, all designs of the proposed project related to transportation and emergency access would be required to meet City standards and regulations.

The proposed project would include two entry points from Raymer Way, as well as connection to the existing Camden at Somerset Ranch subdivision by way of an extension of Edington Drive and a new connection to Thornburg Way. The streets would be between 32 and 50 feet wide (curb to curb), which would allow for emergency

vehicle access within the minimum 20-foot street width requirement. The internal circulation system would consist of several drive aisles with circulation to all residences within the subdivision.

Concerns brought forth in the comment letters and verbal comments on the scope of the EIR during the Notice of Preparation (NOP) public review period included concerns related to an increase in emergency response times due to increased traffic delays and congestion as a result of implementation of the proposed project. As discussed under Impact 4.10-1 and Impact 4.10-5, the project applicant, through City-required conditions of approval, would be required to construct improvements to various intersections in the project vicinity as part of the proposed project that would ensure all intersections identified in the TIA operate in accordance with General Plan Policy C.1.2. Furthermore, as discussed in Chapter 4.9, Public Services and Utilities, of this EIR, under Impact 4.9-1, the Sacramento Metropolitan Fire District (SMFD) has a response time goal of five minutes or less for 80 percent of calls in the City. The SMFD currently meets this goal, and the response time goal is anticipated to be feasible for servicing the proposed project given the proximity of the project site to Station 68, located 2.8 miles southwest of the project site. Additionally, as discussed under Impact 4.9-2 of this EIR, the project applicant would be required to pay the City's applicable Community Facility Fees, which are used to fund new and expanded public service facilities, including police facilities, within the City's Planning Area. Payment of the Community Facility Fees would ensure that adequate police protection facilities are available to serve the project. Staff at the Rancho Cordova Police Department have confirmed that, given payment of applicable development impact fees, impacts related to police protection are not anticipated. Finally, as previously mentioned, the project applicant would be required to comply with the City's Municipal Code to ensure that emergency vehicles and police patrol would not be compromised from adequately accessing a residential subdivision. Altogether, the proposed project would not result in inadequate emergency access or an increase in emergency response times due to increased traffic delays and congestion.

Based on the above information, the proposed project would not hinder emergency access to the site to the extent that access would be deemed inadequate, and a ***less-than-significant*** impact would occur.

Mitigation Measure(s)

None required.

Cumulative Impacts and Mitigation Measures

As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

For further detail related to the cumulative setting of the proposed project, refer to Chapter 5, Statutorily Required Sections, of this EIR.

4.10-5 Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) under Cumulative Plus Project conditions. Based on the analysis below, the cumulative impact is *less than significant*.

As cumulative development occurs within the City of Rancho Cordova in accordance with the City's General Plan, traffic volumes along local roadways would increase relative to existing conditions, potentially resulting in impacts to roadway facilities along US 50 and City intersections. However, as the proximity of complementary land uses improves through increased density, shortened trips typically result as a byproduct. The VMT Evaluation prepared for the proposed project included a VMT per capita analysis of Cumulative Plus Project conditions. As shown in Table 4.10-7, the proposed project would result in a VMT per capita of 17.1 under such conditions, which is below the applicable threshold of 19.7 VMT per capita. Thus, the proposed project would not exceed the applicable threshold under Cumulative Plus Project conditions.

Table 4.10-7
Cumulative Project VMT Per Capita

Trip Type	Internal VMT	External VMT	Total VMT
Origin	10,943	532	11,475
Destination	10,816	528	11,343
Total	21,759	1,059	22,828
Total Population			1,333
VMT Per Capita			**17.1**
Threshold			**19.7**
Exceeds Threshold?			**No**

Source: Kimley-Horn. The Preserve, Vehicle Miles Traveled (VMT) Evaluation. November 4, 2020.

Based on the above information, the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) under Cumulative Plus Project conditions, and the proposed project's cumulative impact would be ***less-than-significant***.

Mitigation Measure(s)

None required.

5. Statutorily Required Sections

5. STATUTORILY REQUIRED SECTIONS

5.1 INTRODUCTION

The Statutorily Required Sections chapter of the EIR includes discussions regarding those topics that are required to be included in an EIR, pursuant to CEQA Guidelines, Section 15126.2. The chapter includes a discussion of the proposed project's potential to result in growth-inducing impacts; the cumulative setting analyzed in this EIR; significant irreversible environmental changes; and significant and unavoidable impacts caused by the proposed project.

5.2 GROWTH-INDUCING IMPACTS

State CEQA Guidelines section 15126.2(d) requires an EIR to evaluate the potential growth-inducing impacts of a proposed project. Specifically, an EIR must discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth can be induced in a number of ways, including the elimination of obstacles to growth, or by encouraging and/or facilitating other activities that could induce growth. Examples of projects likely to have growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or office complexes in areas that are currently only sparsely developed or are undeveloped.

The CEQA Guidelines are clear that while an analysis of growth-inducing effects is required, it should not be assumed that induced growth is necessarily significant or adverse. This analysis examines the following potential growth-inducing impacts related to implementation of the proposed project and assesses whether these effects are significant and adverse (see CEQA Guidelines, Section 15126.2[d]):

1. Foster population and economic growth and construction of housing.
2. Eliminate obstacles to population growth.
3. Affect service levels, facility capacity, or infrastructure demand.
4. Encourage or facilitate other activities that could significantly affect the environment.

Foster Population and Economic Growth and Construction of Housing

As discussed in Chapter 4.7, Land Use and Planning/Population and Housing, of this EIR, development of the site with 440 single-family residential units would increase the available housing within the Rancho Cordova area, which would be expected to increase population in the area. Based on socioeconomic characteristics of developments in the immediate vicinity of the project site, the proposed project is projected to result in a potential population increase of 1,333 residents. The City has anticipated buildout of the Grant Line West Planning Area with a total of 3,393 dwelling units, 9,043 residents, 502,893 square feet (sf) of commercial uses, and 143,684 sf of office uses. Given that the Grant Line West Planning Area is primarily vacant, the population growth resulting from the proposed project would be within the Grant Line West Planning Area population estimates. As noted on page 4.7-15 of Chapter 4.7, the proposed project would be included within the growth projections of the City of Rancho Cordova conducted by the Sacramento Area Council of Governments (SACOG) for the 2020 Metropolitan Transportation

Plan/Sustainable Communities Strategy (MTP/SCS). Because buildout of the City, including the proposed project, has been anticipated in regional development forecasts, implementation of the proposed project would not result in unplanned population growth within the project area. Furthermore, the infrastructure included in the proposed project would be sized to accommodate buildout of the proposed project.

While construction of the proposed project would result in increased construction employment opportunities, which could potentially result in increased permanent population and demand for housing in the vicinity of the project site, employment patterns of construction workers is such that construction workers would not likely, to any significant degree, relocate their households as a result of the construction-related employment opportunities associated with the proposed project.

Although the proposed project would provide short-term employment opportunities, which would likely be filled from the local employee base, with the possible exception of a few household and landscape maintenance jobs, permanent jobs would not be created by the proposed project. Therefore, the proposed project would not result in long-term employment growth in the area.

Appendix G of CEQA Guidelines has been recently amended to clarify that unplanned population growth would be considered a potentially significant impact. However, growth that is planned, and the environmental effects of which have been analyzed in connection with a land use plan or a regional plan, should not by itself be considered an impact. Consequently, the proposed project would result in population growth of the Grant Line West Planning Area, but such growth would be within the buildout projections for the Grant Line West Planning Area, and within growth projections for unincorporated areas within the City of Rancho Cordova. Thus, while the project would foster population and economic growth, such growth would be similar to what has been previously anticipated for the project region, and a less-than-significant impact related to population and economic growth would occur.

Eliminate Obstacles to Population Growth

The elimination of either physical or regulatory obstacles to growth is considered to be a growth-inducing effect. A physical obstacle to growth typically involves the lack of public service infrastructure. The extension of public service infrastructure, including roadways, water mains, and sewer lines, into areas that are not currently provided with these services, would be expected to support new development. Similarly, the elimination or change to a regulatory obstacle, including existing growth and development policies, could result in new growth.

As discussed in Chapter 4.9, Public Services and Utilities, of this EIR, the proposed project would include connection of new eight-inch water mains to an existing 10-inch water main located within Edington Drive, and new or expanded regional infrastructure would not be required. Water conveyance systems needed for the proposed project would be constructed on-site, and would be financed by the project applicant. Consequently, the construction of on-site water infrastructure would not be anticipated to result in elimination of obstacles to population growth.

As also discussed in Chapter 4.9 of this EIR, the proposed project would include two new on-site sewer connections to the existing eight-inch sewer lines within Edington Drive and Thornberg Way. The existing sewer lines connect to the Sacramento Regional County Sanitation District (SRCSD) interceptor system, which carries wastewater directly to the Sacramento Regional Wastewater Treatment Plant (SRWTP). Per the Sewer Study prepared for the proposed project, wastewater generated from the proposed project (0.136 million gallons per day) would constitute

only 0.3 percent of the wastewater treatment demand at buildout of the City's planning area. The wastewater treatment projections used in the General Plan were determined based on population growth estimates, and land use designations were not considered. As such, even though the proposed project includes a change in land use designation, the project would be included as part of the City's planned regional growth estimated. Because City wastewater conveyance facilities currently exist in the project area and would not require the construction of new or expanded infrastructure due to development of the proposed project, the proposed project would not eliminate obstacles to growth that were not previously anticipated for the area.

In regard to roadway improvements, the proposed project would eliminate the possibility of an east-west extension of Centennial Drive through the project site, which is depicted in the Circulation Element of the City's Circulation Plan. The removal of this planned roadway improvement could constitute an obstacle to population growth; however, the proposed project would also include several roadway improvements, including the development of new entry points along Raymer Way, an extension of Edington Drive, a new connection to Thornburg Way, and several new drive aisles which would provide internal circulation with access to all residences within the proposed subdivision. While the proposed roadway extensions would eliminate physical obstacles to undeveloped areas, the areas are already planned for development. As discussed in Chapter 4.7, Land Use and Planning/Population and Housing, of this EIR, the City has anticipated buildout of the Grant Line West Planning Area with a total of 3,393 dwelling units, 9,043 residents, 502,893 sf of commercial uses, and 143,684 sf of office uses. In addition, the SACOG 2020 MTP/SCS has anticipated the addition of 13,421 residential units to the City's housing stock by 2035. Because the surrounding area would result in population growth with or without the proposed project, the extension and construction of the roadways proposed as part of the project would not be considered the elimination of an obstacle to population growth.

Based on the above, the roadway and utility improvements included as part of the proposed project have been generally anticipated by the City and planned for based on regional growth estimates provided by SACOG. Thus, the proposed project would result in a less-than-significant impact in regard to eliminating obstacles to population growth.

Affect Service Levels, Facility Capacity, or Infrastructure Demand

Increases in population that would occur as a result of a proposed project may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental impacts. As discussed in Chapter 4.9, Public Services and Utilities, of this EIR, increased demands for fire and police protection services attributable to the proposed project would necessitate the need for additional resources for the Sacramento Metropolitan Fire District and the Rancho Cordova Police Department. However, the project applicant would be subject to payment of development fees and contribution to tax revenue funds, including the Capital Fire Facilities Fee and the City's applicable Community Facilities Fee. As such, impacts to fire and law enforcement services would be considered fully mitigated with payment of such fees. In addition, wastewater generated by the proposed project could be accommodated by existing wastewater treatment facilities and infrastructure, and existing water supply infrastructure exists to accommodate the domestic and fire flow demands associated with the proposed project.

The landfill that would serve the proposed project has adequate capacity to manage the solid waste generated as a result of the project. Furthermore, mitigation measures set forth in Chapter 4.6, Hydrology and Water Quality, of this EIR would ensure that the proposed project would not create or contribute runoff water that would exceed the capacity of the City's stormwater drainage

systems. Therefore, the proposed project would not increase population such that service levels, facility capacity, or infrastructure demand would require construction of new facilities that could cause significant environmental impacts.

Encourage or Facilitate other Activities That Could Significantly Affect the Environment

This EIR provides a comprehensive assessment of the potential for environmental impacts associated with implementation of the proposed project. Please refer to Chapters 4.1 through 4.10, of this EIR, as well as the attached Initial Study (see Appendix A), which evaluate the potential for impacts from urban development on the project site.

5.3 CUMULATIVE IMPACTS

CEQA Guidelines, Section 15130 requires that an EIR discuss the cumulative and long-term effects of the proposed project that adversely affect the environment. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, Section 15355). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects" (CEQA Guidelines, Section 15355, subd. [a]). "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (CEQA Guidelines, Section 15355, subd. [b]).

The need for cumulative impact assessment reflects the fact that, although a project may cause an "individually limited" or "individually minor" incremental impact that, by itself, is not significant, the increment may be "cumulatively considerable," and, thus, significant, when viewed together with environmental changes anticipated from past, present, and probable future projects (CEQA Guidelines, Section 15064, subd. [h(1)], Section 15065, subd. [c], and Section 15355, subd. [b]). Accordingly, particular impacts may be less than significant on a project-specific basis but significant on a cumulative basis if their small incremental contribution, viewed against the larger backdrop, is cumulatively considerable. However, it should be noted that CEQA Guidelines, Section 15064, Subdivision (h)(5) states, "[…]the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." Therefore, even where cumulative impacts are significant, any level of incremental contribution is not necessarily deemed cumulatively considerable.

Section 15130(b) of CEQA Guidelines indicates that the level of detail of the cumulative analysis need not be as great as for the project impact analyses, but that analysis should reflect the severity of the impacts and their likelihood of occurrence, and that the analysis should be focused, practical, and reasonable. To be adequate, a discussion of cumulative effects must include the following elements:

> (1) Either (a) a list of past, present and probable future projects, including, if necessary, those outside the agency's control, or (b) a summary of projections contained in an adopted general plan or related planning document, or in a prior certified EIR, which described or evaluated regional or area-wide conditions contributing to the cumulative impact, provide that such documents are reference and made available for public inspection at a specified location;

(2) A summary of the individual projects' environmental effects, with specific reference to additional information and stating where such information is available; and

(3) A reasonable analysis of all of the relevant projects' cumulative impacts, with an examination of reasonable, feasible options for mitigating or avoiding the project's contribution to such effects (Section 15130[b]).

For some projects, the only feasible mitigation measures will involve the adoption of ordinances or regulations, rather than the imposition of conditions on a project-by-project basis (Section 15130[c]). Section 15130(a)(3) states that an EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable, and thus not significant, if a project is required to implement or fund the project's fair share of a mitigation measure or measures designed to alleviate the cumulative impact. A discussion of cumulative impacts is provided within in each of the technical chapters of this EIR pursuant to CEQA Guidelines Section 15130.

Cumulative Setting

The lead agency should define the relevant geographic area of inquiry for each impact category (id., Section 15130, subd. [b][3]), and should then identify the universe of "past, present, and probable future projects producing related or cumulative impacts" relevant to the various categories, either through the preparation of a "list" of such projects or through the use of "a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact" (id., subd. [b][1]).

As discussed above, two approaches to identifying cumulative projects and their associated impacts can be used. The "list" approach identifies individual projects known to be occurring or proposed in the surrounding area in order to identify potential cumulative impacts. The "projection" approach uses a summary of projections in adopted General Plans or related planning documents to identify potential cumulative impacts. This EIR uses the projection approach for the cumulative analysis and considers the development anticipated to occur upon buildout of the City of Rancho Cordova General Plan. Buildout of the General Plan would include development of several long-range projects, including, but not limited to, the following: the Rio Del Oro Specific Plan, the Sunridge Specific Plan, the Arboretum Specific Plan, the Suncreek Specific Plan, and the Westborough Specific Plan.

Limited situations exist where the geographic setting differs for the analysis of various resource areas. For example, the cumulative geographic setting for the air quality analysis is the Sacramento Valley Air Basin, which is the air basin that the proposed project is located within. Global climate change is, by nature, a cumulative impact. Emissions of greenhouse gases (GHGs) contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change (e.g., sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). A single project could not generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from a project in combination with other past, present, and future projects could contribute substantially to the world-wide phenomenon of global climate change and the associated environmental impacts. Although the geographical context for global climate change is the Earth, for analysis purposes under CEQA, and due to the regulatory context pertaining to GHG emissions and global climate

change applicable to the proposed project, the geographical context for global climate change in this EIR is limited to the State of California.

In addition, as discussed in Chapter 4.10, Transportation, of this EIR, the cumulative traffic analysis relied on the County of Sacramento's traffic study guidelines and standards established by the Circulation Element of the City of Rancho Cordova's General Plan. Based on the County's requirements, the growth assumptions used in the traffic analysis include cumulative buildout of land uses identified in the Rancho Cordova General Plan, with and without the proposed project. The cumulative setting for the transportation and circulation analysis also includes the anticipated roadway geometry and traffic control anticipated to be present in 2035.

Cumulative impacts are analyzed in each of the technical chapters of this EIR (Chapters 4.1 through 4.10). For those e environmental resource areas that have a different cumulative setting from the general cumulative setting described above, the specific cumulative sitting for that resource area is presented along with the cumulative impact discussion in the relevant resource area chapter of the EIR.

5.4 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Per CEQA Guidelines Section 15126.2(c), this EIR is required to include consideration of significant irreversible environmental changes that would be caused by the proposed project, should the project be implemented. An impact would be determined to be a significant and irreversible change in the environment if:

- Buildout of the project area could involve a large commitment of nonrenewable resources;
- The primary and secondary impacts of development could generally commit future generations to similar uses (e.g., a highway provides access to a previously remote area);
- Development of the proposed project could involve uses in which irreversible damage could result from any potential environmental accidents associated with the project; or
- The phasing and eventual development of the project could result in an unjustified consumption of resources (e.g., the wasteful use of energy).

The proposed project would likely result in, or contribute to, the following significant irreversible environmental changes:

- Conversion of vacant land to a fully built-out residential community, thus precluding alternative land uses in the future; and
- Irreversible consumption of goods and services, such as fire, police, and school services, associated with the future population; and
- Irreversible consumption of energy and natural resources, such as water, electricity, and natural gas, associated with the future residents.

Therefore, the proposed project would likely result in significant irreversible environmental changes, as noted above.

5.5 SIGNIFICANT AND UNAVOIDABLE IMPACTS

According to CEQA Guidelines, an EIR must include a description of those impacts identified as significant and unavoidable should the proposed action be implemented (CEQA Guidelines Section 15126.2[b]). Such impacts would be considered unavoidable when the determination is

made that either mitigation is not feasible or only partial mitigation is feasible such that the impact is not reduced to a level that is less-than-significant.

Based on the analysis provided in Chapters 4.1 through 4.10 of this EIR, the below listed impact was determined to be significant and unavoidable. All other impacts identified in this EIR could be eliminated or reduced to a less-than-significant level by mitigations imposed by the City. The final determination of the significance of impacts and the feasibility of mitigation measures would be made by the City as part of the City's certification action.

4.10-2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) under Existing Plus Project conditions.

As noted on page 4.10-26 of Chapter 4.10, Transportation, of this EIR, according to the VMT Evaluation prepared for the proposed project, implementation of the proposed project would result in a VMT per capita of 23.3, which would exceed the applicable threshold of 19.7. Considering the project site is located in a developing area surrounded by only vacant land and other residential communities, the project area offers limited alternatives to driving for work or shopping needs and restrictions are not placed on parking. In addition, the area's limited access to transit and the inability to implement strategies related to employment and commuting further restricts the proposed project's ability to reduce VMT per capita. Implementation of Mitigation Measures 4.10-2(a) and (b) would reduce the impact, but not to a less-than-significant level. Therefore, the impact would remain *significant and unavoidable*.

6. Alternatives Analysis

6. ALTERNATIVES ANALYSIS

6.1 INTRODUCTION

The Alternatives Analysis chapter of the EIR includes consideration and discussion of a range of reasonable alternatives to the proposed project, as required per CEQA Guidelines Section 15126.6. Generally, the chapter includes discussions of the following: the purpose of an alternatives analysis; a reasonable range of project alternatives and their associated impacts in comparison to the proposed project's impacts; and the environmentally superior alternative.

6.2 CEQA REQUIREMENTS FOR ALTERNATIVE ANALYSIS

The primary intent of the alternatives evaluation in an EIR, as stated in Section 15126.6(a) of the CEQA Guidelines, is to "[…] describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." In the context of CEQA Guidelines Section 21061.1, "feasible" is defined as:

> ...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Section 15126.6(f) of CEQA Guidelines states, "The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice." Section 15126.6(f) of CEQA Guidelines further states:

> The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

In addition, an EIR is not required to analyze alternatives when the effects of the alternative "cannot be reasonably ascertained and whose implementation is remote and speculative."

The CEQA Guidelines provide the following guidance for discussing alternatives to a proposed project:

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives (CEQA Guidelines Section 15126.6[a]).
- Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these

alternatives would impede to some degree the attainment of the project objectives, or would be more costly (CEQA Guidelines Section 15126.6[b]).

- The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination […] Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts (CEQA Guidelines Section 15126.6[c]).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison (CEQA Guidelines Section 15126.6[d]).
- If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines Section 15126.6[d]).
- The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline (CEQA Guidelines Section 15126.6[e][1]).
- If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section 15126.6[e][2]).

Project Objectives

Based on the above, reasonable alternatives to the project must be capable of feasibly attaining most of the basic objectives of the project. The following objectives have been submitted by the project applicant:

1. Consolidate the remaining parcels in the Grant Line West Planning Area of the City of Rancho Cordova General Plan in a manner that concentrates development south of Morrison Creek to avoid and minimize potential conflicts with the South Sacramento Habitat Conservation Plan.
2. Develop a residential mixed-density community that is consistent with the General Plan conceptual land use designation for the Grant Line West Planning Area.
3. Develop a residential community that is contiguous to and compatible with adjacent existing development and that provides a range of housing choices.
4. Utilize existing utility capacity for maximum efficiency.
5. Develop a residential community that can provide timely housing to help meet current demand.
6. Contribute to the overall bicycle and pedestrian connectivity of the City by building key components of the regional trail system and providing strong connections for both existing and future residents.
7. Enhance the City's network of parks, trails, and open spaces for the enjoyment of all residents.

6.3 SELECTION OF ALTERNATIVES

The requirement that an EIR evaluate alternatives to the proposed project or alternatives to the location of the proposed project is a broad one; the primary intent of the alternatives analysis is to disclose other ways that the objectives of the project could be attained, while reducing the magnitude of, or avoiding, one or more of the significant environmental impacts of the proposed project. Alternatives that are included and evaluated in the EIR must be feasible alternatives. However, the CEQA Guidelines require the EIR to "set forth only those alternatives necessary to permit a reasoned choice." As stated in Section 15126.6(a), an EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. The CEQA Guidelines provide a definition for "a range of reasonable alternatives" and thus limit the number and type of alternatives that may need to be evaluated in a given EIR. According to the CEQA Guidelines Section 15126.6(f):

> The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

First and foremost, alternatives in an EIR must be feasible. In the context of CEQA Guidelines Section 21061.1, "feasible" is defined as:

> ...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Finally, an EIR is not required to analyze alternatives when the effects of the alternative "cannot be reasonably ascertained and whose implementation is remote and speculative."

Alternatives Evaluated in this EIR

The following alternatives are evaluated in this section:

1. No Project Alternative;
2. Reduced VMT Alternative; and
3. Reduced Footprint Alternative.

Each of the project alternatives is described in detail below, with a corresponding analysis of each alternative's consistency with the project objectives and evaluation of impacts to the existing environment in comparison to the proposed project's identified impacts. While an effort has been made to include quantitative data for certain analytical topics, where possible, qualitative comparisons of the various alternatives to the project are primarily provided. Such an approach to the analysis is appropriate as evidenced by CEQA Guidelines Section 15126.6(d), which states that the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed. The analysis evaluates impacts that would occur with the alternatives relative to the significant impacts identified for the proposed project. When comparing the potential impacts resulting from implementation of the foregoing alternatives, the following terminology is used:

- "Fewer" = Less than Proposed Project;
- "Similar" = Similar to Proposed Project; and
- "Greater" = Greater than Proposed Project.

When the term "fewer" is used, the reader should not necessarily equate this to elimination of significant impacts identified for the proposed project. For example, in many cases, an alternative would reduce the relative intensity of a significant impact identified for the proposed project, but the impact would still be expected to remain significant under the alternative, thereby requiring mitigation. In other cases, the use of the term "fewer" may mean the actual elimination of an impact identified for the proposed project altogether. Similarly, use of the term "greater" does not necessarily imply that an alternative would require additional mitigation beyond what has been required for the proposed project. To the extent possible, this analysis will distinguish between the two implications of the comparative words "fewer" and "greater".

See Table 6-1 at the end of this chapter for a comparison of the environmental impacts resulting from the considered alternatives and the proposed project.

1. No Project Alternative

The following section includes an overview providing background related to this alternative, a description of this alternative, an evaluation of the alternative's consistency with project objectives, and an impact comparison analysis.

Overview

CEQA requires the evaluation of the comparative impacts of the "No Project" alternative (CEQA Guidelines Section 15126.6[e]). Analysis of the no project alternative shall:

> "… discuss […] existing conditions […] as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." (*Id.*, subd. [e][2]) "If the project is other than a land use or regulatory plan, for example a development project on identifiable property, the 'no project' alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in the property's existing state versus environmental effects that would occur if the project were approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed. In certain instances, the no project alternative means 'no build,' wherein the existing environmental setting is maintained. However, where failure to proceed with the project would not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment." (*Id.*, subd. [e][3][B]).

Description of Alternative

For the purposes of this analysis, the No Project Alternative assumes the project site would remain in its current condition. Currently, the southern portion of the site contains two single-family residences and associated outbuildings. An orchard is located within the northeastern portion of the site. A third single-family residence and associated outbuildings exist within the northwestern portion of the site. The remainder of the site consists primarily of non-native grasses, scattered trees, and associated access roads. The site is characterized by moderate rolling hills and flatlands interspersed with seasonal drainage corridors and wetlands. Morrison Creek runs northeast to southwest through the project site.

Because the No Project Alternative would result in the continuance of current on-site conditions, it is reasonable to assume that, for the time being, the site would remain generally undeveloped. However, the alternative's nullification of the proposed project would eventually impact the future

construction of Centennial Drive. As depicted in Figure C-1, Circulation Plan with Roadway System and Sizing, of the Circulation Element of the General Plan, the City has planned for the future construction of Centennial Drive, which would include a roadway portion that runs through the project site. Under the proposed project, the General Plan Amendment (GPA) would amend the General Plan to no longer include the construction of this portion of Centennial Drive. However, without the proposed project, the General Plan would not need to be amended to accommodate the project. Therefore, without the GPA, Centennial Drive would be constructed as depicted in the Circulation Element. Centennial Drive would be expected to accommodate vehicles from land uses in the project site's vicinity, including the Camden at Somerset Ranch residential subdivision to the south, a Teichert Aggregates Aggregate/Asphaltic Concrete site across Grant Line Road to the east, and the eventual Rio Del Oro residential community to the west.

Consistency with Project Objectives

The No Project Alternative would not meet any of the objectives because the alternative would not consolidate the remaining parcels in the Grant Line West Planning Area in a manner that concentrates development south of Morrison Creek to avoid and minimize potential conflicts with the South Sacramento Habitat Conservation Plan; develop a residential mixed-density community that is consistent with the General Plan conceptual land use designation for the Grant Line West Planning Area; develop a residential community that is contiguous to and compatible with adjacent existing development and that provides a range of housing choices; utilize existing utility capacity for maximum efficiency; develop a residential community that can provide timely housing to help meet current demand; contribute to the overall bicycle and pedestrian connectivity of the City by building key components of the regional trail system and providing strong connections for both existing and future residents; or enhance the City's network of parks, trails, and open spaces for the enjoyment of all residents.

Impacts of Alternative

The following provides a discussion evaluating the impacts of this alternative on baseline conditions as compared to the impacts of the proposed project on baseline conditions for each impact area addressed within this EIR.

Air Quality and Greenhouse Gas Emissions

Under the No Project Alternative, the project site would remain relatively free of development and would be consistent with the predominantly rural nature currently exhibited by the site. The subdivision of the site into 440 single-family residential lots, construction of neighborhood roadways, implementation of two park areas, and associated improvements would not occur. As a result, Mitigation Measure 4.1-7, which requires the purchase of carbon offsets to address impacts related to GHG emissions associated with the proposed project, would not be required.

However, without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element and would be expected to accommodate vehicles from land uses in the project vicinity, including the Camden at Somerset Ranch residential subdivision to the south, a Teichert Aggregates Aggregate/Asphaltic Concrete site across Grant Line Road to the east, and the eventual Rio Del Oro residential community to the west. While construction of the roadway would result in GHG emissions from construction, the alternative would generate fewer total GHG emissions as compared to the proposed project, as the GHG emissions associated with the proposed project would include emissions from construction and operation of the residences as well as emissions from the new vehicle trips

associated with operation of the residences. Conversely, GHG emissions associated with operation of Centennial Drive would not result in net new emissions, as the roadway would largely accommodate existing traffic and traffic already planned for the area. In fact, the operation of Centennial Drive through the project site has to potential to reduce regional VMT and associated GHG emissions. Therefore, the alternative's impacts related to air quality and GHG emissions would be fewer as compared to the proposed project.

Biological Resources

Under the No Project Alternative, the project site would remain generally undeveloped and would be consistent with the predominantly rural nature currently exhibited by the site, as the currently proposed project's components would not be implemented. Therefore, Mitigation Measures 4.2-1 through 4.2-10 and 4.2-12, which address impacts to on-site biological resources associated with the proposed project, would not be required. However, without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element, and would accommodate existing traffic and traffic already planned for the area in the General Plan. While construction of the roadway could potentially result in impacts to biological resources, the alternative would result in a smaller area of ground disturbance as compared to the proposed project. Therefore, the alternative's impacts related to biological resources would be fewer as compared to the proposed project.

Cultural and Tribal Cultural Resources

Under the No Project Alternative, the project site would remain generally undeveloped Therefore, Mitigation Measures 4.3-2 and 4.3-3(a) through (d) would not be required. However, without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element, and would accommodate existing traffic and traffic planned for the area in the General Plan. While construction of the roadway could potentially result in impacts to unknown buried cultural and tribal cultural resources, should such resources exist, the alternative would result in a smaller area of ground disturbance as compared to the proposed project. Therefore, the alternative's impacts related to cultural and tribal cultural resources would be fewer as compared to the proposed project.

Geology and Soils/Mineral Resources

Under the No Project Alternative, the project site would remain generally undeveloped. Therefore, Mitigation Measures 4.4-3 and 4.4-5, which ensure preparation and compliance with a final geotechnical engineering report and address potential impacts to paleontological resources, would not be required. However, without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element, and would accommodate existing traffic and traffic planned for the area in the General Plan. While construction of the roadway could potentially result in soil erosion or the loss of topsoil due to ground disturbance and grading activities, the alternative would result in a smaller area of ground disturbance as compared to the proposed project. Therefore, the alternative's impacts related to geology, soils, and mineral resources would be fewer as compared to the proposed project.

Hazards and Hazardous Materials

Under the No Project Alternative, the project site would remain generally undeveloped. Therefore, Mitigation Measures 4.5-2(a) through (f) would not be required. However, without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element. Construction of the roadway could potentially result in impacts related to the disturbance of various on-site Recognized Environmental Conditions, as the project site has the

potential to contain an underground storage tank, an unknown underground storage system, and other fuel storage vessels in the northern portions of the project site. The southern portion of the project site contains existing structures built prior to 1980 and 1970 that are likely to contain asbestos-containing building materials and lead-based paints. Additionally, soils in the vicinity of the existing on-site structures have the potential to be contaminated with termiticides. As such, the ground-disturbing activities and potential demolition of on-site structures associated with construction of Centennial Drive could expose the public or environment to a significant hazard through reasonably foreseeable upset and accident conditions involving the release of on-site hazardous materials into the environment. However, the alternative would result in a smaller area of ground disturbance as compared to the proposed project. Therefore, the alternative's impacts related to hazards and hazardous materials would be fewer as compared to the proposed project.

Hydrology and Water Quality

Under the No Project Alternative, the project site would remain generally undeveloped. Therefore, Mitigation Measures 4.6-1(a) and (b), 4.6-2, and 4.6-3 which address potential impacts related to short-term construction-related water quality and ensure compliance with best management practices (BMPs) during construction, would not be required. However, without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element, which could require similar mitigation measures as those to which the proposed project would be subject. While construction of the roadway could potentially result in impacts related to water quality by introducing new impervious surfaces, the alternative would result in a smaller area of ground disturbance as compared to the proposed project. Construction of Centennial Drive would also be required to adhere to all applicable federal, State, and local regulations regarding water quality. Therefore, the alternative's impacts related to hydrology and water quality would be fewer as compared to the proposed project.

Land Use and Planning/Population and Housing

Under the No Project Alternative, the project site would remain generally undeveloped and would be consistent with the predominantly rural nature currently exhibited by the site, as the currently proposed project's components would not be implemented. Considering the existing conditions are consistent with the land use and zoning designation for the site, the GPA and Rezone to accommodate the land uses planned by the proposed project would not be required.

Without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element, accommodating existing traffic and traffic already planned for the area in the General Plan. As construction and operation of the roadway would be consistent with the General Plan, implementation of Centennial Drive would not conflict with a land use plan or induce substantial unplanned population growth in an area, as the roadway would be implemented to accommodate planned population growth. Additionally, Centennial Drive would not physically divide an established community or displace substantial numbers of existing people or housing, as the site is predominantly rural. Therefore, the alternative's impacts related to land use and planning and population and housing would be fewer as compared to the proposed project.

Noise

Under the No Project Alternative, the project site would remain generally undeveloped. Therefore, Mitigation Measure 4.8-1, which serves to reduce construction noise, would not be required. However, without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element, which could require similar mitigation



measures as those to which the proposed project would be subject. While construction of the roadway could potentially result in noise impacts related to noise generated by construction vehicles and equipment, the alternative's construction activities would be shorter as compared to the proposed project, given the smaller area of ground disturbance. Additionally, implementation of Centennial Drive would occur in a greater distance from the Camden at Somerset Ranch residential subdivision to the south than would implementation of the proposed project. As such, construction of Centennial Drive would be expected to generate less noise than the proposed project, as Centennial Drive would require less construction activities and less time to implement. Construction of Centennial Drive would also adhere to Section 6.68.090 of the City's Municipal Code, which establishes time periods in which construction is restricted, as well as General Plan Policies N.1.4, N.1.5, and N.1.7, which apply to roadway construction. Therefore, the alternative's impacts related to noise would be fewer as compared to the proposed project.

Public Services and Utilities

Under the No Project Alternative, the project site would remain generally undeveloped. Therefore, under the alternative, no impact would occur related to public services or utilities. Without implementation of the proposed project, Centennial Drive would eventually be constructed as depicted in the Circulation Element. Construction of Centennial Drive would not result in impacts to public services and utilities, as the roadway would not introduce, either directly or indirectly, unplanned growth that would result in the provision of new or physically altered governmental services and/or facilities. As the construction of Centennial Drive has been planned for in the Circulation Element, the roadway would primarily serve to accommodate the City's existing population and growth anticipated for the City in the General Plan. Given that Centennial Drive would serve to accommodate the City's existing and future population already planned for in the General Plan, the roadway would not be expected to result in significant impacts related to utilities services. Therefore, the alternative's impacts related to public services and utilities would be fewer as compared to the proposed project.

Transportation

Under the No Project Alternative, the project site would remain generally undeveloped. Therefore, Mitigation Measures 4.10-2(a) and (b), which address impacts related to VMT, would not be required. The alternative would not result in the introduction of a significant number of new residences and associated improvements to the project site, which would, in turn, preclude new VMT associated with the residences. In addition, the construction of Centennial Drive through the project site would provide new roadway connections which, in general, tends to reduce regional VMT. Therefore, the alternative's impacts related to transportation would be fewer as compared to the proposed project.

2. Reduced VMT Alternative

The following section includes a description of the Reduced VMT Alternative, an evaluation of the alternative's consistency with project objectives, and an impact comparison analysis.

Description of Alternative

The Reduced VMT Alternative was designed to reduce project-generated total VMT to 26,260 VMT per day, which would represent the total project-generated VMT if the proposed project were to satisfy the City's proposed VMT threshold of 19.7 per capita (1,333 residents * 19.7 VMT per capita threshold = 26,260 VMT). In order for the alternative to not exceed a total per-day VMT of 26,260, the number of residential units constructed as part of the proposed project would need to be reduced from 440 to 376 units.

The Reduced VMT Alterative would therefore consist of 376 single-family residential lots on the same 98.9-acre development footprint. Lot sizes would be larger in size than those of the currently proposed project, and the reduction in units would result in a density of 3.8 dwelling units per acre (du/ac). Under the Reduced VMT Alternative, the project would require a rezone of the 98.9 acres to the RD-4 zoning district.

Because the Reduced VMT Alternative would result in a similar development footprint to the proposed project, access to the site under the alternative would continue to be provided by two entry points along Raymer Way. Edington Drive would still be extended to provide access from the site to the existing Camden at Somerset Ranch subdivision. However, with the reduction in units, the site would require fewer interior streets.

The alternative's utility connections would also be similar to the proposed project. Units would connect to the existing 10-inch water main in Edington Drive by way of a new eight-inch water main; however, given the reduced number of units, fewer interior water lines would be required. The same would hold true for the site's new sewer lines. The units would connect to existing eight-inch sewer lines in Edington Drive and Thornberg Way, but the alternative would require fewer sewer line connections to as compared to the proposed project. The alternative would still implement two bio-retention basins in the northwest portion of the site, and new drain inlets and underground storm drains would also be installed. The GPA would still be required to amend the General Plan's Circulation Element, which calls for extending Centennial Drive through the site.

Consistency with Project Objectives

Because the Reduced VMT Alternative would consist of 376 units, resulting in a density of 3.8 du/ac, the alternative would be inconsistent with the General Plan land use designation for the Grant Line West Planning Area, which includes a mix of Medium-Density Residential, with a density of 6.1 to 18 du/ac, and High-Density Residential, with a density of 18 to 40 du/ac. As a result, the Reduced VMT Alternative would be inconsistent with Objective #2. The alternative would meet Objectives #1, #3, #4, #5, #6, and #7, as the reduction of units would not affect the ability for the alternative to consolidate the remaining parcels in the Grant Line West Planning Area in a manner that concentrates development south of Morrison Creek; develop a residential community that is contiguous to and compatible with adjacent existing development; utilize existing utility capacity for maximum efficiency; develop a residential community that can provide timely housing; contribute to the overall bicycle and pedestrian connectivity of the City; or enhance the City's network of parks, trails, and open spaces.

Impacts of Alternative

The following provides a discussion evaluating the impacts of this alternative on baseline conditions as compared to the impacts of the proposed project on baseline conditions for each impact area addressed within this EIR.

Air Quality and Greenhouse Gas Emissions

Due to the Reduced VMT Alternative's reduction in the number of residential units, fewer internal roadways and less connections to water and sewer service would be required. However, site access, stormwater treatment and diversion, and the elimination of Centennial Drive within the project site would remain largely similar under the alternative as compared to the proposed project.

Although the alternative would include less units, the same area of disturbance would still be required to implement the alternative's components. Therefore, Mitigation Measure 4.1-7, which address impacts related to GHG emissions or climate change, may still be required. However, factoring in the alternative's reduced number of lots, which would result in a reduction of air pollutants and GHG emissions generated through construction and operation of the residences, as well as associated total VMT, the alternative's impacts related to air quality and GHGs would be fewer than the proposed project.

Biological Resources

With the increased lot sizes under the Reduced VMT Alternative, the area of impact to implement the alternative would be equivalent to the proposed project. Therefore, Mitigation Measures 4.2-1 through 4.2-10 and 4.2-12 would still be required. Given the similar area of disturbance, the alternative's impacts to biological resources would be similar to the proposed project.

Cultural and Tribal Cultural Resources

The area of impact to implement the alternative would be equivalent to the proposed project. Therefore, Mitigation Measures 4.3-2 and 4.3-3(a) through (d), which address impacts to cultural and tribal cultural resources, would still be required. Given the similar area of disturbance, the alternative's impacts to cultural and tribal cultural resources would be similar to the proposed project.

Geology and Soils/Mineral Resources

Because the alternative would still require compliance with recommendations of a final geotechnical engineering report and mitigation to address potential impacts to buried paleontological resources, Mitigation Measures 4.4-3 and 4.4-5 would still be required. Additionally, because the area of disturbance would be equivalent to the proposed project, the alternative's impacts to geology, soils, and mineral resources would be similar to the proposed project.

Hazards and Hazardous Materials

The area of disturbance to implement the alternative would be equivalent to the proposed project. Therefore, Mitigation Measures 4.5-2(a) through (f), which address potential release of on-site hazardous materials, would still be required. Given the similar area of disturbance, the alternative's impacts to hazards and hazardous materials would be similar to the proposed project.

Hydrology and Water Quality

Because the alternative would involve the same area of disturbance, the alternative would still require mitigation to address potential impacts related to short-term construction-related water quality and compliance with BMPs during construction, Mitigation Measures 4.6-1(a) and (b), 4.6-2, and 4.6-3 would still be required. As a result, the alternative's impacts to hydrology and water quality would be similar to the proposed project.

Land Use and Planning/Population and Housing

The alternative would implement the same components as the proposed project, just to a less intense degree. Consequently, the alternative would still require the elimination of a portion of Centennial Drive, and the alternative's impacts related to land use and planning and population and housing would be similar to the proposed project.

Noise

Mitigation Measure 4.8-1, which requires construction noise reductions, would still be required because the alternative would entail the construction of several residences. However, given that the alternative would include less units, the construction period for the alternative would be shorter. In addition, the development of less units would result in less traffic noise during operations. As a result, alternative's impacts related to noise would be fewer compared to the proposed project.

Public Services and Utilities

While the alternative would implement many of the same components as the proposed project, many of the components, such as the number of lots, internal neighborhood roadways, and utilities connections, would be implemented to a less intense degree. In addition, operations of fewer residential units would result in reduced demand for public services and utilities. As a result, the alternative's impacts related to public services and utilities would be fewer compared to the proposed project.

Transportation

Considering the City's VMT threshold is a function of VMT per capita, a reduction in the number of residents would correspond with a reduction in total VMT and, thus, result in an equivalent rate of VMT per capita. However, total project-generated VMT would be reduced by reducing the number of proposed units. Because the City's VMT threshold is a per capita rate, the alternative's reduced intensity of units would not avoid the project's potential to exceed the City's VMT threshold. The alternative would still require Mitigation Measures 4.10-2(a) and (b). However, total project-generated VMT would be reduced and, consequently, the alternative's impacts related to transportation would be fewer as compared to the proposed project. Nonetheless, although impacts related to transportation would be fewer, the Reduced VMT Alternative would not eliminate the significant and unavoidable impact related to the City's VMT threshold.

3. Reduced Footprint Alternative

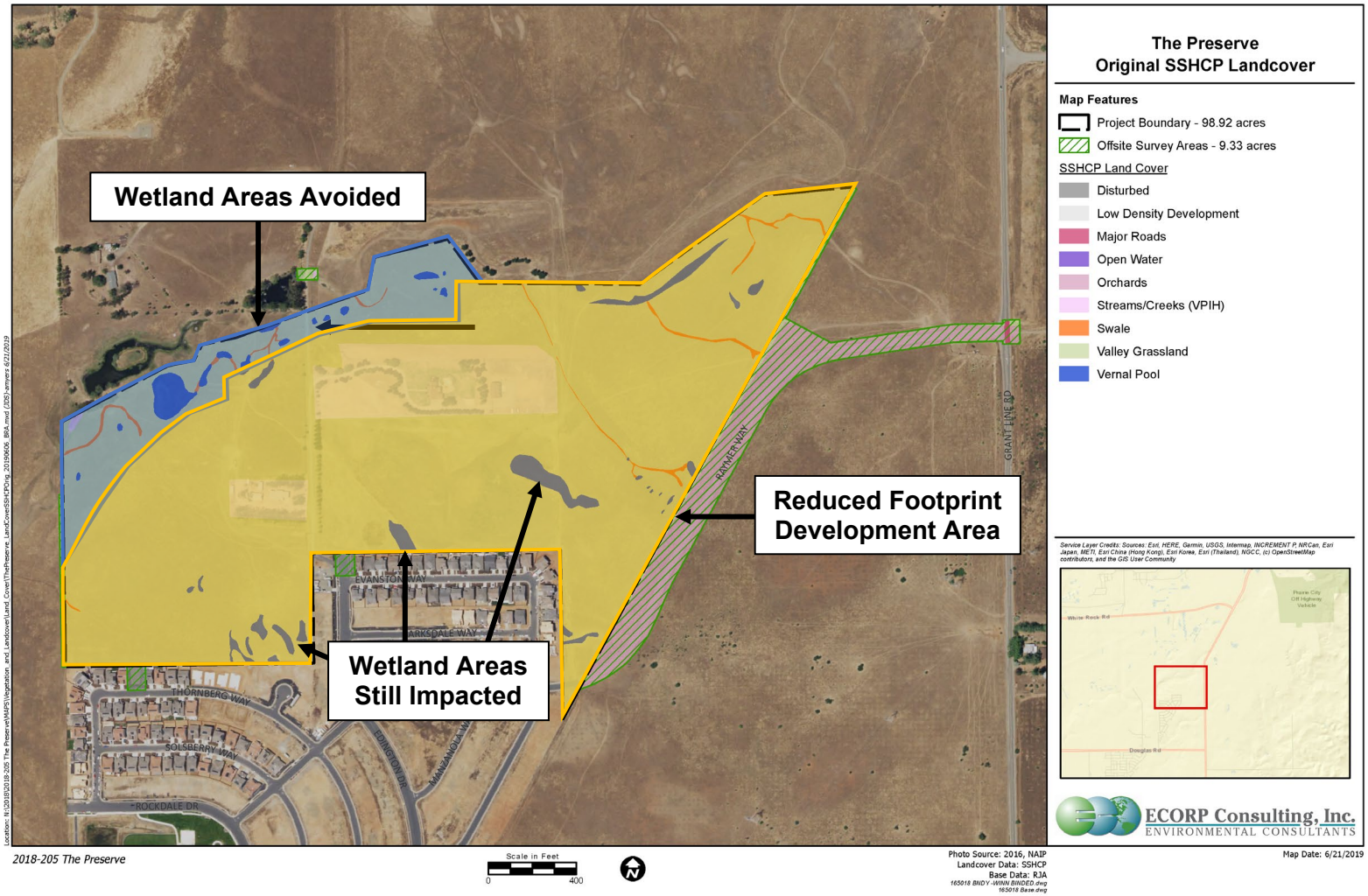
The following section includes a description of the Reduced Footprint Alternative, an evaluation of the alternative's consistency with project objectives, and an impact comparison analysis.

Description of Alternative

Under this alternative, the project site would be reduced to avoid wetland areas in the northwest section of the development area (see Figure 6-1). Wetlands in the southern section of the development area would still be impacted. The reduction in footprint would reduce the project's development area from 98.9 acres to 92.57 acres, which would preserve 6.33 acres of wetlands. The alternative would still implement the 9.77 acres designated for community space to allow for the inclusion of the bio-retention and hydromodification areas in the northwest portion of the site. Retaining the community space would necessitate a reduction in the number of units developed in the western portion of the project site, from 172 units to 47 units. The total units to be developed would be reduced from 440 units to 315 units. The reduction in units and footprint would result in a density of 3.4 du/ac. As such, the alternative would require a Rezone to the RD-4 Zoning District.

Because the Reduced Footprint Alternative would maintain a similar layout to the proposed project, access to the site under the alternative would continue to be provided by two entry points along Raymer Way. Edington Drive would still be extended to provide access from the site to the existing Camden at Somerset Ranch subdivision.

Figure 6-1
Reduced Footprint Alternative Development Area



The alternative's connections to utilities would also be similar to the proposed project. Units would connect to the existing 10-inch water main in Edington Drive by way of a new eight-inch water main; however, with fewer units, the alternative would require fewer new interior water lines. Similarly, the units would connect to existing eight-inch sewer lines in Edington Drive and Thornberg Way, but the alternative would require fewer sewer line connections.

New drain inlets and underground storm drains would also be installed. However, the amount of stormwater infrastructure within the site would also be reduced, due to the reduced area of ground disturbance. The GPA would still be required to amend the General Plan's Circulation Element, which calls for extending Centennial Drive through the site.

Consistency with Project Objectives

Because the Reduced Footprint Alternative would consist of 315 units, resulting in a density of 3.4 du/ac, the alternative would be inconsistent with the General Plan land use designation for the Grant Line West Planning Area, which includes a mix of Medium-Density Residential, with a density of 6.1 to 18 du/ac, and High-Density Residential, with a density of 18 to 40 du/ac. As a result, the Reduced Footprint Alternative would be inconsistent with Objective #2. The alternative would meet Objectives #1, #3, #4, #5, #6, and #7, as the reduction of units would not affect the ability for the alternative to consolidate the remaining parcels in the Grant Line West Planning Area in a manner that concentrates development south of Morrison Creek; develop a residential community that is contiguous to and compatible with adjacent existing development; utilize existing utility capacity for maximum efficiency; develop a residential community that can provide timely housing; contribute to the overall bicycle and pedestrian connectivity of the City; or enhance the City's network of parks, trails, and open spaces.

Impacts of Alternative

The following provides a discussion evaluating the impacts of this alternative on baseline conditions as compared to the impacts of the proposed project on baseline conditions for each impact area addressed within this EIR.

Air Quality and Greenhouse Gas Emissions

The Reduced Footprint Alternative would reduce the area of impact from 98.9 acres to 92.57 acres in order to avoid wetland areas in the northwest section of the project footprint. As the alternative would still implement the 9.77 acres designated for community space, the number of units developed in the western portion of the project site would be reduced from 172 units to 47 units and the total units developed would drop from 440 units to 315 units.

The alternative would include less units and the area of ground disturbance would be slightly decreased as compared to the proposed project. Therefore, Mitigation Measure 4.1-7 to address impacts related to GHG emissions or climate change may still be required. However, factoring in the alternative's reduced footprint and number of lots, which would result in a reduction of air pollutants and GHG emissions generated through construction and operation of the residences, as well as from associated VMT, the alternative's impacts related to air quality and GHGs would be fewer than the proposed project.

Biological Resources

While the area of disturbance to implement the alternative would be smaller in comparison to the proposed project, the alternative would still impact 92.57 acres, including wetland areas in the southern areas of the project site. Therefore, Mitigation Measures 4.2-1 through 4.2-10 and 4.2-

12 would still be required. However, because fewer wetlands would be impacted, the alternative's impacts to biological resources would be fewer as compared to the proposed project.

Cultural and Tribal Cultural Resources

While the area of disturbance to implement the alternative would be smaller in comparison to the proposed project, the alternative would still impact 92.57 acres. Therefore, Mitigation Measures 4.3-2 and 4.3-3(a) through (d), which address potential impacts to cultural and tribal cultural resources, would still be required. However, due to the alternative's smaller area of disturbance, the alternative's impacts to cultural and tribal cultural resources would be fewer as compared to the proposed project.

Geology and Soils/Mineral Resources

Given that the alternative would only shrink the area of disturbance within the project site from 98.9 acres to 92.57 acres, the alternative would still involve ground disturbance of several acres with the same soil conditions as compared to the proposed project. As such, the alternative would still require compliance with recommendations of a final geotechnical engineering report and mitigation to address potential impacts to buried paleontological resources. Therefore, Mitigation Measures 4.4-3 and 4.4-5 would still be required. However, considering the alternative's smaller footprint, the alternative's impacts to geology and soils and mineral resources would be fewer as compared to the proposed project.

Hazards and Hazardous Materials

While the area of disturbance to implement the alternative would be smaller in comparison to the proposed project, the alternative would still impact 92.57 acres. Therefore, Mitigation Measures 4.5-2(a) through (f), which address potential release of on-site hazardous materials, would still be required. However, considering the alternative's smaller footprint, the alternative's impacts to hazards and hazardous materials would be fewer as compared to the proposed project.

Hydrology and Water Quality

While the area of disturbance to implement the alternative would be smaller in comparison to the proposed project, the alternative would still include impervious surfaces and 315 units, which could result in soil erosion or the loss of topsoil during construction activities. As a result, the alternative would require mitigation to address potential impacts related to short-term construction-related water quality and compliance with BMPs during construction, and Mitigation Measures 4.6-1(a) and (b), 4.6-2, and 4.6-3 would still be required. However, considering the alternative's smaller footprint, the alternative's impacts to hydrology and water quality would be fewer as compared to the proposed project.

Land Use and Planning/Population and Housing

Because the alternative would implement many of the same components as the proposed project and would still prevent the construction of Centennial Drive within the boundaries of the project site, the alternative's impacts related to land use and planning and population and housing would be similar to the proposed project.

Noise

Because the alternative would implement many of the same components as the proposed project, just to a less intense degree, Mitigation Measure 4.8-1, which relates to short-term noise from construction activities, would still be required. However, given that the alternative would include less units, the construction period for the alternative would be shorter. In addition, the

development of less units would result in less traffic noise during operations. As a result, alternative's impacts related to noise would be fewer compared to the proposed project.

Public Services and Utilities

Many of the components, such as the number of lots and utilities connections, would be implemented to a less intense degree under the alternative as compared to the proposed project. In addition, operations of fewer residential units would result in reduced demand for public services and utilities. As a result, the alternative's impacts related to public services and utilities would be fewer compared to the proposed project.

Transportation

As described above for the Reduced VMT Alternative, while a reduction in the number of units and, thus, residents would correspond with a reduction in the total VMT, an equivalent rate of VMT per capita would still occur. Because the City's VMT threshold is a per capita rate, the alternative's reduced number of units would not avoid the project's potential to exceed the City's VMT threshold and, as a result, the alternative would still require implementation of Mitigation Measures 4.10-2(a) and (b). However, considering the alternative's reduced number of units, the alternative would generate fewer new vehicle trips and less total VMT as compared to the proposed project. As such, the alternative's impacts related to transportation would be fewer in comparison to the proposed project. However, the Reduced Footprint Alternative would not eliminate the significant and unavoidable impact related to the City's VMT threshold.

6.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6(e)(2) requires consideration of an environmentally superior alternative from the range of reasonable alternatives evaluated. The environmentally superior alternative is the alternative that would result in the fewest or least significant environmental impacts. If the environmental superior alternative is the No Project Alternative, the EIR must identify the environmental superior alternative among the other alternatives. Table 6-1 provides a summary comparison of significance levels for identified impacts under each alternative, and is summarized below.

The No Project Alternative would reduce impacts to all issue areas. However, the No Project Alternative would not meet any of the project objectives.

The Reduced VMT Alternative would result in fewer impacts to Air Quality and GHG Emissions, Noise, Public Services and Utilities, and Transportation as compared to the proposed project. However, the Alternative would not avoid the significant and unavoidable impact related to VMT. The Reduced VMT Alternative would not meet Objective #2, but would meet Objectives #1, #3, #4, #5, and #7.

The Reduced Footprint Alternative would result in fewer impacts to almost all issue areas, except for Land Use and Planning/Population and Housing, which would be similar as compared to the proposed project. However, the Alternative would not avoid the significant and unavoidable impact related to VMT. The Reduced Footprint Alternative would not meet Objective #2, but would meet Objectives #1, #3, #4, #5, and #7.

Based on the analysis presented in this chapter, both the Reduced VMT Alternative and the Reduced Footprint Alternative would meet most of the project objective. However, the Reduced Footprint Alternative would result in fewer impacts than the Reduced VMT Alternative and the

proposed project. Therefore, the Reduced Footprint Alternative would be the environmentally superior alternative.

Table 6-1
Comparison of Environmental Impacts for Project Alternatives

Resource Area	Proposed Project level of significance after mitigation	1. No Project Alternative	2. Reduced VMT Alternative	3. Reduced Footprint Alternative
Air Quality and Greenhouse Gas Emissions	Less than Significant	<	<	<
Biological Resources	Less than Significant	<	=	<
Cultural and Tribal Resources	Less than Significant	<	=	<
Geology and Soils/Mineral Resources	Less than Significant	<	=	<
Hazards and Hazardous Materials	Less than Significant	<	=	<
Hydrology and Water Quality	Less than Significant	<	=	<
Land Use and Planning/Population and Housing	Less than Significant	<	=	=
Noise	Less than Significant	<	<	<
Public Services and Utilities	Less than Significant	<	<	<
Transportation	Significant and Unavoidable	<	<*	<*

Note: Less than Proposed Project = "<"; Similar to Proposed Project = "="; Greater than Proposed Project = ">".

* Significant and Unavoidable impact(s) determined for the proposed project would still be expected to occur under the Alternative.

7. EIR Authors and Persons Consulted

7. EIR AUTHORS AND PERSONS CONSULTED

Raney Planning & Management, Inc.

C. Timothy Raney, AICP	President
Cindy Gnos, AICP	Senior Vice President
Nick Pappani	Vice President
Rod Stinson	Division Manager/Air Quality Specialist
Angela DaRosa	Assistant Division Manager/Air Quality Specialist
Briette Shea	Senior Associate/Air Quality Technician
Jessica Chuidian-Ingersoll	Associate
Joe Baucum	Associate
Jesse Fahrney	Associate
Ben Porter	Associate

City of Rancho Cordova

Darcy Goulart	Principal Planner

Bollard Acoustical Consultants, Inc.

Dario Gotchet	Senior Consultant

ECORP Consulting, Inc.

Taraneh Emam	Project Manager/Senior Biologist
Keith Kwan	Senior Biologist
Angela Haas	Biologist
Matthew Spaulding	Biologist
Daniel Wong	Biologist
Ben Waitman	Arborist
Theodora Fuerstenberg	Senior Archaeologist
Roger Mason	Archaeologist
Megan Webb	Associate Archaeologist
Ellen Dahl	Associate Archaeologist

Geocon Consultants, Inc.

Shane Rodacker	Vice President

Kimley-Horn & Associates, Inc.

Matt Weir	Vice President/Principal Engineer
Chris Gregerson	Engineer

Ruggeri-Jensen-Azar & Associates

John Zellmer	Principal Engineer
Rich Radoycis	Project Manager
Steve Bowman	Project Manager

Youngdahl Consulting Group, Inc.

David C. Sederquist	Senior Engineering Geologist/Hydrogeologist
Dennis S. Eck	Staff Geologist

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Appendix A

NOTICE OF PREPARATION

DATE:	**October 25, 2019**
TO:	**State Clearinghouse** **1400 Tenth Street** **Sacramento CA, 95814**
TO:	**Responsible Agencies, Organizations, and Interested Parties**
LEAD AGENCY:	**City of Rancho Cordova** **Contact: Darcy Goulart** **2729 Prospect Park Drive** **Rancho Cordova, CA 95760**
SUBJECT:	**Environmental Impact Report for The Preserve Project**

In discharging its duties under Section 15125 of the California Environmental Quality Act (CEQA) Guidelines, the City of Rancho Cordova (as Lead Agency) intends to prepare an Environmental Impact Report (EIR) for The Preserve Project. The City will be the lead agency for compliance with the California Environmental Quality Act ("CEQA").

In accordance with Section 15125 of the CEQA Guidelines, the City of Rancho Cordova has prepared this Notice of Preparation to provide Responsible Agencies and other interested parties with sufficient information describing the proposal and its potential environmental effects.

The determination to prepare an EIR was made by the City of Rancho Cordova. An Initial Study, attached hereto, has been prepared pursuant to CEQA Guidelines Section 15125, which identifies the anticipated environmental effects of the project. The Initial Study satisfies the City's obligation under CEQA Guidelines Section 15125 to identify the probable environmental effects of the project.

As specified by the CEQA Guidelines, the Notice of Preparation (NOP) will be circulated for a 30-day review period. The City of Rancho Cordova welcomes public input during this review. In the event that no response or request for additional time is received by any Responsible Agency by the end of the review period, the Lead Agency may presume that the Responsible Agency has no response.

PUBLIC MEETING

A Public Scope Meeting will be held on Wednesday, November 13, 2019 at 6:00 p.m.
in the Rancho Cordova City Hall, American River South Room
2729 Prospect Park Drive, Rancho Cordova

Comments may be submitted during the review period and addressed to

Darcy Goulart, Planning Manager
City of Rancho Cordova
2729 Prospect Park Drive
Rancho Cordova, CA 96670

The comment period closes on November 25, 2019

A. Project Location, Current Use, and Surrounding Use

The project site consists of approximately 283 acres located within the City of Rancho Cordova (see Figure 1). The site is located northwest of Raymer Way and Grant Line Road, north of the Sunridge Specific Plan and east of the Rio Del Oro Specific Plan (see Figure 2). The General Plan designates the project site Planning Area. Specifically, the site is located within the Grant Line West Planning Area and is designated Natural Resources and Residential-Mixed Density by the Draft Land Use Concept Map. The site is zoned Agricultural (AG-80) and Industrial Reserve (IR) and is identified by Assessor's Parcel Numbers (APNs) 072-0300-001, -002, -005, -008, and 073-0010-010, and -011.

Currently, the 283-acre project consists of two single-family residences on the southern portion of the property, and vacant, non-native grasslands throughout the remaining area. The site has moderately rolling hills and flatlands throughout the parcel with seasonal drainage channels and wetlands. Additionally, Morrison Creek flows northeast to southwest through the project site. Several ornamental trees are located along the existing entrance road near the structures on the property. The elevation of the site ranges from 210 to 250 feet above mean sea level. The project site is also traversed by the 275 feet wide utility easement occupied by PG&E and SMUD facilities.

Surrounding land uses include the Camden at Somerset Ranch Residential subdivision to the south, a Teichert Aggregates Aggregate/Asphaltic Concrete site across Grant Line Road to the east, industrial/open space to the north, and vacant land for the development of the Rio Del Oro residential community to the west.

B. Project Characteristics

The proposed project would include subdivision of the site to develop a total of 434 single-family lots and various associated improvements including, but not limited to, parks, a preserve area, landscaping, circulation improvements, and utility installation. The proposed project would include 22.84 acres of public parks north of the proposed residences. Additionally, the project would preserve 185 acres of natural land to the north in order to protect wetlands.

General Plan Amendment/Rezone

Per the City of Rancho Cordova General Plan, the project site is currently designated Planning Area. The Draft Land Use Concept Map for the Grant Line West Planning Area designates the site Natural Resources and Residential-Mixed Density. The proposed project would require a General Plan Amendment to change the site's land use designation to Low-Density Residential. An additional General Plan Amendment would be required to remove from the Circulation Element Centennial Drive in the project vicinity. In addition, the project would require a rezone of approximately 70 acres of AG-80 and approximately 25-acres of IR to Residential District (RD-6). The Residential District designation sets a maximum of six dwelling units per acre (See Figure 3).

Tentative Subdivision Map

The proposed project would subdivide 434-single family residential lots. Lots in the western portion of the site would be a minimum of 4,050 sf (45 feet x 90 feet), with the larger lots located at the corners of each block. Lots located in the central area of the site would be a minimum of 5,775 sf (55 feet x 105 feet). Lots located in the eastern portion of the site would be approximately 4,725 sf (45 feet x 105 feet). The range of lot sizes for the proposed project would be between 4,050 sf and 9,416 sf (see Figure 4). In addition, the project would include an 18 to 20-foot setback from the front of each residence to the street. The proposed would also provide a 100-foot setback from Morrison Creek.

Figure 1
Project Location

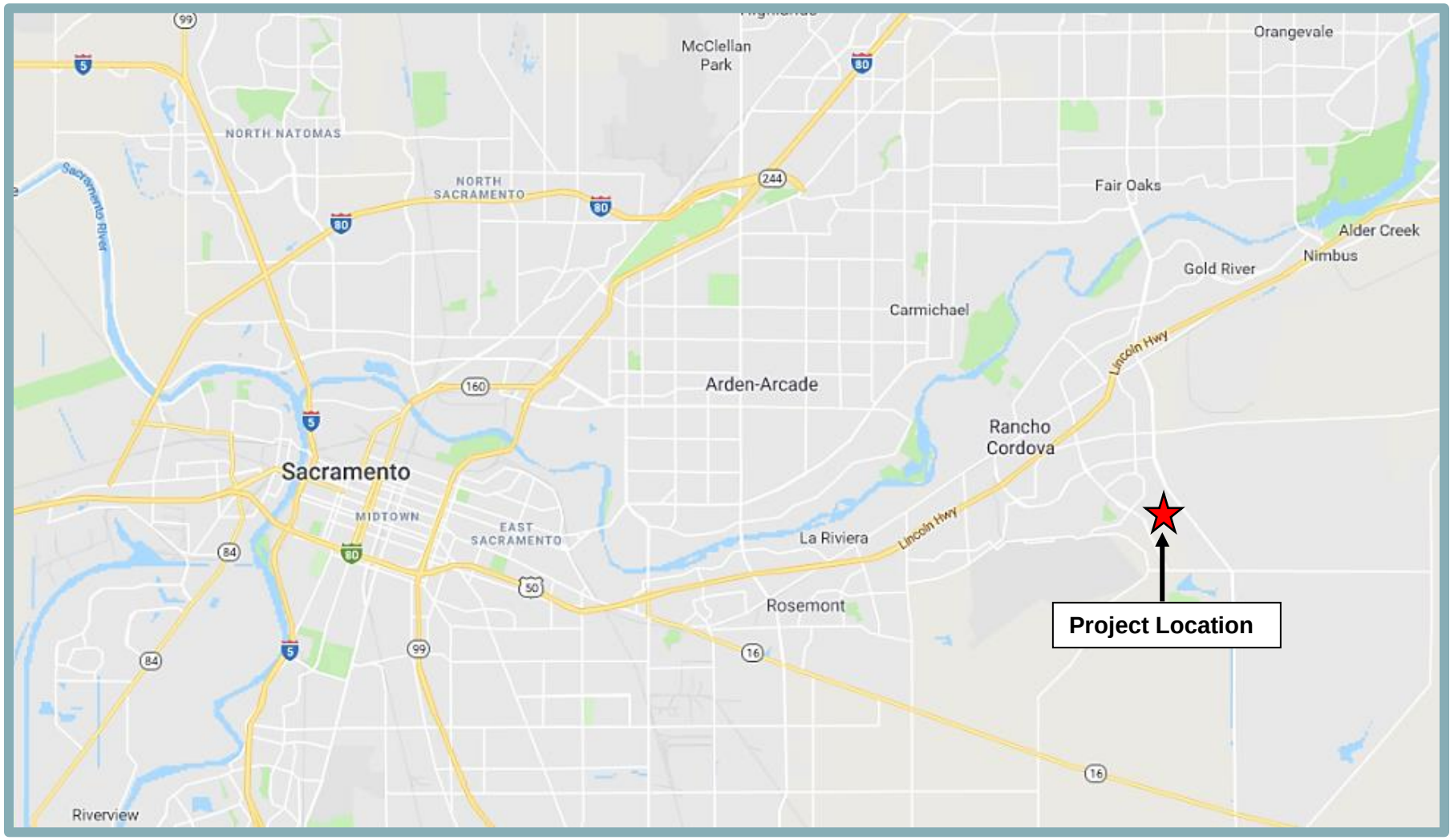


Figure 2
Project Site and Existing Planning Boundaries

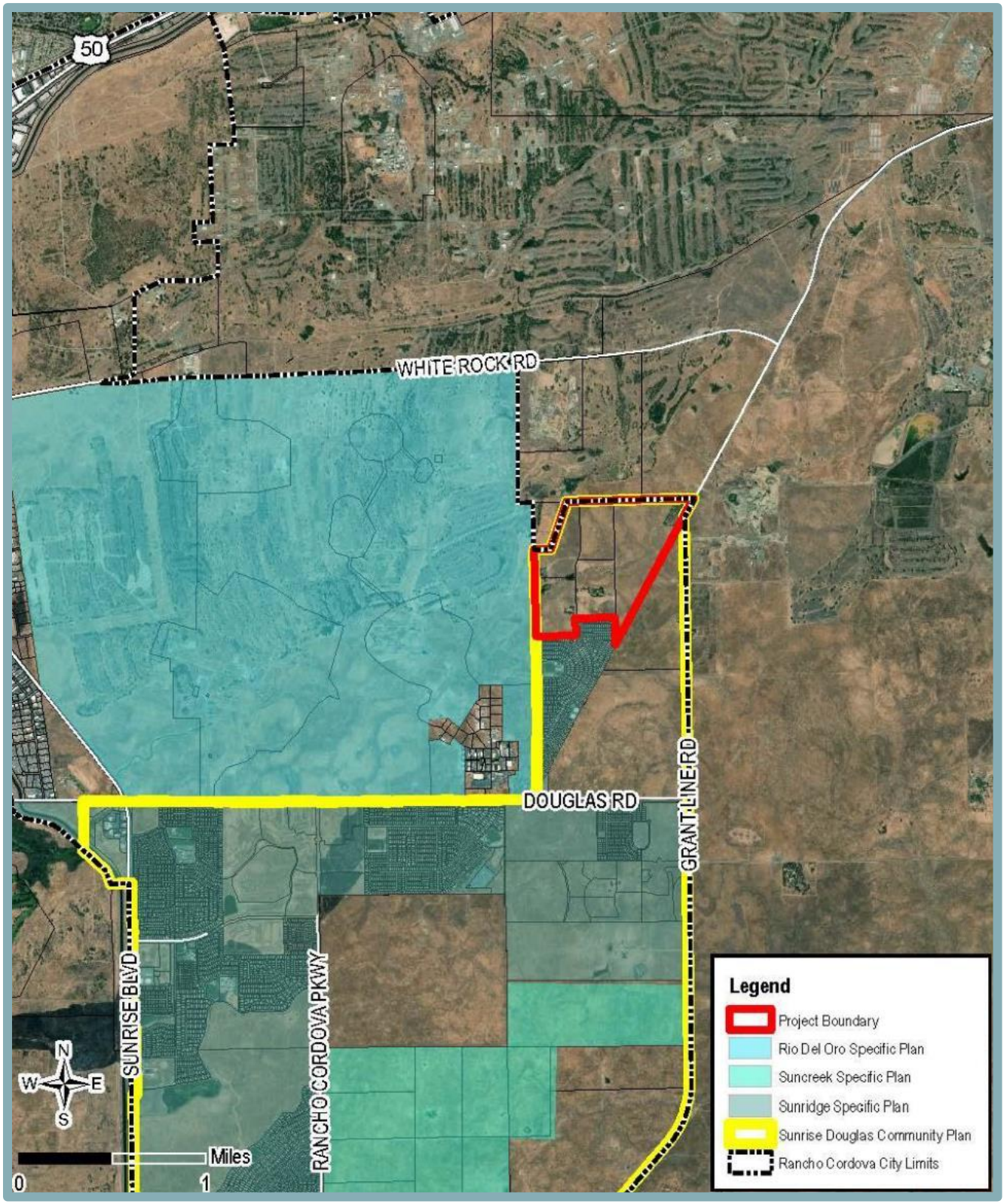


Figure 3
Existing and Proposed Zoning

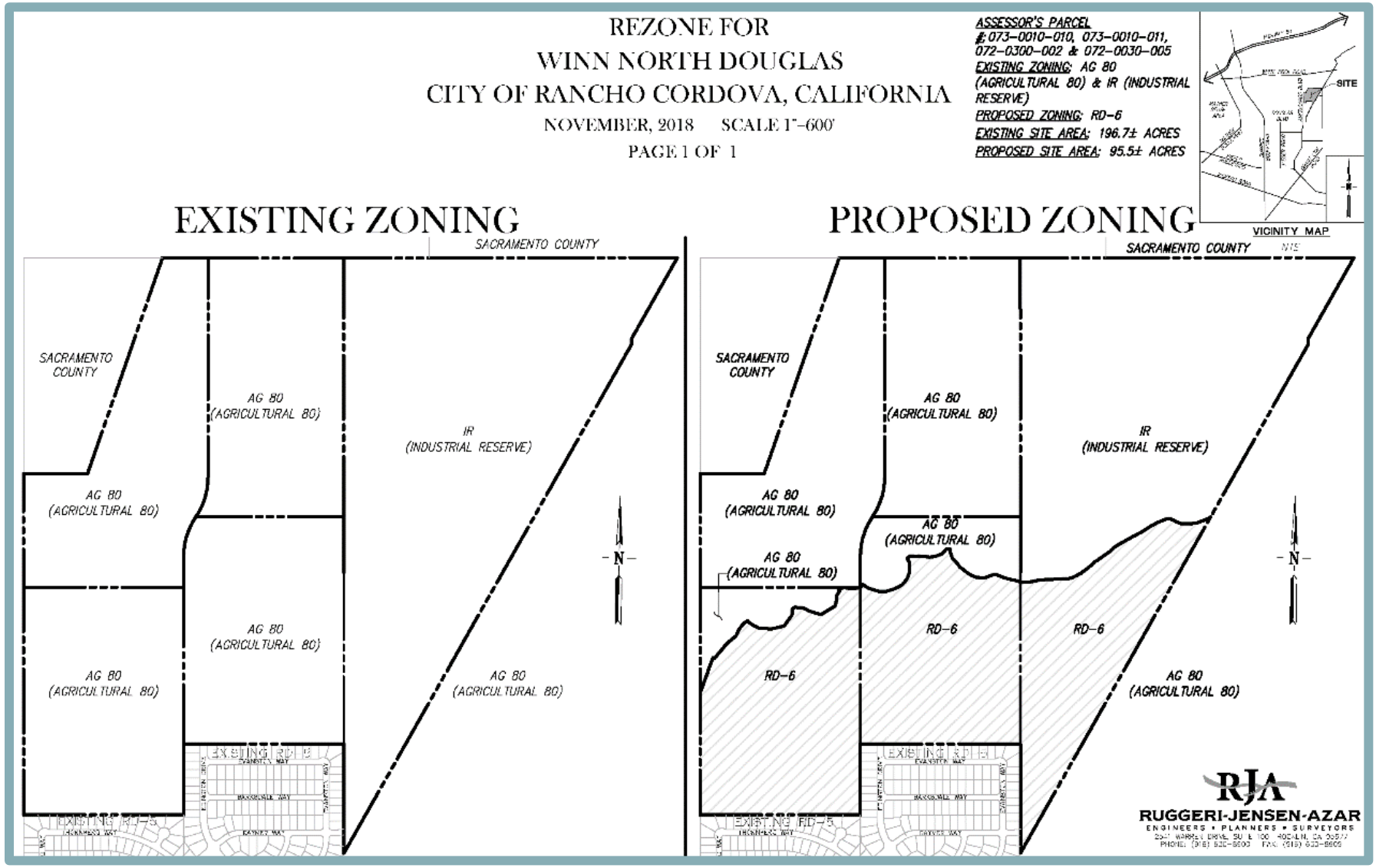
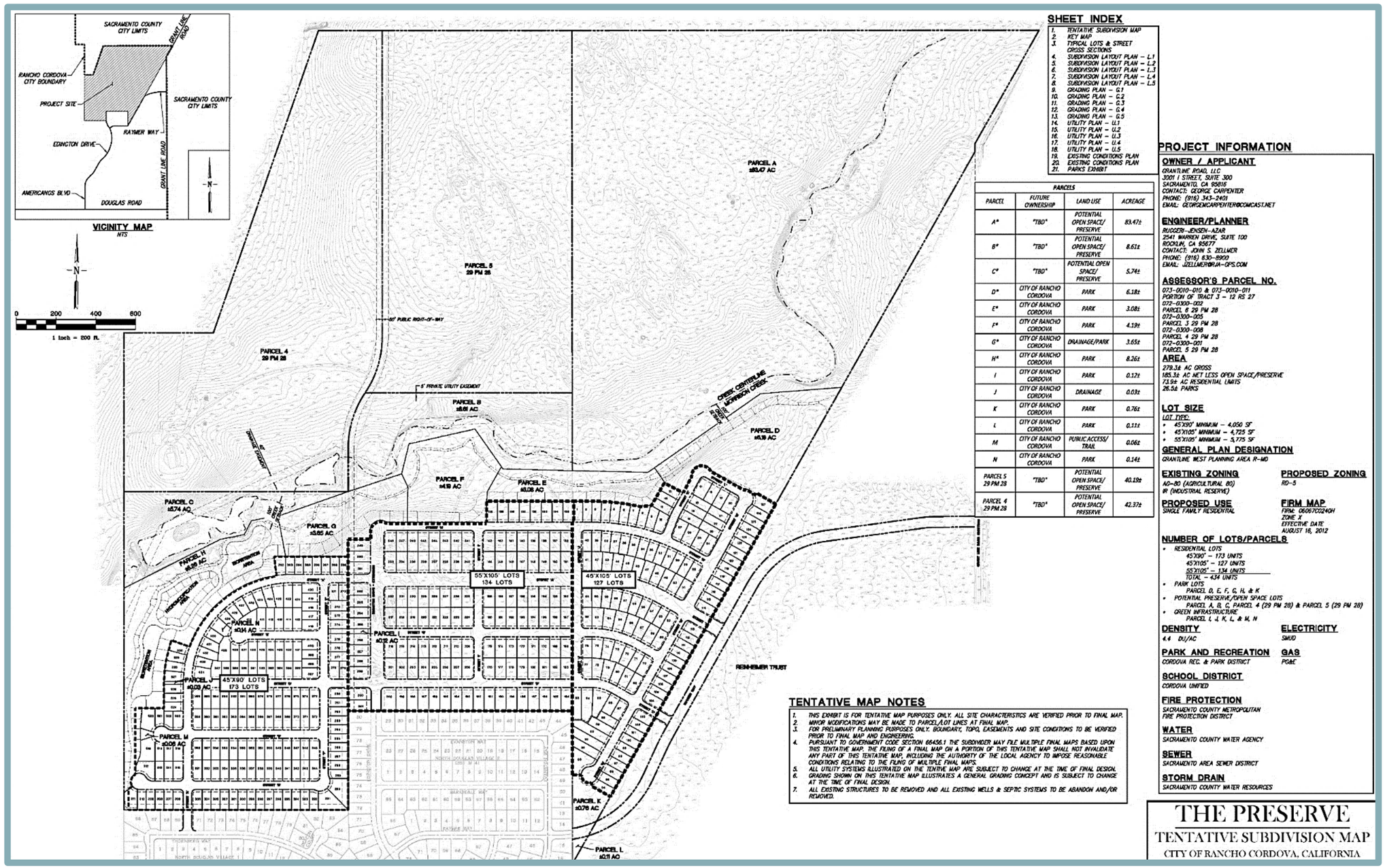


Figure 4
Tentative Subdivision Map



Access and Circulation
The proposed project includes four access points, including two connections to Raymer Way and two connections to the existing Camden at Somerset Ranch subdivision to the south. Street sections would range from 42-feet for the internal residential streets to 69-feet for the residential collector street. The internal residential streets would include a five-foot sidewalk on each side. The other streets would include a combination of parkways with 10-foot sidewalks on one side and either a connected five-foot sidewalk on the other or a six-foot parkway and six-foot sidewalk on the other side.

Open Space/Recreation
As part of the proposed project, 185.3 acres of undeveloped land to the north would be maintained as open space/preserve. The project would designate 8.9 acres for parks, 11.6 acres of Community Space, and 1.6 acres of green infrastructure (see Figure 5). The Community Space would be presented in the form of two bioretention areas that feed into a hydromodification area. The area designated for open space would remain within the IR or AG-80 zoning designation.

The 8.9 acres designated for parks would include two parks managed by the Cordova Parks and Recreation District. The 1.6 acres of green infrastructure would be composed of trail connections to surrounding parks and landscaped areas.

Utilities
Treated water service for the project would be provided by the Sacramento County Water Agency. The proposed project would include construction of new eight-inch water lines connecting to an existing 10-inch water main located within Edington Drive.

Sanitary sewer service is provided to the City by the County Sanitation District 1 (CSD-1). CSD-1 maintains the sewer system collecting waste water flows from individual developments throughout the district and conveys them to the Sacramento Regional County Sanitation District Inceptor system. Wastewater would be routed and delivered to the Sacramento Regional Wastewater Treatment Plant north of Elk Grove (see Figure 6). The project would include connection to the existing eight-inch sewer lines or within Edington Drive and Thornberg Way.

Stormwater throughout the site would be directed through 12- and 30-inch drainage pipes. From the drainage pipes, the stormwater would be routed to the bioretention basins located at the northwestern portion of the parcel. The stormwater would then travel to the hydromodification basin which would deliver the remaining stormwater to the pond north of the project site. In addition, connection to existing natural gas and telecommunications infrastructure would be required for the proposed development.

Figure 5
Parks and Open Space/Preserve Area

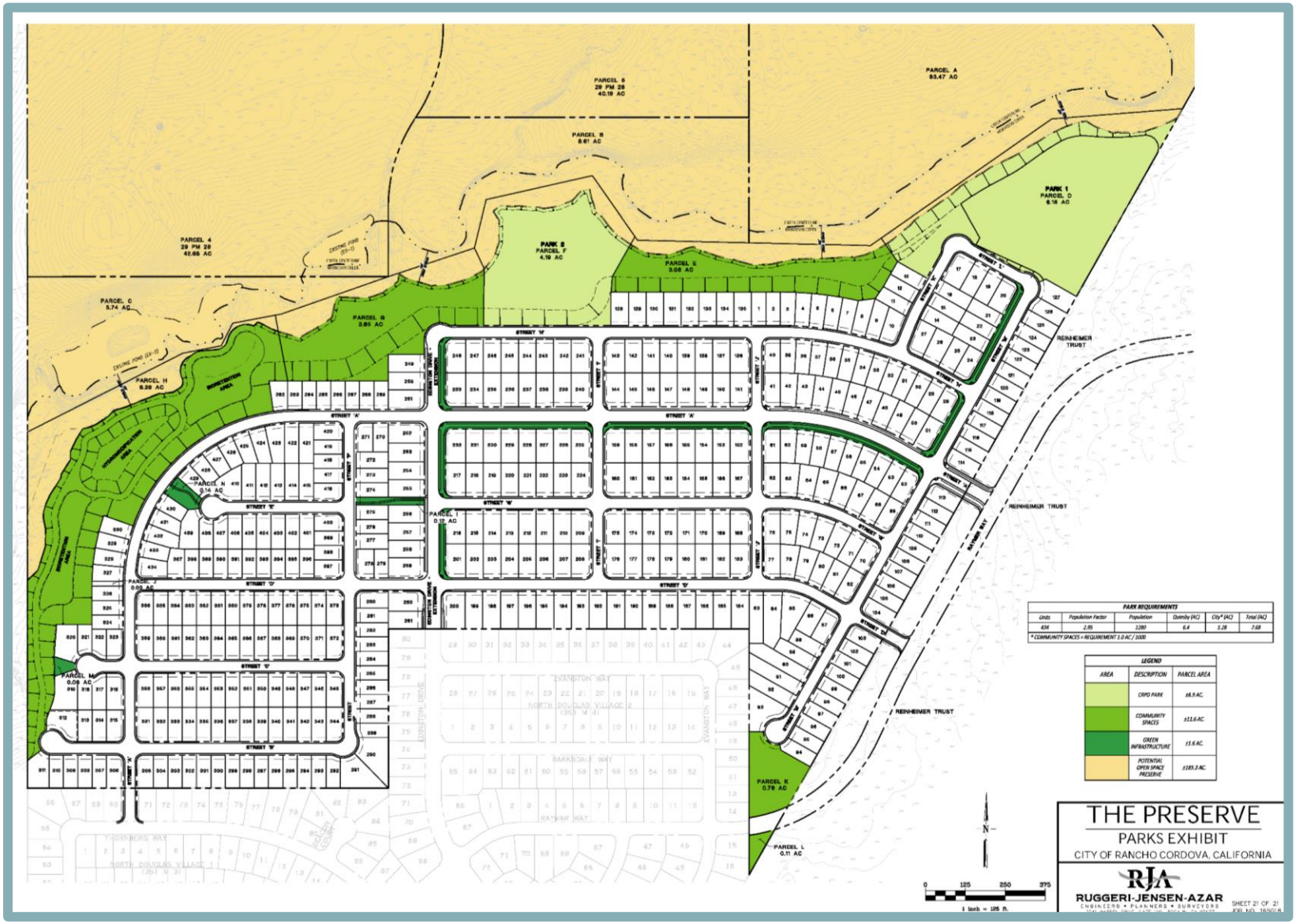
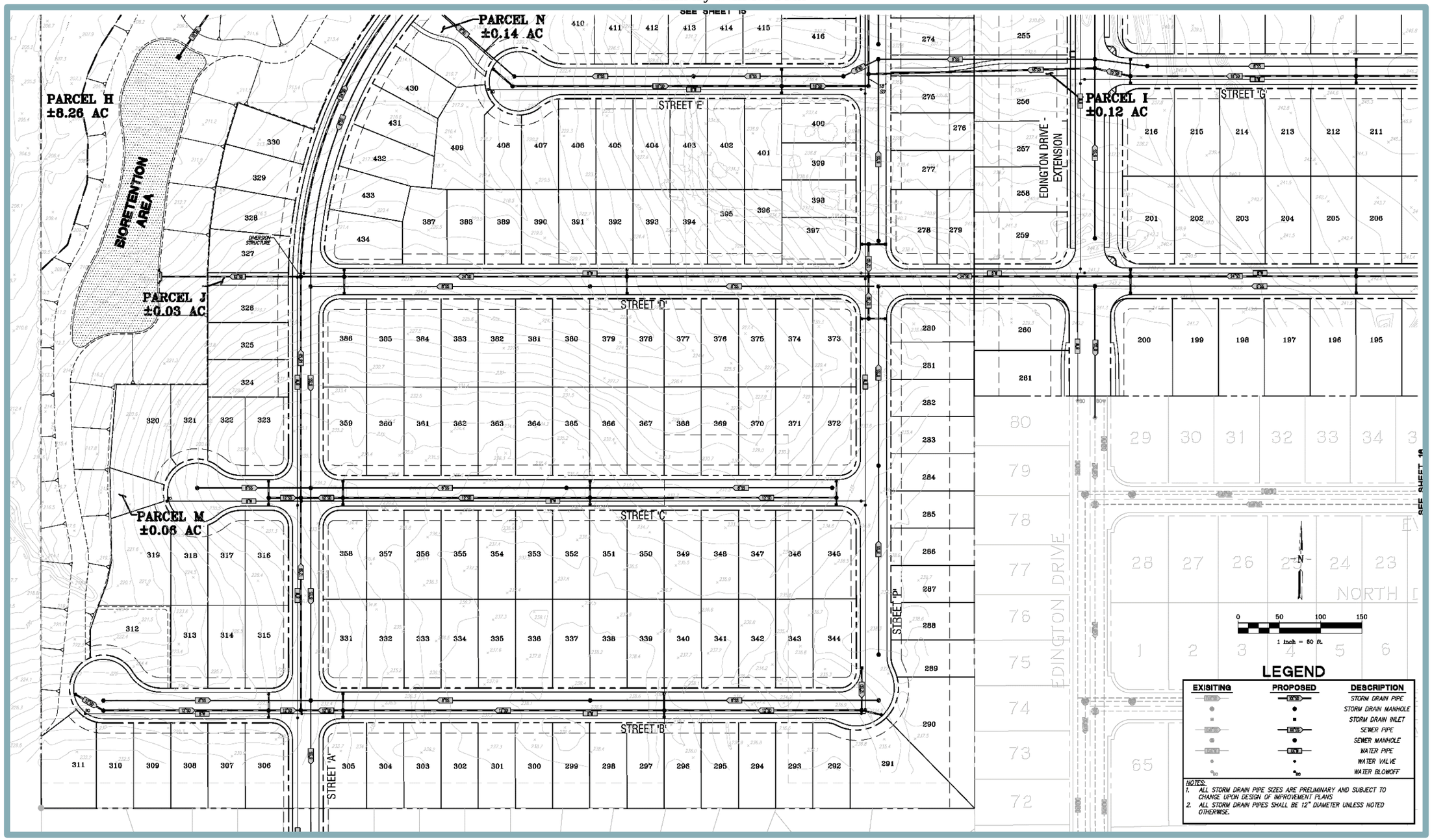


Figure 6
Preliminary Utilities Plan



C. Required Approvals

The proposed project requires approval of the following discretionary entitlements.

The proposed project would require City approval of the following:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- General Plan Amendment from Grant Line West Planning Area to Low-Density Residential;
- General Plan Amendment to remove from the Circulation Element Centennial Drive in the vicinity of the project;
- Rezone from AG-80 (approximately 70 acres) and IR (approximately 25 acres) to MDR (25.9 acres), O (4.3 acres), and RLDR 1-2.3 ac min (1.8 acres).;
- Tentative Subdivision Map; and
- Development Agreement.

Other discretionary approvals that may be required by other governmental agencies may include, but are not limited to, the following:

- California Department of Fish and Wildlife (CDFW);
- Central Valley Regional Water Quality Control Board (CVRWQCB);
- Sacramento Metropolitan Air Quality Management District (SMAQMD); and
- United States Army Corps of Engineers (ACOE) – Nationwide Permit (404).

D. Project Background

The purpose of the EIR is to provide information about potential significant physical environmental impacts of the Preserve Project, to identify possible ways to minimize those significant impacts, and to describe and analyze possible alternatives to the proposed project if potential significant impacts are identified. Preparation of an NOP and EIR does not indicate a decision by the City to approve or disapprove the project. However, prior to making any such decision, the City Council must review and consider the information contained in the EIR.

E. Potential Environmental Effects

The environmental analysis for the proposed project will focus on the following areas: Air Quality and Greenhouse Gas Emissions (including Energy), Biological Resources, Cultural and Tribal Resources, Geology & Soils/Mineral Resources, Hazards and Hazardous Materials, Hydrology & Water Quality (Drainage), Land Use & Planning/Population & Housing, Noise, Public Services and Utilities, and Transportation. In addition, statutorily required sections and discussion of project alternatives will be included. Some refinement to the aforementioned issues may be required based on comments received during the NOP scoping process. The following section describes each of the technical Chapters of the EIR in further detail.

Air Quality and Greenhouse Gas Emissions (including Energy)

The Air Quality and Greenhouse Gas (GHG) Emissions chapter of the EIR will summarize the regional air quality setting, including climate and topography, existing ambient air quality, regulatory setting, and presence of any sensitive receptors near the project site. The air quality impact analysis will be determined through coordination with SMAQMD. A quantitative assessment of short-term and long-term increases of criteria air pollutant emissions of primary concern (i.e., ROG NO_x, and PM_{10}) resulting from the proposed

project will be included. The Traffic Impact Study (TIS) will be based upon modeling using California Emission Estimator Model (CalEEMod). CALINE 4 modeling will be conducted if warranted based on the results of the TIS.

Throughout the GHG section, CalEEMod will be used to produce an estimate of carbon dioxide emissions, including indirect emissions of GHG (e.g., electricity, natural gas). Analysis will include a discussion of Assembly Bill (AB) 32 and Senate Bill (SB) 32 in compliance with the California 2017 Climate Change Scoping Plan and SMAQMD to determine appropriate thresholds. This chapter will also discuss potential energy impacts as a result of the proposed project. In accordance with Appendix G Checklist of the CEQA Guidelines, the analysis will discuss the projects energy efficiency, conservation measures, and applicable mitigation measures, if needed, for reducing air quality, GHG, and energy impacts.

Biological Resources

The Biological Resources analysis will discuss potential impacts to plant communities, wetlands, and wildlife. The analysis will take an in-depth look at potential effects on rare, endangered, candidate sensitive, and special-status species from the buildout of the proposed project. The analysis will reference an Aquatic Resources Delineation, Arborist Survey Report, Special Status Plant Surveys, and Biological Resources Report (BRA) prepared for the project. In addition, the biological resources analysis will discuss the effects of the proposed project on Morrison Creek riparian vegetation and the effects of the proposed project. Recommended mitigation measures will be incorporated, if necessary, to reduce significant impacts to biological resources and ensure compliance with South Sacramento Habitat Conservation Plan.

Cultural and Tribal Resources

The Cultural and Tribal Resources chapter of the EIR will discuss the potential impacts to historical, archaeological, and tribal resources, including human remains and historical buildings, from implementation of the proposed project. Typical historical resources often include, but are not limited to, buildings, farmsteads, rail lines, bridges, and trash scatters containing objects such as colored glass and ceramics. The chapter will include analysis of a record search of the Native American Heritage Commission Sacred Lands File and the California Historical Resources Information System database results for the proposed project. The chapter will also discuss compliance with AB 52 regarding notification of relevant tribes. Recommended mitigation measures will be incorporated, if necessary, to reduce significant cultural and tribal resource impacts.

Geology & Soils/Mineral Resources

The Geology & Soils/Mineral Resources chapter of the EIR will summarize the setting and describe the potential effects from soil erosion, earthquakes, liquefaction, and expansive soils, as well as identify any unique geologic features within the project vicinity. This chapter will utilize a Geotechnical Report prepared for the project site and discuss the present conditions. The Geology & Soils/Mineral Resources chapter will reflect the results of the Geotechnical Report and will provide analysis of the project in the context of the various features in the area. Recommended mitigation measures will be incorporated, if necessary, to reduce significant geologic and mineral resource impacts.

Hydrology & Water Quality (Drainage)

The Hydrology and Water Quality chapter will summarize the setting of the project site and identify potential effects on drainage, flooding, groundwater, and water quality. This chapter will include analysis of drainage from impervious surfaces associated with the proposed project and analyze impacts to groundwater and surface water. The analysis will use the Drainage Study, Sewer Study, and Water Study prepared for the project. The City of Rancho Cordova General Plan, General Plan EIR, and additional

ordinances will be referenced in the analysis. Recommended mitigation measures will be incorporated, if necessary, to reduce significant hydrology and water quality impacts.

Land Use & Planning/Population & Housing

The Land Use & Planning/Population & Housing chapter of the EIR will evaluate the consistency of the proposed project with the City of Rancho Cordova's adopted land use plans and policies, as well as the projects compatibility with surrounding land uses both, existing and proposed. The analysis will discuss amendments needed to the General Plan and the required changes to the zoning designations. The Rancho Cordova General Plan, Zoning Ordinances, and other documents will be examined to determine the potential effects of the proposed project. Population and housing will be addressed in the chapter to discuss population growth and the effects of the increase in residents. Recommended mitigation measures will be incorporated, if necessary, to reduce significant land use and planning, as well as population and housing impacts.

Noise

The Noise chapter of the EIR will be based on a project specific noise analysis. The noise analysis will include evaluation of the existing noise environment, prediction of project-generated noise, and development of noise control mitigation measures, as appropriate. Analysis of the proposed projects potential impact on surrounding sensitive receptors due to construction noise and vibration will be included. Potential noise associated with traffic effects will be evaluated in relation to the Noise Element of the City's General Plan and relevant ordinances. Recommended mitigation measures will be incorporated, if necessary, to reduce significant noise impacts.

Public Services and Utilities

The Public Services and Utilities chapter will describe the current setting and potential demands the proposed project may have on services, including fire, police, schools, parks, and recreation. The Rancho Cordova General Plan and General Plan EIR will be used to evaluate the potential impacts on public services. The Utilities portion of this chapter will focus on the potential effects on water supply, wastewater treatment, and solid waste disposal. The analysis will reference information from the Rancho Cordova Urban Water Management Plan (UWMP) to evaluate the potential new demand on water supply as a result of the proposed project. In addition, wastewater and solid waste issues will be analyzed using the Rancho Cordova General Plan and General Plan EIR and through consultation with the appropriate service provider. Recommended mitigation measures will be incorporated, if necessary, to reduce public services and utilities impacts.

Transportation

The Transportation chapter of the EIR will incorporate a TIS provided to evaluate impacts of the proposed project on existing and future transportation systems. The TIS will be used to examine the surrounding intersections in the area and the potential impacts the proposed project may have on the roadways. The chapter will evaluate the adequacy of site access, emergency access, possible design hazards, and on-site circulation. The chapter will also include additional analysis of Vehicle Miles Traveled induced by the proposed project. Recommended mitigation measures will be incorporated, if necessary, to reduce significant transportation impacts.

Attachment – Initial Study

City of Rancho Cordova
Community Development Department

The Preserve Project

Initial Study

October 2019

Prepared by

RANEY PLANNING & MANAGEMENT, INC. 20 years
1501 Sports Drive, Suite A, • Sacramento • CA • 95834
Office 916.372.6100 • Fax 916.419.6108

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INITIAL STUDY

October 2019

A. BACKGROUND

1.	Project Title:	The Preserve Project
2.	Lead Agency Name and Address:	City of Rancho Cordova Community Development Department 2729 Prospect Park Drive Rancho Cordova, CA 95760
3.	Contact Person and Phone Number:	Darcy Goulart Principal Planner (916) 851-8784
4.	Project Location:	Northwest of Raymer Way and Grant Line Road Rancho Cordova, CA APNs 072-0300-001, -002, -005, -008, 073-0010-010, and -011
5.	Project Sponsor's Name and Address:	Winn Communities, Inc. 3001 I Street, Suite 300 Sacramento, CA 95816 (916) 930-0925
6.	Existing General Plan Designation:	Grant Line West Planning Area Natural Resources Residential Mixed Density
7.	Existing Zoning Designation:	Agricultural (AG-80) Industrial Reserve (IR)
8.	Proposed Land Use Designation:	Low-Density Residential
9.	Proposed Zoning Designation:	Residential District (RD-6) Agricultural (AG-80) Industrial Reserve (IR)
10.	Required Approvals from Other Public Agencies:	California Department of Fish and Wildlife Central Valley Regional Water Quality Control Board Sacramento Metropolitan Air Quality Management District United States Army Corps of Engineers

11. Surrounding Land Uses and Setting:

The project site consists of approximately 283 acres located within the City of Rancho Cordova, California. Currently, the project site contains two single-family residences on the southern portion of the site, and the remainder of the site is vacant, primarily composed of non-native grasses and forbs. The City of Rancho Cordova General Plan designates the project site as Grant Line West Planning Area and the site is zoned Agricultural (AG-80) and Industrial Reserve (IR). Surrounding land uses include Camden at Somerset Ranch residential subdivision to the south; vacant agricultural lands under a Williamson Act contact to the east, vacant land approved for the development of the Rio Del Oro residential community to the west and industrial/open space to the north.

12. Project Description Summary:

The proposed project would include developing a 434-unit, single-family residential subdivision including parks, preserve areas, and additional infrastructure to support the community. Of the 283 acres within the project site, 185.3 acres of undeveloped land on the northern parcels would be remain as open space/preserve. The project would include 26.12 acres of public parks and community spaces north of the proposed residences. Additionally, the proposed project would include landscaping, circulation improvements, and utility installation. The project would require approval of a General Plan Amendment to change the land use designation of the site, a General Plan Amendment to remove from the Circulation Element Centennial Drive in the project vicinity, a Rezone, Development Agreement, and a Tentative Subdivision Map.

13. Status of Native American Consultation Pursuant to Public Resources Code Section 21080.3.1:

In compliance with Assembly Bill (AB) 52 (Public Resources Code Section 21080.3.1), project notification letters were distributed to the necessary tribes in the project area. To date, requests to consult have not been received by the City of Rancho Cordova.

B. SOURCES

The following documents are referenced information sources used for the purposes of this Initial Study:

1. California Building Standards Commission. *California Green Building Standards Code*. 2019.
2. California Department of Conservation. *Sacramento County Important Farmland 2016.* July 2017.
3. California Department of Forestry and Fire Protection. *Sacramento County, Fire Hazard Severity Zones in SRA*. November 7, 2007.
4. California Department of Transportation. *California Scenic Highway Mapping System*. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm. Accessed June 2019.
5. City of Rancho Cordova. *City of Rancho Cordova General Plan.* Adopted June 26, 2006.
6. City of Rancho Cordova. *City of Rancho Cordova General Plan Draft Environmental Impact Report, SCH# 2005022137.* March 13, 2006.
7. City of Rancho Cordova. *City of Rancho General Plan Land Use Policy Map*. June 26, 2006.

8. City of Rancho Cordova. *Design Guidelines*. September 6, 2005.
9. City of Rancho Cordova. *Rancho Cordova Police Department*. Available at: http://www.ranchocordovapd.com/about.php. Accessed: July 11, 2019.
10. Department of Toxic Substances Control. *EnviroStor.* Available at: https://www.envirostor.dtsc.ca.gov/public/. Accessed June 2019.
11. ECORP Consulting Inc. *Arborist Survey Report, The Preserve, Rancho Cordova, California.* October 23, 2018.
12. ECORP Consulting, Inc. *Biological Resources Assessment, The Preserve Development, Rancho Cordova, California.* December 17, 2018.
13. Federal Emergency Management Agency. *Sacramento County Flood Insurance Rate Map.* August 16, 2012.
14. Sacramento Metropolitan Air Quality Management District. *CEQA Guide to Air Quality Assessment* [pg. 7-3]. December, 2007. Available at: http://www.airquality.org/LandUseTransportation/Documents/Ch7Odors%20FINAL6-2016.pdf. Accessed June 24, 2019.
15. Sacramento County Water Agency. *Urban Water Management Plan.* May, 2016.

C. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or as indicated by the checklist on the following pages.

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

D. DETERMINATION

On the basis of this initial study:

☐ 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 applicant. 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" 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 measures 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 pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Darcy Goulart, Principal Planner	City of Rancho Cordova
Printed Name	For

E. BACKGROUND AND INTRODUCTION

This Initial Study (IS) identifies and analyzes the potential environmental impacts of The Preserve Project (proposed project). The information and analysis presented in this document is organized in accordance with the order of the California Environmental Quality Act (CEQA) checklist in Appendix G of the CEQA Guidelines.

On June 26, 2006, the City of Rancho Cordova adopted a comprehensive update to the City's General Plan[1] and certified an associated Environmental Impact Report (EIR).[2] Per Section 15168 of the CEQA Guidelines, a project that is consistent with the General Plan and zoning designations of the City may tier from the analysis contained in the General Plan EIR, incorporating by reference the general discussions from the broader EIR. The proposed project would not be consistent with General Plan designation and requires a General Plan Amendment to change the land use designation of the site, a General Plan Amendment to remove from the Circulation Element Centennial Drive in the project vicinity, and a Rezone. As a result, the environmental analysis contained in this IS cannot be tiered from the General Plan EIR in accordance with CEQA Guidelines Section 15152, but rather, the analysis herein is primarily based upon project-specific technical studies and information. However, where applicable, supplemental information in this IS has been drawn from the Rancho Cordova General Plan and the Rancho Cordova General Plan EIR, and both documents are incorporated by reference in this IS.

The mitigation measures prescribed for environmental effects described in this IS would be implemented in conjunction with the project, as required by CEQA, and the mitigation measures would be incorporated into the project. In addition, findings and a project Mitigation Monitoring and Reporting Program (MMRP) would be adopted in conjunction with approval of the project.

F. PROJECT DESCRIPTION

The following section provides a comprehensive description of the proposed project in accordance with CEQA Guidelines.

Project Location and Setting

The project site consists of approximately 283 acres located within the City of Rancho Cordova, California (see Figure 1). The site is located northwest of Raymer Way and Grant Line Road, within the Grant Line West Planning Area of the City (see Figure 2). The project site is directly east of the Rio Del Oro Specific Plan and north of the Sunridge Specific Plan. The site is identified by Assessor's Parcel Numbers (APNs) 072-0300-001, -002, -005, -008, and 073-0010-010, and -011.

Currently, the 283-acre project site contains two single-family residences on the southern portion of the site, and the remainder of the site is vacant, primarily composed of non-native grasses. The site is characterized by moderate rolling hills and flatlands interspersed with seasonal drainage corridors and wetlands. Additionally, Morrison Creek runs northeast to southwest through the project site. The site contains at least two wells and septic systems associated with the existing residences.

[1] City of Rancho Cordova. *City of Rancho Cordova General Plan.* Adopted June 26, 2006.
[2] City of Rancho Cordova. *City of Rancho Cordova General Plan Draft Environmental Impact Report, SCH# 2005022137.* March 13, 2006.

Figure 1
Project Location

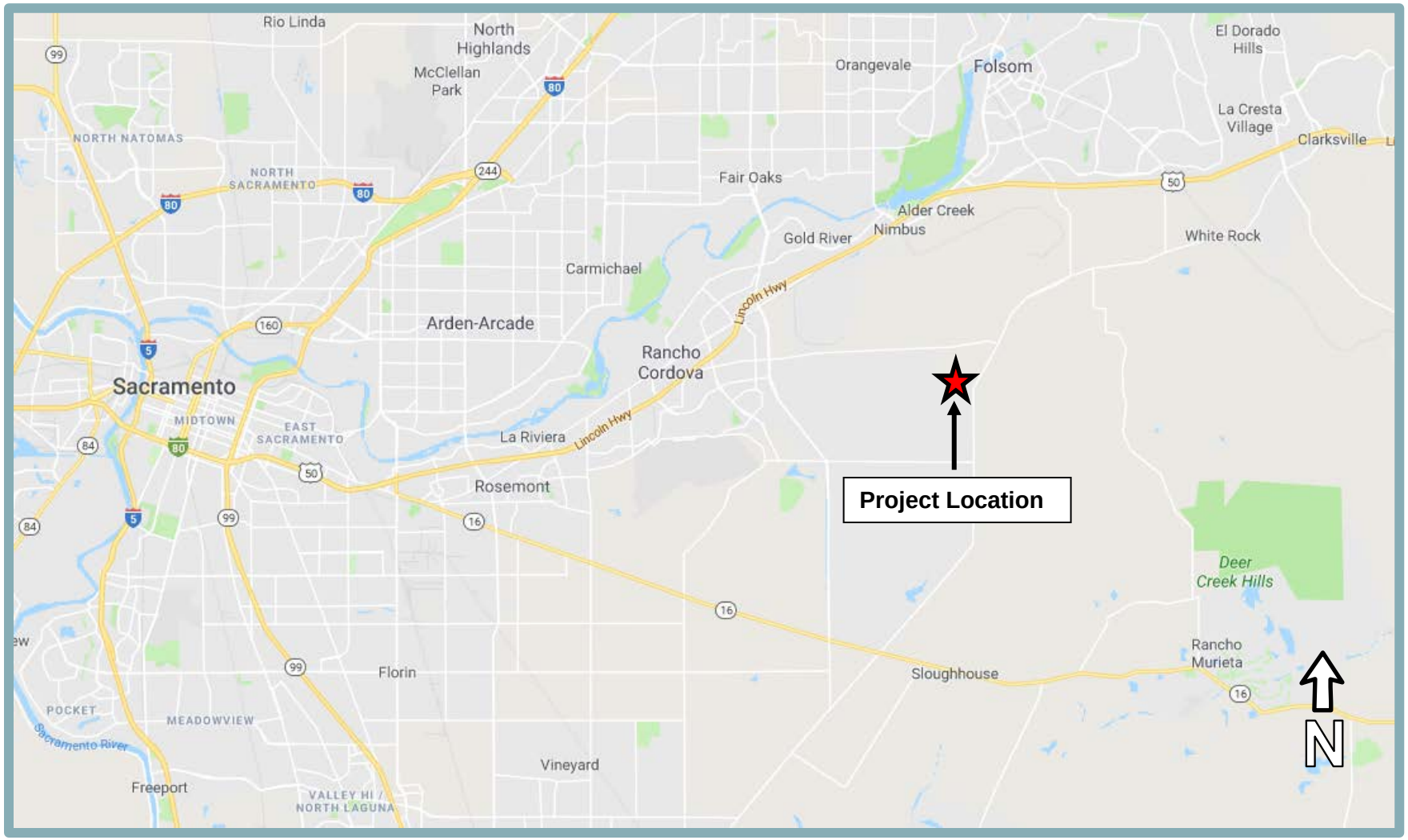
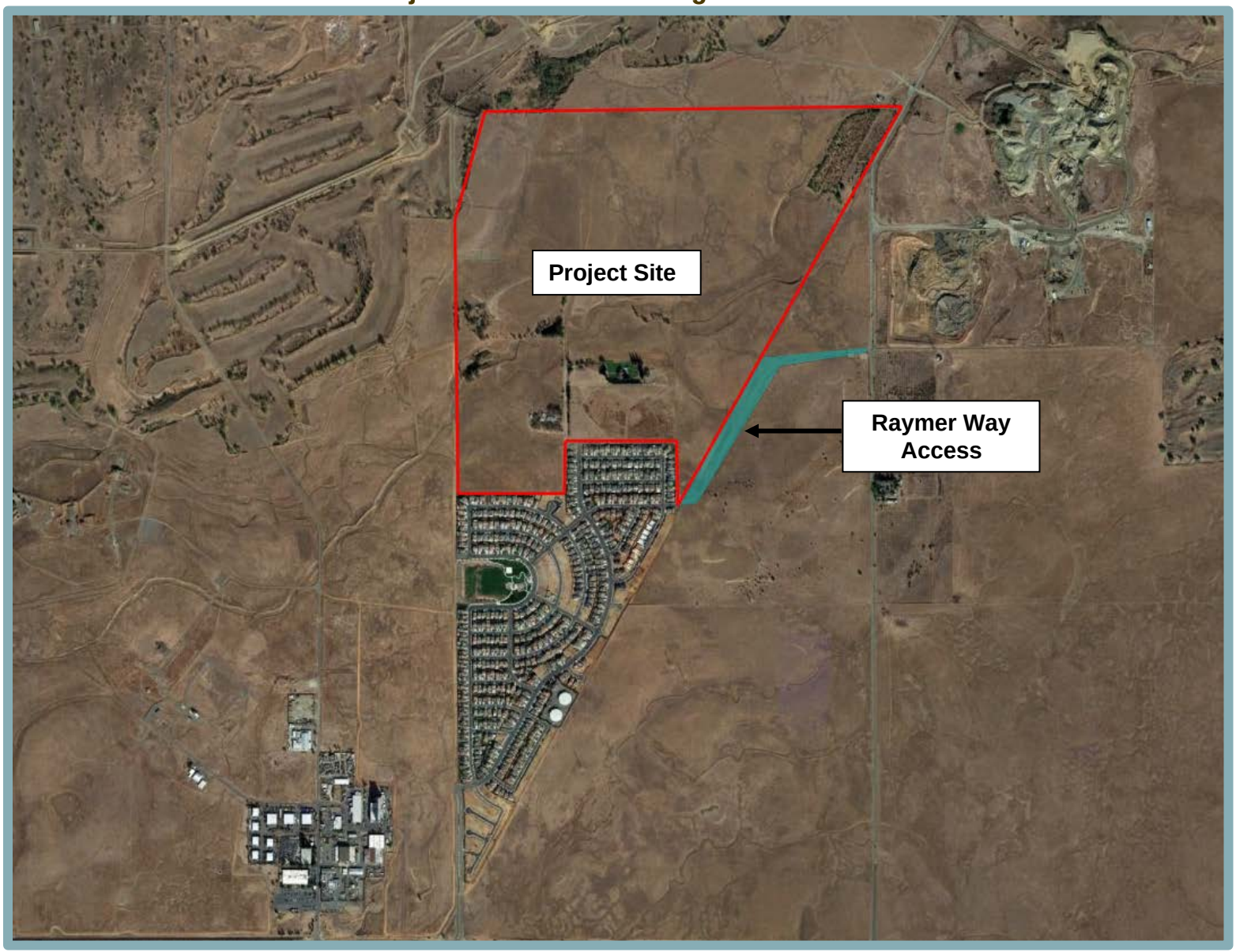


Figure 2
Project Site and Existing Boundaries



The General plan designates the project site Planning Area. Specifically, the site is located within the Grant Line West Planning Area and is designated Natural Resources and Residential-Mixed Density by the Draft Land Use Concept Map. The site is zoned Agricultural (AG-80) and Industrial Reserve (IR).

The elevation of the site ranges from 210 to 250 feet above mean sea level. The project site is predominantly covered in grassland, primarily composed of non-native annual grasses and forbs, with limited patchy riparian vegetation along Morrison Creek. In addition, the project site contains approximately 7.9 acres of jurisdictional wetlands, including seasonal wetlands and vernal pools. Several ornamental trees are located along the existing entrance road and around the existing residential buildings. In all, an arborist report prepared for the project site documented 249 trees within the site, including coast redwood, eucalyptus, and other trees not native to the region.

Project Components

The proposed project would include subdivision of the project site to develop a total of 434 single-family lots and various associated improvements including, but not limited to, parks, a preserve area, landscaping, circulation improvements, and utility installation. The project would require City approval of the following: General Plan Amendment; Rezone; Development Agreement; and Tentative Subdivision Map. The details of the proposed project, including required approvals, are described in further detail below.

General Plan Amendment/Rezone

Per the City of Rancho Cordova General Plan, the project site is currently designated Planning Area. The Draft Land Use Concept Map for the Grant Line West Planning Area designates the site Natural Resources and Residential-Mixed Density. The proposed project would require a General Plan Amendment to change the site's land use designation in the Grant Line West Planning Area to Low-Density Residential. An additional General Plan Amendment would be required to remove from the Circulation Element Centennial Drive in the project vicinity. In addition, the project would require a rezone to change approximately 70 acres of the AG-80 and approximately 25 acres of the IR zoning designations to Residential District (RD-6), six dwelling units per acre maximum (see Figure 3).

Tentative Subdivision Map

The proposed project would include a Tentative Subdivision Map to subdivide the project site into 434 single-family residential lots (see Figure 4). Lots on the western portion of the project site would generally be a minimum of 4,050 sf (45 feet x 90 feet), with larger lots at the corners of each block. Lots in the central portion of the site would generally be a minimum of 5,775 sf (55 feet x 105 feet) with corner lots and others being larger, and lots in the eastern portion of the site would generally be a minimum of 4,725 sf (45 feet x 105 feet). Overall, the proposed lots would range from a minimum of 4,050 sf to a maximum of 9,416 sf (see Figure 5 and Figure 6). The units would include either an 18- or 20-foot setback from the front of the residence to the street. In addition, the proposed project would establish a 100-foot setback from Morrison Creek.

In addition, subdivision of the site would include 26.12 acres of park area and community spaces, 1.22 acres of green infrastructure, and 185.3 acres of open space/preserve area. Within the community space, the proposed project would also include three hydromodification basins for treatment of wastewater.

Figure 3
Existing and Proposed Zoning

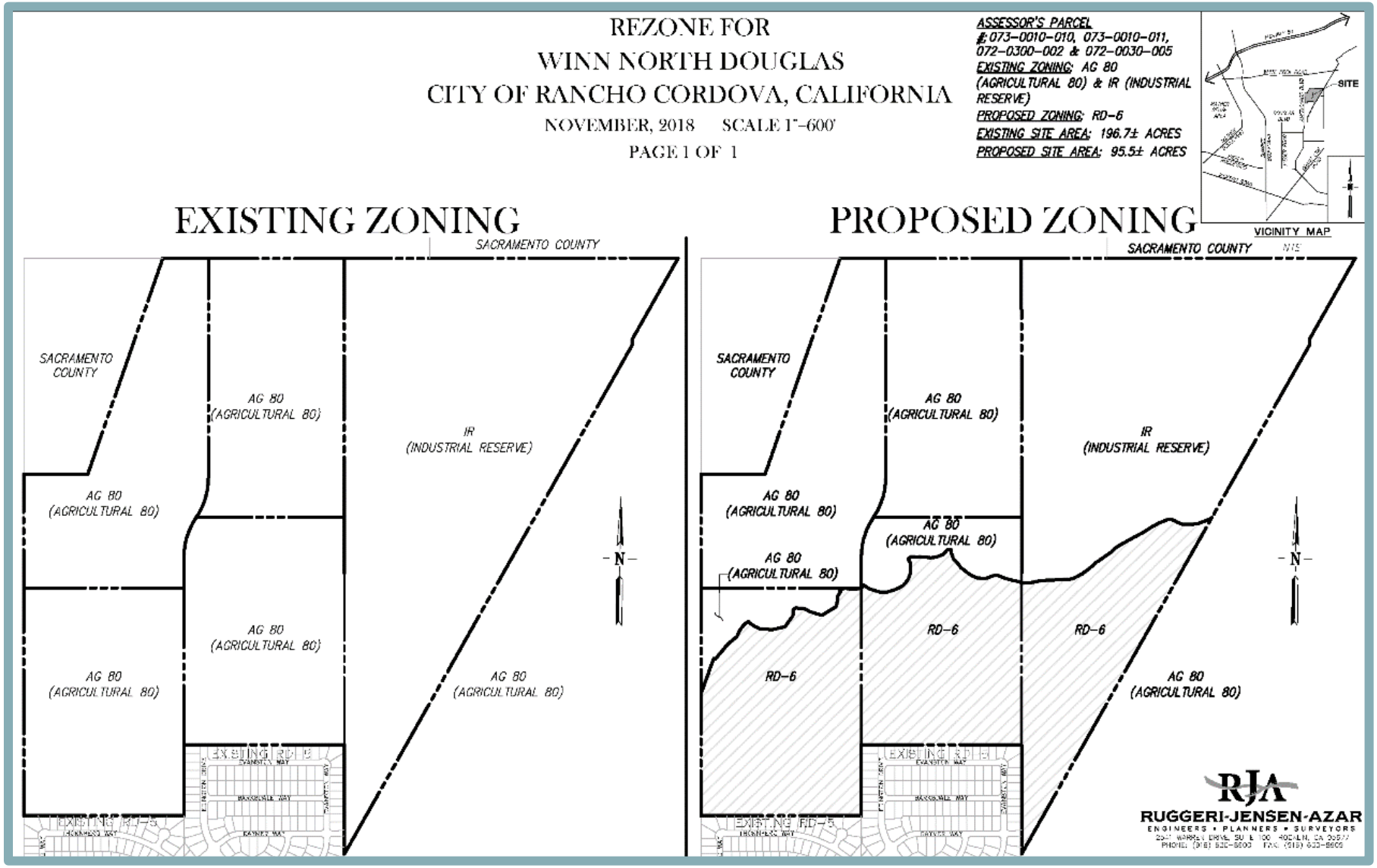
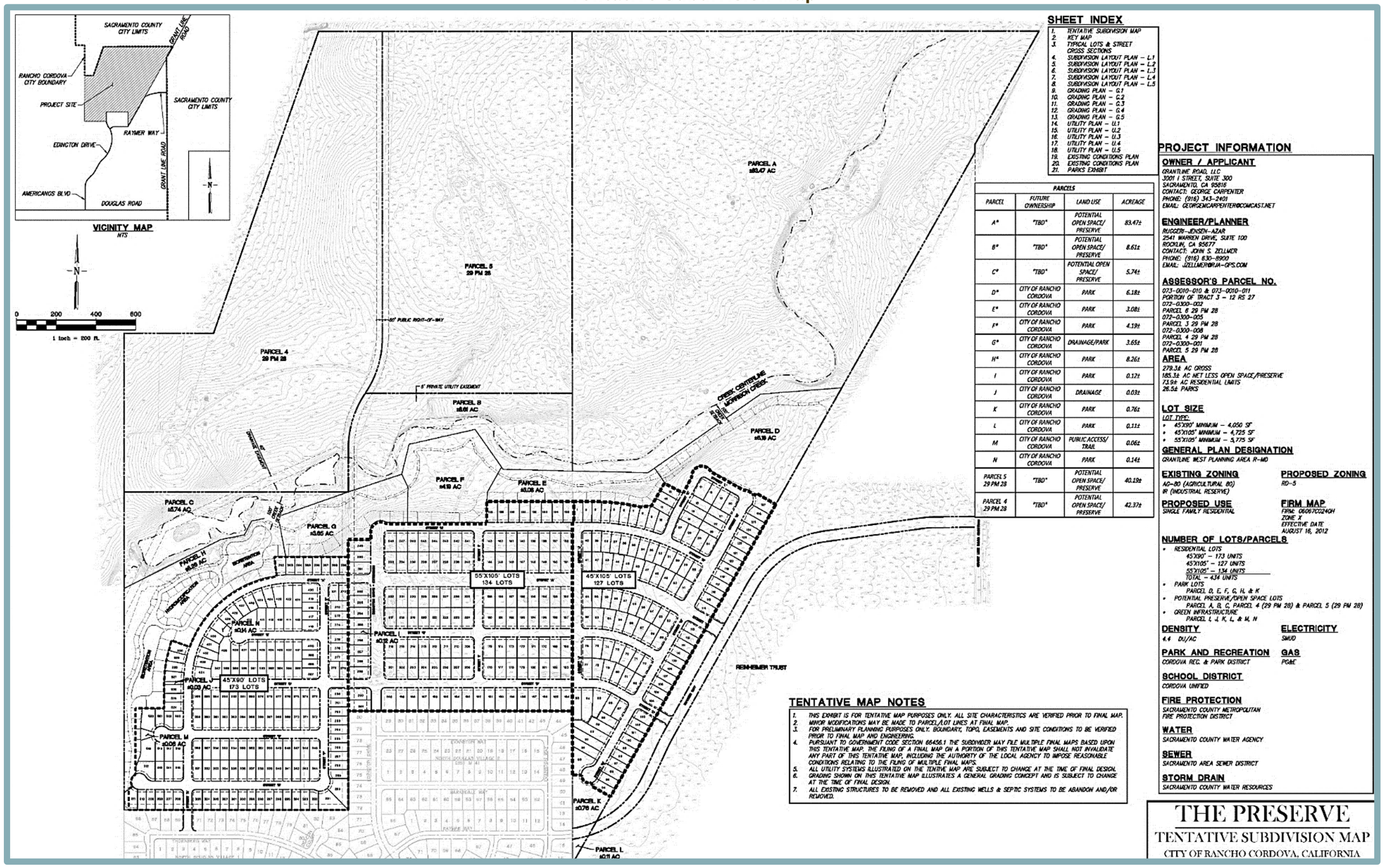


Figure 4
Tentative Subdivision Map



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5. SUBDIVISION LAYOUT PLAN – L.2
6. SUBDIVISION LAYOUT PLAN – L.3
7. SUBDIVISION LAYOUT PLAN – L.4
8. SUBDIVISION LAYOUT PLAN – L.5
9. GRADING PLAN – G.1
10. GRADING PLAN – G.2
11. GRADING PLAN – G.3
12. GRADING PLAN – G.4
13. GRADING PLAN – G.5
14. UTILITY PLAN – U.1
15. UTILITY PLAN – U.2
16. UTILITY PLAN – U.3
17. UTILITY PLAN – U.4
18. UTILITY PLAN – U.5
19. EXISTING CONDITIONS PLAN
20. EXISTING CONDITIONS PLAN
21. PARKS EXHIBIT

PARCELS

PARCEL	FUTURE OWNERSHIP	LAND USE	ACREAGE
A*	"TBD"	POTENTIAL OPEN SPACE/ PRESERVE	83.47±
B*	"TBD"	POTENTIAL OPEN SPACE/ PRESERVE	8.61±
C*	"TBD"	POTENTIAL OPEN SPACE/ PRESERVE	5.74±
D*	CITY OF RANCHO CORDOVA	PARK	6.18±
E*	CITY OF RANCHO CORDOVA	PARK	3.08±
F*	CITY OF RANCHO CORDOVA	PARK	4.19±
G*	CITY OF RANCHO CORDOVA	DRAINAGE/PARK	3.65±
H*	CITY OF RANCHO CORDOVA	PARK	8.26±
I	CITY OF RANCHO CORDOVA	PARK	0.12±
J	CITY OF RANCHO CORDOVA	DRAINAGE	0.03±
K	CITY OF RANCHO CORDOVA	PARK	0.76±
L	CITY OF RANCHO CORDOVA	PARK	0.11±
M	CITY OF RANCHO CORDOVA	PUBLIC ACCESS/ TRAIL	0.06±
N	CITY OF RANCHO CORDOVA	PARK	0.14±
PARCEL 5 29 PM 28	"TBD"	POTENTIAL OPEN SPACE/ PRESERVE	40.19±
PARCEL 4 29 PM 28	"TBD"	POTENTIAL OPEN SPACE/ PRESERVE	42.37±

TENTATIVE MAP NOTES

1. THIS EXHIBIT IS FOR TENTATIVE MAP PURPOSES ONLY. ALL SITE CHARACTERISTICS ARE VERIFIED PRIOR TO FINAL MAP.
2. MINOR MODIFICATIONS MAY BE MADE TO PARCEL/LOT LINES AT FINAL MAP.
3. FOR PRELIMINARY PLANNING PURPOSES ONLY. BOUNDARY, TOPO, EASEMENTS AND SITE CONDITIONS TO BE VERIFIED PRIOR TO FINAL MAP AND ENGINEERING.
4. PURSUANT TO GOVERNMENT CODE SECTION 66456.1 THE SUBDIVIDER MAY FILE MULTIPLE FINAL MAPS BASED UPON THIS TENTATIVE MAP. THE FILING OF A FINAL MAP ON A PORTION OF THIS TENTATIVE MAP SHALL NOT INVALIDATE ANY PART OF THIS TENTATIVE MAP, INCLUDING THE AUTHORITY OF THE LOCAL AGENCY TO IMPOSE REASONABLE CONDITIONS RELATING TO THE FILING OF MULTIPLE FINAL MAPS.
5. ALL UTILITY SYSTEMS ILLUSTRATED ON THE TENTHE MAP ARE SUBJECT TO CHANGE AT THE TIME OF FINAL DESIGN.
6. GRADING SHOWN ON THIS TENTATIVE MAP ILLUSTRATES A GENERAL GRADING CONCEPT AND IS SUBJECT TO CHANGE AT THE TIME OF FINAL DESIGN.
7. ALL EXISTING STRUCTURES TO BE REMOVED AND ALL EXISTING WELLS & SEPTIC SYSTEMS TO BE ABANDON AND/OR REMOVED.

PROJECT INFORMATION

OWNER / APPLICANT
GRANTLINE ROAD, LLC
3001 I STREET, SUITE 300
SACRAMENTO, CA 95816
CONTACT: GEORGE CARPENTER
PHONE: (916) 343-2401
EMAIL: GEORGE@CARPENTERCOMCAST.NET

ENGINEER/PLANNER
RUGGERI-JENSEN-AZAR
2541 WARREN DRIVE, SUITE 100
ROCKLIN, CA 95677
CONTACT: JOHN S. ZELLMER
PHONE: (916) 630-8900
EMAIL: JZELLMER@RJA-GPS.COM

ASSESSOR'S PARCEL NO.
073-0010-010 & 073-0010-011
PORTION OF TRACT 3 – 12 RS 27
072-0300-002
PARCEL 6 29 PM 28
072-0300-005
PARCEL 3 29 PM 28
072-0300-008
PARCEL 4 29 PM 28
072-0300-007
PARCEL 5 29 PM 28

AREA
279.3± AC GROSS
185.3± AC NET LESS OPEN SPACE/PRESERVE
73.9± AC RESIDENTIAL UNITS
26.5± PARKS

LOT SIZE
LOT TYPE:
- 45'X90' MINIMUM – 4,050 SF
- 45'X105' MINIMUM – 4,725 SF
- 55'X105' MINIMUM – 5,775 SF

GENERAL PLAN DESIGNATION
GRANTLINE WEST PLANNING AREA R-MD

EXISTING ZONING
AG-80 (AGRICULTURAL 80)
IR (INDUSTRIAL RESERVE)

PROPOSED ZONING
RD-5

PROPOSED USE
SINGLE FAMILY RESIDENTIAL

FIRM MAP
FIRM: 06067C0240H
ZONE: X
EFFECTIVE DATE
AUGUST 16, 2012

NUMBER OF LOTS/PARCELS
- RESIDENTIAL LOTS
  - 45'X90' – 173 UNITS
  - 45'X105' – 127 UNITS
  - 55'X105' – 134 UNITS
  - TOTAL – 434 UNITS
- PARK LOTS
  - PARCEL D, E, F, G, H, & K
- POTENTIAL PRESERVE/OPEN SPACE LOTS
  - PARCEL A, B, C, PARCEL 4 (29 PM 28) & PARCEL 5 (29 PM 28)
- GREEN INFRASTRUCTURE
  - PARCEL I, J, K, L, & M, N

DENSITY
4.4 DU/AC

ELECTRICITY
SMUD

PARK AND RECREATION
CORDOVA REC. & PARK DISTRICT

GAS
PG&E

SCHOOL DISTRICT
CORDOVA UNIFIED

FIRE PROTECTION
SACRAMENTO COUNTY METROPOLITAN FIRE PROTECTION DISTRICT

WATER
SACRAMENTO COUNTY WATER AGENCY

SEWER
SACRAMENTO AREA SEWER DISTRICT

STORM DRAIN
SACRAMENTO COUNTY WATER RESOURCES

THE PRESERVE
TENTATIVE SUBDIVISION MAP
CITY OF RANCHO CORDOVA, CALIFORNIA

Figure 5
Western Site Map Plan

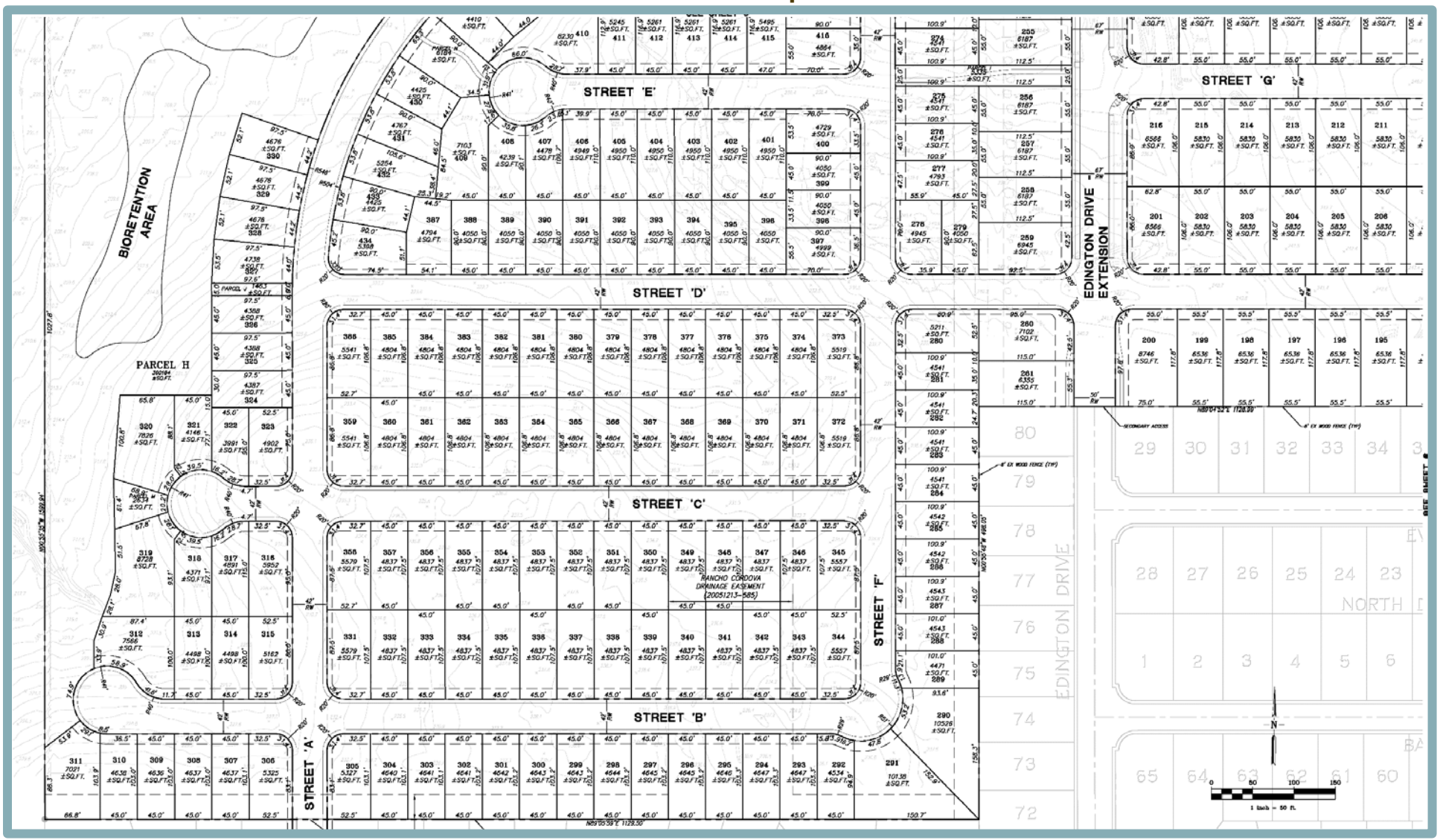
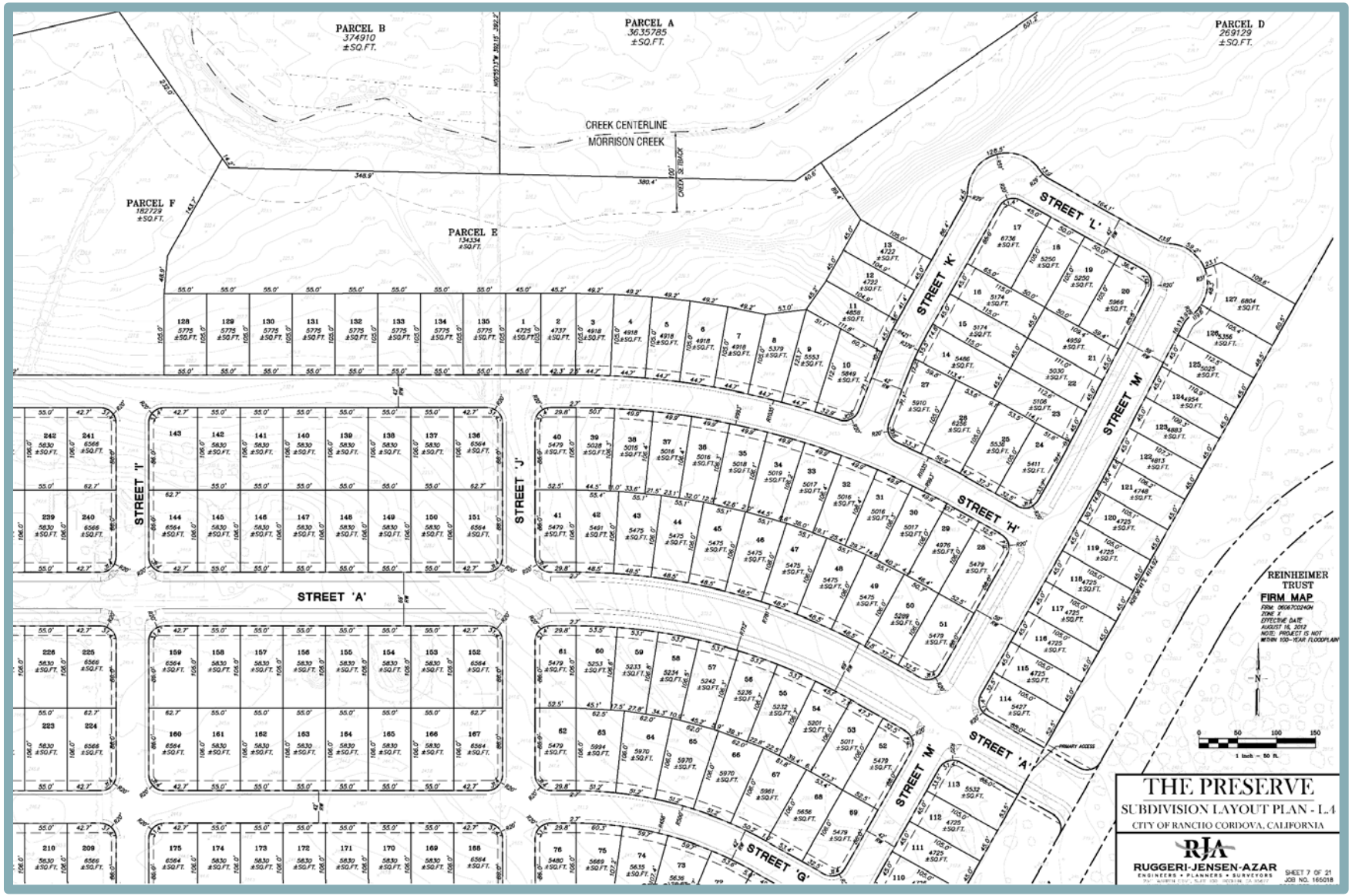


Figure 6
Eastern Site Map Plan



Development Agreement

The proposed project would include a Development Agreement to assure the City that the proposed project would be constructed and developed in compliance with the plans submitted by the applicant. The agreement would also give certainty to various City fees associated with development of the proposed project. Development Agreements increase the certainty in the approval of development projects, thereby preventing the waste of resources, reducing the cost of development, and encouraging investment in comprehensive planning.

Access and Circulation

The proposed project would include two entry points and potential widening of Raymer Way, as well as connection to the existing Camden at Somerset Ranch subdivision by way of an extension of Edington Drive and a new connection to Thornburg Way. The streets would be between 42 and 69-feet wide, which would allow for emergency vehicle access within the minimum 20-foot street width requirement. The internal circulation system would consist of several streets with circulation to all residences within the subdivision. The proposed project would include construction of 10-foot sidewalks and gutters per City standards along the internal streets. Six-foot margins along the sides of each street would allow for street parking. Construction of the two entry points from Raymer Way as well as the new connection with Thornburg Way would require construction activity outside of, but adjacent to, the project site. These roadway improvements would be considered off-site.

Parks, Open Space, and Landscaping

As part of the proposed project, 185.3 acres of undeveloped land on the northern parcels would be retained as open space/preserve (see Figure 7). Morrison Creek would be undisturbed within the open space area. The proposed project would include measures to protect the vegetation and habitats within the 185.3 acres of open space/preserve, including but not limited to, preserve fencing and long-term funding for management of the preserve. Portions of an easement for the future extension of Centennial Drive would be located within the 185.3-acre open space/preserve area. The areas designated for open space would maintain the IR or AG-80 zoning designation and would not require an amendment.

A total of 26.12 acres are planned for two park areas located at the northern end of the development area and community spaces. The parks would be managed by the Cordova Recreation and Park District. The Community Space area would include bioretention and hydromodification areas. Finally, 1.22 acres of the project site would be designated green infrastructure which would include enhanced landscaped areas and trails with connection to the surrounding parks.

Utilities

Potable water service for the project would be provided by the Sacramento County Water Agency. The proposed project would include connection of new eight-inch water mains to an existing 10-inch water main located within Edington Drive. The new water lines would run throughout the streets of the project site and would service all units (see Figure 8).

Sanitary sewer service is provided to the City by the County Sanitation District 1. The County Sanitation District 1 operates and maintains the sewer system, which collects wastewater flows from individual developments within the City and conveys them to the Sacramento Regional County Sanitation District Inceptor system. Wastewater is ultimately delivered to the Sacramento Regional Wastewater Treatment Plant north of Elk Grove.

Figure 7
Parks and Open Space / Preserve Land

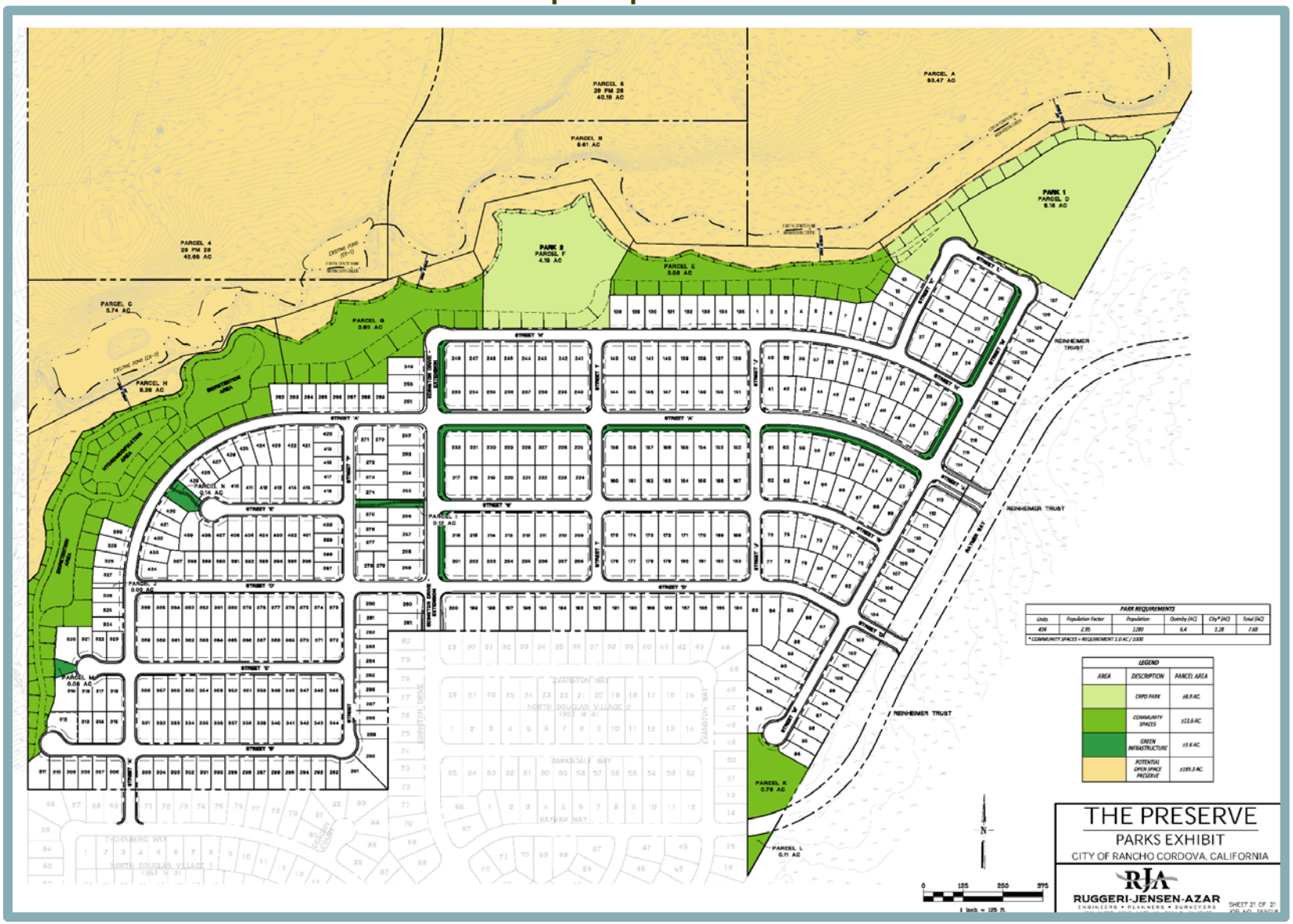
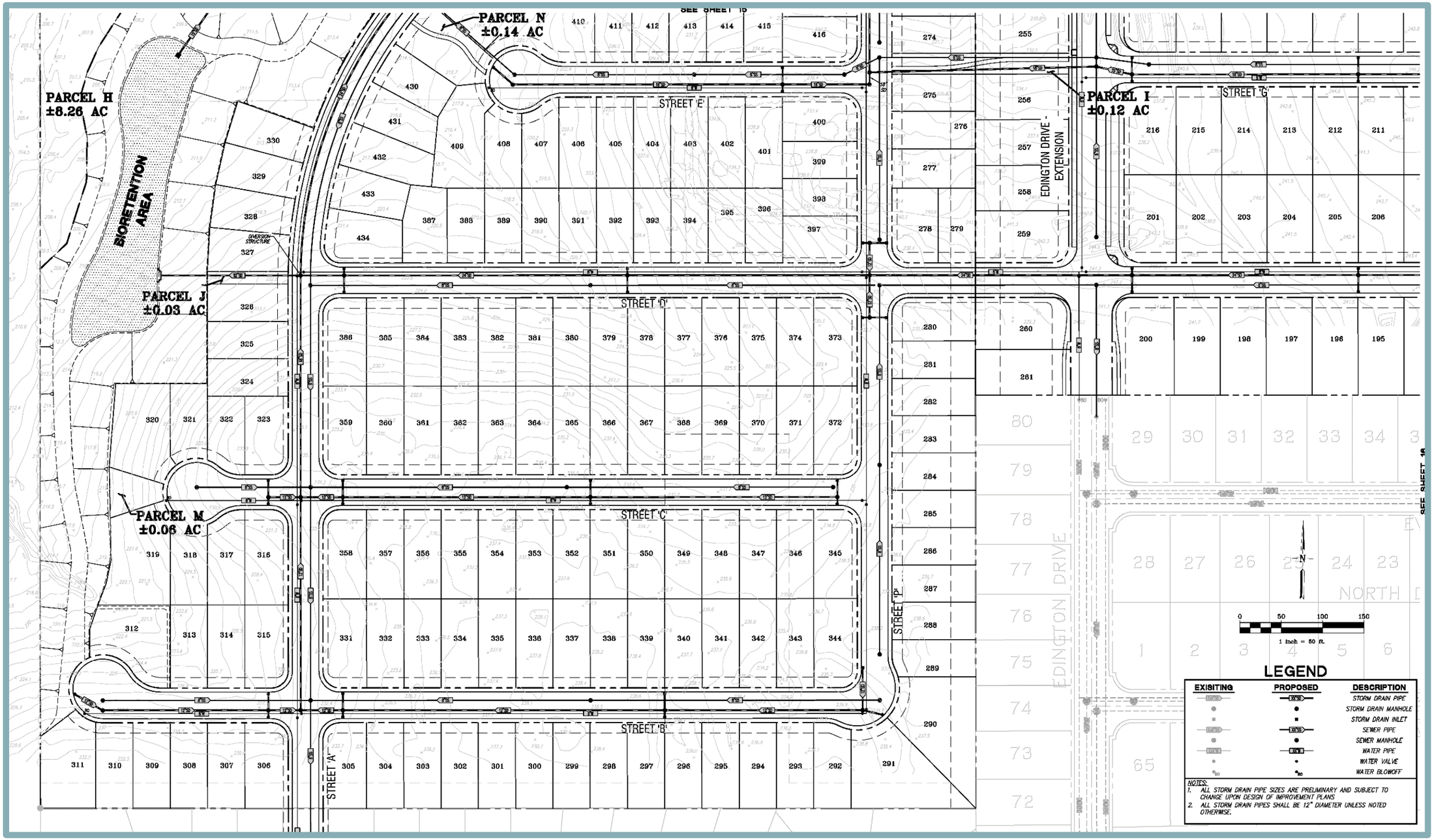


Figure 8
Preliminary Utilities Plan



The proposed project would include installation of eight-inch sanitary sewer pipelines throughout the project site which would divert wastewater to the County Sanitation District. The project would include connection of the eight-inch sanitary sewer lines to existing eight-inch sewer lines within Edington Drive and Thornberg Way.

Stormwater generated by impervious areas within the project site would be directed to a series of new drain inlets, by way of drainage pipes sized between 12 and 30 inches. Runoff from the inlets would then be directed to three bioretention and hydromodification basins along the northwest corner of the project site. Each area would be constructed and sized to properly treat stormwater falling on the project site prior to discharge to the City system.

G. ENVIRONMENTAL CHECKLIST

The following checklist contains the environmental checklist form presented in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Less Than Significant with Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than-significant level.

Less-Than-Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

I. AESTHETICS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 of 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?	☐	✖	☐	☐

Discussion

a,b. Examples of typical scenic vistas include mountain ranges, ridgelines, or bodies of water as viewed from a highway, public space, or other area designated for the express purpose of viewing and sightseeing. In general, a project's impact to a scenic vista would occur if development of the project would substantially change or remove a scenic vista. A scenic vista includes any such areas designated by a federal, state, or local agency. The City of Rancho Cordova's General Plan does not officially designate scenic vistas within the planning area. However, the City of Rancho Cordova General Plan EIR does designate the American River and the Sierra Nevada Mountain range as scenic resources. Additionally, the City lists areas which include views of scenic resources. Examples include Mt. Diablo (Grant Line Road), Pine Hill, Flagstaff Hill, Pyramid Peak, Carson Spur, Jackson Butte, Mt. Vaca, and Goat Mountain/Snow Mountain.[3] In addition, the General Plan EIR designates the American River as an important scenic resource; however, the project site is approximately 5.5 miles away and does not offer scenic views of the river from the site. Therefore, the project would not obstruct this scenic resource. Despite the Sierra Nevada Mountain range being designated as a scenic resource, the General Plan states that the views are scattered, and partially obstructed by distance and existing structures. Public views of the Sierra Nevada Mountain range to the east of the project site may be available from portions of Grant Line Road in proximity to the project site; however, public views of the Sierra Nevada Mountain range are not currently available from the west of the project site. Development of the proposed project would not alter existing views looking east from Grant Line Road (i.e. views looking from Grant Line Road towards the Sierra Nevada). Thus, the proposed project would not substantially affect views of the Sierra Nevada Mountain range or the American River.

The City's General Plan notes that scenic views of Mount Diablo are available from portions of Grant Line Road. However, the areas proposed for residential development are located approximately 1,000 feet from Grant Line Road. Separation of the proposed residences from Grant Line Road would diminish the perceived height of the proposed structures, allowing for views over proposed residences. In addition, the proposed

[3] City of Ranch Cordova. *Rancho Cordova General Plan – III Urban Design Element* [pg. 8]. June 2006.

residential structures would be subject to the design requirements within the City of Rancho Cordova's Municipal Code, including the maximum building height restrictions. Adherence to the zoning code maximum height restrictions would ensure that development of the proposed project would not include construction of excessively tall structures that could substantially interfere with distant views of scenic resources. Considering the lack of significant or designated public views of the American River or the Sierra Nevada foothills across the project site, the setback of proposed structures from Grant Line Road, and the existing maximum height requirements, the proposed project would not result in a substantial adverse effect on a scenic vista.

According to the California Scenic Highway Mapping System, the project site is not located within the vicinity of an officially designated State Scenic Highway.[4] The nearest designated State Scenic Highways are State Route (SR) 50 and SR 160; however, the project is located approximately 3.75 miles away from SR 50 and 12 miles away from SR 160. Because the project site is not visible from either highway, the project would not have an adverse-effect on the foregoing scenic highways.

The proposed project is not located within the vicinity of a designated scenic vista or state scenic highway. Therefore, development of the proposed project would not have a substantial adverse effect on a scenic vista and would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway. Thus, a ***less-than-significant*** impact would occur.

c. Views of the project site currently consist of rural agricultural landscapes, dominated by weedy ruderal vegetation where agricultural operations have ceased, and two on-site structures. The site is bordered by the Camden at Somerset Ranch residential subdivision to the south and Grant Line Road is located to the east of the site. The proposed project would result in a portion of the project being developed with a single-family residential subdivision.

Although a portion of the land within the project site would be converted to residential uses, the area to the north of the proposed residential development would remain as undeveloped open/agricultural space. Because the northern portion of the project site would remain undeveloped, public views of the site from Grant Line Road, of the northern portion of the site, would remain unchanged.

The proposed residential structures would be adjacent to the existing residential development to the south of the project site, and would be visually consistent with the existing subdivision. Therefore, although the proposed project would result in a change in the visual character of the southern portion of the project site, such a change would be consistent with the existing development to the south of the project site. The proposed development would be subject to all relevant standards within the Rancho Cordova Municipal Code and the City's *Design Guidelines*.[5] The City's *Design Guidelines* provide a framework to evaluate new development projects and ensure that development within the City meet the City's aesthetic and design standards and vision. In addition, the *Design Guidelines* include a checklist that should be used in the design of projects to ensure that all proposed residential developments meet the City's design standards.

[4] California Department of Transportation. *California Scenic Highway Mapping System*. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm. Accessed June 2019.

[5] City of Rancho Cordova. *Design Guidelines*. September 6, 2005.

Considering the above, implementation of the proposed project would include retention of the northern portion of the site as undeveloped agricultural/grassland areas, while the southern portion of the site would be developed in a manner consistent with existing development adjacent to the site, and in compliance with all relevant guidelines related to project design. Therefore, the proposed project would not result in a degradation of the existing visual character of the site or quality of the public views of the site and its surroundings, resulting in a ***less-than-significant*** impact.

d. The project site is located in a rural agricultural area. As such, relatively few sources of light and glare occur in the project vicinity. Existing sources of light and glare are primarily limited to headlights from vehicles travelling on Grant Line Road and Raymer Way. Sources of light and glare are also produced by the Camden at Somerset Ranch residential subdivision to the south of the project site and the two existing on-site residences. Implementation of the proposed project would develop the site with 434 residential buildings, and, thus, would introduce new sources of light and glare where little currently exists.

Development of the project would add new sources of light and glare to the site in the form of street lights, homes, windows, and increased vehicle traffic. Per Section 23.725.060 of the Ranch Cordova Municipal Code, the project would be subject to compliance with the applicable sections of the lighting code, including, but not limited to, shielding of fixtures to limit light pollution and the restriction of direct lighting from crossing property lines.

Given that the exact location and type of lighting fixtures required on-site is not currently known, the potential exists for the project to create a new source of substantial light or glare which could adversely affecting nighttime views in the area and potentially violating Section 23.725.060 of the Ranch Cordova Municipal Code. Thus, a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

I-1 *Prior to the approval of Improvement Plans and issuance of Building Permits for any development on the project site, the project applicant shall submit a lighting plan for the project to the City of Rancho Cordova Planning Division for review and approval. The lighting plan shall include, but not necessarily be limited to, the following provisions:*

- *Shield or screen lighting fixtures to direct the light downward and prevent light spill on adjacent properties;*
- *Place and shield or screen flood and area lighting needed for construction activities and/or security so as not to disturb adjacent residential areas and passing motorists;*
- *For public lighting, prohibit the use of light fixtures that are of unusually high intensity or brightness (e.g., harsh mercury vapor, low-pressure sodium, or fluorescent bulbs) or that blink or flash;*
- *Use appropriate building materials (such as low-glare glass, low-glare building glaze or finish, neutral, colored paint and roofing materials), shielded or screened lighting, and appropriate signage*

to prevent light and glare from adversely affecting motorists on nearby roadways; and

- *The proposed location, mounting height, and aiming point of all outdoor lighting used during project operations and/or construction.*

II. AGRICULTURE AND FOREST RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 of 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 Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	✖
d. Result in the 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 or conversion of forest land to non-forest use?	☐	☐	✖	☐

Discussion

a,e. The project site is currently zoned AG-80 and IR, and the parcel contains two-single family residences with vacant land containing non-native grasses throughout the site. Per the Department of Conservation Farmland Mapping and Monitoring Program (FMMP), the project site is currently classified as Grazing Land, Farmland of Local Importance, and Unique Farmland.[6] Grazing Land is defined as land where existing vegetation is suited for the grazing of livestock. Farmland of Local Importance is land that is currently irrigated for crops or pasture or non-irrigated crops. Grazing Land and Farmland of Local Importance do not qualify as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Furthermore, the project site is not currently used for grazing purposes or for crops or pasture.

A small area in the northeast portion of the project site is designated Unique Farmland. However, the portion of the site designated Unique Farmland is located within the 185.3-acre open space/ preserve area, which would be retained and would not be developed as part of the proposed project. It should be noted that the 185.3-acre open space/preserve area includes portions of an easement for the future extension of Centennial Drive; however, development within this easement is not proposed as part of the proposed project. Further, the easement area is not located within the portion of the site designated as Unique Farmland. The 185.3-acre area would maintain the AG-80 and IR zoning designations. Under the existing AG-80 zoning, agriculture activities could occur. The portions of nature preserve and bio-retention areas at the northern portion of the proposed residential area would provide a buffer between the proposed residential uses and the potential future agricultural activities within the AG-80 zone and the area designated as

[6] California Department of Conservation. *Sacramento County Important Farmland 2016*. July 2017.

Unique Farmland . As such, development of the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use or involve any other changes in the existing environment which could result in conversion of Farmland to non-agricultural use. Therefore, a ***less-than-significant*** impact would occur.

b. The proposed project includes a request for a rezone of a portion of the site from the existing AG-80 and IR designation to RD-6. The remaining 185.3-acres of the site would continue to hold the existing AG-80 and IR zoning designations. The project site is not currently being used for agricultural purposes, and, thus, the project would not result in development of land being used for agriculture. Furthermore, the City has already considered impacts associated with development of the site with non-agricultural uses as part of the General Plan EIR analysis. The proposed project would not result in any impacts in excess of what has already been considered by the City. Given the City's General Plan EIR has already anticipated impacts related to conversion of agricultural land,, and the project site is not under a Williamson Act contract, a ***less-than-significant*** impact would occur.

c,d. The project area is not considered forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), and is not zoned Timberland Production (as defined by Government Code section 51104[g]). Therefore, the proposed project would have ***no impact*** with regard to conversion of forest land or any potential conflict with forest land, timberland, or Timberland Production zoning.

III. AIR QUALITY. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	✖	☐

Discussion

a,b. Rancho Cordova is located within the Sacramento Valley Air Basin (SVAB) and under the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD). The federal Clean Air Act (CAA) and the California Clean Air Act (CCAA) require that federal and State ambient air quality standards (AAQS) be established, respectively, for six common air pollutants, known as criteria pollutants. The criteria pollutants include particulate matter (PM), ground-level ozone, carbon monoxide (CO), sulfur oxides, nitrogen oxides (NO_X), and lead. At the federal level, Sacramento County is designated as severe nonattainment for the 8-hour ozone AAQS, nonattainment for the 24-hour $PM_{2.5}$ AAQS, and attainment or unclassified for all other criteria pollutant AAQS. At the State level, the area is designated as a serious nonattainment area for the 1-hour ozone AAQS, nonattainment for the 8-hour ozone AAQS, nonattainment for the PM_{10} and $PM_{2.5}$ AAQS, and attainment or unclassified for all other State AAQS.

Due to the nonattainment designations, SMAQMD, along with the other air districts in the SVAB region, is required to develop plans to attain the federal and State AAQS for ozone and particulate matter. The attainment plans currently in effect for the SVAB are the 2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 Ozone Attainment Plan), $PM_{2.5}$ Implementation/Maintenance Plan and Re-designation Request for Sacramento $PM_{2.5}$ Nonattainment Area ($PM_{2.5}$ Implementation/Maintenance Plan), and the 1991 Air Quality Attainment Plan (AQAP), including triennial reports. The air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control measures have worked, and show how air pollution would be reduced. In addition, the plans include the estimated future levels of pollution to ensure that the area would meet air quality goals.

General conformity requirements of the State Implementation Plan (SIP) include whether a project would cause or contribute to new violations of any federal AAQS, increase the frequency or severity of an existing violation of any federal AAQS, or delay timely attainment of any federal AAQS. In addition, a project would be considered to conflict with, or obstruct implementation of, an applicable air quality plan if the project would be inconsistent with the emissions inventories contained in the air quality plan. Emission inventories are developed based on projected increases in population, employment, regional vehicle miles traveled (VMT), and associated area sources within the region, which are based on regional projections that are, in turn, based on General Plans and zoning designations for the region.

Due to the nonattainment designations of the area, SMAQMD has developed plans to attain the State and federal standards for ozone and particulate matter. The plans include the 2013 Ozone Attainment Plan, the $PM_{2.5}$ Implementation/Maintenance Plan, and the 2012 Triennial Assessment and Plan Update. Adopted SMAQMD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with applicable air quality plans. Thus, by exceeding the SMAQMD's mass emission thresholds for operational or construction emissions of ROG, NO_X, or PM_{10}, a project would be considered to conflict with or obstruct implementation of the SMAQMD's air quality planning efforts.

During construction of the proposed project heavy-duty equipment would operate on the project site. Exhaust emissions would be generated by construction equipment, as well as equipment used for vegetation clearing and earth movement activities. Additional criteria pollutant emissions would be generated from workers and residents commuting to and from the project site. In addition, operational emissions associated with the proposed development would primarily consist of an increase in vehicle trips. Increased vehicle trips in the City of Rancho Cordova would generate increased amounts of NO_X, ROG, and PM_{10}. Therefore, the aforementioned activities could result in increased emissions in the project vicinity above thresholds established by the SMAQMD.

Construction and operational emissions associated with the proposed project, in combination with other past, present, and reasonably foreseeable projects within the project region could either delay attainment of the standards or require the adoption of additional controls on existing and future air pollution sources to offset emission increases. The increase in emissions as a result of the project would require further study to determine the significance of related impacts. Thus, the project could cumulatively contribute to regional air quality health effects through emissions of criteria and mobile source air pollutants. Based on the above, the proposed project could result in a ***potentially significant*** impact with regard to air quality.

Further analysis of the above impact will be included in the Air Quality and Greenhouse Gas Emissions (including Energy) chapter of The Preserve Project EIR.

c. Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Sensitive receptors are typically defined as facilities where sensitive receptor population groups (i.e., children, the elderly, the acutely ill, and the chronically ill) are likely to be located. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. The nearest existing sensitive receptors would be the residential development located south of the project site.

The major pollutants of concern are localized carbon monoxide (CO) emissions and toxic air contaminant (TAC) emissions. Implementation of the proposed project would involve operation of heavy-duty construction equipment on the project site throughout the duration of the construction activities. Furthermore, project operations may include sources of TACs or contribute substantially to localized CO emissions. Given that construction and

operation of the proposed project could result in localized CO and TAC emissions, further analysis of such emission sources is required.

Because the proposed project could involve pollutant emissions associated with construction and operations of the proposed project, the project could expose existing sensitive receptors to substantial pollutant concentrations. Accordingly, impacts related to exposure of sensitive receptors to substantial pollutant concentrations could be ***potentially significant***.

Further analysis of the above impact will be included in the Air Quality and Greenhouse Gas Emissions (including Energy) chapter of The Preserve Project EIR.

d. Emissions such as those leading to odors have the potential to adversely affect sensitive receptors within the project area. Pollutants of principal concern include emissions leading to odors, emission of dust, or emissions considered to constitute air pollutants. Air pollutants and emissions of dust have been discussed in section "a" through "c" above and will be further addressed in the Air Quality and Greenhouse Gas Emissions chapter of the Preserve Project EIR. Therefore, the following discussion focuses on emissions of odors.

According to the SMAQMD, common types of facilities that are known to produce odors include, but are not limited to, wastewater treatment facilities, chemical or fiberglass manufacturing, landfills, composting facilities, food processing facilities, refineries, dairies, and rendering plants.[7] Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The presence of an odor impact is dependent on a number of variables including: the nature of the odor source; the frequency of odor generation; the intensity of odor; the distance of odor source to sensitive receptors; wind direction; and sensitivity of the receptor. Residential land uses, such as the proposed project, are not typically associated with creation of substantial objectionable odors. As a result, the proposed project operations would not create any objectionable odors that would affect a substantial number of people.

In addition, SMAQMD regulates objectionable odors through Rule 402 (Nuisance), which prohibits any person or source from emitting air contaminants that cause detriment, nuisance, or annoyance to a considerable number of persons or the public. Rule 402 is enforced based on complaints. If complaints are received, the SMAQMD is required to investigate the complaint, as well as determine and ensure a solution for the source of the complaint, which could include operational modifications. Thus, although not anticipated, if odor complaints are submitted after the proposed project is approved, the SMAQMD would ensure that such odors are addressed and any potential odor effects reduced to less than significant.

For the aforementioned reasons, implementation of the proposed project would not result in emissions (such as those leading to odors) adversely affecting a substantial number of people, and a ***less-than-significant*** impact would result.

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[7] Sacramento Metropolitan Air Quality Management District. *CEQA Guide to Air Quality Assessment* [pg. 7-3]. December, 2007. Available at: http://www.airquality.org/LandUseTransportation/Documents/Ch7Odors%20FINAL6-2016.pdf. Accessed June 24, 2019.

IV. BIOLOGICAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 Wildlife 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, and regulations or by the California Department of Fish and Wildlife or US 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 resident or migratory fish or wildlife species or with established 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?	✖	☐	☐	☐

Discussion

a. A search of special-status species in the area was conducted for the Buffalo Creek 7.5-minute quadrangle through the California Natural Diversity Database (CNDDB) for the project area.[8] According to the CNDDB, various species of special-status plants and animals occur within the vicinity of the project site. Special-status plants with the potential to occur at the project site include legenere, slender Orcutt grass, Sacramento Orcutt grass, and Sanford's arrowhead. In addition, the potential exists for the following special-status wildlife species to occur on-site: conservancy fairy shrimp, mid-valley fairy shrimp, ricksecker's water scavenger beetle, vernal pool tadpole shrimp, western spadefoot, American badger, burrowing owl, ferruginous hawk, golden eagle, grasshopper sparrow, loggerhead shrike, merlin, northern harrier, western pond turtle, white-tailed kite, Swainson's hawk, tricolored blackbird, special-status bats, and other migratory birds and nesting raptors protected by the Migratory Bird Treaty Act. Therefore, the proposed project could have a substantial adverse effect, either directly or through habitat modifications, on a 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 Wildlife, or U.S. Fish & Wildlife Service. Thus, a ***potentially significant*** impact could occur.

[8] California Natural Diversity Database. *Buffalo Creek, California*. 2018

Further analysis of the above impact will be included in the Biological Resources chapter of The Preserve Project EIR.

b,c. A Wetland Delineation prepared for the project site in accordance with the Army Corps of Engineers Wetland Delineation Manual noted that the project site contains potential wetlands and waters of the U.S., including vernal pools, wetland swales, and streams/creeks. The various on-site wetlands are seasonal; however, the wetlands may serve as potential habitats for various species found on the project site. Although a portion of the project site would remain open space, the potential exists that development of the proposed residences would disturb the wetlands and vernal pools located on-site. Furthermore, while the project would include a 100-foot setback from Morrison Creek, the potential to disrupt wildlife in the area still exists. Therefore, the project could have a substantial adverse effect on riparian habitat or other sensitive natural communities identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service, and could 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. Thus, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Biological Resources chapter of The Preserve Project EIR.

d. Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or by areas of human disturbance or urban development. Topography and other natural factors in combination with urbanization can fragment or separate large open-space areas. The fragmentation of natural habitat can create isolated “islands” of vegetation and habitat that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity.

The proposed project site contains Morrison Creek which is located within the northern portion of the site and various riparian habitats are present throughout project site. The riparian vegetation could represent a wildlife movement corridor which could be disturbed with implementation of the project. Moreover, the use of the project site as a wildlife nursery site, although unlikely, is currently unknown. Due to the potential presence of the wildlife movement corridors the project could interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites. Thus, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Biological Resources chapter of The Preserve Project EIR.

e. The project site contains a total of 249 trees greater than six inches in diameter at standard height (dsh) for trees measured at 4.5-feet above natural grade. All of the trees on the project site are nonnative to the region. Of the 249 total trees on the project site, 146 trees are 12-inches or more in dsh and meet the definition of a Protected Tree per the City of Rancho Cordova’s Municipal Code (Chapter 19.12). With implementation of the proposed project, a portion of the existing trees would require removal to accommodate the proposed development. Removal of a substantial number of trees, including protected trees could result in a ***potentially significant*** impact related to conflicting with local

policies or ordinances protecting biological resources, including local tree preservation policies.

Further analysis of the above impact will be included in the Biological Resources chapter of The Preserve Project EIR.

f. The South Sacramento Habitat Conservation Plan (SSHCP) was recently adopted in February of 2018, by the cities of Rancho Cordova and Galt; Sacramento County; the Sacramento County Water Agency; the Sacramento County Regional Sanitation District; and the Capital Southeast Connector Joint Powers Authority. The project site is located within the boundaries of the SSHCP and is subject to the SSHCP requirements. The proposed project would be subject to compliance monitoring to track the status of the SSHCP implementation and provide protection and mitigation for covered species. As such, the potential exists for the proposed project to conflict with applicable standards within the SSHCP, and a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Biological Resources chapter of The Preserve Project EIR.

V. CULTURAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	✖	☐	☐	☐
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	✖	☐	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries.	✖	☐	☐	☐

Discussion

a,b,c. Historical resources are features that are associated with the lives of historically important persons and/or historically significant events, that embody the distinctive characteristics of a type, period, region or method of construction, or that have yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation. Examples of typical historical resources include, but are not limited to, buildings, farmsteads, rail lines, bridges, and trash scatters containing objects such as colored glass and ceramics. According to the City's General Plan EIR, the Rancho Cordova Planning Area contains twenty-three historic resources, eight prehistoric sites, and one prehistoric/historic site.[9] The project site has not been formally evaluated for the presence/absence of historic or archaeological resources, nor has the site been evaluated for the presence/absence of human remains. Consequently, the presence or absence of such resources at the project site is currently unknown, and the possibility exists that such resources could occur on-site.

Considering that unknown historical/archaeological resources, including human remains, have the potential to exist on-site, ground-disturbing activity related to the proposed construction activities could encounter such resources. Therefore, the project could cause a substantial adverse change in the significance of historical or archaeological resources, including human remains, and a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Cultural and Tribal Resources chapter of The Preserve Project EIR.

[9] City of Ranch Cordova. *City of Rancho Cordova General Plan Draft Environmental Impact Report*. [Page 4.11-3] March 13, 2006.

VI. ENERGY. *Would the project:*	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 construction or operation?	✖	☐	☐	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	✖	☐	☐	☐

Discussion

a,b. The main forms of available energy supply are electricity, natural gas, and oil. A description of the 2019 California Green Building Standards Code (CBSC), with which the proposed project would be required to comply, as well as discussions regarding the proposed project's potential effects related to energy demand during construction and operations is provided below.

The 2019 CBSC, otherwise known as the CAL Green Code (CCR Title 24, Part 11), which will become effective on January 1, 2020.[10] The purpose of the CAL Green Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The CBSC standards regulate the method of use, properties, performance, types of materials used in construction, alteration repair, improvement and rehabilitation of a structure or improvement to property. Construction of the proposed project would involve an increase in energy demand and consumption. Construction related work would require the use of oil in the form of gasoline or diesel fuel or construction trips. Hauling and materials truck delivery and operation of off-road construction equipment would be required in the development of the project.

The project is anticipated to receive electricity from SMUD and natural gas from PG&E. Energy use associated with operation of the proposed project would be typical of residential uses requiring electricity and natural gas for interior and exterior building lighting, heating, ventilation, and air condition (HVAC), electronic equipment, machinery, appliances, security systems, and more.

Based on the increased use of energy during project construction and operations, the project could result in a significant impact due to wasteful or inefficient energy as well as conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Thus, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Air Quality and Greenhouse Gas Emissions (including Energy) chapter of The Preserve Project EIR.

[10] California Building Standards Commission. *California Green Building Standards Code*. 2019.

VII. GEOLOGY AND SOILS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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?	✖	☐	☐	☐
d. Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	✖	☐	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	✖
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	✖	☐	☐	☐

Discussion

ai. According to the City's General Plan EIR, the closest fault zone to the project site is the Bear Mountain fault zone. The Bear Mountain fault zone is the primary fault concern in Sacramento County; however, the fault zone is located approximately 24 miles northeast of Rancho Cordova's Planning Area. Given that known surface expressions of fault traces do not exist within the City's Planning Area, including the site, fault rupture hazard is not a significant geologic hazard at the site. In addition, Alquist-Priolo Earthquake Fault Zones are not known to exist near the project site. Therefore, ***no impact*** would occur related to substantial adverse effects, including risk, injury, or death, associated with the rupture of a known fault zone.

aii. Ground shaking is the motion that occurs as energy is released during fault related activity and occurs as a result of seismic activity. According to the General Plan EIR, the greatest geologic potential for injury or property damage in the Planning Area is the result of ground shaking from a nearby earthquake. The Planning Area is located within Seismic Zone 3,

which is a characteristic of the intensity of an earthquake in a given area. Seismic Zone 3 is considered an area of relatively low ground shaking potential. The California Building Code requirements would mitigate the shaking effects of nearby seismic activity. Structures built in compliance with the California Building Code should be able to resist moderate earthquakes although some nonstructural damage may occur, and resist major earthquakes without collapse; however, some structural and nonstructural damage is common.

The project would be built in compliance with the California Building Code requirements. Although the project would adhere to the California Building Code requirements, the proposed project could expose people or structures to substantial adverse effects including the risk of loss, injury, or death involving seismic ground shaking and a ***potentially significant*** impact would occur.

Further analysis of the above impact will be included in the Geology and Soils/Mineral Resources chapter of The Preserve Project EIR.

aiii, aiv,
c. The proposed project's potential effects related to liquefaction, landslides, lateral spreading, and subsidence/settlement are discussed in detail below.

Liquefaction

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. In the process, the soil undergoes transient loss of strength, which commonly causes ground displacement or ground failure to occur. Because saturated soils are a necessary condition for liquefaction, soil layers in areas where the groundwater table is near the surface have higher liquefaction potential than those in which the water table is located at greater depths. As noted in the General Plan EIR, the depth to the groundwater table and aquifer system is generally greater than 50 feet. While it is not likely that unstable soil is located at the project site, further investigation is necessary to determine the presence/absence of liquefiable soils at the project site.

Landslides

Seismically-induced landslides are triggered by earthquake ground shaking. The risk of landslide hazard is greatest in areas with steep, unstable slopes. Although on-site slopes are relatively minor, the potential for landslides to occur at or affect the site is currently unknown. Therefore, further investigation is necessary to ensure the proposed project would not result in adverse effects.

Lateral Spreading

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically, lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. Because the potential for liquefaction to occur at the site is unknown, the potential for lateral spreading to occur is unknown. Further analysis of the geologic conditions is required to avoid adverse effects.

Subsidence/Settlement

Loose unsaturated sandy soils can settle during strong seismic shaking. The potential for subsidence/settlement at the site is currently unknown, thus, further study is required to ensure that the proposed project would not result in substantial adverse effects related to subsidence or settlement of on-site soils.

Conclusion

Based on the above discussion, further analysis of on-site soil conditions is necessary to ensure that the proposed project would not result in adverse effects related to liquefaction, landslides, lateral spreading, or subsidence/settlement. Thus, a ***potentially significant*** impact could occur related to directly or indirectly causing substantial adverse effects, including the risk of loss, injury, or death, involving liquefaction, due to the sites location on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, potentially resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

Further analysis of the above impact will be included in the Geology and Soils/Mineral Resources chapter of The Preserve Project EIR.

b. Issues related to erosion and degradation of water quality during construction are further discussed in Section X, Hydrology and Water Quality, of this IS, under question 'a'. During grading activities associated with development of the proposed project, soil may be temporarily exposed. Thus, the potential exists for wind and water to erode portions of the soil on-site, resulting in the loss of topsoil. Impacts related to substantial soil erosion or the loss of topsoil during construction of the proposed project could be ***potentially significant***.

Further analysis of the above impact will be included in the Hydrology and Water Quality (Drainage) chapter of The Preserve Project EIR.

d. Expansive soils can undergo significant volume changes with changes in moisture content. Specifically, such soils shrink and harden when dried and expand and soften when wetted. If structures are underlain by expansive soils, foundation systems must be capable of withstanding the potential damaging movements of the soil. The proposed project would include construction of foundations or development of residential structures that could be subject to potential risks related to expansive soils. Further study of the geologic conditions would be necessary. Therefore, the proposed project would result in a ***potentially significant*** impact related to being located on expansive soil, as defined in Table 18-1B of the Uniform Building Code, thereby creating substantial direct or indirect risks to life or property.

Further analysis of the above impact will be included in the Geology and Soils/Mineral Resources chapter of The Preserve Project EIR.

e. The proposed project would include connection to the County Sanitation District 1 system. Therefore, because the proposed project would use a sewer system, ***no impact*** regarding the capability of soil to adequately support the use of septic tanks or alternative wastewater disposal systems would occur.

f. The potential for paleontological resources/unique geologic features to exist at the site is unknown. Should previously unknown paleontological resources exist within the project

site, ground-disturbing activity such as grading and excavating associated with development of the proposed project would have the potential to disturb or destroy such resources. Therefore, the proposed project could result in the direct or indirect destruction of a unique paleontological resource, and a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Geology and Soils/Mineral Resources chapter of The Preserve Project EIR.

VIII. GREENHOUSE GAS EMISSIONS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 gasses?	✖	☐	☐	☐

Discussion

a,b. Emissions of greenhouse gases (GHGs) contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth. An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHG are inherently considered cumulative impacts.

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions. Estimated GHG emissions attributable to the project would be primarily associated with increases of carbon dioxide (CO_2) and, to a lesser extent, other GHG pollutants, such as methane (CH_4) and nitrous oxide (N_2O) associated with area sources, mobile sources or vehicles, and electricity use. As such, the proposed project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, impacts related to GHG emissions and global climate change could be cumulatively considerable and considered ***potentially significant***.

Further analysis of the above impact will be included in the Air Quality and Greenhouse Gas Emissions (including Energy) chapter of The Preserve Project EIR.

IX. HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 likely 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 or excessive noise 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 the risk of loss, injury or death involving wildland fires?	☐	☐	✖	☐

Discussion

a,b. A significant hazard to the public or the environment could result from the routine transport, use, or disposal of hazardous materials. While the proposed project would not be used for industrial purposes, previous uses of the project site may have involved past uses of hazardous materials. Given that the project site is designated for agricultural production uses, the potential exists for on-site soils to be contaminated with herbicides and/or pesticides from past agricultural activities on-site. If present in sufficient concentrations, such chemicals could pose a risk to workers involved in earth-moving activities at the project site.

In addition, the project site contains two single-family residences on the property which may require removal as part of the proposed project. For buildings constructed prior to 1980, the Code of Federal Regulations (29 CFR 1926.1101) states that all thermal system insulation must be designated as “presumed asbestos containing material.” Asbestos is the name for a group of natural occurring silicate materials that are considered “fibrous” and can cause serious illness if inhaled. In addition, lead-based paint is common in structures built prior to 1978. Lead is considered a highly toxic material and caution should be used when removing similar structures. Because the age of the structures on-site is

unknown, the presence or absence of asbestos and lead-based paint cannot be determined at this time.

The project site currently contains septic systems to support the existing residences. The proposed project would include connection to the County Sanitation District 1 system; thus, abandonment of the existing septic systems would be necessary. If not properly abandoned, the on-site septic systems could pose a hazard to construction workers or future residents. Thus, further analysis is needed to determine the potential impacts of the previous septic systems.

Given that the previous uses of the site and current conditions of the on-site structures are unknown, and the need to properly abandon the existing septic system, a ***potentially significant*** impact could occur involving the release of hazardous materials into the public environment.

Further analysis of the above impact will be included in the Hazards and Hazardous Materials chapter of The Preserve Project EIR.

c. The nearest schools relative to the project site are Sunrise Elementary School, located approximately 2.3 miles west of the site, and Robert J. McGarvey Elementary School, located approximately 2.5 miles southwest of the site. Therefore, schools are not located within a quarter mile of the site and the proposed project would result in ***no impact*** related to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

d. A list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 was accessed through the Envirostor database.[11] Based on Envirostor data, the project site has not been listed as a past or present hazardous materials site. The nearest hazardous materials site is a McDonnell Douglas test site which is located approximately 0.80-mile from the project site. Therefore, the project would have a ***less-than-significant*** impact with respect to the location of the project on a hazardous materials site or creating a significant hazard to the public.

e. The proposed project is not located within an airport land use plan. The closest airport to the project site is Mather Airport, located approximately five miles to the west of the project site. Therefore, the proposed project site is not located within two miles of any public airports and does not fall within an airport land use plan area and ***no impact*** would result related to a safety hazard for people living or working in the area.

f. Sufficient emergency access is determined by a number of factors including site circulation and access points. The project would include two off-site entry points and improvements to Raymer Way, as well as an extension to the existing Camden at Somerset Ranch Subdivision by way of an extension of Edington Drive and a new connection to Thornburg Way. The streets would be between 42 and 69-feet wide which would provide adequate emergency vehicle access meeting a minimum 20-feet street width requirement. The proposed project would not include substantial modifications to the existing roadway system in the project area. The proposed project would not include any changes to the surrounding roadway networks that would impair circulation. Therefore, the proposed

[11] Department of Toxic Substances Control. *Envirostor Database Map*. Available at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Sacramento&tour=True. Accessed July 12, 2019.

project would not impair or physically interfere with any emergency evacuation or response plan, and a ***less-than-significant*** impact would occur.

g. Issues related to wildfire hazards are discussed in Section XX, Wildfire, of this IS. As noted therein, the project site is not located within a Very High or High Fire Hazard Severity Zone (FHSZ).[12] In addition, the site is bordered by an existing residential development to the south which limits the risk of wildland fire to the project site. The area located east of the project site, across Grant Line Road, is designated as a moderate fire hazard zone; the project site is separated from the moderate fire hazard zone by Grant Line Road, and fire protection services are provided to the site by the Sacramento Metropolitan Fire District. Therefore, the nearby moderate fire hazard zone is not considered to pose a substantial hazard to the proposed residences.

The proposed project would not expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands, and a ***less-than-significant*** impact would occur.

[12] California Department of Forestry and Fire Protection. *Sacramento County, Fire Hazard Severity Zones in SRA*. November 7, 2007.

X. HYDROLOGY AND WATER QUALITY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 or amount of surface runoff in a manner which would result in flooding on- or offsite;	✖	☐	☐	☐
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 flood 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?	✖	☐	☐	☐

Discussion

a. During the early stages of construction, topsoil would be exposed due to grading and leveling of the site. Therefore, after grading and leveling and prior to overlaying the ground with imperious surfaces, the potential exists for wind and water erosion to discharge sediment and/or urban pollutants into stormwater runoff, which would adversely affect water quality. In addition, the proposed project would result in the generation of increased urban runoff from the creation of substantial impervious areas, which could contribute urban runoff constituents to downstream surface waters. The proposed project would be subject to regulation by the Central Valley Regional Water Quality Control Board (CVRWQCB) to prevent degradation of water quality.

Based on the above, the proposed project could result in the violation of water quality standards and degradation of water quality, and a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Hydrology and Water Quality (Drainage) chapter of The Preserve Project EIR.

b,e. According to the Sacramento County Water Agency's Urban Water Management Plan (UWMP), the Sacramento Central Groundwater Authority (SCGA) adopted a Groundwater Management Plan in 2006.[13] The SCGA was formed to maintain the long-term sustainable yield of the Sacramento Valley Groundwater Basin groundwater supply. Implementation of the proposed project could potentially deplete groundwater supply from this basin. In addition, the proposed project would require a National Pollutant Discharge Elimination System (NPDES) permit and a Storm Water Control Plan (SWCP) as the project would create over 10,000 sf of impervious surfaces. Thus, the proposed project could result in a ***potentially significant*** impact related to substantially decreasing groundwater supplies or interfering substantially with groundwater recharge such that the project could impede a sustainable groundwater management plan of the basin.

Further analysis of the above impact will be included in the Hydrology and Water Quality (Drainage) chapter of The Preserve Project EIR.

ci-civ. Stormwater runoff from impervious surfaces on the site would be directed toward the proposed bioretention and hydromodification areas in the northwest of corner of the parcel. Water from the bioretention basins would drain into the hydromodification basin through a 12-inch storm drain. An outlet structure would be connected to the hydromodification basin which would then direct the water to an existing pond off site.

Given the substantial drainage modifications that would occur with the proposed project, further study is required to ensure that such modifications would not result in substantial erosion, siltation, or flooding on- or off-site, create or contribute runoff water which would provide substantial additional sources of polluted runoff. Thus, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Hydrology and Water Quality (Drainage) chapter of The Preserve Project EIR.

d. The project site is not located near the ocean and, thus, would not be subject to tsunami hazards. The site is not located within the vicinity of a large closed body of water such as a lake or reservoir that could be subject to risks from seiches. In addition, according to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, the project site is not located within a Special Flood Hazard Area subject to a 100-year flooding.[14] Therefore, the proposed project would result in ***no impact*** related to impeding or redirecting flood flows, or pose a risk related to the release of pollutants due to project inundation due to flooding.

[13] Sacramento County Water Agency. *Urban Water Management Plan.* May, 2016.
[14] Federal Emergency Management Agency. *Sacramento County Flood Insurance Rate Map.* August 16, 2012.

XI. LAND USE AND PLANNING. *Would the project:*		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 an environmental effect?	✖	☐	☐	☐

Discussion

a. A project risks dividing an established community if the project would introduce infrastructure or alter land use so as to change the land use conditions in the surrounding community, or isolate an existing land use. Currently, two existing single-family homes are located on the project site. Given that the existing single-family residences do not belong to an established community and would be demolished as part of the proposed project, the project would not have the potential to physically divide an established community. Accordingly, a **less-than-significant** impact would occur.

b. Per the Rancho Cordova General Plan, the project site is currently designated Planning Area. The site is located within the Grant Line West Planning Area and is designated Natural Resources and Residential-Mixed Density. Implementation of the project would require a General Plan Amendment to change the sites land use designation to Low-Density Residential. An additional General Plan Amendment would be required to remove from the Circulation Element Centennial Drive in the project vicinity. In addition, the project would require a rezone of the AG-80 and IR zoning designations to RD-6.

Given that the proposed project would require a General Plan Amendment and rezone, further analysis of the project's consistency with applicable land use policies, plans, and regulations is required to ensure that the project would not cause a significant environmental impact due to conflicts with such standards. Thus, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Land Use and Planning/Population and Housing chapter of The Preserve Project EIR.

XII. MINERAL RESOURCES. *Would the project:*	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?	✖	☐	☐	☐

Discussion

a,b. Per the City's General Plan EIR, mineral extraction in the Planning Area primarily consists of fine sand and course gravel, as well as clay. Currently, two mining operations exist near the project site. Teichert aggregates is located northeast of the project site and Union Mine Iron is located southwest of the project site. The proximity of the project site to existing mining operations could signify that the site contains both known significant mineral resources and known mineral deposits that could qualify as mineral resources.[15] Given that the proposed project is located close to an existing mining operation, the proposed project could result in the loss of availability of known mineral resources. Thus, a ***potentially significant*** impact would occur.

Further analysis of the above impact will be included in the Geology and Soils/Mineral Resources chapter of The Preserve Project EIR.

[15] City of Rancho Cordova. *Rancho Cordova General Plan Draft EIR* [pg. 4.8-11]. March 2006.

XIII. NOISE. *Would the project result in:*	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 groundborne vibration or groundborne 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?	☐	☐	☐	✖

Discussion

a. The existing noise environment in the project vicinity is defined primarily by vehicle noise from surrounding streets including Grant Line Road and Raymer Way. The proposed project would increase traffic noise levels on surrounding streets with the introduction of new residential development. In addition, project operations would also result in an increase in stationary noise associated with outdoor and recreational activities in the area. Temporary noise sources would also be produced during construction activities. Construction activities could include earth moving activities, stationary equipment, and construction vehicles would generate noise during demolition, site preparation, excavation, and grading. Noise levels generated by the project may exceed established thresholds in the City's General Plan Noise Element and Noise Ordinance. The project could cause a substantial permanent, temporary, or periodic increase in ambient noise levels in the project vicinity above thresholds. Therefore, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Noise chapter of The Preserve Project EIR.

b. Groundborne vibration generated would be generated during construction of the proposed project. Construction activities would produce groundborne vibrations include drilling, the use of jackhammers, and other high-power or vibratory tools, and heavy-duty equipment. In addition, construction activities may expose the nearby residential development to the south of the project site to groundborne vibrations. In the event that such groundborne vibration occurs within the vicinity of the existing sensitive receptors to the south of the project site, the project could expose people to or generate excessive groundborne vibration or groundborne noise levels, and a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in The Noise chapter of the Preserve Project EIR.

c. The nearest airport to the project site is Mather Airport, located approximately five miles to the west of the project site. Therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels related to air traffic, and ***no impact*** would occur.

XIV. POPULATION AND HOUSING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?	✖	☐	☐	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	✖	☐

Discussion

a. The proposed project would include the development of a 434-unit, single-family residential subdivision. The proposed project requests a General Plan Amendment to remove the Natural Reserve and Residential-Mixed Density designation and introduce Low-Density Residential to the project site. Additionally, the project includes a request to rezone a portion of the site from AG-80 and IR zoning to RD-6. The proposed project would not be consistent with City's current General Plan designations for the project site and would result in direct population growth in the area. Thus, the project would result in a ***potentially significant*** impact related to population and housing.

Further analysis of the above impact will be included in the Land Use & Planning/Population and Housing chapter of The Preserve Project EIR.

b. The project site is currently developed with two single-family residences on the southern portion of the project site. The proposed project would require demolition of the on-site structures. While the project would displace inhabitants of the two single-family residences, considering the small number of current residents that would be displaced, replacement housing would be available from the existing housing stock in Rancho Cordova. Furthermore, the project would add 434 residential units to the site, resulting in a net increase of 432 units to the City's housing stock. Thus, a ***less-than-significant*** impact would occur.

XV. PUBLIC SERVICES. *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:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection?	✖	☐	☐	☐
b. Police protection?	✖	☐	☐	☐
c. Schools?	✖	☐	☐	☐
d. Parks?	☐	☐	✖	☐
e. Other Public Facilities?	☐	☐	✖	☐

Discussion

a. Fire protection services within the project area are provided by the Sacramento Metropolitan Fire District. The project site is located close to two fire stations in the City of Rancho Cordova. Station 68 is located approximately four miles south west of the project site and Station 66 is located approximately six miles west of the project site. Station 68 is located at 4381 Anatolia Drive in Rancho Cordova while Station 66 is located at 3180 Kilgore Road in Rancho Cordova. The proposed project would include development of new residential units and parks, which could result in the potential for fire incidents, EMT calls, and create an increase in demand for fire protection services. Therefore, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Public Services and Utilities chapter of The Preserve Project EIR.

b. Police protection services for the project site are currently provided by the Rancho Cordova Police Department, which maintains a staff of 55 sworn police officers and 7 nonsworn staff members.[16] The Police Station is located at 2897 Kilgore Road in the City of Rancho Cordova. The proposed project would increase the number of residents and houses in the area, which could result in an increase in demand for police protection services. Thus, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Public Services and Utilities chapter of The Preserve Project EIR.

c. The project site is located with the Folsom Cordova Unified School District, which includes 33 public and private schools. The project site would be served by Navigator Elementary School located at 10679 Bear Hollow Drive, W.E. Mitchell Middle School located at 2100 Zinfandel Drive, and Cordova High School located at 2239 Chase Drive.

The proposed project would include residential development, and, thus, would increase the number of students attending local school facilities. The student generation estimates presented in Table 1 uses the rates provided in the City's General Plan EIR for single-

[16] City of Rancho Cordova. Rancho Cordova Police Department. Available at: http://www.ranchocordovapd.com/about.php. Accessed: July 11, 2019.

family dwelling units.[17] As shown in Table 1, the proposed project could generate approximately 221 students. Therefore, the proposed project would result in an increased number of students in the area, and, thus may result in a ***potentially significant*** impact to school services.

Table 1
Student Generation Estimates

Housing Type	# of Units	Elementary Students		Junior High Students		High School Students	
		Rate	New Students	Rate	New Students	Rate	New Students
Low Density	434	0.299	130	0.104	45	0.107	46
						Total New Students	**221**

Source:
- City of Rancho Cordova. *Rancho Cordova General Plan Draft EIR.* [pg. 4.12-77]. March, 2006.

Further analysis of the above impact will be included in the Public Services chapter of The Preserve Project EIR.

d,e. The proposed project would include the construction of new homes and, thus, would introduce new residents to the project area. As such, the project would result in increased demand for schools, parks, and other public facilities. The Rancho Cordova Recreation and Park District maintains 18 neighborhood parks and six community parks. Hagan Community Park includes approximately 75 acres including the Cordova Community Center, three swimming pools, and additional recreation areas. A section of the American River Parkway is also in Rancho Cordova which includes a 23-mile open space area.

In addition, the City has collected Quimby Act fees since its incorporation in July 2003. The Quimby Act standard for dedication of parkland is 5 acres per 1,000 residents. Per section 22.40 of the City's Municipal Code, the project would be required to dedicate at least 6.4 acres of parkland based on the inclusion of 434 units within the proposed project.[18] The proposed project would satisfy the Municipal Code requirement, as the project would include dedication of a total of 26.12 acres, included in two park areas located at the northern end of the development and community spaces. The parks would be managed by the Cordova Recreation and Park District. The designated community space areas would include bioretention and hydromodification basins. In addition, the project site would include 1.22 acres of green infrastructure to enhance landscape areas and trails connected to surrounding parks.

Currently, other public facilities located in Rancho Cordova include four community swimming pools, the Cordova Senior Center, Mather Sports Complex, the Cordova Shooting Center, and the Cordova Golf Course. The Mather Sports Complex allows residents to participate in a large variety of activities including aerobics, racquetball, and a gym where residents can exercise. Due to the proposed implementation of open space and parks, the project would satisfy the City's parkland dedication requirements and allow access to public facilities throughout the City. Thus, a ***less-than-significant*** impact related to impacts on parks or the need for additional parks would occur.

[17] City of Rancho Cordova. *Rancho Cordova General Plan Draft EIR.* [pg. 4.12-77]. March, 2006.
[18] City of Rancho Cordova. *Rancho Cordova Municipal Code*. [Section 22.40.035]. June 2019

XVI. RECREATION. *Would the project:*	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?	☐	☐	✖	☐

Discussion

a,b. Given that the proposed project would include residential development and would generate population growth within the project area, the project would result in increased demand for park and recreation facilities. However, the proposed project would include two on-site parks and open space at the northern end of the site. As stated in Section XV Public Services, the project would designate 26.12 acres and Community Space, and 1.22 acres of green infrastructure which would exceed the City's parkland dedication requirement of 6.4 acres. Per Section 22.40 of the City's Municipal Code, the parks would be managed by the Cordova Parks and Recreation District and subject to park improvement development fees. Therefore, substantial deterioration of any parks or recreational facilities would not occur as a result of the proposed project.

In addition to the development of the proposed parks, the American River Parkway includes C.M. Geothe Park which consists of 444 acres, and has hiking, bicycling, and horseback riding trails as well as picnic areas for residents. Construction of recreation facilities will not be included as part of the proposed project; however, Rancho Cordova offers numerous recreation facilities including the Mills Station Arts and Culture Center and an exhibit of fine art at Rancho Cordova City Hall.[19] The Neil Orchard Senior Activities Center also offers a place for intimate family gatherings and large community meetings. The project would not be required to construct new recreation facilities, as the current facilities, combined with the proposed on-site park areas, would accommodate residents of the proposed project.

With payment of improvement development fees and designated land for parks, the project would not result in substantial physical deterioration of any existing neighborhood or regional parks or other recreational facilities, and would not result in adverse physical effects related to the construction or expansion of new facilities. Consequently, a ***less-than-significant*** impact would occur.

[19] City of Rancho Cordova. *Rancho Cordova General Plan Draft EIR*. [pg. 4.12-84]. March 2006.

XVII. TRANSPORTATION. *Would the project:*	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. 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?	✖	☐	☐	☐

Discussion

a. The proposed project would include construction of two entry points and improvements on Raymer Way, as well as connection to the existing Camden at Somerset Ranch subdivision through an extension of Edington Drive and a new connection to Thornburg Way. Increased vehicle trips in the area related to project construction and operations could impact roadway systems by increasing vehicle volumes and congestion at intersections. Thus, further study is required to determine whether implementation of the proposed project would result in substantial impacts related to traffic load and capacity of the roadway system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections). In addition, the project could exceed, either individually or cumulatively, a level of service standard established by the City General Plan for roads affected by project traffic. Therefore, the project could result in a ***potentially significant*** impact related to conflicting with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Further analysis of the above impact will be included in the Transportation chapter of The Preserve Project EIR.

b. Section 15064.3 of the CEQA Guidelines provides specific considerations for evaluating a project's transportation impacts. Per Section 15064.3, analysis of vehicle miles travelled (VMT) attributable to a project is the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in Section 15064.3(b)(2) regarding roadway capacity, a project's effect on automobile delay does not constitute a significant environmental impact under CEQA. It should be noted that currently, the provisions of Section 15064.3 apply only prospectively; determination of impacts based on VMT is not required Statewide until July 1, 2020. It should also be noted that the City does not currently have standards for VMT and relies on level of service standards.

Given that the proposed project would result in increased vehicle trip generation on local roadways, further analysis of VMT attributable to the project is required to ensure that the project would not conflict with Section 15064.3(b) of the CEQA Guidelines. Thus, a ***potentially significant*** impact could occur.

Further analysis of the above impact will be included in the Transportation chapter of The Preserve Project EIR.

c,d. An existing residential subdivision is currently located directly south of the project site and agricultural land to the north. The proposed project includes a request for a General Plan amendment and rezone to allow for the proposed 434 single family residences. The proposed project would include construction of two entry points from Raymer Way, as well as connection to the existing Camden at Somerset Ranch subdivision through an extension of Edington Drive and a new connection to Thornburg Way. Raymer Way may also be improved by widening of the roadway. The internal circulation system would consist of multiple roads to all the residences within the subdivision. The proposed increase in development intensity of the site through development of the proposed residences could cause an increase in traffic-related hazards or affect emergency access in the project area. Without further evaluation, the proposed project could result in a ***potentially significant*** impact related to an increase in hazards from design features or incompatible uses, or inadequate emergency access to the project.

Further analysis of the above impact will be included in the Transportation chapter of The Preserve Project EIR.

XVIII. TRIBAL CULTURAL RESOURCES. *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:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. 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).	✖	☐	☐	☐
b. 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. In applying the 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.	✖	☐	☐	☐

Discussion

a,b. The proposed project site would include grading and excavation during construction which could lead to encountering previously unknown tribal cultural resources. Tribal resources may exist within the project site due to the site's proximity to Morrison Creek. To aid in the determination of the presence or absence of tribal cultural resources, the City is in the process of conducting tribal outreach per AB 52. Thus, until tribal consultation is complete and further study is completed related to the presence or absence of tribal cultural resources, impact of the proposed project cannot be known. Therefore, further study is required and a ***potentially significant*** impact to tribal cultural resources could occur.

Further analysis of the above impact will be included in the Cultural and Tribal Resources chapter of The Preserve Project EIR.

XIX. UTILITIES AND SERVICE SYSTEMS. *Would the project:*	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?	✖	☐	☐	☐

Discussion

a,c. Potable water service for the project would be provided by the Sacramento County Water Agency (SCWA). The proposed project would include installation of new eight-inch water mains, which would connect to an existing 10-inch water main located within Edington Drive. Sanitary sewer service is provided to the City by the County Sanitation District 1. The County Sanitation District 1 collects the wastewater flows from individual developments and directs them to the Sacramento Sanitation District Inceptor System. Wastewater would be routed through the eight-inch sanitary sewer pipelines which would ultimately be delivered to the Sacramento Regional Wastewater Treatment Plant north of Elk Grove. Given the size of the proposed residential development, the total quantity of wastewater generated could be substantial.

The proposed project would increase the amount of impervious surfaces at the project site, thus, increasing stormwater runoff at the site. Stormwater would be directed through 12 and 30-inch drainage pipes to the bioretention basins located in the northwest corner of the project site. The stormwater would then be directed to the hydromodification basin and then directed to the pond north of the project site.

The project would require the relocation or construction of new water infrastructure, as new waterlines would be included in the development. In addition, connection to existing natural gas or telecommunications infrastructure would be required for the proposed residential development.

Per the SCWA's 2015 Urban Water Management Plan, water demands within the SCWA Zone 40 North Service Area are approximately 24,403 acre-feet per year (afy). By the year 2030, the Zone 40 North Service Area water demands are expected to reach 56,816 afy. As stated above, water demand projections were based on buildout of the SCWA's UWMP.. Because the proposed project would include a General Plan Amendment, implementation of the proposed project could result in an increase in demand for water that was not previously foreseen. Therefore, further study is necessary to determine the potential effect.

Based on the above, the proposed project would require the relocation or construction of new wastewater treatment, natural gas, or telecommunications facilities. Therefore, the project could result in a ***potentially significant*** impact related to requiring or resulting in the relocation or construction of new or expanded water, storm water drainage, or electric power facilities, the construction or relocation of which could cause significant environmental effects.

Further analysis of the above impact will be included in the Public Services and Utilities chapter of The Preserve Project EIR.

b. As discussed in Section X, Hydrology and Water Quality, of this Initial Study, the proposed project would rely on groundwater supplies. Groundwater would be supplied by the SCWA. The proposed project could potentially deplete supply from the Sacramento Valley Groundwater Basin and have an adverse effect.

According to the 2015 Urban Water Management Plan, the SCWA's ground water is Rancho Cordova's main water supply. While the City uses surface water as a source of water supply, groundwater supplies are more reliable and consistent.[20] The UWMP predicts that the SCWA will be able to meet water demands in normal years, single dry years, and multiple dry years through the year 2040. If multiple dry years were to occur between 2020 and 2040, the first-year supply totals would range from 77,900 afy in 2020 to 90,900 afy in 2040. The water supply would meet demand totals of 48,121 afy to 79,278 afy. In second year, supply and demand totals would remain the same. In the third dry year, supply totals would range from 70,200 afy in 2020 to 83,800 afy in 2040. Again, the water supply would meet demand totals of 48,121 afy to 79,278 afy. While the SCWA could supply the SCWA's service area during drought years, demand projections for the service area were based on land use designations for the SCWA's service area. The proposed project includes a request for a General Plan Amendment to allow for development of a portion of the site with residential uses. Because the proposed project would include a General Plan Amendment, implementation of the proposed project could result in an increase in demand for water that was not previously foreseen.

Further analysis is necessary to ensure that adequate groundwater supplies would be available to serve the project following the General Plan Amendment altering the land use designation to Low-Density Residential. Therefore, the proposed project could result in a ***potentially significant*** impact related to having sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.

[20] Sacramento County Water Agency. *Urban Water Management Plan.* May 2016.

Further analysis of the above impact will be included in the Public Services and Utilities chapter of The Preserve Project EIR.

d,e. The Sacramento County Department of Waste Management and Recycling (DWMR) is responsible for maintain waste management for residents. The Sacramento County DWMR also oversees the Sacramento Regional Solid Waste Authority (SWA). Solid waste generated from the proposed project would be disposed of at the Kiefer Road Landfill. The landfill is located at 12701 Kiefer Boulevard, near the intersection of Kiefer Boulevard and Grant Line Road. According to the City's General Plan EIR, the Kiefer Road Landfill has a total capacity of 117 million cubic yards. The Kiefer Road Landfill is operating below permitted capacity and will have the capacity for about 20 additional years. While the landfill has remaining capacity, the proposed project has not been anticipated by the General Plan and could generate solid waste in excess of the capacity of the landfill.

Based on the above, the proposed project could 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. Further study is necessary to determine if the project would comply with federal, State, and local management and reduction statutes and regulations related to solid waste. Therefore, a ***potentially significant*** impact related to solid waste would occur as a result of the proposed project.

Further analysis of the above impact will be included in the Public Services and Utilities chapter of The Preserve Project EIR.

XX. WILDFIRE. *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:*	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 a 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?	☐	☐	✖	☐

Discussion

a-d. According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program, the project site is not located within a Very High or High FHSZ.[21] The land located to the east of Grant Line Road is designated as Moderate FHSZ in a State Responsibility Area (SRA). Compared to High and Very High FHSZ, the Moderate FHSZ classification defines areas that present a relatively low risk of wildfires.

The area directly south of the proposed project site is occupied with residential development, which would act as a fire break, reducing the potential for fire to spread to the project site from the south. In addition, the currently vacant land to the west of the site is approved for the development of the Rio Del Oro residential community, which, upon completion, would similarly limit the potential for wildfire risk from the west. However, the areas to the north and east of the project site are currently undeveloped and interspersed with ruderal vegetation. The proposed project would preserve 185.3 acres of undeveloped land on the northern parcels. The undeveloped preserve area would be separated from the proposed residences by 26.12 acres of public parks and community spaces north of the proposed residences. The park and community spaces area would be regularly maintained and would provide a buffer between the open space lands and the proposed residential development, providing a fire break and reducing the potential for the spread of wildfire to the proposed residences.

In addition, implementation of the proposed project would include site clearing activities, which would remove much of the on-site vegetation within the developable area and would further create a buffer between lands designated for open space and residential development. Development of the site for residential uses would reduce the risk of wildland fire because site improvements, such as roadways, driveways, and irrigated

[21] California Department of Forestry and Fire Protection. *Sacramento County, Fire Hazard Severity Zones in SRA*. November 7, 2007.

landscaping, would reduce readily combustible vegetation. Furthermore, development of the proposed project would include the installation of fire suppression systems (e.g., fire hydrants, fire sprinklers, smoke detectors) and would be designed in accordance with the latest requirements of the California Fire Code. In accordance with State standards, the project would be required to maintain defensible space to provide a fire break that would prevent the spread of ground fires and protect on-site structures. The proposed project would also be subject to fire safety requirements of the Sacramento Metropolitan Fire District, which would review all plans as part of the City's Building Permit review process. Fire sprinklers, vegetative buffer zones, and other fire-safe measures may be required as part of their review. Compliance with such would ensure that the potential hazards associated with wildand fires to the proposed buildings and structures would be reduced.

Therefore, based on the above, although an SRA is located in proximity to the project site, implementation of the proposed project would not be expected to result in the following wildfire hazards identified in CEQA Guidelines Appendix G: emergency response or evacuation; exacerbation of wildfire or other fire risks; or wildfire related flooding or landslides, slope instability, or drainage changes.Thus, a ***less-than-significant*** impact would occur.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE.	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?	✖	☐	☐	☐

Discussion

a. As discussed in Section IV, Biological Resources, of this IS, the proposed project could potentially result in impacts to special-status plant and wildlife species and other biological resources. Thus, implementation of the proposed project could have the potential to degrade the quality of the environment by potentially reducing the habitat for special-status plant and animal species. In addition, the project could have a substantial adverse effect on riparian habitat or other sensitive natural communities, including the various wetlands on-site. Furthermore, as noted in Section V, the project site has not been formally evaluated for the presence of historical resources, and possibility exists for such resources to be found on-site. As such, and in the absence of further study, the project could eliminate important examples of the major periods of California history or prehistory. Thus, a ***potentially significant*** impact could occur.

Further analysis of the above impacts will be included in The Preserve Project EIR.

b. The proposed project, in conjunction with other development within the City of Rancho Cordova, could incrementally contribute to cumulative impacts in the project area. In particular, the chapters that will discuss project related impacts include Air Quality and Greenhouse Gas Emissions (including Energy), Biological Resources, Cultural and Tribal Resources, Geology and Soils/Mineral Resources, Hazards and Hazardous Materials, Hydrology and Water Quality (Drainage), Land Use and Planning/Population and Housing, Noise, Public Services and Utilities, and Transportation. Thus, a ***potentially significant*** impact could occur with regard to cumulative impacts in the project area.

Further analysis of the above impacts will be included in The Preserve Project EIR.

c. As described in this IS, implementation of the proposed project could result in impacts related to air quality, hazardous materials, and excess noise levels. As such, in the absence of further study, the project could cause substantial adverse effects on human beings, and a ***potentially significant*** impact could occur.

Further analysis of the above impacts will be included in The Preserve Project EIR.

Appendix B

Department of Transportation
Ron E. Vicari, Director

Divisions
Administration
Maintenance & Operations
Engineering & Planning

County of Sacramento

October 31, 2019

Kelly Whitman
Planning Department
City of Rancho Cordova
2729 Prospect Park Drive
Rancho Cordova, CA 95670

SUBJECT: COMMENTS ON THE NOTICE OF PREPARATION (NOP) FOR THE PRESERVE ENVIRONMENTAL IMPACT REPORT (EIR)

Ms. Whitman:

The County of Sacramento, Department of Transportation has reviewed the NOP for the subject project. We appreciate the opportunity to review these documents.

Our comments are simply that we would expect that if this project has any impacts on the transportation facilities in the County of Sacramento that mitigation measures be included in the EIR that address these impacts. To that end we would request that any county roadways that would experience increased traffic volumes from the development be studied in the EIR. In looking at the plan there appears to be the potential for traffic to come from the proposed project through Raymer Road at Grant Line Road and White Rock Road. We have the following comments to offer at this time.

1. The traffic study for the EIR should evaluate the traffic impacts on the following roadway segments:
   - White Rock Road West of Grant Line Road
   - White Rock Road North of Grant Line Road
   - Grant Line Road North of Raymer Road
   - Grant Line Road South of Raymer Road

2. The following intersections should also be evaluated in the study during the weekday AM and PM peak hour:
   - Grant Line Road and White Rock Road
   - Grant Line Road and Raymer Road
   - Grant Line Road and Douglas Road

Should you have any questions, please feel free to contact me at (916) 874-7052.

Sincerely,

Matthew G. Darrow, PE, TE, PTOE.
Principal Civil Engineer
Department of Transportation

MGD/mp

November 18, 2019

Darcy Goulart
City of Rancho Cordova Planning Department
2729 Prospect Park Dr.
Rancho Cordova, CA 95670

Regarding: **Notice of Preparation regarding an Environmental Impact Report**
The Preserve Tentative Subdivision Map (June 10, 2019)
Comment Period: October 25 – November 25
Grant Line West Planning Area
Rancho Cordova, CA

Reviewed by: Cordova Recreation and Park District
Laura Taylor, CRPD Park Planning and Development Manager
Lisbet Gullone, CRPD Contract Planner

As a part of the entitlement process for The Preserve Tentative Subdivision Map, the City of Rancho Cordova circulated a Notice of Preparation regarding an Environmental Impact Report on October 25, 2019. The Cordova Recreation and Park District (CRPD or 'the District') has previously prepared project review comments in a letter dated March 15, 2019 and met with the project team on February 21 and October 17, 2019.

BACKGROUND
After CRPD reviewed the project for Quimby Parkland requirements in May of this year, the application was on hold until the City could determine if the previously planned extension of Centennial Drive (through the northeast corner of the Parkway development) would remain an option. This issue has now been resolved. The City will no longer pursue a road extension through the future open space preserve north of the subdivision.

The Preserve Project Initial Study dated October 2019 contains outdated statistics about the Cordova Recreation and Park District (CRPD) on page 47. The name of the District needs to be corrected in paragraph one. The District currently has 39 parks (10 community parks and 29 neighborhood parks). CRPD also has a golf course, two swimming pools (one is currently being replaced), a senior center and the Mather Sports Complex that includes a gymnasium. CRPD no longer has a shooting center.

TENTATIVE SUBDIVISION MAP
The Preserve subdivision includes 434 single family units and will have a future population of 1,280 individuals (434 x 2.95). The community is required to provide 6.4 acres of Quimby Parkland (5 acres per 1,000 residents), but as shown in the Park Exhibit, the two parks that are designated to CRPD have a combined area of 10.37 acres. CRPD has also noted that the park area is specified as 8.9 acres on page 8 of the NOP.

The current project proposal exceeds the Quimby parkland dedication requirement. The District's acceptance of additional acreage requires an increase to existing funding models for the development and maintenance of the additional park acreage.

The District has met with the applicant to discuss the latest Tentative Map and Park Exhibit (dated June 10, 2019), but written review comments have not yet been prepared. While the proposed Quimby parks are not consistent with CRPD's regular standards regarding size and location, the District is open to some deviations to be approved by the District's General Manager and ultimately the Board of Directors through the mechanism of a Park Development Agreement.

At this time, several options are under consideration. CRPD may consider the larger park in the northeast corner of the subdivision (Park 1) a Community Park and the smaller park at the center of the open space/park corridor (Park 2) a Neighborhood Park. The City of Rancho Cordova staff and CRPD staff have begun discussions about the concept of a trailhead at Park 1 Community Park site to access the proposed trail system. The jurisdictional issues related to City trails and CRPD Quimby parkland have not been detailed should the two agencies pursue a trailhead facility.

ACCESS AND CIRCULATION

District standards state that neighborhood parks should have street frontage on three sides and community parks should have street frontage on two sides. The proposed park layout does not conform to this standard and causes some concern for access, visibility and potential security issues. The District has considered mitigation measures for the access issues created by the non-conformance, suggested below.

The two proposed parks are incorporated with the park/open space corridor close to Morrison Creek, CRPD would like to improve public access to and increase the visibility of the park sites by locating the main loop road (from the North Douglas Neighborhood to Raymer Way) next to Park 2. As a part of this change, Street H would become the main entrance from Raymer Way (in lieu of Street A). In order to further increase the visibility of the two parks, CRPD would also like to place park signs along the assigned loop road.

The proposed trail along Morrison Creek will need to provide access for large maintenance and emergency vehicles. The trail corridor and associated cable fencing along the creek will need to be located in an easement that is separate from the Quimby park sites.

The trail system within The Preserve was presented as connecting to the City of Rancho Cordova trail system. However, adjustments will need to be made to this project proposal and to approved plans for offsite properties to connect the trail system in this project to the City trail system. Because a creek trail was originally envisioned to extend from the west boundary of the Preserve to Americanos Boulevard (along the north side of Morrison Creek), CRPD recommends that the trail within the Preserve (along the south side of Morrison Creek) should extend up to the west subdivision boundary. From this location, a future trail could be extended west through a portion of Rio Del Oro Specific Plan area to Americanos Boulevard. By moving the trail from the north side of the creek, the main part of the wetlands preserve can also remain undisturbed.

Demonstrated ability to connect The Preserve trail system to the larger City system is needed to justify the concept of a trailhead at Park 1 Community Park site.

OPEN SPACE/RECREATION
It is the goal of CRPD to provide an average of 5 acres of improved parkland per 1,000 residents. In addition, the District strives to provide 52% Community Parks and 48% of Neighborhood Parks. It will not be possible to apply these standards to The Preserve. However, CRPD can direct the applicant towards closer compliance. A community asset trailhead area and a parking lot and restroom to service trailhead use (possibly under the jurisdiction of the City of Rancho Cordova) could be set aside in or adjacent to Park 1. This will steer the project towards closer compliance. The location of Park 1 at the end of the subdivision roadway system complicate vehicular access to Park 1 from the broader community. These complications could impact the use of Park 1 as a community park.

The grading plan for Park 2 has significant slopes within the parcel boundary. The slopes reduce the programmable space available and excludes the possibility of off-street parking for this park. Therefore, it can only be considered for neighborhood park use. The grading plan for the Park 1 parcel has significant slopes on the northern portion of the project. These will be difficult to monitor and maintain. CRPD would prefer not to accept maintenance of the slopes off the back side of the park that do not provide a public park use benefit.

CRPD does not consider slopes that exceed 25% (4:1) as Quimby Parkland. The current park sizes shown on the maps should distinguish between that creditable as Quimby parkland (4:1 or less) and portions exceeding 4:1 slope.

Because each park site has a limited amount of street frontage, CRPD recommends that parking should be permitted on each side of streets that front park land, especially for Park 2. As a part of the District's standards, vertical curbs and attached sidewalks are also required for street frontages along park sites.

UTILITIES
Both park sites will need to be provided with standard utility stubs required for park development. CRPD requested the applicant investigate if a gravity-flow sewer line can serve Park 2.

POTENTIAL ENVIRONMENTAL EFFECTS
CRPD recommends that sport field lighting, pedestrian and parking lot lighting, noise, and increased traffic associated with public parks should be considered in the future environmental study. The impacts of Park 1 should consider potential impacts of actively-programmed community parks with the potential for community park amenities.

The environmental study shall also identify soil types, wetlands and biological resources on land designated for parks. If unsuitable soils, wetlands or protected plants and animals are impacting park land, the EIR shall identify appropriate mitigation measures for the removal.

PARK DEVELOPMENT AGREEMENT
As a part of the process to identify a final park system for the Preserve, a Park Development Agreement between the developer and CRPD will be required. If the park system and trail system plan have jurisdictional issues related to trail easements, maintenance, ownership related to a trailhead, parking lot and restroom those issues will be described in a Park Development Agreement and further detailed in an agreement between the City and the Park District.

RECOMMENDATIONS REGARDING THE ENVIRONMENTAL IMPACT REPORT
The Environmental Impact Report for the Preserve should address the following issues:

1. Consider vehicular access to the proposed Park 1 site from the broader community. Improve vehicular access to the Park 1. Consider the option that the main east entrance to the subdivision could be moved from Street A to Street H and Street H could be designated as the wider loop road through the neighborhood. Ideally, the higher volume traffic road should front the proposed community park.

2. Specify that the trail along the south side of Morrison Creek will be designed to accommodate emergency vehicles.

3. Extend the proposed trail to the west subdivision boundary and demonstrate connection to the City-wide Trail System.

4. Suggest erosion control measures for new slopes that are steeper than 4:1 (0.25%).

5. Address lighting, noise, and increased traffic associated with public parks.

6. Identify soil types, wetlands and biological resources on land designated for parks and develop mitigation measures for the removal of unsuitable soils, wetlands or protected plants and animals.

Please contact the District if you have any questions or comments regarding these recommendations.

Respectfully,

Laura L Taylor ASLA
Park Planning and Development Manager
Cordova Recreation and Park District

Copy: Patrick Larkin, General Manager for Cordova Recreation and Park District
Bob Shattuck, Shattuck Community Planning
Cristina James, CPRD Landscape Architect

Department of Waste Management and Recycling
Doug Sloan, Director

County of Sacramento

Date: November 19, 2019

To: Darcy Goulart, City of Rancho Cordova Planning Department

From: Dave Ghirardelli, County of Sacramento Department of Waste Management & Recycling (DWMR)

SUBJECT: DWMR Comments on The Preserve Environmental Impact Report (EIR) Notice of Preparation (NOP)

Please find below DWMR's comments regarding The Preserve EIR NOP.

Sacramento County's Kiefer Landfill serves the waste disposal needs of residents and businesses throughout Sacramento County and the cities within it. Kiefer Landfill is located approximately three miles from The Preserve. The proximity and pre-existence of Kiefer Landfill and the important role it plays in the Sacramento region should be considered during development of the EIR. DWMR can provide detailed and current information for relevant Sections of the EIR and the City of Rancho Cordova is invited to inquire, specifically when authoring the Land Use chapter, Public Services and Utilities chapter, and the Transportation chapter, among others.

In order to maintain service for citizens and businesses throughout the County, parcels created within The Preserve should be accompanied by Disclosures recorded on deeds acknowledging the pre-existence and proximity of Kiefer Landfill and the waste disposal activities that occur there. Sample disclosures can be provided by DWMR upon request.

Please do not hesitate to contact me if you have any questions or need additional clarification on any points made above. Also, please keep me updated regarding The Preserve as the application process for the project entitlements proceeds.

My contact information is below:

Dave Ghirardelli
Solid Waste Planner II
County of Sacramento
Department of Waste Management & Recycling
(916) 875-4557
ghirardellid@saccounty.net

Department of Waste Management and Recycling
Doug Sloan, Director

County of Sacramento

9850 Goethe Road • Sacramento, California 95827 • phone (916) 875-6789 • fax (916) 854-9212 • www.sacgreenteam.com

SMUD®

Sent Via E-Mail

November 20, 2019

Darcy Goulart, Planning Manager
City of Rancho Cordova
Community Development Department
2729 Prospect Park Drive
Rancho Cordova, CA 95670
dgoulart@cityofranchocordova.org

Subject: **The Preserve Project / NOP / 2019100515**

Dear Ms. Goulart:

The Sacramento Municipal Utility District (SMUD) appreciates the opportunity to provide comments on the Notice of Preparation (NOP) for The Preserve Project (Project, SCH 2019100515). SMUD is the primary energy provider for Sacramento County and the proposed Project area. SMUD's vision is to empower our customers with solutions and options that increase energy efficiency, protect the environment, reduce global warming, and lower the cost to serve our region. As a Responsible Agency, SMUD aims to ensure that the proposed Project limits the potential for significant environmental effects on SMUD facilities, employees, and customers.

It is our desire that the Project NOP will acknowledge any Project impacts related to the following:

- Overhead and or underground transmission and distribution line easements. Please view the following links on smud.org for more information regarding transmission encroachment:
  - https://www.smud.org/en/Business-Solutions-and-Rebates/Design-and-Construction-Services
  - https://www.smud.org/en/Corporate/Do-Business-with-SMUD/Land-Use/Transmission-Right-of-Way
- Utility line routing
- Electrical load needs/requirements
- Energy Efficiency
- Climate Change
- Cumulative impacts related to the need for increased electrical delivery
- The potential need to relocate and or remove any SMUD infrastructure that may be affected in or around the project area

SMUD would like to be involved with discussing the above areas of interest as well as discussing any other potential issues. We aim to be partners in the efficient and sustainable delivery of the proposed Project. Please ensure that the information included in this response is conveyed to the Project planners and the appropriate Project proponents.

Environmental leadership is a core value of SMUD and we look forward to collaborating with you on this Project. Again, we appreciate the opportunity to provide input on this NOP. If you have any questions regarding this letter, please contact SMUD's Environmental Management Specialist, Jerry Park, at jerry.park@smud.org or 916.732.7406.

Sincerely,



Nicole Goi
Regional & Local Government Affairs
Sacramento Municipal Utility District
6301 S Street, Mail Stop A313
Sacramento, CA 95817
nicole.goi@smud.org

Cc: Jerry Park

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
East Sacramento Area
11336 Trade Center Drive
Rancho Cordova, CA 95742
(916) 464-1450
(800) 735-2929 (TT/TDD)
(800) 735-2922 (Voice)

RECEIVED
NOV 25 2019
BY:.....

November 21, 2019

File No.: 260.15702

Darcy Goulart
City of Rancho Cordova
2729 Prospect Park Drive
Rancho Cordova, CA 95670

The East Sacramento Area Office of the California Highway Patrol recently received a "Notice of Preparation," Environmental Impact Report for the proposed Preserve Project in the City of Rancho Cordova, State Clearing House (SCH) #2019100515. After our review, we have concerns with the potential impact this project could have on traffic congestion, and an increase in calls for service within our jurisdiction.

The actual proposed community is within the Rancho Cordova City limits, but the ingress and egress routes our within the jurisdiction of the California Highway Patrol, East Sacramento Area's jurisdiction. Our concerns relate to the proposed construction of a master planned community to include 434 residential units on 71.58 acres, and public parks on 26.12 acres. This project is located north of Grantline Road, south of Sunrise Boulevard between Prairie City Road and Jackson Road. There are several major roadways that will be impacted by the increased traffic congestion. Jackson Road, State Route 16 (SR-16), is a two-lane undivided highway with minimal shoulders, surrounded by agricultural fields. SR-16 already experiences significant traffic delays/congestion during commute hours and heavy commercial vehicle traffic due to the commercial businesses within the area and the County Landfill. These roads are also used as a major commuter thoroughfare for Amador County, and numerous communities within Sacramento, San Joaquin, and El Dorado Counties. SR-16, Sunrise Boulevard, White Rock Road, Prairie City Road and Grantline Road are roadways within our jurisdiction that are significant ingress and egress routes that will be used to access the proposed community from both US Highway 50 and State Route 99 (SR-99). There are numerous cross streets within the vicinity of the planned project that will also see an increase in traffic congestion.

The aforementioned roadways currently experience traffic congestion and significant delays during commute hours, and without proper traffic management engineering prior to the development of the proposed community, traffic congestion will continue to increase. All of the roadways mentioned are two lane roadways that were originally developed for a rural community and were not designed to accommodate the rapid increase in population. This

project will negatively impact our operations due to the increased traffic congestion, which will lead to an increase in traffic collisions, calls for service, and ultimately will significantly increase our response time. The mission of the California Highway Patrol is to provide the highest level of Safety, Service and Security. The delays in service due to the traffic congestion will impact our ability to provide the service the citizens deserve.

If you have any questions regarding these concerns, please contact Lieutenant Johnson at (916) 464-1450.

Sincerely,

R. M. JOHNSON, Lieutenant
Commander

cc: State Clearing House
Valley Division
Special Projects Section

22 November 2019

Darcy Goulart
City of Rancho Cordova
2729 Prospect Park Drive
Rancho Cordova, CA 95670

CERTIFIED MAIL
7019 0700 0002 0111 5886

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, THE PRESERVE PROJECT, SCH#2019100515, SACRAMENTO COUNTY

Pursuant to the State Clearinghouse's 25 October 2019 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Preserve Project, located in Sacramento County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

The project is located within the South Sacramento Habitat Conservation Plan (SSHCP) boundary. The project must implement all applicable SSHCP Avoidance and Minimization Measures.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically

as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Total Maximum Daily Load

Morrison Creek is currently 303(d) listed for Diazinon, Pentachlorophenol (PCP), Pyrethroids, and Toxicity. Since the project contains tributaries to Morrison Creek, Central Valley Water Board staff recommends noting the current 303(d) listings for Morrison Creek within the draft Environmental Impact Report and discussing any potential any effects of these pollutants from project activities.

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

> *Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.*
>
> *This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.*

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities

(Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers

seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4812 or Jordan.Hensley@waterboards.ca.gov.

Original Signed By

Jordan Hensley
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento (via email)

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

November 25, 2019

SENT VIA E-MAIL

Darcy Goulart
Principal Planner, City of Rancho Cordova
2729 Prospect Park Drive, Rancho Cordova, California 95670

Subject: The Preserve Initial Study and Notice of Preparation for a Draft Environmental Impact Report

Dear Ms. Goulart,

Thank you for providing the opportunity for the Sacramento Metropolitan Air Quality Management District (SMAQMD) to review and comment on the Initial Study (IS) and Notice of Preparation (NOP) for a Draft Environmental Impact Report (DEIR) for The Preserve. We have reviewed the project in a manner consistent with the California Health and Safety Code Section 40961 requirement that SMAQMD "represent all the citizens of the Sacramento District in influencing the decisions of other public and private agencies whose actions may have an adverse impact on air quality." We offer the following comments.

Thresholds & Analysis
This project's size exceeds SMAQMD's screening threshold for construction analysis for both greenhouse gas (GHG) and criteria pollutant (pollutants covered by state and federal clean air acts) emissions. It exceeds SMAQMD's screening threshold for operational analysis of GHG emissions. SMAQMD's Guide to Air Quality Assessment in Sacramento County (CEQA Guide), available on our website, provides methods to analyze project air quality and climate change impacts, including screening criteria, thresholds of significance, and more, to assist lead agencies in complying with CEQA.

If the construction emissions of criteria pollutants and / or GHGs are determined to be significant, the City should require SMAQMD's standard construction mitigation, available in the CEQA Guide. If operational GHG emissions are determined to be significant, the City should apply all feasible mitigation, as described in the CEQA Guide. Further, as the City of Rancho Cordova does not have a Climate Action Plan (CAP), please note that SMAQMD's CEQA Guide contains guidance for addressing greenhouse gas emissions associated with individual development projects.

Grant Line West Planning Area
The planning area identified in the NOP does not include the entire Grant Line West planning area, and the DEIR should include context for the project within the Grant Line West planning area. This would include projected plans for land use in the rest of the Grant Line West planning area.

Conclusion
We look forward to receiving more project information through the environmental review process, so we can more fully evaluate this project for its effects on air quality. Thank you for

your consideration. All projects are subject to SMAQMD rules and regulations at the time of construction. A list of the most common rules that apply at the construction phase of projects is available on our website. If you have questions about these comments, please contact me at mwright@airquality.org or 916-874-4207

Sincerely,



Molly Wright, AICP
Air Quality Planner / Analyst

c: Paul Philley, AICP, Program Coordinator, SMAQMD

DEPARTMENT OF TRANSPORTATION
DISTRICT 3
PLANNING DIVISION
703 B Street, MS-4130
Marysville CA 95901
PHONE (530) 634-7616
www.dot.ca.gov
TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life.

November 25, 2019

GTS# 03-SAC-2018-00566

Darcy Goulart
City of Rancho Cordova
2729 Prospect Park Drive
Rancho Cordova, CA 95670

The Preserve – Notice of Preparation (NOP) of an Environmental Impact Report

Dear Darcy Goulart,

Thank you for including the California Department of Transportation (Caltrans) in the review process for the project referenced above. Caltrans' new mission, vision, and goals signal a modernization of our approach to California's transportation system. We review this local development for impacts to the State Highway System (SHS) in keeping with our mission, vision, and goals for sustainability/livability/economy, and safety/health. We provide these comments consistent with the State's smart mobility goals that support a vibrant economy, and build communities, not sprawl.

The applicant is proposing to rezone the property from Agriculture 80 and Industrial to Residential 5 (RD-5). The development includes 434 single family lots, parks, preserve area and all necessary infrastructure to support the project. The project applicant has submitted an arborist report, drainage study, sewer report, water study and aquatic resources delineation. Additional studies that are being prepared area biological resources assessment, traffic study, special-status plant surveys, raptor/bat survey and a geotechnical report. The site is located northwest of Raymer Way and Grant Line Road, north of the Sunridge Specific Plan and east of the Rio Del Oro Specific Plan. Based on the information received, Caltrans provides the following comments:

Traffic Forecasting/Operations

This project will have a significant impact to the US 50 interchanges, mainly to Sunrise, Prairie City, Zinfandel and Mather Road. We look forward to the opportunity to review the Traffic Impact Analysis (TIA) as referenced on page 13 of the NOP. Please incorporate the following points in the TIA:

- Trip generation table for each land use for the project including the land use code used and the units for those land uses.
- Trip distribution map
- Existing Traffic Volume
- Project Only Traffic Volume

- Existing Traffic Volume on Opening Day (Construction Completion Year)
- Existing Traffic Volume on Opening Day (Construction Completion Year) + Project Volume
- Cumulative 20-year traffic volume without project
- Cumulative 20-year traffic volume with project
- Analysis at the following interchanges:
    - US 50/Mather Field Road
    - US 50/Zinfandel Drive
    - US 50/Sunrise Blvd
    - US 50/Prairie City Road
- VMT Analysis for the project
- Suggested mitigation measures

Please provide our office with copies of any further actions regarding the Project. We would appreciate the opportunity to review and comment on any changes related to this development.

If you have any questions regarding these comments or require additional information, please contact David Smith at (530) 634-7799 or by email at: david.j.smith@dot.ca.gov.

Sincerely,

DAVID SMITH
Acting Branch Chief, Transportation Planning – South
Planning, Local Assistance, and Sustainability

Appendix C

The Preserve Project

Sacramento Metropolitan AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	440.00	Dwelling Unit	73.50	792,000.00	1175

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	387.09	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor updated per SMUD's RPS reductions

Land Use - Acreage updated per applicant-provided questionnaire

Construction Phase - Timing updated per estimates provided on applicant's construction questionnaire

Demolition -

Grading - Based on applicant-provided questionnaire

Vehicle Trips - Trip rates and trip lengths updated to match project-specific data from Kimley Horn Traffic Study

Mobile Land Use Mitigation -

Energy Mitigation - Title 24 exceedance applied to reflect compliance with the 2019 CBSC.

Water Mitigation - Water conservation strategy applied to reflect compliance with 2019 CalGreen Code and MWELO.

The Preserve Project - Sacramento Metropolitan AQMD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	391.00
tblConstructionPhase	NumDays	1,110.00	391.00
tblConstructionPhase	NumDays	70.00	23.00
tblConstructionPhase	NumDays	110.00	44.00
tblConstructionPhase	NumDays	75.00	24.00
tblConstructionPhase	NumDays	40.00	11.00
tblGrading	MaterialImported	0.00	10,000.00
tblLandUse	LotAcreage	142.86	73.50
tblProjectCharacteristics	CO2IntensityFactor	590.31	387.09
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	HO_TL	8.50	6.65
tblVehicleTrips	HS_TL	7.50	5.87
tblVehicleTrips	HW_TL	15.00	11.74
tblVehicleTrips	ST_TR	9.91	9.12
tblVehicleTrips	SU_TR	8.62	9.12
tblVehicleTrips	WD_TR	9.52	9.12

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	1.0875	2.8391	2.2530	5.2100e-003	0.4113	0.1206	0.5319	0.1655	0.1121	0.2776	0.0000	466.7041	466.7041	0.0917	0.0000	468.9973
2022	3.6727	2.9478	3.3452	8.1900e-003	0.3187	0.1195	0.4381	0.0858	0.1130	0.1988	0.0000	733.6739	733.6739	0.0885	0.0000	735.8866
2023	0.9409	0.5992	0.7376	1.8300e-003	0.0728	0.0233	0.0961	0.0196	0.0221	0.0417	0.0000	163.7641	163.7641	0.0194	0.0000	164.2488
Maximum	**3.6727**	**2.9478**	**3.3452**	**8.1900e-003**	**0.4113**	**0.1206**	**0.5319**	**0.1655**	**0.1130**	**0.2776**	**0.0000**	**733.6739**	**733.6739**	**0.0917**	**0.0000**	**735.8866**

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	1.0875	2.8391	2.2530	5.2100e-003	0.4113	0.1206	0.5319	0.1655	0.1121	0.2776	0.0000	466.7037	466.7037	0.0917	0.0000	468.9969
2022	3.6727	2.9478	3.3452	8.1900e-003	0.3187	0.1195	0.4381	0.0858	0.1130	0.1988	0.0000	733.6735	733.6735	0.0885	0.0000	735.8862
2023	0.9409	0.5992	0.7376	1.8300e-003	0.0728	0.0233	0.0961	0.0196	0.0221	0.0417	0.0000	163.7640	163.7640	0.0194	0.0000	164.2487
Maximum	**3.6727**	**2.9478**	**3.3452**	**8.1900e-003**	**0.4113**	**0.1206**	**0.5319**	**0.1655**	**0.1130**	**0.2776**	**0.0000**	**733.6735**	**733.6735**	**0.0917**	**0.0000**	**735.8862**

The Preserve Project - Sacramento Metropolitan AQMD Air District, Annual

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**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	**5-1-2021**	**7-31-2021**	1.5699	1.5699
2	**8-1-2021**	**10-31-2021**	1.1783	1.1783
3	**11-1-2021**	**1-31-2022**	1.7346	1.7346
4	**2-1-2022**	**4-30-2022**	1.6211	1.6211
5	**5-1-2022**	**7-31-2022**	1.6711	1.6711
6	**8-1-2022**	**10-31-2022**	1.6735	1.6735
7	**11-1-2022**	**1-31-2023**	1.6505	1.6505
8	**2-1-2023**	**4-30-2023**	1.0027	1.0027
		Highest	1.7346	1.7346

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	3.7255	0.0523	4.5386	2.4000e-004		0.0251	0.0251		0.0251	0.0251	0.0000	7.4120	7.4120	7.1300e-003	0.0000	7.5902
Energy	0.0613	0.5238	0.2229	3.3400e-003		0.0424	0.0424		0.0424	0.0424	0.0000	1,258.9304	1,258.9304	0.0605	0.0212	1,266.7700
Mobile	1.1263	4.7232	13.9603	0.0476	4.3122	0.0369	4.3491	1.1559	0.0344	1.1903	0.0000	4,376.8398	4,376.8398	0.1936	0.0000	4,381.6791
Waste						0.0000	0.0000		0.0000	0.0000	85.8652	0.0000	85.8652	5.0745	0.0000	212.7273
Water						0.0000	0.0000		0.0000	0.0000	10.1427	36.1866	46.3293	0.0376	0.0226	54.0100
Total	**4.9131**	**5.2993**	**18.7218**	**0.0511**	**4.3122**	**0.1044**	**4.4165**	**1.1559**	**0.1019**	**1.2577**	**96.0079**	**5,679.3687**	**5,775.3766**	**5.3733**	**0.0439**	**5,922.7766**

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	3.7255	0.0523	4.5386	2.4000e-004		0.0251	0.0251		0.0251	0.0251	0.0000	7.4120	7.4120	7.1300e-003	0.0000	7.5902
Energy	0.0575	0.4909	0.2089	3.1300e-003		0.0397	0.0397		0.0397	0.0397	0.0000	568.5548	568.5548	0.0109	0.0104	571.9335
Mobile	1.1178	4.6708	13.7405	0.0467	4.2259	0.0363	4.2622	1.1328	0.0338	1.1665	0.0000	4,294.1341	4,294.1341	0.1904	0.0000	4,298.8948
Waste						0.0000	0.0000		0.0000	0.0000	85.8652	0.0000	85.8652	5.0745	0.0000	212.7273
Water						0.0000	0.0000		0.0000	0.0000	8.1142	28.9493	37.0634	0.0301	0.0181	43.2080
Total	**4.9007**	**5.2141**	**18.4880**	**0.0500**	**4.2259**	**0.1011**	**4.3270**	**1.1328**	**0.0986**	**1.2314**	**93.9793**	**4,899.0503**	**4,993.0296**	**5.3131**	**0.0285**	**5,134.3538**

	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	**0.25**	**1.61**	**1.25**	**2.17**	**2.00**	**3.16**	**2.03**	**2.00**	**3.20**	**2.10**	**2.11**	**13.74**	**13.55**	**1.12**	**34.98**	**13.31**

3.0 Construction Detail

Construction Phase

The Preserve Project - Sacramento Metropolitan AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2021	6/2/2021	5	23	
2	Site Preparation	Site Preparation	6/3/2021	6/17/2021	5	11	
3	Grading	Grading	6/18/2021	8/18/2021	5	44	
4	Paving	Paving	8/19/2021	9/21/2021	5	24	
5	Building Construction	Building Construction	9/22/2021	3/22/2023	5	391	
6	Architectural Coating	Architectural Coating	10/6/2021	4/5/2023	5	391	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 110

Acres of Paving: 0

Residential Indoor: 1,603,800; Residential Outdoor: 534,600; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

The Preserve Project - Sacramento Metropolitan AQMD Air District, Annual

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	55.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,250.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	158.00	47.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	32.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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					
Fugitive Dust					6.1600e-003	0.0000	6.1600e-003	9.3000e-004	0.0000	9.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0364	0.3616	0.2480	4.5000e-004		0.0178	0.0178		0.0166	0.0166	0.0000	39.1009	39.1009	0.0110	0.0000	39.3760
Total	**0.0364**	**0.3616**	**0.2480**	**4.5000e-004**	**6.1600e-003**	**0.0178**	**0.0240**	**9.3000e-004**	**0.0166**	**0.0175**	**0.0000**	**39.1009**	**39.1009**	**0.0110**	**0.0000**	**39.3760**

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	2.0000e-004	7.2600e-003	1.6600e-003	2.0000e-005	4.6000e-004	2.0000e-005	4.9000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	2.0797	2.0797	1.2000e-004	0.0000	2.0827
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	5.6000e-004	6.1300e-003	2.0000e-005	1.9000e-003	1.0000e-005	1.9100e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6093	1.6093	4.0000e-005	0.0000	1.6103
Total	**1.0100e-003**	**7.8200e-003**	**7.7900e-003**	**4.0000e-005**	**2.3600e-003**	**3.0000e-005**	**2.4000e-003**	**6.4000e-004**	**3.0000e-005**	**6.7000e-004**	**0.0000**	**3.6889**	**3.6889**	**1.6000e-004**	**0.0000**	**3.6929**

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					6.1600e-003	0.0000	6.1600e-003	9.3000e-004	0.0000	9.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0364	0.3616	0.2480	4.5000e-004		0.0178	0.0178		0.0166	0.0166	0.0000	39.1009	39.1009	0.0110	0.0000	39.3760
Total	**0.0364**	**0.3616**	**0.2480**	**4.5000e-004**	**6.1600e-003**	**0.0178**	**0.0240**	**9.3000e-004**	**0.0166**	**0.0175**	**0.0000**	**39.1009**	**39.1009**	**0.0110**	**0.0000**	**39.3760**

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	2.0000e-004	7.2600e-003	1.6600e-003	2.0000e-005	4.6000e-004	2.0000e-005	4.9000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	2.0797	2.0797	1.2000e-004	0.0000	2.0827
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	5.6000e-004	6.1300e-003	2.0000e-005	1.9000e-003	1.0000e-005	1.9100e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6093	1.6093	4.0000e-005	0.0000	1.6103
Total	**1.0100e-003**	**7.8200e-003**	**7.7900e-003**	**4.0000e-005**	**2.3600e-003**	**3.0000e-005**	**2.4000e-003**	**6.4000e-004**	**3.0000e-005**	**6.7000e-004**	**0.0000**	**3.6889**	**3.6889**	**1.6000e-004**	**0.0000**	**3.6929**

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					0.0994	0.0000	0.0994	0.0546	0.0000	0.0546	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0214	0.2227	0.1164	2.1000e-004		0.0112	0.0112		0.0103	0.0103	0.0000	18.3896	18.3896	5.9500e-003	0.0000	18.5383
Total	**0.0214**	**0.2227**	**0.1164**	**2.1000e-004**	**0.0994**	**0.0112**	**0.1106**	**0.0546**	**0.0103**	**0.0650**	**0.0000**	**18.3896**	**18.3896**	**5.9500e-003**	**0.0000**	**18.5383**

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	4.6000e-004	3.2000e-004	3.5200e-003	1.0000e-005	1.0900e-003	1.0000e-005	1.1000e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9236	0.9236	2.0000e-005	0.0000	0.9242
Total	**4.6000e-004**	**3.2000e-004**	**3.5200e-003**	**1.0000e-005**	**1.0900e-003**	**1.0000e-005**	**1.1000e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9236**	**0.9236**	**2.0000e-005**	**0.0000**	**0.9242**

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					0.0994	0.0000	0.0994	0.0546	0.0000	0.0546	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0214	0.2227	0.1164	2.1000e-004		0.0112	0.0112		0.0103	0.0103	0.0000	18.3896	18.3896	5.9500e-003	0.0000	18.5383
Total	**0.0214**	**0.2227**	**0.1164**	**2.1000e-004**	**0.0994**	**0.0112**	**0.1106**	**0.0546**	**0.0103**	**0.0650**	**0.0000**	**18.3896**	**18.3896**	**5.9500e-003**	**0.0000**	**18.5383**

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	4.6000e-004	3.2000e-004	3.5200e-003	1.0000e-005	1.0900e-003	1.0000e-005	1.1000e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9236	0.9236	2.0000e-005	0.0000	0.9242
Total	**4.6000e-004**	**3.2000e-004**	**3.5200e-003**	**1.0000e-005**	**1.0900e-003**	**1.0000e-005**	**1.1000e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9236**	**0.9236**	**2.0000e-005**	**0.0000**	**0.9242**

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					0.1919	0.0000	0.1919	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8890	119.8890	0.0388	0.0000	120.8583
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1919**	**0.0437**	**0.2355**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8890**	**119.8890**	**0.0388**	**0.0000**	**120.8583**

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	4.4500e-003	0.1649	0.0377	4.9000e-004	0.0105	5.7000e-004	0.0111	2.8900e-003	5.4000e-004	3.4300e-003	0.0000	47.2647	47.2647	2.7300e-003	0.0000	47.3329
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	2.0600e-003	1.4200e-003	0.0156	5.0000e-005	4.8500e-003	3.0000e-005	4.8800e-003	1.2900e-003	3.0000e-005	1.3200e-003	0.0000	4.1048	4.1048	1.0000e-004	0.0000	4.1074
Total	**6.5100e-003**	**0.1663**	**0.0533**	**5.4000e-004**	**0.0154**	**6.0000e-004**	**0.0160**	**4.1800e-003**	**5.7000e-004**	**4.7500e-003**	**0.0000**	**51.3695**	**51.3695**	**2.8300e-003**	**0.0000**	**51.4402**

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					0.1919	0.0000	0.1919	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8888	119.8888	0.0388	0.0000	120.8582
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1919**	**0.0437**	**0.2355**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8888**	**119.8888**	**0.0388**	**0.0000**	**120.8582**

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	4.4500e-003	0.1649	0.0377	4.9000e-004	0.0105	5.7000e-004	0.0111	2.8900e-003	5.4000e-004	3.4300e-003	0.0000	47.2647	47.2647	2.7300e-003	0.0000	47.3329
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	2.0600e-003	1.4200e-003	0.0156	5.0000e-005	4.8500e-003	3.0000e-005	4.8800e-003	1.2900e-003	3.0000e-005	1.3200e-003	0.0000	4.1048	4.1048	1.0000e-004	0.0000	4.1074
Total	**6.5100e-003**	**0.1663**	**0.0533**	**5.4000e-004**	**0.0154**	**6.0000e-004**	**0.0160**	**4.1800e-003**	**5.7000e-004**	**4.7500e-003**	**0.0000**	**51.3695**	**51.3695**	**2.8300e-003**	**0.0000**	**51.4402**

3.5 Paving - 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	0.0151	0.1550	0.1758	2.7000e-004		8.1300e-003	8.1300e-003		7.4800e-003	7.4800e-003	0.0000	24.0282	24.0282	7.7700e-003	0.0000	24.2225
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0151**	**0.1550**	**0.1758**	**2.7000e-004**		**8.1300e-003**	**8.1300e-003**		**7.4800e-003**	**7.4800e-003**	**0.0000**	**24.0282**	**24.0282**	**7.7700e-003**	**0.0000**	**24.2225**

3.5 Paving - 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	1.6800e-003	1.1600e-003	0.0128	4.0000e-005	7.3900e-003	3.0000e-005	7.4200e-003	1.9000e-003	2.0000e-005	1.9200e-003	0.0000	3.3585	3.3585	9.0000e-005	0.0000	3.3606
Total	**1.6800e-003**	**1.1600e-003**	**0.0128**	**4.0000e-005**	**7.3900e-003**	**3.0000e-005**	**7.4200e-003**	**1.9000e-003**	**2.0000e-005**	**1.9200e-003**	**0.0000**	**3.3585**	**3.3585**	**9.0000e-005**	**0.0000**	**3.3606**

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	0.0151	0.1550	0.1758	2.7000e-004		8.1300e-003	8.1300e-003		7.4800e-003	7.4800e-003	0.0000	24.0282	24.0282	7.7700e-003	0.0000	24.2224
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0151**	**0.1550**	**0.1758**	**2.7000e-004**		**8.1300e-003**	**8.1300e-003**		**7.4800e-003**	**7.4800e-003**	**0.0000**	**24.0282**	**24.0282**	**7.7700e-003**	**0.0000**	**24.2224**

3.5 Paving - 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	1.6800e-003	1.1600e-003	0.0128	4.0000e-005	7.3900e-003	3.0000e-005	7.4200e-003	1.9000e-003	2.0000e-005	1.9200e-003	0.0000	3.3585	3.3585	9.0000e-005	0.0000	3.3606
Total	**1.6800e-003**	**1.1600e-003**	**0.0128**	**4.0000e-005**	**7.3900e-003**	**3.0000e-005**	**7.4200e-003**	**1.9000e-003**	**2.0000e-005**	**1.9200e-003**	**0.0000**	**3.3585**	**3.3585**	**9.0000e-005**	**0.0000**	**3.3606**

3.6 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	0.0694	0.6363	0.6050	9.8000e-004		0.0350	0.0350		0.0329	0.0329	0.0000	84.5476	84.5476	0.0204	0.0000	85.0576
Total	**0.0694**	**0.6363**	**0.6050**	**9.8000e-004**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**84.5476**	**84.5476**	**0.0204**	**0.0000**	**85.0576**

3.6 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	6.2700e-003	0.1970	0.0531	5.2000e-004	0.0131	6.1000e-004	0.0137	3.7800e-003	5.8000e-004	4.3600e-003	0.0000	50.1614	50.1614	2.5800e-003	0.0000	50.2259
Worker	0.0270	0.0186	0.2049	6.0000e-004	0.0635	4.3000e-004	0.0639	0.0169	3.9000e-004	0.0173	0.0000	53.8006	53.8006	1.3600e-003	0.0000	53.8346
Total	**0.0333**	**0.2157**	**0.2580**	**1.1200e-003**	**0.0766**	**1.0400e-003**	**0.0776**	**0.0207**	**9.7000e-004**	**0.0216**	**0.0000**	**103.9619**	**103.9619**	**3.9400e-003**	**0.0000**	**104.0605**

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	0.0694	0.6363	0.6050	9.8000e-004		0.0350	0.0350		0.0329	0.0329	0.0000	84.5475	84.5475	0.0204	0.0000	85.0575
Total	**0.0694**	**0.6363**	**0.6050**	**9.8000e-004**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**84.5475**	**84.5475**	**0.0204**	**0.0000**	**85.0575**

3.6 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	6.2700e-003	0.1970	0.0531	5.2000e-004	0.0131	6.1000e-004	0.0137	3.7800e-003	5.8000e-004	4.3600e-003	0.0000	50.1614	50.1614	2.5800e-003	0.0000	50.2259
Worker	0.0270	0.0186	0.2049	6.0000e-004	0.0635	4.3000e-004	0.0639	0.0169	3.9000e-004	0.0173	0.0000	53.8006	53.8006	1.3600e-003	0.0000	53.8346
Total	**0.0333**	**0.2157**	**0.2580**	**1.1200e-003**	**0.0766**	**1.0400e-003**	**0.0776**	**0.0207**	**9.7000e-004**	**0.0216**	**0.0000**	**103.9619**	**103.9619**	**3.9400e-003**	**0.0000**	**104.0605**

3.6 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	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

3.6 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	0.0208	0.6629	0.1748	1.8400e-003	0.0467	1.8900e-003	0.0486	0.0135	1.8100e-003	0.0153	0.0000	177.0732	177.0732	8.9300e-003	0.0000	177.2964
Worker	0.0900	0.0597	0.6714	2.0400e-003	0.2262	1.4800e-003	0.2277	0.0601	1.3600e-003	0.0615	0.0000	184.7483	184.7483	4.3600e-003	0.0000	184.8574
Total	**0.1107**	**0.7226**	**0.8462**	**3.8800e-003**	**0.2728**	**3.3700e-003**	**0.2762**	**0.0736**	**3.1700e-003**	**0.0768**	**0.0000**	**361.8214**	**361.8214**	**0.0133**	**0.0000**	**362.1538**

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	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

3.6 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	0.0208	0.6629	0.1748	1.8400e-003	0.0467	1.8900e-003	0.0486	0.0135	1.8100e-003	0.0153	0.0000	177.0732	177.0732	8.9300e-003	0.0000	177.2964
Worker	0.0900	0.0597	0.6714	2.0400e-003	0.2262	1.4800e-003	0.2277	0.0601	1.3600e-003	0.0615	0.0000	184.7483	184.7483	4.3600e-003	0.0000	184.8574
Total	**0.1107**	**0.7226**	**0.8462**	**3.8800e-003**	**0.2728**	**3.3700e-003**	**0.2762**	**0.0736**	**3.1700e-003**	**0.0768**	**0.0000**	**361.8214**	**361.8214**	**0.0133**	**0.0000**	**362.1538**

3.6 Building Construction - 2023

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	0.0456	0.4172	0.4711	7.8000e-004		0.0203	0.0203		0.0191	0.0191	0.0000	67.2234	67.2234	0.0160	0.0000	67.6232
Total	**0.0456**	**0.4172**	**0.4711**	**7.8000e-004**		**0.0203**	**0.0203**		**0.0191**	**0.0191**	**0.0000**	**67.2234**	**67.2234**	**0.0160**	**0.0000**	**67.6232**

3.6 Building Construction - 2023

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	3.6400e-003	0.1229	0.0345	4.0000e-004	0.0104	2.0000e-004	0.0106	3.0100e-003	1.9000e-004	3.2000e-003	0.0000	38.7772	38.7772	1.8000e-003	0.0000	38.8222
Worker	0.0188	0.0120	0.1377	4.4000e-004	0.0505	3.2000e-004	0.0508	0.0134	3.0000e-004	0.0137	0.0000	39.6641	39.6641	8.7000e-004	0.0000	39.6860
Total	**0.0225**	**0.1349**	**0.1722**	**8.4000e-004**	**0.0609**	**5.2000e-004**	**0.0614**	**0.0164**	**4.9000e-004**	**0.0169**	**0.0000**	**78.4414**	**78.4414**	**2.6700e-003**	**0.0000**	**78.5082**

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	0.0456	0.4172	0.4711	7.8000e-004		0.0203	0.0203		0.0191	0.0191	0.0000	67.2233	67.2233	0.0160	0.0000	67.6231
Total	**0.0456**	**0.4172**	**0.4711**	**7.8000e-004**		**0.0203**	**0.0203**		**0.0191**	**0.0191**	**0.0000**	**67.2233**	**67.2233**	**0.0160**	**0.0000**	**67.6231**

3.6 Building Construction - 2023

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	3.6400e-003	0.1229	0.0345	4.0000e-004	0.0104	2.0000e-004	0.0106	3.0100e-003	1.9000e-004	3.2000e-003	0.0000	38.7772	38.7772	1.8000e-003	0.0000	38.8222
Worker	0.0188	0.0120	0.1377	4.4000e-004	0.0505	3.2000e-004	0.0508	0.0134	3.0000e-004	0.0137	0.0000	39.6641	39.6641	8.7000e-004	0.0000	39.6860
Total	**0.0225**	**0.1349**	**0.1722**	**8.4000e-004**	**0.0609**	**5.2000e-004**	**0.0614**	**0.0164**	**4.9000e-004**	**0.0169**	**0.0000**	**78.4414**	**78.4414**	**2.6700e-003**	**0.0000**	**78.5082**

3.7 Architectural Coating - 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					
Archit. Coating	0.7985					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9000e-003	0.0481	0.0573	9.0000e-005		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003	0.0000	8.0428	8.0428	5.5000e-004	0.0000	8.0566
Total	**0.8054**	**0.0481**	**0.0573**	**9.0000e-005**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**	**0.0000**	**8.0428**	**8.0428**	**5.5000e-004**	**0.0000**	**8.0566**

3.7 Architectural Coating - 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	4.7200e-003	3.2600e-003	0.0358	1.0000e-004	0.0111	7.0000e-005	0.0112	2.9500e-003	7.0000e-005	3.0200e-003	0.0000	9.4037	9.4037	2.4000e-004	0.0000	9.4096
Total	**4.7200e-003**	**3.2600e-003**	**0.0358**	**1.0000e-004**	**0.0111**	**7.0000e-005**	**0.0112**	**2.9500e-003**	**7.0000e-005**	**3.0200e-003**	**0.0000**	**9.4037**	**9.4037**	**2.4000e-004**	**0.0000**	**9.4096**

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	0.7985					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9000e-003	0.0481	0.0573	9.0000e-005		2.9600e-003	2.9600e-003		2.9600e-003	2.9600e-003	0.0000	8.0427	8.0427	5.5000e-004	0.0000	8.0565
Total	**0.8054**	**0.0481**	**0.0573**	**9.0000e-005**		**2.9600e-003**	**2.9600e-003**		**2.9600e-003**	**2.9600e-003**	**0.0000**	**8.0427**	**8.0427**	**5.5000e-004**	**0.0000**	**8.0565**

3.7 Architectural Coating - 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	4.7200e-003	3.2600e-003	0.0358	1.0000e-004	0.0111	7.0000e-005	0.0112	2.9500e-003	7.0000e-005	3.0200e-003	0.0000	9.4037	9.4037	2.4000e-004	0.0000	9.4096
Total	**4.7200e-003**	**3.2600e-003**	**0.0358**	**1.0000e-004**	**0.0111**	**7.0000e-005**	**0.0112**	**2.9500e-003**	**7.0000e-005**	**3.0200e-003**	**0.0000**	**9.4037**	**9.4037**	**2.4000e-004**	**0.0000**	**9.4096**

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	3.2954					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.1831	0.2358	3.9000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	33.1923	33.1923	2.1600e-003	0.0000	33.2463
Total	**3.3220**	**0.1831**	**0.2358**	**3.9000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**33.1923**	**33.1923**	**2.1600e-003**	**0.0000**	**33.2463**

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	0.0182	0.0121	0.1360	4.1000e-004	0.0458	3.0000e-004	0.0461	0.0122	2.8000e-004	0.0125	0.0000	37.4174	37.4174	8.8000e-004	0.0000	37.4395
Total	**0.0182**	**0.0121**	**0.1360**	**4.1000e-004**	**0.0458**	**3.0000e-004**	**0.0461**	**0.0122**	**2.8000e-004**	**0.0125**	**0.0000**	**37.4174**	**37.4174**	**8.8000e-004**	**0.0000**	**37.4395**

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	3.2954					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0266	0.1831	0.2358	3.9000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	33.1923	33.1923	2.1600e-003	0.0000	33.2463
Total	**3.3220**	**0.1831**	**0.2358**	**3.9000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**	**0.0000**	**33.1923**	**33.1923**	**2.1600e-003**	**0.0000**	**33.2463**

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	0.0182	0.0121	0.1360	4.1000e-004	0.0458	3.0000e-004	0.0461	0.0122	2.8000e-004	0.0125	0.0000	37.4174	37.4174	8.8000e-004	0.0000	37.4395
Total	**0.0182**	**0.0121**	**0.1360**	**4.1000e-004**	**0.0458**	**3.0000e-004**	**0.0461**	**0.0122**	**2.8000e-004**	**0.0125**	**0.0000**	**37.4174**	**37.4174**	**8.8000e-004**	**0.0000**	**37.4395**

3.7 Architectural Coating - 2023

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	0.8619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.5200e-003	0.0443	0.0616	1.0000e-004		2.4100e-003	2.4100e-003		2.4100e-003	2.4100e-003	0.0000	8.6811	8.6811	5.2000e-004	0.0000	8.6941
Total	**0.8684**	**0.0443**	**0.0616**	**1.0000e-004**		**2.4100e-003**	**2.4100e-003**		**2.4100e-003**	**2.4100e-003**	**0.0000**	**8.6811**	**8.6811**	**5.2000e-004**	**0.0000**	**8.6941**

3.7 Architectural Coating - 2023

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	4.4700e-003	2.8500e-003	0.0327	1.0000e-004	0.0120	8.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2600e-003	0.0000	9.4183	9.4183	2.1000e-004	0.0000	9.4235
Total	**4.4700e-003**	**2.8500e-003**	**0.0327**	**1.0000e-004**	**0.0120**	**8.0000e-005**	**0.0121**	**3.1900e-003**	**7.0000e-005**	**3.2600e-003**	**0.0000**	**9.4183**	**9.4183**	**2.1000e-004**	**0.0000**	**9.4235**

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	0.8619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.5200e-003	0.0443	0.0616	1.0000e-004		2.4100e-003	2.4100e-003		2.4100e-003	2.4100e-003	0.0000	8.6811	8.6811	5.2000e-004	0.0000	8.6940
Total	**0.8684**	**0.0443**	**0.0616**	**1.0000e-004**		**2.4100e-003**	**2.4100e-003**		**2.4100e-003**	**2.4100e-003**	**0.0000**	**8.6811**	**8.6811**	**5.2000e-004**	**0.0000**	**8.6940**

3.7 Architectural Coating - 2023

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	4.4700e-003	2.8500e-003	0.0327	1.0000e-004	0.0120	8.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2600e-003	0.0000	9.4183	9.4183	2.1000e-004	0.0000	9.4235
Total	**4.4700e-003**	**2.8500e-003**	**0.0327**	**1.0000e-004**	**0.0120**	**8.0000e-005**	**0.0121**	**3.1900e-003**	**7.0000e-005**	**3.2600e-003**	**0.0000**	**9.4183**	**9.4183**	**2.1000e-004**	**0.0000**	**9.4235**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	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	1.1178	4.6708	13.7405	0.0467	4.2259	0.0363	4.2622	1.1328	0.0338	1.1665	0.0000	4,294.1341	4,294.1341	0.1904	0.0000	4,298.8948
Unmitigated	1.1263	4.7232	13.9603	0.0476	4.3122	0.0369	4.3491	1.1559	0.0344	1.1903	0.0000	4,376.8398	4,376.8398	0.1936	0.0000	4,381.6791

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	4,012.80	4,012.80	4012.80	11,566,848	11,335,511
Total	4,012.80	4,012.80	4,012.80	11,566,848	11,335,511

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
Single Family Housing	11.74	5.87	6.65	46.50	12.50	41.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.562895	0.037862	0.207220	0.115570	0.017815	0.005092	0.018559	0.023754	0.002009	0.001969	0.005819	0.000618	0.000817

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable 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	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	652.3299	652.3299	0.0489	0.0101	656.5648
NaturalGas Mitigated	0.0575	0.4909	0.2089	3.1300e-003		0.0397	0.0397		0.0397	0.0397	0.0000	568.5548	568.5548	0.0109	0.0104	571.9335
NaturalGas Unmitigated	0.0613	0.5238	0.2229	3.3400e-003		0.0424	0.0424		0.0424	0.0424	0.0000	606.6005	606.6005	0.0116	0.0111	610.2052

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					
Single Family Housing	1.13673e+007	0.0613	0.5238	0.2229	3.3400e-003		0.0424	0.0424		0.0424	0.0424	0.0000	606.6005	606.6005	0.0116	0.0111	610.2052
Total		**0.0613**	**0.5238**	**0.2229**	**3.3400e-003**		**0.0424**	**0.0424**		**0.0424**	**0.0424**	**0.0000**	**606.6005**	**606.6005**	**0.0116**	**0.0111**	**610.2052**

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					
Single Family Housing	1.06543e+007	0.0575	0.4909	0.2089	3.1300e-003		0.0397	0.0397		0.0397	0.0397	0.0000	568.5548	568.5548	0.0109	0.0104	571.9335
Total		**0.0575**	**0.4909**	**0.2089**	**3.1300e-003**		**0.0397**	**0.0397**		**0.0397**	**0.0397**	**0.0000**	**568.5548**	**568.5548**	**0.0109**	**0.0104**	**571.9335**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	3.71526e+006	652.3299	0.0489	0.0101	656.5648
Total		**652.3299**	**0.0489**	**0.0101**	**656.5648**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	3.7255	0.0523	4.5386	2.4000e-004		0.0251	0.0251		0.0251	0.0251	0.0000	7.4120	7.4120	7.1300e-003	0.0000	7.5902
Unmitigated	3.7255	0.0523	4.5386	2.4000e-004		0.0251	0.0251		0.0251	0.0251	0.0000	7.4120	7.4120	7.1300e-003	0.0000	7.5902

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	0.4956					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0932					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	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
Landscaping	0.1367	0.0523	4.5386	2.4000e-004		0.0251	0.0251		0.0251	0.0251	0.0000	7.4120	7.4120	7.1300e-003	0.0000	7.5902
Total	**3.7255**	**0.0523**	**4.5386**	**2.4000e-004**		**0.0251**	**0.0251**		**0.0251**	**0.0251**	**0.0000**	**7.4120**	**7.4120**	**7.1300e-003**	**0.0000**	**7.5902**

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	0.4956					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0932					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	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
Landscaping	0.1367	0.0523	4.5386	2.4000e-004		0.0251	0.0251		0.0251	0.0251	0.0000	7.4120	7.4120	7.1300e-003	0.0000	7.5902
Total	**3.7255**	**0.0523**	**4.5386**	**2.4000e-004**		**0.0251**	**0.0251**		**0.0251**	**0.0251**	**0.0000**	**7.4120**	**7.4120**	**7.1300e-003**	**0.0000**	**7.5902**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	37.0634	0.0301	0.0181	43.2080
Unmitigated	46.3293	0.0376	0.0226	54.0100

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	28.6678 / 18.0732	46.3293	0.0376	0.0226	54.0100
Total		**46.3293**	**0.0376**	**0.0226**	**54.0100**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	22.9342 / 14.4585	37.0634	0.0301	0.0181	43.2080
Total		**37.0634**	**0.0301**	**0.0181**	**43.2080**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	85.8652	5.0745	0.0000	212.7273
Unmitigated	85.8652	5.0745	0.0000	212.7273

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	423	85.8652	5.0745	0.0000	212.7273
Total		**85.8652**	**5.0745**	**0.0000**	**212.7273**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	423	85.8652	5.0745	0.0000	212.7273
Total		**85.8652**	**5.0745**	**0.0000**	**212.7273**

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

The Preserve Project

Sacramento Metropolitan AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	440.00	Dwelling Unit	73.50	792,000.00	1175

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	387.09	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor updated per SMUD's RPS reductions

Land Use - Acreage updated per applicant-provided questionnaire

Construction Phase - Timing updated per estimates provided on applicant's construction questionnaire

Demolition -

Grading - Based on applicant-provided questionnaire

Vehicle Trips - Trip rates and trip lengths updated to match project-specific data from Kimley Horn Traffic Study

Mobile Land Use Mitigation -

Energy Mitigation - Title 24 exceedance applied to reflect compliance with the 2019 CBSC.

Water Mitigation - Water conservation strategy applied to reflect compliance with 2019 CalGreen Code and MWELO.

The Preserve Project - Sacramento Metropolitan AQMD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	391.00
tblConstructionPhase	NumDays	1,110.00	391.00
tblConstructionPhase	NumDays	70.00	23.00
tblConstructionPhase	NumDays	110.00	44.00
tblConstructionPhase	NumDays	75.00	24.00
tblConstructionPhase	NumDays	40.00	11.00
tblGrading	MaterialImported	0.00	10,000.00
tblLandUse	LotAcreage	142.86	73.50
tblProjectCharacteristics	CO2IntensityFactor	590.31	387.09
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	HO_TL	8.50	6.65
tblVehicleTrips	HS_TL	7.50	5.87
tblVehicleTrips	HW_TL	15.00	11.74
tblVehicleTrips	ST_TR	9.91	9.12
tblVehicleTrips	SU_TR	8.62	9.12
tblVehicleTrips	WD_TR	9.52	9.12

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2021	28.6329	53.7083	33.4031	0.0865	18.2716	2.0458	20.3174	9.9851	1.8821	11.8673	0.0000	8,618.4329	8,618.4329	2.0828	0.0000	8,670.5031
2022	28.3469	22.5128	26.9515	0.0651	2.5365	0.9186	3.4551	0.6810	0.8691	1.5501	0.0000	6,435.7585	6,435.7585	0.7542	0.0000	6,454.6140
2023	28.1073	20.2996	26.0952	0.0641	2.5364	0.7905	3.3269	0.6810	0.7479	1.4288	0.0000	6,330.3880	6,330.3880	0.7364	0.0000	6,348.7975
Maximum	**28.6329**	**53.7083**	**33.4031**	**0.0865**	**18.2716**	**2.0458**	**20.3174**	**9.9851**	**1.8821**	**11.8673**	**0.0000**	**8,618.4329**	**8,618.4329**	**2.0828**	**0.0000**	**8,670.5031**

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	lb/day										lb/day					
2021	28.6329	53.7083	33.4031	0.0865	18.2716	2.0458	20.3174	9.9851	1.8821	11.8673	0.0000	8,618.4328	8,618.4328	2.0828	0.0000	8,670.5030
2022	28.3469	22.5128	26.9515	0.0651	2.5365	0.9186	3.4551	0.6810	0.8691	1.5501	0.0000	6,435.7585	6,435.7585	0.7542	0.0000	6,454.6140
2023	28.1073	20.2996	26.0952	0.0641	2.5364	0.7905	3.3269	0.6810	0.7479	1.4288	0.0000	6,330.3880	6,330.3880	0.7364	0.0000	6,348.7975
Maximum	**28.6329**	**53.7083**	**33.4031**	**0.0865**	**18.2716**	**2.0458**	**20.3174**	**9.9851**	**1.8821**	**11.8673**	**0.0000**	**8,618.4328**	**8,618.4328**	**2.0828**	**0.0000**	**8,670.5030**

The Preserve Project - Sacramento Metropolitan AQMD Air District, Summer

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	lb/day										lb/day					
Area	20.7581	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010	0.0000	65.3630	65.3630	0.0629	0.0000	66.9344
Energy	0.3359	2.8701	1.2213	0.0183		0.2321	0.2321		0.2321	0.2321		3,663.9045	3,663.9045	0.0702	0.0672	3,685.6772
Mobile	7.7883	24.9023	87.1323	0.2830	24.5278	0.2022	24.7299	6.5558	0.1884	6.7442		28,665.4343	28,665.4343	1.2077		28,695.6274
Total	**28.8823**	**28.1909**	**124.6623**	**0.3032**	**24.5278**	**0.6352**	**25.1629**	**6.5558**	**0.6215**	**7.1772**	**0.0000**	**32,394.7017**	**32,394.7017**	**1.3408**	**0.0672**	**32,448.2390**

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	lb/day										lb/day					
Area	20.7581	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010	0.0000	65.3630	65.3630	0.0629	0.0000	66.9344
Energy	0.3148	2.6901	1.1447	0.0172		0.2175	0.2175		0.2175	0.2175		3,434.1063	3,434.1063	0.0658	0.0630	3,454.5135
Mobile	7.7391	24.6368	85.6620	0.2776	24.0372	0.1986	24.2358	6.4247	0.1851	6.6098		28,122.4736	28,122.4736	1.1876		28,152.1624
Total	**28.8120**	**27.7453**	**123.1153**	**0.2967**	**24.0372**	**0.6171**	**24.6543**	**6.4247**	**0.6036**	**7.0282**	**0.0000**	**31,621.9429**	**31,621.9429**	**1.3162**	**0.0630**	**31,673.6102**

	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	**0.24**	**1.58**	**1.24**	**2.15**	**2.00**	**2.85**	**2.02**	**2.00**	**2.88**	**2.08**	**0.00**	**2.39**	**2.39**	**1.83**	**6.27**	**2.39**

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	5/1/2021	6/2/2021	5	23	
2	Site Preparation	Site Preparation	6/3/2021	6/17/2021	5	11	
3	Grading	Grading	6/18/2021	8/18/2021	5	44	
4	Paving	Paving	8/19/2021	9/21/2021	5	24	
5	Building Construction	Building Construction	9/22/2021	3/22/2023	5	391	
6	Architectural Coating	Architectural Coating	10/6/2021	4/5/2023	5	391	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 110

Acres of Paving: 0

Residential Indoor: 1,603,800; Residential Outdoor: 534,600; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

The Preserve Project - Sacramento Metropolitan AQMD Air District, Summer

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	55.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,250.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	158.00	47.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	32.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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	lb/day										lb/day					
Fugitive Dust					0.5354	0.0000	0.5354	0.0811	0.0000	0.0811			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**0.5354**	**1.5513**	**2.0868**	**0.0811**	**1.4411**	**1.5222**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

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	lb/day										lb/day					
Hauling	0.0168	0.6103	0.1404	1.8700e-003	0.0416	2.1300e-003	0.0437	0.0114	2.0400e-003	0.0134		200.6467	200.6467	0.0113		200.9288
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
Worker	0.0785	0.0439	0.6425	1.7100e-003	0.1711	1.1100e-003	0.1722	0.0454	1.0200e-003	0.0464		170.7555	170.7555	4.4300e-003		170.8664
Total	**0.0954**	**0.6542**	**0.7829**	**3.5800e-003**	**0.2127**	**3.2400e-003**	**0.2159**	**0.0568**	**3.0600e-003**	**0.0598**		**371.4022**	**371.4022**	**0.0157**		**371.7952**

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	lb/day										lb/day					
Fugitive Dust					0.5354	0.0000	0.5354	0.0811	0.0000	0.0811			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**0.5354**	**1.5513**	**2.0868**	**0.0811**	**1.4411**	**1.5222**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

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	lb/day										lb/day					
Hauling	0.0168	0.6103	0.1404	1.8700e-003	0.0416	2.1300e-003	0.0437	0.0114	2.0400e-003	0.0134		200.6467	200.6467	0.0113		200.9288
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
Worker	0.0785	0.0439	0.6425	1.7100e-003	0.1711	1.1100e-003	0.1722	0.0454	1.0200e-003	0.0464		170.7555	170.7555	4.4300e-003		170.8664
Total	**0.0954**	**0.6542**	**0.7829**	**3.5800e-003**	**0.2127**	**3.2400e-003**	**0.2159**	**0.0568**	**3.0600e-003**	**0.0598**		**371.4022**	**371.4022**	**0.0157**		**371.7952**

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

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	lb/day										lb/day					
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
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
Worker	0.0942	0.0527	0.7710	2.0600e-003	0.2053	1.3300e-003	0.2066	0.0545	1.2300e-003	0.0557		204.9066	204.9066	5.3200e-003		205.0396
Total	**0.0942**	**0.0527**	**0.7710**	**2.0600e-003**	**0.2053**	**1.3300e-003**	**0.2066**	**0.0545**	**1.2300e-003**	**0.0557**		**204.9066**	**204.9066**	**5.3200e-003**		**205.0396**

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

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	lb/day										lb/day					
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
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
Worker	0.0942	0.0527	0.7710	2.0600e-003	0.2053	1.3300e-003	0.2066	0.0545	1.2300e-003	0.0557		204.9066	204.9066	5.3200e-003		205.0396
Total	**0.0942**	**0.0527**	**0.7710**	**2.0600e-003**	**0.2053**	**1.3300e-003**	**0.2066**	**0.0545**	**1.2300e-003**	**0.0557**		**204.9066**	**204.9066**	**5.3200e-003**		**205.0396**

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	lb/day										lb/day					
Fugitive Dust					8.7203	0.0000	8.7203	3.6036	0.0000	3.6036			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.7203**	**1.9853**	**10.7057**	**3.6036**	**1.8265**	**5.4301**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

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	lb/day										lb/day					
Hauling	0.1999	7.2499	1.6680	0.0222	0.4941	0.0253	0.5194	0.1352	0.0242	0.1594		2,383.7154	2,383.7154	0.1341		2,387.0678
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
Worker	0.1047	0.0585	0.8567	2.2900e-003	0.2281	1.4800e-003	0.2296	0.0605	1.3600e-003	0.0619		227.6740	227.6740	5.9100e-003		227.8218
Total	**0.3046**	**7.3084**	**2.5246**	**0.0245**	**0.7222**	**0.0268**	**0.7490**	**0.1957**	**0.0256**	**0.2213**		**2,611.3894**	**2,611.3894**	**0.1400**		**2,614.8896**

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	lb/day										lb/day					
Fugitive Dust					8.7203	0.0000	8.7203	3.6036	0.0000	3.6036			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.7203**	**1.9853**	**10.7057**	**3.6036**	**1.8265**	**5.4301**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

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	lb/day										lb/day					
Hauling	0.1999	7.2499	1.6680	0.0222	0.4941	0.0253	0.5194	0.1352	0.0242	0.1594		2,383.7154	2,383.7154	0.1341		2,387.0678
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
Worker	0.1047	0.0585	0.8567	2.2900e-003	0.2281	1.4800e-003	0.2296	0.0605	1.3600e-003	0.0619		227.6740	227.6740	5.9100e-003		227.8218
Total	**0.3046**	**7.3084**	**2.5246**	**0.0245**	**0.7222**	**0.0268**	**0.7490**	**0.1957**	**0.0256**	**0.2213**		**2,611.3894**	**2,611.3894**	**0.1400**		**2,614.8896**

3.5 Paving - 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	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

3.5 Paving - 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	lb/day										lb/day					
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
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
Worker	0.1570	0.0878	1.2850	3.4300e-003	0.6396	2.2200e-003	0.6419	0.1638	2.0400e-003	0.1658		341.5110	341.5110	8.8700e-003		341.7327
Total	**0.1570**	**0.0878**	**1.2850**	**3.4300e-003**	**0.6396**	**2.2200e-003**	**0.6419**	**0.1638**	**2.0400e-003**	**0.1658**		**341.5110**	**341.5110**	**8.8700e-003**		**341.7327**

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	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

3.5 Paving - 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	lb/day										lb/day					
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
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
Worker	0.1570	0.0878	1.2850	3.4300e-003	0.6396	2.2200e-003	0.6419	0.1638	2.0400e-003	0.1658		341.5110	341.5110	8.8700e-003		341.7327
Total	**0.1570**	**0.0878**	**1.2850**	**3.4300e-003**	**0.6396**	**2.2200e-003**	**0.6419**	**0.1638**	**2.0400e-003**	**0.1658**		**341.5110**	**341.5110**	**8.8700e-003**		**341.7327**

3.6 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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.6 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	lb/day										lb/day					
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
Vendor	0.1695	5.2736	1.3786	0.0144	0.3695	0.0163	0.3857	0.1063	0.0156	0.1218		1,528.1735	1,528.1735	0.0756		1,530.0644
Worker	0.8271	0.4625	6.7676	0.0181	1.8021	0.0117	1.8138	0.4779	0.0108	0.4887		1,798.6248	1,798.6248	0.0467		1,799.7923
Total	**0.9966**	**5.7361**	**8.1463**	**0.0325**	**2.1715**	**0.0279**	**2.1995**	**0.5842**	**0.0263**	**0.6105**		**3,326.7983**	**3,326.7983**	**0.1223**		**3,329.8567**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.6 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	lb/day										lb/day					
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
Vendor	0.1695	5.2736	1.3786	0.0144	0.3695	0.0163	0.3857	0.1063	0.0156	0.1218		1,528.1735	1,528.1735	0.0756		1,530.0644
Worker	0.8271	0.4625	6.7676	0.0181	1.8021	0.0117	1.8138	0.4779	0.0108	0.4887		1,798.6248	1,798.6248	0.0467		1,799.7923
Total	**0.9966**	**5.7361**	**8.1463**	**0.0325**	**2.1715**	**0.0279**	**2.1995**	**0.5842**	**0.0263**	**0.6105**		**3,326.7983**	**3,326.7983**	**0.1223**		**3,329.8567**

3.6 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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 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	lb/day										lb/day					
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
Vendor	0.1574	4.9881	1.2727	0.0143	0.3694	0.0142	0.3837	0.1063	0.0136	0.1199		1,514.7098	1,514.7098	0.0734		1,516.5459
Worker	0.7731	0.4163	6.2384	0.0174	1.8021	0.0114	1.8134	0.4779	0.0105	0.4884		1,734.0642	1,734.0642	0.0420		1,735.1142
Total	**0.9304**	**5.4044**	**7.5110**	**0.0317**	**2.1715**	**0.0256**	**2.1971**	**0.5842**	**0.0241**	**0.6083**		**3,248.7740**	**3,248.7740**	**0.1154**		**3,251.6601**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 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	lb/day										lb/day					
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
Vendor	0.1574	4.9881	1.2727	0.0143	0.3694	0.0142	0.3837	0.1063	0.0136	0.1199		1,514.7098	1,514.7098	0.0734		1,516.5459
Worker	0.7731	0.4163	6.2384	0.0174	1.8021	0.0114	1.8134	0.4779	0.0105	0.4884		1,734.0642	1,734.0642	0.0420		1,735.1142
Total	**0.9304**	**5.4044**	**7.5110**	**0.0317**	**2.1715**	**0.0256**	**2.1971**	**0.5842**	**0.0241**	**0.6083**		**3,248.7740**	**3,248.7740**	**0.1154**		**3,251.6601**

3.6 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.6 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.1236	4.1608	1.1289	0.0140	0.3694	6.6400e-003	0.3760	0.1062	6.3500e-003	0.1126		1,486.9223	1,486.9223	0.0664		1,488.5823
Worker	0.7236	0.3750	5.7472	0.0168	1.8021	0.0111	1.8132	0.4779	0.0102	0.4881		1,668.8191	1,668.8191	0.0377		1,669.7608
Total	**0.8472**	**4.5358**	**6.8761**	**0.0308**	**2.1715**	**0.0177**	**2.1892**	**0.5842**	**0.0166**	**0.6007**		**3,155.7414**	**3,155.7414**	**0.1041**		**3,158.3431**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.6 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.1236	4.1608	1.1289	0.0140	0.3694	6.6400e-003	0.3760	0.1062	6.3500e-003	0.1126		1,486.9223	1,486.9223	0.0664		1,488.5823
Worker	0.7236	0.3750	5.7472	0.0168	1.8021	0.0111	1.8132	0.4779	0.0102	0.4881		1,668.8191	1,668.8191	0.0377		1,669.7608
Total	**0.8472**	**4.5358**	**6.8761**	**0.0308**	**2.1715**	**0.0177**	**2.1892**	**0.5842**	**0.0166**	**0.6007**		**3,155.7414**	**3,155.7414**	**0.1041**		**3,158.3431**

3.7 Architectural Coating - 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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**25.5680**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 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	lb/day										lb/day					
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
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
Worker	0.1675	0.0937	1.3707	3.6600e-003	0.3650	2.3600e-003	0.3673	0.0968	2.1800e-003	0.0990		364.2784	364.2784	9.4600e-003		364.5149
Total	**0.1675**	**0.0937**	**1.3707**	**3.6600e-003**	**0.3650**	**2.3600e-003**	**0.3673**	**0.0968**	**2.1800e-003**	**0.0990**		**364.2784**	**364.2784**	**9.4600e-003**		**364.5149**

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**25.5680**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 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	lb/day										lb/day					
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
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
Worker	0.1675	0.0937	1.3707	3.6600e-003	0.3650	2.3600e-003	0.3673	0.0968	2.1800e-003	0.0990		364.2784	364.2784	9.4600e-003		364.5149
Total	**0.1675**	**0.0937**	**1.3707**	**3.6600e-003**	**0.3650**	**2.3600e-003**	**0.3673**	**0.0968**	**2.1800e-003**	**0.0990**		**364.2784**	**364.2784**	**9.4600e-003**		**364.5149**

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**25.5536**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	lb/day										lb/day					
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
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
Worker	0.1566	0.0843	1.2635	3.5300e-003	0.3650	2.3000e-003	0.3673	0.0968	2.1200e-003	0.0989		351.2029	351.2029	8.5100e-003		351.4155
Total	**0.1566**	**0.0843**	**1.2635**	**3.5300e-003**	**0.3650**	**2.3000e-003**	**0.3673**	**0.0968**	**2.1200e-003**	**0.0989**		**351.2029**	**351.2029**	**8.5100e-003**		**351.4155**

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**25.5536**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	lb/day										lb/day					
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
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
Worker	0.1566	0.0843	1.2635	3.5300e-003	0.3650	2.3000e-003	0.3673	0.0968	2.1200e-003	0.0989		351.2029	351.2029	8.5100e-003		351.4155
Total	**0.1566**	**0.0843**	**1.2635**	**3.5300e-003**	**0.3650**	**2.3000e-003**	**0.3673**	**0.0968**	**2.1200e-003**	**0.0989**		**351.2029**	**351.2029**	**8.5100e-003**		**351.4155**

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**25.5407**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.1466	0.0760	1.1640	3.3900e-003	0.3650	2.2500e-003	0.3672	0.0968	2.0700e-003	0.0989		337.9887	337.9887	7.6300e-003		338.1794
Total	**0.1466**	**0.0760**	**1.1640**	**3.3900e-003**	**0.3650**	**2.2500e-003**	**0.3672**	**0.0968**	**2.0700e-003**	**0.0989**		**337.9887**	**337.9887**	**7.6300e-003**		**338.1794**

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**25.5407**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.1466	0.0760	1.1640	3.3900e-003	0.3650	2.2500e-003	0.3672	0.0968	2.0700e-003	0.0989		337.9887	337.9887	7.6300e-003		338.1794
Total	**0.1466**	**0.0760**	**1.1640**	**3.3900e-003**	**0.3650**	**2.2500e-003**	**0.3672**	**0.0968**	**2.0700e-003**	**0.0989**		**337.9887**	**337.9887**	**7.6300e-003**		**338.1794**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	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	lb/day										lb/day					
Mitigated	7.7391	24.6368	85.6620	0.2776	24.0372	0.1986	24.2358	6.4247	0.1851	6.6098		28,122.4736	28,122.4736	1.1876		28,152.1624
Unmitigated	7.7883	24.9023	87.1323	0.2830	24.5278	0.2022	24.7299	6.5558	0.1884	6.7442		28,665.4343	28,665.4343	1.2077		28,695.6274

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	4,012.80	4,012.80	4012.80	11,566,848	11,335,511
Total	4,012.80	4,012.80	4,012.80	11,566,848	11,335,511

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
Single Family Housing	11.74	5.87	6.65	46.50	12.50	41.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.562895	0.037862	0.207220	0.115570	0.017815	0.005092	0.018559	0.023754	0.002009	0.001969	0.005819	0.000618	0.000817

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable 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	lb/day										lb/day					
NaturalGas Mitigated	0.3148	2.6901	1.1447	0.0172		0.2175	0.2175		0.2175	0.2175		3,434.1063	3,434.1063	0.0658	0.0630	3,454.5135
NaturalGas Unmitigated	0.3359	2.8701	1.2213	0.0183		0.2321	0.2321		0.2321	0.2321		3,663.9045	3,663.9045	0.0702	0.0672	3,685.6772

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	lb/day										lb/day					
Single Family Housing	31143.2	0.3359	2.8701	1.2213	0.0183		0.2321	0.2321		0.2321	0.2321		3,663.9045	3,663.9045	0.0702	0.0672	3,685.6772
Total		**0.3359**	**2.8701**	**1.2213**	**0.0183**		**0.2321**	**0.2321**		**0.2321**	**0.2321**		**3,663.9045**	**3,663.9045**	**0.0702**	**0.0672**	**3,685.6772**

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	lb/day										lb/day					
Single Family Housing	29.1899	0.3148	2.6901	1.1447	0.0172		0.2175	0.2175		0.2175	0.2175		3,434.1063	3,434.1063	0.0658	0.0630	3,454.5135
Total		**0.3148**	**2.6901**	**1.1447**	**0.0172**		**0.2175**	**0.2175**		**0.2175**	**0.2175**		**3,434.1063**	**3,434.1063**	**0.0658**	**0.0630**	**3,454.5135**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	lb/day										lb/day					
Mitigated	20.7581	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010	0.0000	65.3630	65.3630	0.0629	0.0000	66.9344
Unmitigated	20.7581	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010	0.0000	65.3630	65.3630	0.0629	0.0000	66.9344

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	lb/day										lb/day					
Architectural Coating	2.7155					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.9488					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	1.0939	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010		65.3630	65.3630	0.0629		66.9344
Total	**20.7581**	**0.4185**	**36.3087**	**1.9200e-003**		**0.2010**	**0.2010**		**0.2010**	**0.2010**	**0.0000**	**65.3630**	**65.3630**	**0.0629**	**0.0000**	**66.9344**

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	lb/day										lb/day					
Architectural Coating	2.7155					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.9488					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	1.0939	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010		65.3630	65.3630	0.0629		66.9344
Total	**20.7581**	**0.4185**	**36.3087**	**1.9200e-003**		**0.2010**	**0.2010**		**0.2010**	**0.2010**	**0.0000**	**65.3630**	**65.3630**	**0.0629**	**0.0000**	**66.9344**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

The Preserve Project

Sacramento Metropolitan AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	440.00	Dwelling Unit	73.50	792,000.00	1175

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	387.09	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor updated per SMUD's RPS reductions

Land Use - Acreage updated per applicant-provided questionnaire

Construction Phase - Timing updated per estimates provided on applicant's construction questionnaire

Demolition -

Grading - Based on applicant-provided questionnaire

Vehicle Trips - Trip rates and trip lengths updated to match project-specific data from Kimley Horn Traffic Study

Mobile Land Use Mitigation -

Energy Mitigation - Title 24 exceedance applied to reflect compliance with the 2019 CBSC.

Water Mitigation - Water conservation strategy applied to reflect compliance with 2019 CalGreen Code and MWELO.

The Preserve Project - Sacramento Metropolitan AQMD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	75.00	391.00
tblConstructionPhase	NumDays	1,110.00	391.00
tblConstructionPhase	NumDays	70.00	23.00
tblConstructionPhase	NumDays	110.00	44.00
tblConstructionPhase	NumDays	75.00	24.00
tblConstructionPhase	NumDays	40.00	11.00
tblGrading	MaterialImported	0.00	10,000.00
tblLandUse	LotAcreage	142.86	73.50
tblProjectCharacteristics	CO2IntensityFactor	590.31	387.09
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	HO_TL	8.50	6.65
tblVehicleTrips	HS_TL	7.50	5.87
tblVehicleTrips	HW_TL	15.00	11.74
tblVehicleTrips	ST_TR	9.91	9.12
tblVehicleTrips	SU_TR	8.62	9.12
tblVehicleTrips	WD_TR	9.52	9.12

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2021	28.6158	54.0019	33.3665	0.0859	18.2716	2.0458	20.3174	9.9851	1.8821	11.8673	0.0000	8,553.5898	8,553.5898	2.0881	0.0000	8,605.7914
2022	28.3331	22.7415	25.7748	0.0623	2.5365	0.9194	3.4558	0.6810	0.8698	1.5508	0.0000	6,148.7748	6,148.7748	0.7525	0.0000	6,167.5869
2023	28.0962	20.4760	24.9746	0.0613	2.5364	0.7910	3.3274	0.6810	0.7483	1.4293	0.0000	6,053.7797	6,053.7797	0.7346	0.0000	6,072.1436
Maximum	**28.6158**	**54.0019**	**33.3665**	**0.0859**	**18.2716**	**2.0458**	**20.3174**	**9.9851**	**1.8821**	**11.8673**	**0.0000**	**8,553.5898**	**8,553.5898**	**2.0881**	**0.0000**	**8,605.7914**

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	lb/day										lb/day					
2021	28.6158	54.0019	33.3665	0.0859	18.2716	2.0458	20.3174	9.9851	1.8821	11.8673	0.0000	8,553.5898	8,553.5898	2.0881	0.0000	8,605.7914
2022	28.3331	22.7415	25.7748	0.0623	2.5365	0.9194	3.4558	0.6810	0.8698	1.5508	0.0000	6,148.7748	6,148.7748	0.7525	0.0000	6,167.5869
2023	28.0962	20.4760	24.9746	0.0613	2.5364	0.7910	3.3274	0.6810	0.7483	1.4293	0.0000	6,053.7797	6,053.7797	0.7346	0.0000	6,072.1436
Maximum	**28.6158**	**54.0019**	**33.3665**	**0.0859**	**18.2716**	**2.0458**	**20.3174**	**9.9851**	**1.8821**	**11.8673**	**0.0000**	**8,553.5898**	**8,553.5898**	**2.0881**	**0.0000**	**8,605.7914**

The Preserve Project - Sacramento Metropolitan AQMD Air District, Winter

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	lb/day										lb/day					
Area	20.7581	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010	0.0000	65.3630	65.3630	0.0629	0.0000	66.9344
Energy	0.3359	2.8701	1.2213	0.0183		0.2321	0.2321		0.2321	0.2321		3,663.9045	3,663.9045	0.0702	0.0672	3,685.6772
Mobile	5.8490	26.7337	78.8765	0.2554	24.5278	0.2041	24.7318	6.5558	0.1903	6.7460		25,912.5115	25,912.5115	1.1899		25,942.2592
Total	**26.9430**	**30.0223**	**116.4065**	**0.2757**	**24.5278**	**0.6371**	**25.1649**	**6.5558**	**0.6233**	**7.1791**	**0.0000**	**29,641.7790**	**29,641.7790**	**1.3230**	**0.0672**	**29,694.8707**

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	lb/day										lb/day					
Area	20.7581	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010	0.0000	65.3630	65.3630	0.0629	0.0000	66.9344
Energy	0.3148	2.6901	1.1447	0.0172		0.2175	0.2175		0.2175	0.2175		3,434.1063	3,434.1063	0.0658	0.0630	3,454.5135
Mobile	5.8020	26.4302	77.7010	0.2506	24.0372	0.2005	24.2377	6.4247	0.1869	6.6116		25,422.1045	25,422.1045	1.1710		25,451.3806
Total	**26.8750**	**29.5388**	**115.1544**	**0.2697**	**24.0372**	**0.6190**	**24.6562**	**6.4247**	**0.6054**	**7.0301**	**0.0000**	**28,921.5738**	**28,921.5738**	**1.2997**	**0.0630**	**28,972.8284**

	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	**0.25**	**1.61**	**1.08**	**2.17**	**2.00**	**2.84**	**2.02**	**2.00**	**2.87**	**2.08**	**0.00**	**2.43**	**2.43**	**1.76**	**6.27**	**2.43**

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	5/1/2021	6/2/2021	5	23	
2	Site Preparation	Site Preparation	6/3/2021	6/17/2021	5	11	
3	Grading	Grading	6/18/2021	8/18/2021	5	44	
4	Paving	Paving	8/19/2021	9/21/2021	5	24	
5	Building Construction	Building Construction	9/22/2021	3/22/2023	5	391	
6	Architectural Coating	Architectural Coating	10/6/2021	4/5/2023	5	391	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 110

Acres of Paving: 0

Residential Indoor: 1,603,800; Residential Outdoor: 534,600; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

The Preserve Project - Sacramento Metropolitan AQMD Air District, Winter

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	55.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,250.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	158.00	47.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	32.00	0.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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	lb/day										lb/day					
Fugitive Dust					0.5354	0.0000	0.5354	0.0811	0.0000	0.0811			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**0.5354**	**1.5513**	**2.0868**	**0.0811**	**1.4411**	**1.5222**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

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	lb/day										lb/day					
Hauling	0.0173	0.6338	0.1501	1.8400e-003	0.0416	2.2100e-003	0.0438	0.0114	2.1100e-003	0.0135		197.5372	197.5372	0.0118		197.8322
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
Worker	0.0765	0.0543	0.5288	1.5000e-003	0.1711	1.1100e-003	0.1722	0.0454	1.0200e-003	0.0464		149.8290	149.8290	3.8200e-003		149.9244
Total	**0.0938**	**0.6881**	**0.6789**	**3.3400e-003**	**0.2127**	**3.3200e-003**	**0.2160**	**0.0568**	**3.1300e-003**	**0.0599**		**347.3662**	**347.3662**	**0.0156**		**347.7565**

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	lb/day										lb/day					
Fugitive Dust					0.5354	0.0000	0.5354	0.0811	0.0000	0.0811			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**0.5354**	**1.5513**	**2.0868**	**0.0811**	**1.4411**	**1.5222**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

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	lb/day										lb/day					
Hauling	0.0173	0.6338	0.1501	1.8400e-003	0.0416	2.2100e-003	0.0438	0.0114	2.1100e-003	0.0135		197.5372	197.5372	0.0118		197.8322
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
Worker	0.0765	0.0543	0.5288	1.5000e-003	0.1711	1.1100e-003	0.1722	0.0454	1.0200e-003	0.0464		149.8290	149.8290	3.8200e-003		149.9244
Total	**0.0938**	**0.6881**	**0.6789**	**3.3400e-003**	**0.2127**	**3.3200e-003**	**0.2160**	**0.0568**	**3.1300e-003**	**0.0599**		**347.3662**	**347.3662**	**0.0156**		**347.7565**

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

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	lb/day										lb/day					
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
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
Worker	0.0918	0.0651	0.6345	1.8000e-003	0.2053	1.3300e-003	0.2066	0.0545	1.2300e-003	0.0557		179.7948	179.7948	4.5800e-003		179.9092
Total	**0.0918**	**0.0651**	**0.6345**	**1.8000e-003**	**0.2053**	**1.3300e-003**	**0.2066**	**0.0545**	**1.2300e-003**	**0.0557**		**179.7948**	**179.7948**	**4.5800e-003**		**179.9092**

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

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	lb/day										lb/day					
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
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
Worker	0.0918	0.0651	0.6345	1.8000e-003	0.2053	1.3300e-003	0.2066	0.0545	1.2300e-003	0.0557		179.7948	179.7948	4.5800e-003		179.9092
Total	**0.0918**	**0.0651**	**0.6345**	**1.8000e-003**	**0.2053**	**1.3300e-003**	**0.2066**	**0.0545**	**1.2300e-003**	**0.0557**		**179.7948**	**179.7948**	**4.5800e-003**		**179.9092**

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	lb/day										lb/day					
Fugitive Dust					8.7203	0.0000	8.7203	3.6036	0.0000	3.6036			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.7203**	**1.9853**	**10.7057**	**3.6036**	**1.8265**	**5.4301**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

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	lb/day										lb/day					
Hauling	0.2060	7.5297	1.7830	0.0219	0.4941	0.0262	0.5203	0.1352	0.0251	0.1603		2,346.7743	2,346.7743	0.1402		2,350.2788
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
Worker	0.1020	0.0724	0.7051	2.0100e-003	0.2281	1.4800e-003	0.2296	0.0605	1.3600e-003	0.0619		199.7720	199.7720	5.0900e-003		199.8992
Total	**0.3080**	**7.6021**	**2.4881**	**0.0239**	**0.7222**	**0.0277**	**0.7499**	**0.1957**	**0.0264**	**0.2221**		**2,546.5463**	**2,546.5463**	**0.1453**		**2,550.1780**

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	lb/day										lb/day					
Fugitive Dust					8.7203	0.0000	8.7203	3.6036	0.0000	3.6036			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.7203**	**1.9853**	**10.7057**	**3.6036**	**1.8265**	**5.4301**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

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	lb/day										lb/day					
Hauling	0.2060	7.5297	1.7830	0.0219	0.4941	0.0262	0.5203	0.1352	0.0251	0.1603		2,346.7743	2,346.7743	0.1402		2,350.2788
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
Worker	0.1020	0.0724	0.7051	2.0100e-003	0.2281	1.4800e-003	0.2296	0.0605	1.3600e-003	0.0619		199.7720	199.7720	5.0900e-003		199.8992
Total	**0.3080**	**7.6021**	**2.4881**	**0.0239**	**0.7222**	**0.0277**	**0.7499**	**0.1957**	**0.0264**	**0.2221**		**2,546.5463**	**2,546.5463**	**0.1453**		**2,550.1780**

3.5 Paving - 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	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

3.5 Paving - 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	lb/day										lb/day					
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
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
Worker	0.1529	0.1086	1.0576	3.0100e-003	0.6396	2.2200e-003	0.6419	0.1638	2.0400e-003	0.1658		299.6580	299.6580	7.6300e-003		299.8487
Total	**0.1529**	**0.1086**	**1.0576**	**3.0100e-003**	**0.6396**	**2.2200e-003**	**0.6419**	**0.1638**	**2.0400e-003**	**0.1658**		**299.6580**	**299.6580**	**7.6300e-003**		**299.8487**

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	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

3.5 Paving - 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	lb/day										lb/day					
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
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
Worker	0.1529	0.1086	1.0576	3.0100e-003	0.6396	2.2200e-003	0.6419	0.1638	2.0400e-003	0.1658		299.6580	299.6580	7.6300e-003		299.8487
Total	**0.1529**	**0.1086**	**1.0576**	**3.0100e-003**	**0.6396**	**2.2200e-003**	**0.6419**	**0.1638**	**2.0400e-003**	**0.1658**		**299.6580**	**299.6580**	**7.6300e-003**		**299.8487**

3.6 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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.6 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	lb/day										lb/day					
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
Vendor	0.1783	5.4010	1.5658	0.0141	0.3695	0.0171	0.3865	0.1063	0.0163	0.1226		1,496.5621	1,496.5621	0.0811		1,498.5906
Worker	0.8055	0.5717	5.5699	0.0158	1.8021	0.0117	1.8138	0.4779	0.0108	0.4887		1,578.1986	1,578.1986	0.0402		1,579.2033
Total	**0.9838**	**5.9727**	**7.1357**	**0.0300**	**2.1715**	**0.0288**	**2.2003**	**0.5842**	**0.0271**	**0.6113**		**3,074.7607**	**3,074.7607**	**0.1213**		**3,077.7939**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.6 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	lb/day										lb/day					
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
Vendor	0.1783	5.4010	1.5658	0.0141	0.3695	0.0171	0.3865	0.1063	0.0163	0.1226		1,496.5621	1,496.5621	0.0811		1,498.5906
Worker	0.8055	0.5717	5.5699	0.0158	1.8021	0.0117	1.8138	0.4779	0.0108	0.4887		1,578.1986	1,578.1986	0.0402		1,579.2033
Total	**0.9838**	**5.9727**	**7.1357**	**0.0300**	**2.1715**	**0.0288**	**2.2003**	**0.5842**	**0.0271**	**0.6113**		**3,074.7607**	**3,074.7607**	**0.1213**		**3,077.7939**

3.6 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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 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	lb/day										lb/day					
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
Vendor	0.1656	5.0988	1.4467	0.0140	0.3694	0.0150	0.3844	0.1063	0.0143	0.1206		1,483.1798	1,483.1798	0.0788		1,485.1506
Worker	0.7548	0.5144	5.1151	0.0153	1.8021	0.0114	1.8134	0.4779	0.0105	0.4884		1,521.6343	1,521.6343	0.0361		1,522.5362
Total	**0.9204**	**5.6132**	**6.5618**	**0.0293**	**2.1715**	**0.0263**	**2.1978**	**0.5842**	**0.0248**	**0.6090**		**3,004.8141**	**3,004.8141**	**0.1149**		**3,007.6868**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 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	lb/day										lb/day					
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
Vendor	0.1656	5.0988	1.4467	0.0140	0.3694	0.0150	0.3844	0.1063	0.0143	0.1206		1,483.1798	1,483.1798	0.0788		1,485.1506
Worker	0.7548	0.5144	5.1151	0.0153	1.8021	0.0114	1.8134	0.4779	0.0105	0.4884		1,521.6343	1,521.6343	0.0361		1,522.5362
Total	**0.9204**	**5.6132**	**6.5618**	**0.0293**	**2.1715**	**0.0263**	**2.1978**	**0.5842**	**0.0248**	**0.6090**		**3,004.8141**	**3,004.8141**	**0.1149**		**3,007.6868**

3.6 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.6 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.1305	4.2312	1.2759	0.0137	0.3694	7.1100e-003	0.3765	0.1062	6.7900e-003	0.1130		1,456.0569	1,456.0569	0.0711		1,457.8332
Worker	0.7087	0.4631	4.6931	0.0147	1.8021	0.0111	1.8132	0.4779	0.0102	0.4881		1,464.4644	1,464.4644	0.0323		1,465.2715
Total	**0.8392**	**4.6943**	**5.9690**	**0.0284**	**2.1715**	**0.0182**	**2.1896**	**0.5842**	**0.0170**	**0.6012**		**2,920.5213**	**2,920.5213**	**0.1033**		**2,923.1047**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.6 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.1305	4.2312	1.2759	0.0137	0.3694	7.1100e-003	0.3765	0.1062	6.7900e-003	0.1130		1,456.0569	1,456.0569	0.0711		1,457.8332
Worker	0.7087	0.4631	4.6931	0.0147	1.8021	0.0111	1.8132	0.4779	0.0102	0.4881		1,464.4644	1,464.4644	0.0323		1,465.2715
Total	**0.8392**	**4.6943**	**5.9690**	**0.0284**	**2.1715**	**0.0182**	**2.1896**	**0.5842**	**0.0170**	**0.6012**		**2,920.5213**	**2,920.5213**	**0.1033**		**2,923.1047**

3.7 Architectural Coating - 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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**25.5680**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 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	lb/day										lb/day					
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
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
Worker	0.1631	0.1158	1.1281	3.2100e-003	0.3650	2.3600e-003	0.3673	0.0968	2.1800e-003	0.0990		319.6352	319.6352	8.1400e-003		319.8387
Total	**0.1631**	**0.1158**	**1.1281**	**3.2100e-003**	**0.3650**	**2.3600e-003**	**0.3673**	**0.0968**	**2.1800e-003**	**0.0990**		**319.6352**	**319.6352**	**8.1400e-003**		**319.8387**

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**25.5680**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 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	lb/day										lb/day					
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
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
Worker	0.1631	0.1158	1.1281	3.2100e-003	0.3650	2.3600e-003	0.3673	0.0968	2.1800e-003	0.0990		319.6352	319.6352	8.1400e-003		319.8387
Total	**0.1631**	**0.1158**	**1.1281**	**3.2100e-003**	**0.3650**	**2.3600e-003**	**0.3673**	**0.0968**	**2.1800e-003**	**0.0990**		**319.6352**	**319.6352**	**8.1400e-003**		**319.8387**

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**25.5536**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	lb/day										lb/day					
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
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
Worker	0.1529	0.1042	1.0360	3.0900e-003	0.3650	2.3000e-003	0.3673	0.0968	2.1200e-003	0.0989		308.1791	308.1791	7.3100e-003		308.3618
Total	**0.1529**	**0.1042**	**1.0360**	**3.0900e-003**	**0.3650**	**2.3000e-003**	**0.3673**	**0.0968**	**2.1200e-003**	**0.0989**		**308.1791**	**308.1791**	**7.3100e-003**		**308.3618**

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**25.5536**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	lb/day										lb/day					
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
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
Worker	0.1529	0.1042	1.0360	3.0900e-003	0.3650	2.3000e-003	0.3673	0.0968	2.1200e-003	0.0989		308.1791	308.1791	7.3100e-003		308.3618
Total	**0.1529**	**0.1042**	**1.0360**	**3.0900e-003**	**0.3650**	**2.3000e-003**	**0.3673**	**0.0968**	**2.1200e-003**	**0.0989**		**308.1791**	**308.1791**	**7.3100e-003**		**308.3618**

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**25.5407**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.1435	0.0938	0.9505	2.9800e-003	0.3650	2.2500e-003	0.3672	0.0968	2.0700e-003	0.0989		296.6004	296.6004	6.5400e-003		296.7639
Total	**0.1435**	**0.0938**	**0.9505**	**2.9800e-003**	**0.3650**	**2.2500e-003**	**0.3672**	**0.0968**	**2.0700e-003**	**0.0989**		**296.6004**	**296.6004**	**6.5400e-003**		**296.7639**

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	lb/day										lb/day					
Archit. Coating	25.3491					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**25.5407**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.1435	0.0938	0.9505	2.9800e-003	0.3650	2.2500e-003	0.3672	0.0968	2.0700e-003	0.0989		296.6004	296.6004	6.5400e-003		296.7639
Total	**0.1435**	**0.0938**	**0.9505**	**2.9800e-003**	**0.3650**	**2.2500e-003**	**0.3672**	**0.0968**	**2.0700e-003**	**0.0989**		**296.6004**	**296.6004**	**6.5400e-003**		**296.7639**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	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	lb/day										lb/day					
Mitigated	5.8020	26.4302	77.7010	0.2506	24.0372	0.2005	24.2377	6.4247	0.1869	6.6116		25,422.1045	25,422.1045	1.1710		25,451.3806
Unmitigated	5.8490	26.7337	78.8765	0.2554	24.5278	0.2041	24.7318	6.5558	0.1903	6.7460		25,912.5115	25,912.5115	1.1899		25,942.2592

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	4,012.80	4,012.80	4012.80	11,566,848	11,335,511
Total	4,012.80	4,012.80	4,012.80	11,566,848	11,335,511

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
Single Family Housing	11.74	5.87	6.65	46.50	12.50	41.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.562895	0.037862	0.207220	0.115570	0.017815	0.005092	0.018559	0.023754	0.002009	0.001969	0.005819	0.000618	0.000817

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable 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	lb/day										lb/day					
NaturalGas Mitigated	0.3148	2.6901	1.1447	0.0172		0.2175	0.2175		0.2175	0.2175		3,434.1063	3,434.1063	0.0658	0.0630	3,454.5135
NaturalGas Unmitigated	0.3359	2.8701	1.2213	0.0183		0.2321	0.2321		0.2321	0.2321		3,663.9045	3,663.9045	0.0702	0.0672	3,685.6772

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	lb/day										lb/day					
Single Family Housing	31143.2	0.3359	2.8701	1.2213	0.0183		0.2321	0.2321		0.2321	0.2321		3,663.9045	3,663.9045	0.0702	0.0672	3,685.6772
Total		**0.3359**	**2.8701**	**1.2213**	**0.0183**		**0.2321**	**0.2321**		**0.2321**	**0.2321**		**3,663.9045**	**3,663.9045**	**0.0702**	**0.0672**	**3,685.6772**

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	lb/day										lb/day					
Single Family Housing	29.1899	0.3148	2.6901	1.1447	0.0172		0.2175	0.2175		0.2175	0.2175		3,434.1063	3,434.1063	0.0658	0.0630	3,454.5135
Total		**0.3148**	**2.6901**	**1.1447**	**0.0172**		**0.2175**	**0.2175**		**0.2175**	**0.2175**		**3,434.1063**	**3,434.1063**	**0.0658**	**0.0630**	**3,454.5135**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	lb/day										lb/day					
Mitigated	20.7581	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010	0.0000	65.3630	65.3630	0.0629	0.0000	66.9344
Unmitigated	20.7581	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010	0.0000	65.3630	65.3630	0.0629	0.0000	66.9344

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	lb/day										lb/day					
Architectural Coating	2.7155					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.9488					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	1.0939	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010		65.3630	65.3630	0.0629		66.9344
Total	**20.7581**	**0.4185**	**36.3087**	**1.9200e-003**		**0.2010**	**0.2010**		**0.2010**	**0.2010**	**0.0000**	**65.3630**	**65.3630**	**0.0629**	**0.0000**	**66.9344**

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	lb/day										lb/day					
Architectural Coating	2.7155					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.9488					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	1.0939	0.4185	36.3087	1.9200e-003		0.2010	0.2010		0.2010	0.2010		65.3630	65.3630	0.0629		66.9344
Total	**20.7581**	**0.4185**	**36.3087**	**1.9200e-003**		**0.2010**	**0.2010**		**0.2010**	**0.2010**	**0.0000**	**65.3630**	**65.3630**	**0.0629**	**0.0000**	**66.9344**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

The Preserve Project

Sacramento Metropolitan AQMD Air District, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demolition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Concrete/Industrial Saws	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Excavators	Diesel	No Change	0	5	No Change	0.00
Forklifts	Diesel	No Change	0	3	No Change	0.00
Generator Sets	Diesel	No Change	0	1	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	2	No Change	0.00
Paving Equipment	Diesel	No Change	0	2	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	6	No Change	0.00
Scrapers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	9	No Change	0.00
Welders	Diesel	No Change	0	1	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	4.00000E-002	2.75500E-001	3.54600E-001	5.80000E-004	1.59900E-002	1.59900E-002	0.00000E+000	4.99161E+001	4.99161E+001	3.23000E-003	0.00000E+000	4.99969E+001
Concrete/Industrial Saws	4.43000E-003	3.49400E-002	4.22500E-002	7.00000E-005	1.99000E-003	1.99000E-003	0.00000E+000	6.18305E+000	6.18305E+000	3.60000E-004	0.00000E+000	6.19202E+000
Cranes	6.45300E-002	7.27660E-001	3.25130E-001	9.90000E-004	3.00900E-002	2.76900E-002	0.00000E+000	8.67193E+001	8.67193E+001	2.80500E-002	0.00000E+000	8.74205E+001
Excavators	1.79900E-002	1.69040E-001	2.56840E-001	4.10000E-004	8.20000E-003	7.54000E-003	0.00000E+000	3.56207E+001	3.56207E+001	1.15200E-002	0.00000E+000	3.59087E+001
Forklifts	6.73900E-002	6.24020E-001	6.77440E-001	9.00000E-004	4.15800E-002	3.82500E-002	0.00000E+000	7.87619E+001	7.87619E+001	2.54700E-002	0.00000E+000	7.93987E+001
Generator Sets	6.48100E-002	5.74990E-001	7.18780E-001	1.29000E-003	2.89400E-002	2.89400E-002	0.00000E+000	1.10498E+002	1.10498E+002	5.26000E-003	0.00000E+000	1.10630E+002
Graders	9.97000E-003	1.30340E-001	3.88800E-002	1.50000E-004	4.13000E-003	3.80000E-003	0.00000E+000	1.28068E+001	1.28068E+001	4.14000E-003	0.00000E+000	1.29103E+001
Pavers	5.91000E-003	6.22800E-002	6.97200E-002	1.10000E-004	3.01000E-003	2.77000E-003	0.00000E+000	9.90778E+000	9.90778E+000	3.20000E-003	0.00000E+000	9.98789E+000
Paving Equipment	4.61000E-003	4.65700E-002	6.09900E-002	1.00000E-004	2.30000E-003	2.12000E-003	0.00000E+000	8.58826E+000	8.58826E+000	2.78000E-003	0.00000E+000	8.65770E+000
Rollers	4.55000E-003	4.61800E-002	4.51300E-002	6.00000E-005	2.82000E-003	2.60000E-003	0.00000E+000	5.53213E+000	5.53213E+000	1.79000E-003	0.00000E+000	5.57686E+000
Rubber Tired Dozers	6.43500E-002	6.74730E-001	2.48320E-001	5.20000E-004	3.27500E-002	3.01300E-002	0.00000E+000	4.61595E+001	4.61595E+001	1.49300E-002	0.00000E+000	4.65327E+001
Scrapers	4.09000E-002	4.70920E-001	3.08210E-001	6.70000E-004	1.83200E-002	1.68600E-002	0.00000E+000	5.85933E+001	5.85933E+001	1.89500E-002	0.00000E+000	5.90671E+001
Tractors/Loaders/Backhoes	9.80300E-002	9.95480E-001	1.29929E+000	1.80000E-003	5.46100E-002	5.02400E-002	0.00000E+000	1.58254E+002	1.58254E+002	5.11800E-002	0.00000E+000	1.59533E+002
Welders	5.44000E-002	2.86450E-001	3.31850E-001	5.00000E-004	1.26100E-002	1.26100E-002	0.00000E+000	3.67971E+001	3.67971E+001	4.42000E-003	0.00000E+000	3.69076E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	4.00000E-002	2.75500E-001	3.54600E-001	5.80000E-004	1.59900E-002	1.59900E-002	0.00000E+000	4.99161E+001	4.99161E+001	3.23000E-003	0.00000E+000	4.99969E+001
Concrete/Industrial Saws	4.43000E-003	3.49400E-002	4.22500E-002	7.00000E-005	1.99000E-003	1.99000E-003	0.00000E+000	6.18304E+000	6.18304E+000	3.60000E-004	0.00000E+000	6.19202E+000
Cranes	6.45300E-002	7.27650E-001	3.25130E-001	9.90000E-004	3.00900E-002	2.76900E-002	0.00000E+000	8.67192E+001	8.67192E+001	2.80500E-002	0.00000E+000	8.74204E+001
Excavators	1.79900E-002	1.69040E-001	2.56840E-001	4.10000E-004	8.20000E-003	7.54000E-003	0.00000E+000	3.56206E+001	3.56206E+001	1.15200E-002	0.00000E+000	3.59086E+001
Forklifts	6.73900E-002	6.24020E-001	6.77440E-001	9.00000E-004	4.15800E-002	3.82500E-002	0.00000E+000	7.87618E+001	7.87618E+001	2.54700E-002	0.00000E+000	7.93986E+001
Generator Sets	6.48100E-002	5.74990E-001	7.18780E-001	1.29000E-003	2.89400E-002	2.89400E-002	0.00000E+000	1.10498E+002	1.10498E+002	5.26000E-003	0.00000E+000	1.10630E+002
Graders	9.97000E-003	1.30340E-001	3.88800E-002	1.50000E-004	4.13000E-003	3.80000E-003	0.00000E+000	1.28068E+001	1.28068E+001	4.14000E-003	0.00000E+000	1.29103E+001
Pavers	5.91000E-003	6.22800E-002	6.97200E-002	1.10000E-004	3.01000E-003	2.77000E-003	0.00000E+000	9.90777E+000	9.90777E+000	3.20000E-003	0.00000E+000	9.98788E+000
Paving Equipment	4.61000E-003	4.65700E-002	6.09900E-002	1.00000E-004	2.30000E-003	2.12000E-003	0.00000E+000	8.58825E+000	8.58825E+000	2.78000E-003	0.00000E+000	8.65769E+000
Rollers	4.55000E-003	4.61800E-002	4.51300E-002	6.00000E-005	2.82000E-003	2.60000E-003	0.00000E+000	5.53213E+000	5.53213E+000	1.79000E-003	0.00000E+000	5.57686E+000
Rubber Tired Dozers	6.43500E-002	6.74730E-001	2.48320E-001	5.20000E-004	3.27500E-002	3.01300E-002	0.00000E+000	4.61595E+001	4.61595E+001	1.49300E-002	0.00000E+000	4.65327E+001
Scrapers	4.09000E-002	4.70920E-001	3.08210E-001	6.70000E-004	1.83200E-002	1.68600E-002	0.00000E+000	5.85933E+001	5.85933E+001	1.89500E-002	0.00000E+000	5.90670E+001
Tractors/Loaders/Backhoes	9.80300E-002	9.95480E-001	1.29929E+000	1.80000E-003	5.46100E-002	5.02400E-002	0.00000E+000	1.58253E+002	1.58253E+002	5.11800E-002	0.00000E+000	1.59533E+002
Welders	5.44000E-002	2.86450E-001	3.31850E-001	5.00000E-004	1.26100E-002	1.26100E-002	0.00000E+000	3.67971E+001	3.67971E+001	4.42000E-003	0.00000E+000	3.69075E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20202E-006	1.20202E-006	0.00000E+000	0.00000E+000	1.20007E-006
Concrete/Industrial Saws	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.61732E-006	1.61732E-006	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	0.00000E+000	1.37427E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.15315E-006	1.15315E-006	0.00000E+000	0.00000E+000	1.14390E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.12294E-006	1.12294E-006	0.00000E+000	0.00000E+000	1.11394E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.14269E-006	1.14269E-006	0.00000E+000	0.00000E+000	1.13352E-006
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.17649E-006	1.17649E-006	0.00000E+000	0.00000E+000	1.17509E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	7.80837E-007	7.80837E-007	0.00000E+000	0.00000E+000	7.74574E-007
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.00931E-006	1.00931E-006	0.00000E+000	0.00000E+000	1.00121E-006
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.16438E-006	1.16438E-006	0.00000E+000	0.00000E+000	1.15504E-006
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.29984E-006	1.29984E-006	0.00000E+000	0.00000E+000	1.07451E-006
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.02401E-006	1.02401E-006	0.00000E+000	0.00000E+000	1.18509E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.13742E-006	1.13742E-006	0.00000E+000	0.00000E+000	1.19098E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.08704E-006	1.08704E-006	0.00000E+000	0.00000E+000	1.08379E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	

No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.07	0.02	0.07	0.02	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	0.41	0.11	0.41	0.11	0.00	0.00
Demolition	Fugitive Dust	0.01	0.00	0.01	0.00	0.00	0.00
Demolition	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Grading	Fugitive Dust	0.19	0.08	0.19	0.08	0.00	0.00
Grading	Roads	0.02	0.00	0.02	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.01	0.00	0.01	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.10	0.05	0.10	0.05	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.76	1.11	1.57	1.89	1.73	1.74	0.00	1.89	1.89	1.62	0.00	1.89
Natural Gas	6.27	6.27	6.27	6.29	6.28	6.28	0.00	6.27	6.27	6.28	6.29	6.27
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00	19.99	20.03	20.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting: Low Density Suburban

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	-0.01	0.13		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

Yes	Neighborhood Enhancements	Improve Pedestrian Network	2.00	Project Site and Connecting Off-Site		
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.02			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.02			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"	3.00			
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program	5.00			
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.02			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Exceed Title 24	7.00	
No	Install High Efficiency Lighting	0.00	
Yes	On-site Renewable	0.00	100.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	20.00	20.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Minor Project Health Effects Tool

Latitude	38.576556	**<-- Step 1: Input latitude (Please chose a value between 38.0 and 39.7)**
Longitude	-121.195628	**<-- Step 2: Input longitude (Please chose a value between -122.5 and -120.0)**

PM2.5 Health Endpoint	Age Range[1]	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5] (Mean)	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory					
Emergency Room Visits, Asthma	0 - 99	0.74	0.67	0.0037%	18419
Hospital Admissions, Asthma	0 - 64	0.047	0.043	0.0024%	1846
Hospital Admissions, All Respiratory	65 - 99	0.29	0.26	0.0013%	19644
Cardiovascular					
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.16	0.14	0.00060%	24037
Acute Myocardial Infarction, Nonfatal	18 - 24	0.000060	0.000054	0.0014%	4
Acute Myocardial Infarction, Nonfatal	25 - 44	0.0054	0.0050	0.0016%	308
Acute Myocardial Infarction, Nonfatal	45 - 54	0.014	0.013	0.0018%	741
Acute Myocardial Infarction, Nonfatal	55 - 64	0.023	0.022	0.0018%	1239
Acute Myocardial Infarction, Nonfatal	65 - 99	0.098	0.091	0.0018%	5052
Mortality					
Mortality, All Cause	30 - 99	1.9	1.7	0.0039%	44766

Ozone Health Endpoint	Age Range[1]	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5] (Mean)	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory					
Hospital Admissions, All Respiratory	65 - 99	0.069	0.055	0.00028%	19644
Emergency Room Visits, Asthma	0 - 17	0.25	0.20	0.0034%	5859
Emergency Room Visits, Asthma	18 - 99	0.44	0.36	0.0028%	12560
Mortality					
Mortality, Non-Accidental	0 - 99	0.044	0.037	0.00012%	30386

1. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

2. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects are shown for the Reduced Sacramento 4-km Modeling Domain and the 5-Air-District Region.

3. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, the background incidence rates cover the 5-Air-District Region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

4. The total number of health incidences across the 5-Air-District Region is calculated based on the modeling data. The information is presented to assist in providing overall health context.

5. The technical specifications and map for the Reduced Sacramento 4-km Modeling Domain are included in Appendix A, Table A-1 and Appendix B, Figure B-2 of the *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District.*

Sac Metro Air District Minor Project Health Effects Tool, version 2, published June 2020

Appendix D

Biological Resources Assessment

The Preserve Development

Rancho Cordova, California

Prepared For:

Winn Communities, Inc.

July 27, 2021

SUPERSEDED
December 13, 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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Attachment B – SSHCP Modeled Species Habitat Maps

Attachment C – Results of SSHCP Habitat Surveys

Attachment D – Special-Status Plant Survey Report

Attachment E – Special-Status Species Evaluated for the Study Area

Attachment F – Aquatic Resources Delineation

Attachment G – Wildlife Observed Onsite

Attachment H – Arborist Report

Attachment I – SSHCP Avoidance and Minimization Measures

LIST OF ACRONYMS AND ABBREVIATIONS

AMM	SSHCP Avoidance and Minimization Measure
ARP	SSHCP Aquatic Resources Program
BA	Biological assessment
BCC	Birds of conservation concern
BO	Biological opinion
BRA	Biological resources assessment
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
CWR	Clean Water Rule
dsh	Diameter at standard height
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ITP	Incidental Take Permit
MBTA	Migratory Bird Treaty Act
MSL	Mean sea level
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OHWM	Ordinary high-water mark
Project	The Preserve Development
RWQCB	Regional Water Quality Control Board
SSC	Species of special concern
SSHCP	South Sacramento Habitat Conservation Plan

LIST OF ACRONYMS AND ABBREVIATIONS

Study Area	±112-acre area including The Preserve Development and offsites
TNW	Traditionally Navigable Water
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WBWG	Western Bat Working Group

1.0 INTRODUCTION

On behalf of Winn Communities, Inc., ECORP Consulting, Inc. conducted a biological resources assessment (BRA) for a ±112-acre Study Area for The Preserve Development (Project), a proposed project located in Rancho Cordova, Sacramento County, California. The Study Area includes the 98.92-acre Project area, as well as potential Offsite areas totaling 13.16 acres. In this document the Offsite areas are referred to as the Rio del Oro Offsite (located to the west of the Project), the Raymer Way Offsite (located to the east of the Project), the Morrison Creek Offsite (located to the north of the Project around an existing crossing of Morrison Creek), and the North Douglas Offsites (road stubs located to the south of the Project). Representative photographs of the Study Area are provided as Attachment A.

1.1 Study Area Location

The Study Area is located to the west of Raymer Way and Grant Line Road in Rancho Cordova, California. The Study Area corresponds to an unsectioned portion of the Rio de los Americanos Land Grant within the "Buffalo Creek, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1980) (Figure 1. *Study Area Location and Vicinity*). The approximate center of the site is located at 38.574614° North and -121.196708° West within the Lower Sacramento Watershed (Hydrologic Unit Code #18020163, USGS 2016).

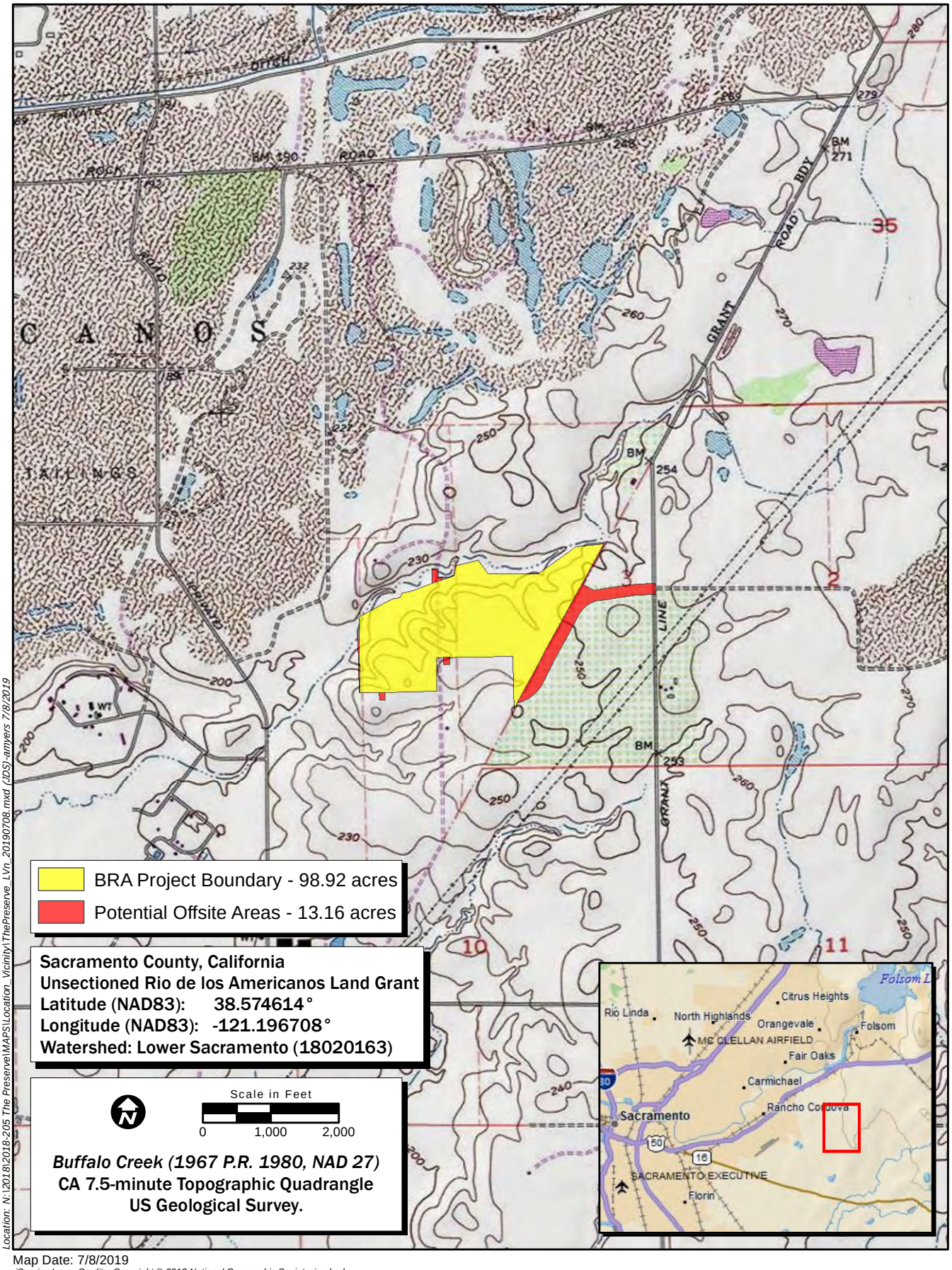
1.2 Purpose of this Biological Resources Assessment

The purpose of this BRA was to collect information on the biological resources present or with the potential to occur in the Study Area, to provide an analysis of potential Project impacts on these resources, and to recommend mitigation measures. This BRA is intended to support preparation of an environmental document pursuant to the California Environmental Quality Act (CEQA), and to support an application for a South Sacramento Habitat Conservation Plan (SSHCP) Permit.

1.3 Project Description

The Project is a residential development containing approximately 434 lots, parks, and open spaces including a trail system, residential and collector streets, and stormwater management infrastructure.

An open space trail system and parks are located immediately south of Morrison Creek as a buffer between the creek and the proposed residential neighborhood.



Location: N:\2018\2018-205 The Preserve\MAPS\Location_Vicinity\ThePreserve_LVn_20190708.mxd (JDS)-amyers 7/8/2019

Map Date: 7/8/2019

iService Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed
Copyright:(c) 2018 Garmin

Figure 1. Study Area Location and Vicinity

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2018-205 The Preserve

The Project will offer a variety of housing choices that will be consistent with the Medium Density Residential General Plan designation, which allows for small lot single-family homes. The Project has a compact urban design that allows for less land to be developed than typical large lot developments, creating a more efficient land use pattern. The Project would build out to the eastern boundary of the City, which was forecasted in the General Plan as the Grant Line West Planning Area. This location allows for connection to existing infrastructure, reducing the impact footprint and need for offsite improvements. The circulation pattern of the project was designed to utilize the aesthetic views of Morrison Creek while keeping safe vehicular patterns in conjunction with inviting and enhanced pedestrian routes. The Project will have four points of access: two points from Raymer Way, one point from Thornberg Way, and one point from the extension of Edington Drive.

1.3.1 Project Offsites

An offsite area along Raymer Way (Raymer Way Offsite) has been included in this assessment in anticipation that future improvements to the roadway may be required to support the Project. In addition, there are four other potential offsite areas described in this assessment as the Morrison Creek Offsite, North Douglas Offsites, and Rio del Oro Offsite. Within the Morrison Creek Offsite, an existing berm to the east of a gravel road crossing Morrison Creek is proposed to be removed to minimize flooding of the adjacent areas during 100-year storms. The North Douglas Offsites are the locations of future roadway connections to the existing North Douglas Project. Within the Rio del Oro Offsite, a small amount of grading may be required in association with the slopes at the western side of the Project. The Rio del Oro Offsite is located entirely within a disced firebreak on the Rio del Oro property.

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Endangered Species Act

The Endangered Species Act (ESA) protects plants and animals that are listed as endangered or threatened by U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). Section 9 of ESA prohibits, without authorization, the taking of listed wildlife, where take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant under federal jurisdiction and removing, cutting, digging up, damaging, or destroying any listed plant in any other area in knowing violation of state law (16 U.S. Code [USC] 1538). Under Section 7 of ESA, federal agencies are required to consult with USFWS and/or NMFS if their actions, including permit approvals and funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a biological opinion (BO), USFWS and NMFS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of ESA provides for the issuance of incidental take permits where no other federal actions are necessary provided a habitat conservation plan is developed.

Permitting under the SSHCP, which was developed pursuant to Section 10 of the ESA, allows for take authorization of certain Covered Species through a streamlined permitting process. The SSHCP is discussed further in Section 2.5.8.

Critical Habitat

Critical Habitat is defined in Section 3 of ESA as:

1. the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection; and

2. specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

For inclusion in a Critical Habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features essential to the conservation of the species (16 USC 1533). Critical Habitat designations identify, to the extent known and using the best scientific data available, habitat areas that provide essential life cycle needs of the species (areas on which are found the primary constituent elements). Primary constituent elements are the physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

1. Space for individual and population growth and for normal behavior;

2. Food, water, air, light, minerals, or other nutritional or physiological requirements;

3. Cover or shelter;

4. Sites for breeding, reproduction, or rearing (or development) of offspring; and

5. Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized under the MBTA, USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State

of California has incorporated the protection of non-game birds in § 3800, migratory birds in § 3513, and birds of prey in § 3503.5 of the California Fish and Game Code.

2.1.3 Clean Water Act

The federal Clean Water Act's (CWA's) purpose is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into "Waters of the U.S." without a permit from the U.S. Army Corps of Engineers (USACE). The Clean Water Rule (CWR) was published in April 2015, but implementation of the rule was stayed until July 2018. It is currently (2018) in effect for California and a few other states. The CWR defines which features are considered Waters of the U.S. (and thus subject to the CWA). The CWR defines Waters of the U.S. as features having a significant effect on the chemical, physical, or biological integrity of a Traditional Navigable Water (TNW), interstate water, or territorial seas. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3 7b). The U.S. Environmental Protection Agency (USEPA) also has authority over wetlands, including the authority to veto permits issued by USACE under CWA Section 404(c).

Projects involving activities that have no more than minimal individual and cumulative adverse environmental effects may meet the conditions of one of the Nationwide Permits already issued by USACE (Federal Register 82:1860, January 6, 2017). If impacts on wetlands could be substantial, an individual permit is required. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB). The SSHCP includes an Aquatic Resources Program (ARP) to allow for streamlined permitting pursuant to CWA Sections 404 and 401. The SSHCP is discussed further in Section 2.5.8.

2.2 State and Local Regulations

2.2.1 California Endangered Species Act

The California ESA (California Fish and Game Code §§ 2050-2116) protects species of fish, wildlife, and plants listed by the state as endangered or threatened. Species identified as candidates for listing may also receive protection. Section 2080 of the California ESA prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The California ESA allows for take incidental to otherwise lawful projects under permits issued by California Department of Fish and Wildlife (CDFW). Permitting under the SSHCP provides take authorization of certain Covered Species through a streamlined permitting process. The SSHCP is discussed further in Section 2.5.8.

2.2.2 Fully Protected Species

The State of California first began to designate species as "fully protected" prior to the creation of the federal and the California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the federal and/or California ESAs. Fully protected species are identified in the California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish.

These sections of the California Fish and Game Code provide that fully protected species may not be taken or possessed at any time, including prohibition of CDFW from issuing incidental take permits for fully protected species under the California ESA. CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit and may allow incidental take for lawful activities carried out under an approved Natural Community Conservation Plan (NCCP) within which such species are covered. The SSHCP is not an approved NCCP; however, it is consistent with California Fish and Game Code sections related to fully protected species, and SSHCP Covered Species include some fully protected species. The SSHCP is discussed further in Section 2.5.8.

2.2.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (California Fish and Game Code §§ 1900-1913) was established with the intent to "preserve, protect and enhance rare and endangered plants in this state." The NPPA is administered by CDFW. The Fish and Game Commission has the authority to designate native plants as "endangered" or "rare". The NPPA prohibits the take of plants listed under the NPPA, but the NPPA contains a number of exemptions to this prohibition that have not been clarified by regulation or judicial rule. In 1984, the California ESA brought under its protection all plants previously listed as endangered under NPPA. Plants listed as rare under NPPA are not protected under the California ESA, but are still protected under the provisions of NPPA. The Fish and Game Commission no longer lists plants under NPPA, reserving all listings to the California ESA.

2.2.4 California Fish and Game Code Special Protections for Birds

In addition to protections contained within the California ESA and California Fish and Game Code § 3511 described above, the California Fish and Game Code includes a number of sections that specifically protect certain birds.

Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the California Fish and Game Commission or a mitigation plan approved by CDFW for mining operations.

Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.

Section 3503.5 protects birds of prey (which includes eagles, hawks, falcons, kites, ospreys, and owls) and prohibits the take, possession, or destruction of any birds and their nests

Section 3505 makes it unlawful to take, sell, or purchase egrets, ospreys, and several exotic non-native species, or any part of these birds.

Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

2.2.5 Lake or Streambed Alteration Agreements

Section 1600-1616 of the California Fish and Game Code requires individuals or agencies to provide a Notification of Lake or Streambed Alteration to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW reviews the proposed actions and, if necessary, proposed measures to protect affected fish and wildlife resources. The final proposal mutually agreed upon by CDFW and the applicant is the Lake or Streambed Alternation Agreement. The SSHCP complies with Sections 1600-1616 of the California Fish and Game Code. The SSHCP is discussed further in Section 2.5.8.

2.2.6 Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of stormwater runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, with any region that could affect the water of the state" (Water Code 13260(a)). Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code 13050 (e)). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirements for these activities. The SSHCP's ARP allows for streamlined permitting pursuant to the CWA and complies with the Porter-Cologne Water Quality Act. The SSHCP is discussed further in Section 2.5.8.

2.2.7 California Environmental Quality Act

In accordance with CEQA Guidelines § 15380, a species or subspecies not specifically protected under the federal or California ESAs or NPPA may be considered endangered, rare, or threatened for CEQA review purposes if the species meets certain criteria specified in the Guidelines. These criteria include definitions similar to definitions used in ESA, the California ESA, and NPPA. Section 15380 was included in the CEQA Guidelines primarily to address situations in which a project under review may have a significant effect on a species that has not been listed under ESA, the California ESA, or NPPA, but that may meet the

definition of endangered, rare, or threatened. Animal species identified as species of special concern (SSC) by CDFW, and plants identified by the California Native Plant Society (CNPS) as rare, threatened, or endangered may meet the CEQA definition of rare or endangered. The SSHCP is consistent with CEQA. The SSHCP is discussed further in Section 2.5.8.

Species of Special Concern

SSC are defined by CDFW as a species, subspecies, or distinct population of an animal native to California that are not legally protected under ESA, the California ESA, or the California Fish and Game Code, but currently satisfies one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role;
- The species is listed as federally (but not state) threatened or endangered, or meets the state definition of threatened or endangered but has not formally been listed;
- The species has or is experiencing serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status;
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status; and
- SSC are typically associated with habitats that are threatened.

Depending on the policy of the lead agency, projects that result in substantial impacts to SSC may be considered significant under CEQA.

U.S. Fish and Wildlife Service Birds of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under ESA." To meet this requirement, USFWS published a list of birds of conservation concern (BCC) (USFWS 2008) for the United States. The list identifies the migratory and nonmigratory bird species (beyond those already designated as federally threatened or endangered) that represent USFWS's highest conservation priorities. Depending on the policy of the lead agency, projects that result in substantial impacts to BCC may be considered significant under CEQA.

Sensitive Natural Communities

The CDFW maintains the *California Natural Community List* (CDFW 2018a), which provides a list of vegetation alliances, associations, and special stands as defined in the *Manual of California Vegetation* (Sawyer et al. 2009), along with their respective state and global rarity ranks. Natural communities with a

state rarity rank of 1, 2, or 3 are considered sensitive natural communities. Depending on the policy of the lead agency, impacts to sensitive natural communities may be considered significant under CEQA.

California Rare Plant Ranks

The CNPS maintains the *Inventory of Rare and Endangered Plants of California* (CNPS 2018a), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, and/or low populations. Plant species meeting one of these criteria are assigned to one of six California Rare Plant Ranks (CRPRs). The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

- Rare Plant Rank 1A – presumed extirpated in California and either rare or extinct elsewhere
- Rare Plant Rank 1B – rare, threatened, or endangered in California and elsewhere
- Rare Plant Rank 2A – presumed extirpated in California, but more common elsewhere
- Rare Plant Rank 2B – rare, threatened, or endangered in California but more common elsewhere
- Rare Plant Rank 3 – a review list of plants about which more information is needed
- Rare Plant Rank 4 – a watch list of plants of limited distribution

Additionally, CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 1 through 3, with 1 being the most threatened and 3 being the least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
- Threat Rank 0.2 – Moderately threatened in California (20-80 percent occurrences threatened/moderate degree and immediacy of threat)
- Threat Rank 0.3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

Factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Rank; and differences in Threat Ranks do not constitute additional or different protection (CNPS 2018a).

Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, or 2, and 3 are typically considered significant under CEQA Guidelines § 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 4 and at the discretion of the CEQA lead agency.

California Environmental Quality Act Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant. Generally, impacts to listed (rare, threatened, or endangered) species are considered significant. Assessment of "impact significance" to populations of non-listed species (e.g., SSC) usually considers the proportion of the species' range that will be affected by a project, impacts to habitat, and the regional and population level effects.

Specifically, § 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant under CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

2.2.8 South Sacramento Habitat Conservation Plan

The SSHCP is a regional effort that provides development and infrastructure projects with streamlined federal and state permitting processes while creating a preserve system to protect habitat, open space, and agricultural lands (County of Sacramento et al. 2018). The SSHCP allows project proponents within the Plan Area to simplify and expedite the state and federal ESA permitting process. In addition to streamlining the ESA permitting processes, a parallel ARP has been developed to address permitting pursuant to the Clean Water Act Section 404 and 401 permitting process. The SSHCP will allow Sacramento County, the City of Rancho Cordova, City of Galt, and the Southeast Connector Joint Powers Authority to receive Incidental Take Permits (ITP) for Covered Species from USFWS and CDFW for activities and projects they conduct. In addition, the three local Land Use Authority Permittees (the County, Galt, and Rancho Cordova) can extend incidental take coverage provided by the SSHCP ITPs to activities and projects implemented by Third-Party Project Proponents that are under the jurisdiction of that Land Use Authority Permittee. See www.southsachcp.com for more information.

Table 1 provides a list of the SSHCP Covered Species, adapted from Table 1-2 of the SSHCP (County of Sacramento et al. 2018).

Table 1. SSHCP Covered Species

Scientific Name Common Name	Status		
	Federal	State	CRPR
Invertebrates			
Lepidurus packardi Vernal pool tadpole shrimp	E	—	—
Branchinecta lynchi Vernal pool fairy shrimp	T	—	—
Branchinecta mesovallensis Mid-valley fairy shrimp	—	—	—
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	T	—	—
*Hydrochara ricksecker*i Ricksecker's water scavenger beetle	—	—	—
Amphibians			
Ambystoma californiense California tiger salamander, (Central Valley population)	T	T	—
Spea hammondii Western spadefoot	—	CSC	—
Reptiles			
Actinemys marmorata Western pond turtle	—	CSC	—
Thamnophis gigas Giant garter snake	T	T	—
Birds			
Accipiter cooperii Cooper's hawk	—	WL	—
Agelaius tricolor Tricolored blackbird	BCC	T	—
Athene cunicularia hypugaea Western burrowing owl	BCC	CSC	—
Buteo regalis Ferruginous hawk	BCC	—	—
Buteo swainsoni Swainson's hawk	BCC	T	—
Circus cyaneus Northern harrier	—	CSC	—
Elanus leucurus White-tailed kite	—	CFP	—
Grus canadensis tabida Greater sandhill crane	—	T; CFP	—
Lanius ludovicianus Loggerhead shrike	BCC	CSC	—
Mammals			
Lasiurus blossevillii Western red bat	—	CSC	—

Table 1. SSHCP Covered Species

Scientific Name Common Name	Status		
	Federal	State	CRPR
Taxidea taxus American badger	—	CSC	—
Plants			
Downingia pusilla Dwarf downingia	—	—	2.2
Gratiola heterosepala Boggs Lake hedge-hyssop	—	E	1B.2
Juncus leiospermus var. *ahartii* Ahart's dwarf rush	—	—	1B.2
Legenere limosa Legenere	—	—	1B.1
Navarretia myersii Pincushion navarretia	—	—	1B.1
Orcuttia tenuis Slender Orcutt grass	T	E	1B.1
Orcuttia viscida Sacramento Orcutt grass	E	E	1B.1
Sagittaria sanfordii Sanford's arrowhead	—	—	1B.2

Status Definitions

Federal:
E = Listed as endangered under the federal ESA
T = Listed as threatened under the federal ESA
— = No federal ESA listing
BCC = Bird of Conservation Concern, USFWS 2008.

State:
E = Listed as endangered under state ESA
T = Listed as threatened under state ESA
CFP = Fully protected under the California Fish and Game Code
CSC = Species of special concern in California
WL = Watch List
— = No state status

California Native Plant Society California Rare Plant Rank (CRPR):
1B = Rare, threatened, or endangered in California and elsewhere
2 = Rare, threatened, or endangered in California but more common elsewhere

CRPR Threat Ranks
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

2.2.9 City of Rancho Cordova Tree Ordinance

The City of Rancho Cordova Tree Ordinance defines Protected Trees as follows:

- Native oak trees – *Quercus lobata*, valley oak; *Quercus wislizenii*, interior live oak; *Quercus douglasii*, blue oak; or *Quercus* x. *morehus*, oracle oak – having a trunk diameter of at least six inches or greater; or
- Any tree species other than a native oak having a trunk diameter of at least 12 inches or greater on nonresidential property; or
- Any tree species other than a native oak having a trunk diameter of at least 24 inches or greater on residential property; or
- Any tree planted as a requirement tree for site development, tree permit condition, landscape plan removal replacement, or other designated condition by the public works director or planning director.

The City Ordinance defines the methods by which trunk diameter is determined as:

- "Diameter at standard height" or "dsh" means the diameter of a tree measured at four and one-half feet above natural grade, except as specified below. The diameter shall be calculated by using the following formula: diameter equals circumference/3.14.
- For a tree that branches at or below four and one-half feet, dsh means the diameter at the narrowest point between the grade and the branching point.
- For a tree with a common root system that branches at the ground, dsh means the sum of the diameter of the largest trunk and one-half the cumulative diameter of the remaining trunks at four and one-half feet above natural grade.

Trees designated with protected status under the City Ordinance may require additional reporting and planning requirements. The City ordinances require a report, to be prepared by a certified arborist, detailing the preservation, removal, replacement, or relocation of any protected trees prior to the preliminary approval of any parcel map. Protected Trees require a permit from the City of Rancho Cordova if pruning or removal of these trees is necessary.

3.0 METHODS

For the purposes of this assessment, special-status species are defined as plants or animals that:

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the ESA;
- are listed or candidates for future listing as threatened or endangered under the California ESA;
- meet the definitions of endangered or rare under § 15380 of the CEQA Guidelines;
- are identified as a SSC by the CDFW;
- are birds identified as BCC by the USFWS;

- are considered by the CNPS to be "rare, threatened, or endangered in California", "plants about which more information is needed", or "plants of limited distribution – a watch list" (i.e., species with a CRPR of 1B, 2, 3, or 4);
- are plants listed as rare under the NPPA (California Fish and Game Code, § 1900 et seq.);
- are fully protected in California in accordance with the California Fish and Game Code, §§ 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes); or
- are Covered Species as defined by the SSHCP.

Species that are tracked by the CNDDB but having no other special status are not considered to be special-status species.

Two different procedures were used to assess the potential for SSHCP Covered Species and species that are not Covered Species to occur within the Study Area. These are described below.

3.1 Analysis of SSHCP Covered Species

SSHCP Modeled Species Habitat data were used to determine which SSHCP Covered Species are considered to have the potential to occur within the Study Area (SSHCP Covered Species are listed in Table 1). Modeled Species Habitat data were obtained from Dudek and no revisions to the extent of Modeled Species Habitat were made by ECORP. Maps of Modeled Species Habitat are presented in Attachment B.

3.1.1 Field Assessment for Covered Species

Surveys for potential habitat for tricolored blackbird, burrowing owl, Swainson's hawk, other raptors, and western red bat were conducted per requirements of SSHCP Avoidance and Minimization Measures (AMMs) TCB-1, WBO-1, SWHA-1, RAPTOR-1, and BAT-1. The methods used and results of these surveys are described in Attachment C. Information from these surveys was used to determine whether specific potential habitat features (e.g., nesting trees, burrows) for these species were present onsite.

In addition, surveys for special-status plant species were conducted per AMMs PLANT-1 and ORCUTT-1 in spring 2019. The results of these surveys are described in Attachment D.

3.2 Analysis of Other Special-Status Species

3.2.1 Literature Review

The following resources were queried to determine whether any species other than SSHCP Covered Species have potential to occur within the Study Area.

- CDFW CNDDB record search for the "Buffalo Creek, California" 7.5-minute quadrangle and the eight surrounding USGS quadrangles (CDFW 2018b);

- USFWS Information, Planning, and Consultation System Resource Report List for the Study Area (USFWS 2018);
- CNPS' electronic *Inventory of Rare and Endangered Plants of California* was queried for the "Buffalo Creek, California" 7.5-minute quadrangle and the eight surrounding USGS quadrangles (CNPS 2018a).

3.2.2 Field Assessment for Other Species

Several surveys were conducted by ECORP biologists during fall 2018 and spring 2019. During these surveys, the Study Area was walked on foot where accessible, and topographic maps and aerial imagery were referenced. The Raymer Way Offsite was observed from the publicly accessible roadway, and the Rio del Oro Offsite was observed from within the Project.

Biological communities occurring within the Study Area were characterized and the following biological resource information was collected:

- Potential aquatic features (also described separately in the Aquatic Resources Delineation [ECORP 2018]);
- Protected Trees occurring onsite;
- Animal and plant species directly observed;
- Habitat and vegetation communities; and
- Representative photographs of the Study Area, provided as Attachment A.

3.2.3 Evaluation of Special-Status Species

Based on SSHCP modeled species habitat, species occurrence information from the literature review, and field assessments, a list of special-status plant and animal species considered to have the potential to occur within the Study Area was generated. This list is provided in Attachment E and the potentially occurring species are summarized in Section 4.0.

Each of the species that were considered as potentially occurring within the Study Area or vicinity was evaluated based on the following criteria:

- **Present** - Species was observed during field surveys or is known to occur within the Study Area based on documented occurrences within the CNDDB, SSHCP, or other literature.
- **Potential to Occur** - Habitat (including soil and elevation requirements) for the species occurs within the Study Area based on site assessment, literature research, or SSHCP Modeled Species Habitat data.
- **Low Potential to Occur** - Marginal or limited amounts of habitat occur, and/or the species is not known to occur within the vicinity of the Study Area based on CNDDB records and other available documentation. This designation is only used for species that are not SSHCP Covered Species.

- **Absent** - No suitable habitat (including soils and elevation requirements) and/or the species is not known to occur within the vicinity of the Study Area based on CNDDB records and other documentation, or SSHCP Modeled Species Habitat data does not indicate that habitat for the species occurs within the site.

4.0 RESULTS

4.1 Site Characteristics and Land Use

The Study Area is situated at an elevation range between approximately 200 and 250 feet above mean sea level (MSL) in Rancho Cordova, California. The Study Area is located in the Great Valley region, Sacramento Valley subregion of the California Floristic Province (Baldwin et al. 2012). This region is characterized by agricultural areas, grasslands, wetlands, and valley oaks (Baldwin et al. 2012). The average annual precipitation for the region is 36.9 inches (with the wettest period during November-March), and average daily temperatures range from 47.7˚F in winter to 73.8˚F in summer (National Oceanic and Atmospheric Administration [NOAA] 2018).

The Study Area is characterized by flat to gently rolling terrain and consists primarily of grazed annual grasslands with two residences and other outbuildings. A private road, sometimes identified as Douglas Road, leads from south of the Study Area into the two residences.

The Study Area is located within the USFWS Mather Core Area (USFWS 2005a). Core Areas are areas prioritized for the conservation and recovery of threatened and endangered vernal pool species.

4.2 Soils

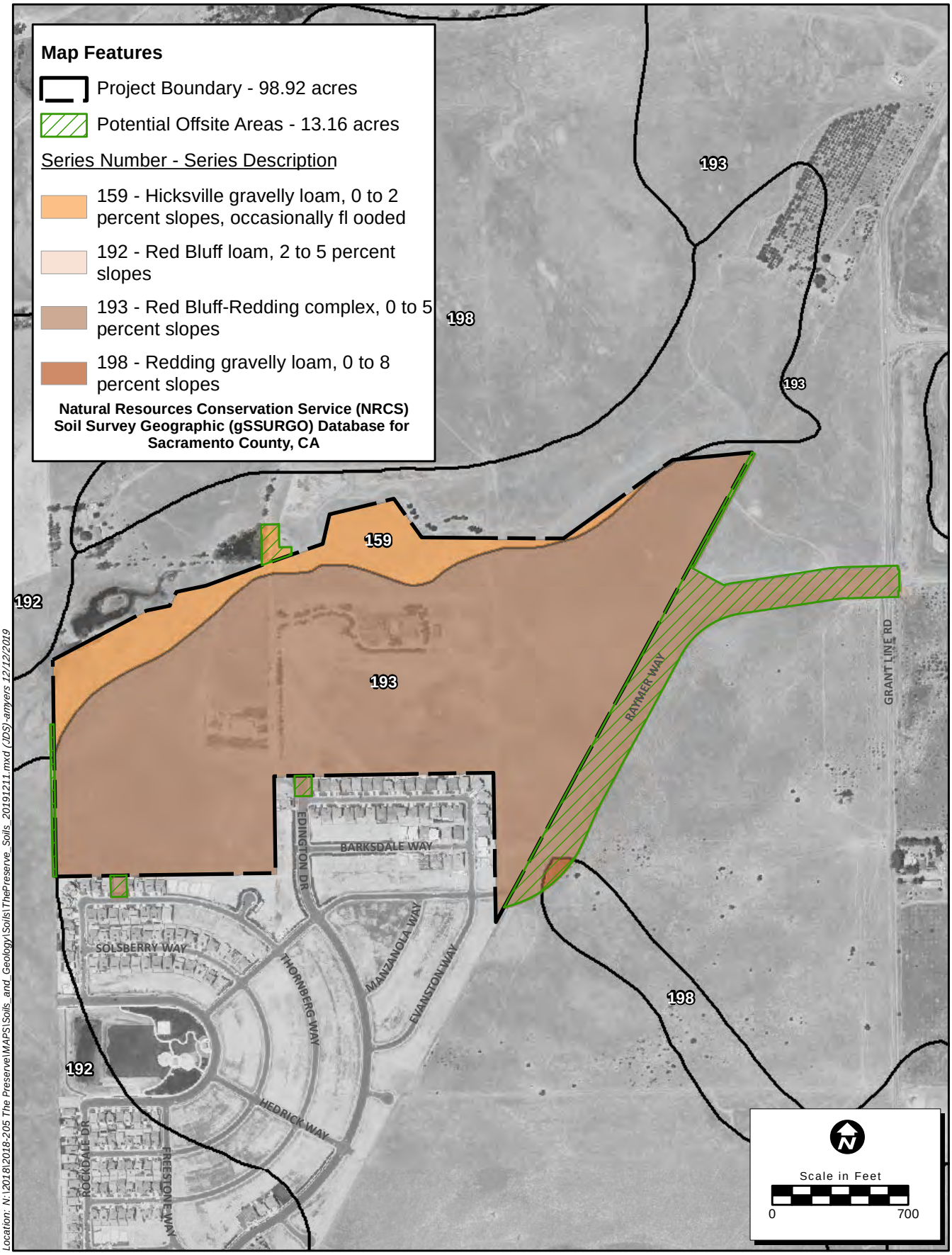
According to the *Web Soil Survey* (NRCS 2018), two soil units, or types, have been mapped within the Study Area (Figure 2. *Natural Resources Conservation Service Soil Types*):

- (159) Hicksville gravelly loam, 0 to 2 percent slopes, occasionally flooded;
- (192) Red Bluff loam, 2 to 5 percent slopes;
- (193) Red Bluff-Redding complex, 0 to 5 percent slopes; and
- (198) Redding gravelly loam, 0 to 8 percent slopes.

Hicksville and Red Bluff soils are formed in alluvium derived from mixed rock sources. Redding soils are formed in gravelly and cobbly alluvium derived from mixed rock sources (NRCS 2018). No soil units derived from serpentinite or other ultramafic parent materials have been reported to occur within the Study Area or its immediate vicinity (NRCS 2018). Furthermore, no apparent inclusions of ultramafic rocks or soils were observed during the June 2018 field survey.

4.3 Land Cover Types

SSHCP Land Cover data within the Study Area were reviewed; however, the type and extent of SSHCP Land Cover types was revised to reflect field conditions based on the onsite assessment. Baseline SSHCP



Location: N:\2018\2018-205 The Preserve\MAPS\Soils_and_Geology\Soils\ThePreserve_Soils_20191211.mxd (JDS)-amyers 12/12/2019

Map Date: 12/12/2019
Photo Source: 2016, NAIP

Figure 2. Natural Resources Conservation Service Soil Types

2018-205 The Preserve

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Land Cover data is presented in *Figure 3. Original SSHCP Land Cover*, and a revised Land Cover map is provided as *Figure 4. Revised SSHCP Land Cover*.

4.3.1 Terrestrial Land Cover Types

The SSHCP Land Cover data indicated that the Study Area primarily contains the Valley Grassland land cover type, and the reconnaissance vSisit revised the extent of this land cover type on Figure 4. The Study Area also contains Low Density Development and a small amount of Disturbed land cover.

Valley Grassland

The Valley Grassland land cover type is predominantly characterized by non-native (naturalized) annual grasses. Within the Study Area, the common plant species found in Valley Grassland are a mixture of nonnative annual grasses, including medusahead grass (*Elymus caput-medusae*), soft brome (*Bromus hordeaceus*), wild oats (*Avena fatua*), and brome fescue (*Festuca bromoides*). Narrow tarplant (*Holocarpha virgata*), a native perennial forb, is also common in this land cover type within the Study Area.

Low Density Development

The Low Density Development land cover type consists of existing homesteads including buildings/structures and horticultural trees. Trees are described further in Section 4.8.

Disturbed/Major Roads

The Disturbed and Major Roads land cover types consists of disturbed areas, and sections of paved and gravel road within the Study Area.

Major Roads

Major Roads land cover type consists of Grant Line Road and Raymer Way within the Raymer Way Offsite.

4.3.2 Aquatic Land Cover Types

An aquatic resources delineation was conducted for the Project in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) and is provided as Attachment F-1. The USACE verified this delineation on May 9, 2019 (Attachment F-2). An Addendum to the delineation has been prepared for the Offsites (Attachment F-3), but has not yet been verified by the USACE as of the date of this assessment.

A total of 4.727 acres of aquatic resources have been mapped within the Study Area, consisting of 4.425 acres within the Project area and 0.302 acre within the Offsites. These include Vernal Pool, Swale, and Stream/Creek land cover types. The Morrison Creek and North Douglas Offsites were included in the aquatic resources delineation for the Project (ECORP 2018a). The Rio del Oro Offsite was delineated and verified by the USACE for the Rio del Oro Project (SPK-1999-00590) and per the verified delineation, no Waters of the U.S. lie within this area. The Raymer Way Offsite has not been formally delineated due to inability to access these areas as of the date of this report; however, roadside ditches were delineated

Figure 3.
The Preserve
Original SSHCP Landcover

Map Features

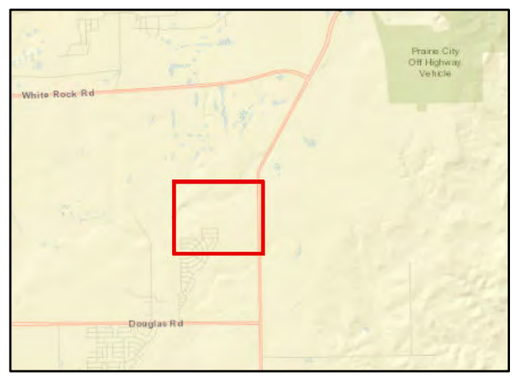
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

SSHCP Land Cover

- Disturbed
- Low Density Development
- Major Roads
- Open Water
- Orchards
- Streams/Creeks (VPIH)
- Swale
- Valley Grassland
- Vernal Pool

EVANSTON WAY
BARKSDALE WAY
THORNBERG WAY
SOLSBERRY WAY
ROCKDALE DR
EDINGTON DR
MANZANOLA WAY
RAYMER WAY
GRANT LINE RD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Location: N:\2018\2018-205 The Preserve\MAPS\Vegetation_and_Landcover\Land_Cover\ThePreserve_LandCoverSSHCPOrig_20191211.mxd (JDS)-amyers 12/12/2019

2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Landcover Data: SSHCP
Base Data: RJA
165018 BNDY -WINN BINDED.dwg
165018 Base.dwg

Map Date: 12/12/2019

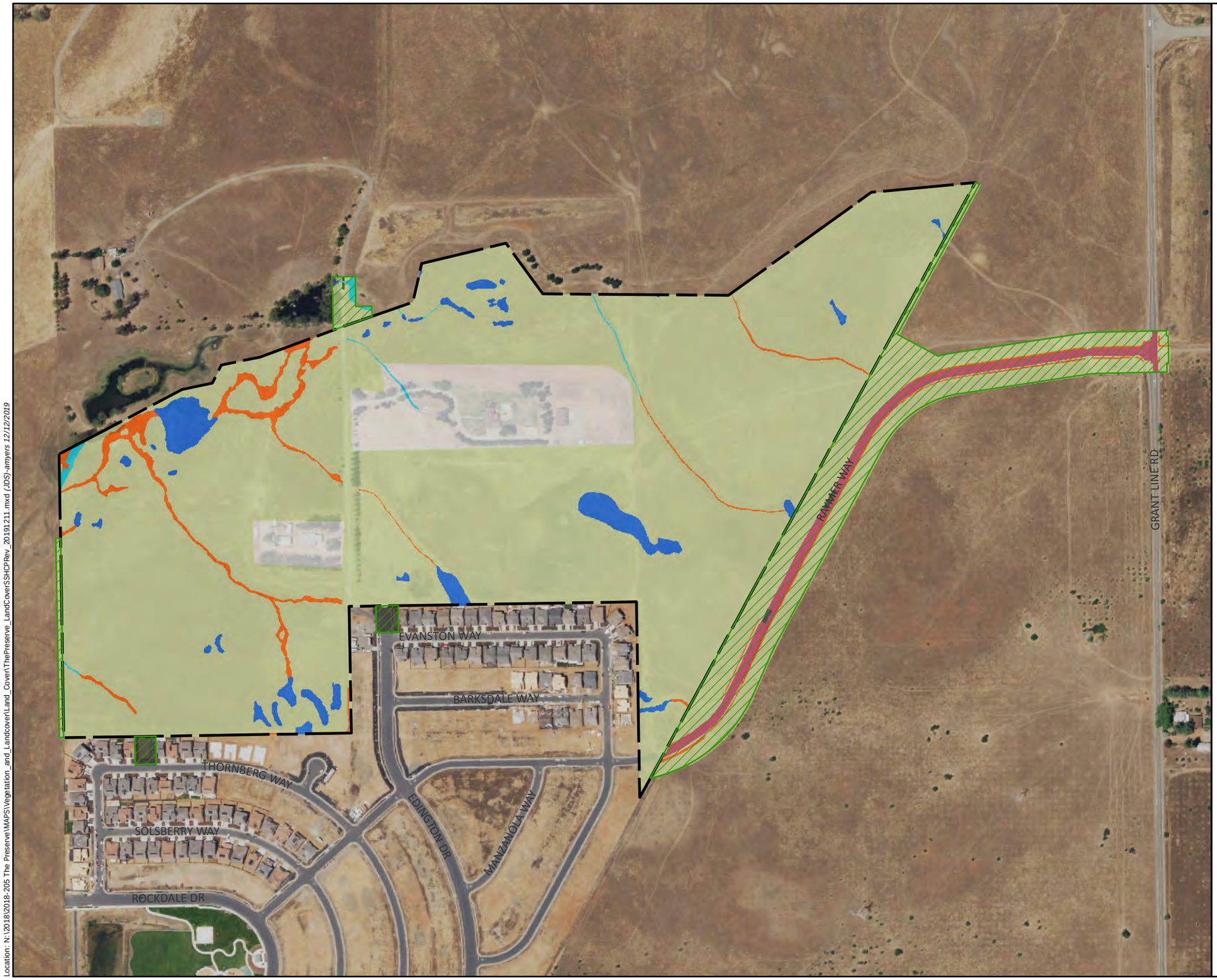


Figure 4.
The Preserve
Revised SSHCP Land Cover

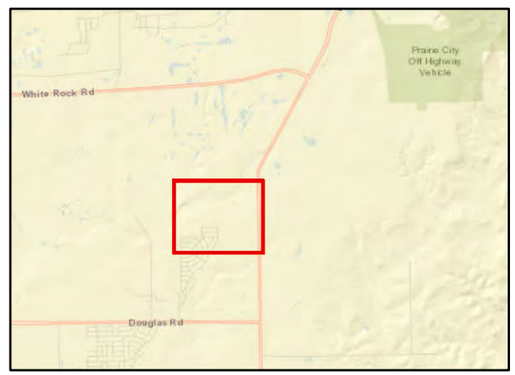
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modified SSHCP Land Cover

- Major Roads
- Open Water
- Stream/Creek
- Swale
- Vernal Pool
- Valley Grassland
- Disturbed
- Low Density Development

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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ENVIRONMENTAL CONSULTANTS

Location: N:\2018\2018-205 The Preserve\MAPS\Vegetation_and_Landcover\Land_Cover\ThePreserve_LandCoverSSHCPRev_20191211.mxd (JDS)-amyers 12/12/2019

2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Landcover Data: SSHCP/ECORP
Base Data: RJA
165018 BNDY -WINN BINDED.dwg
165018 Base.dwg

Map Date: 12/12/2019

from the publicly accessible roads. A discussion of the aquatic resources found onsite is presented below, and an aquatic resources delineation map is presented in Figure 5. *Aquatic Resources Delineation*.

Vernal Pool

Vernal pools are seasonal ephemeral wetlands that fill and dry each year, forming in shallow depressions within Valley Grassland that are underlaid by an impermeable layer (e.g., a hardpan). Water collects in the depressions during the winter rainy season and recedes during the spring. Soils typically remain moist until late spring before becoming desiccated, and then remain dry throughout the summer. Vernal pools provide habitat for several special-status species, including invertebrates, plants, and amphibians.

Vernal pools occur throughout the Study Area. These features are variously dominated by Great Valley button-celery (*Eryngium castrense*), stalked popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), Mediterranean barley (*Hordeum marinum*), waxy mannagrass (*Glyceria declinata*), hairy hawkbit (*Leontodon saxatilis*), and toad rush (*Juncus bufonius*).

Swale

Swales are shallow ephemeral drainages found in flat to gently rolling Valley Grassland in association with vernal pool complexes, on soils with an impermeable layer. Swales convey runoff as shallow, gently sloping ephemeral wetlands during and shortly after winter rainstorms, but usually maintain soil saturation for longer periods during the growing season. They typically have hydric soils and support hydrophytic vegetation but lack an ordinary high-water mark (OHWM). Roadside ditches that may represent habitat for vernal pool invertebrates may also be classified as swales. Swales serve as habitat for many vernal pool species and provide hydrological connections between vernal pools that allows movement/dispersal of amphibian species, plant seeds, and vernal pool invertebrates (both adults and cysts).

Swales occur throughout the Study Area, and are dominated by Italian ryegrass (*Festuca perennis*), Fitch's spikeweed (*Centromadia fitchii*), and Mediterranean barley. Swale land cover within the Raymer Way Offsite represents roadside ditches.

Stream/Creek

The Stream/Creek land cover type includes intermittent and perennial linear water features such as rivers, streams, creeks, drainages, and roadside and irrigation ditches. These features typically exhibit a bed and bank and an OHWM. Morrison Creek is primarily located outside and to the north of the Study Area, with the exception of one Offsite located around an existing crossing of Morrison Creek.

Several small headwater tributaries to the creek flow through the Study Area into Morrison Creek. These features do not represent habitat for vernal pool invertebrates, due to the fast-moving flow and ephemeral nature of the features. Stream/creek features occur throughout the Study Area, flowing northwest to Morrison Creek, and vary from steep, unvegetated features, to gently sloping features that are sparsely vegetated with creeping spikerush (*Eleocharis macrostachya*).



Figure 5.
Aquatic Resources Delineation

Map Features

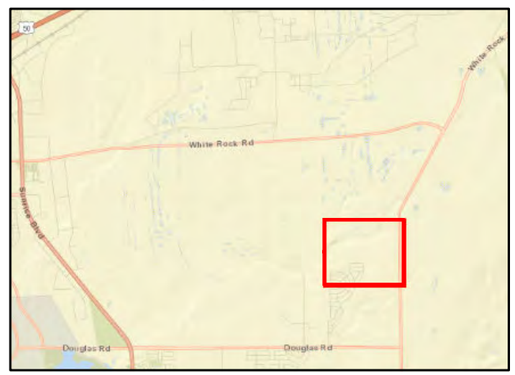
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Potential Aquatic Resources - 4.727 acres *

- Vernal Pool - 2.613 acres
- Swale - 1.866 acres
- Stream/Creek (Non VPIH) - 0.232 acres
- Open Water - 0.016 acres

** The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.*

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 400

Photo Source: ESRI, Sacramento County 2018
Boundary Source: Ruggeri-Jensen-Azar & Associates
Delineator(s): C.DeLong (ECORP), Foothill Associates
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

Map Date: 12/12/2019

ECORP: N:\2018\2018-205 THE PRESERVE\MAPS\JURISDICTIONAL_DELINEATION\USACE_DELINEATION\VITHEPRESERVE_ARD_20191211.MXD(JDS)-AMYERS 12/12/2019

4.4 Wildlife

Wildlife species observed within and around the Study Area during the 2018 site visits are listed in Attachment G.

4.5 Evaluation of Special-Status Species

Based on SSHCP Modeled Species Habitat data, the Study Area contains habitat for 20 Covered Species. Of these, one species was considered Present based on field observations made during habitat surveys required by SSHCP AMMs and one species was considered Present based on CNDDB data. SSHCP Modeled Species Habitat maps are provided in Attachment B. Eight SSHCP Covered Species were determined to be absent from the Study Area because no SSHCP Modeled Species Habitat existed within the Study Area.

The literature sources described in Section 3.1 were queried for any species other than the SSHCP Covered Species. These queries resulted in an additional seven species that were considered to have Potential to Occur or Low Potential to Occur.

Tabulated results of all species evaluated for the Study Area are presented in Attachment E. Each of the 27 species that were considered to be Present, Potential to Occur, or Low Potential to Occur (according to the definitions in Section 3.3) are listed in Table 2, and descriptions are provided in the following sections. Species that were considered to be Absent from the Study Area due to the lack of suitable habitat, or because the known distribution of the species does not include the Study Area vicinity, are not discussed further in this document.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Plants						
Stinkbells *(Fritillaria agrestis)*	-	-	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, Pinyon and juniper woodland, and Valley and foothill grassland (33' - 5,102').	March–June	Absent within Project. Special-status plant surveys did not detect this species. Potential to Occur within Raymer Way Offsite; Valley grassland represents suitable habitat.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Boggs Lake hedge–hyssop *(Gratiola heterosepala)*	–	CE	1B.2, SSHCP Covered Species	Marshes, swamps, lake margins, and vernal pools (33'–7,792').	April–August	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
Ahart's dwarf rush *(Juncus leiospermus* var. *ahartii)*	–	–	1B.2, SSHCP Covered Species	Mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields (USFWS 2005a) (98'–751').	March–May	Absent within Project. Special-status plant surveys did not detect this species. Small amounts of SSHCP Modeled Species Habitat present within unsurveyed Raymer Way Offsites.
Legenere *(Legenere limosa)*	–	–	1B.1, SSHCP Covered Species	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005b) (3'–2,887').	April–June	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
Slender Orcutt grass *(Orcuttia tenuis)*	FT	CE	1B.1, SSHCP Covered Species	Vernal pools, often gravelly (115'–5,774').	May–September	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Sacramento Orcutt grass *(Orcuttia viscida)*	FE	CE	1B.1, SSHCP Covered Species	Vernal pools (98'–328').	April–July	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
Sanford's arrowhead *(Sagittaria sanfordii)*	–	–	1B.2, SSHCP Covered Species	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
Invertebrates						
Conservancy fairy shrimp (*Branchinecta conservatio)*	FE	-	-	Vernal pools/wetlands.	November–April	Potential to Occur within vernal pool habitat.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	-	SSHCP Covered Species	Vernal pools/wetlands.	November-April	Potential to Occur. SSHCP Modeled Species Habitat present.
Midvalley fairy shrimp *(Branchinecta mesovallensis)*	-	-	CNDDB, SSHCP Covered Species	Vernal pools/wetlands.	November – April	Potential to Occur. SSHCP Modeled Species Habitat present.
Ricksecker's water scavenger beetle *Hydochara ricksecker*i	-	-	SSHCP Covered Species	Vernal pools/wetlands.	November-April	Potential to Occur. SSHCP Modeled Species Habitat present.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	-	SSHCP Covered Species	Vernal pools/wetlands.	November-April	Present. SSHCP Modeled Species Habitat present and CNDDB occurrence overlaps the site.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Amphibians						
Western spadefoot (*Spea hammondii*)	-	-	SSC, SSHCP Covered Species	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March-May	Potential to Occur. SSHCP Modeled Species Habitat present.
Reptiles						
Western pond turtle (*Actinemys marmorata*)	-	-	SSC, SSHCP Covered Species	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Potential to Occur. No SSHCP Modeled Species Habitat present; however, ponded areas in Morrison Creek represent potential habitat.
Birds						
Burrowing owl (*Athene cunicularia)*	-	-	BCC, SSC, SSHCP Covered Species	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g. prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February-August	Present. SSHCP Modeled Species Habitat present, and burrowing owls were observed during survey conducted per SSHCP AMM WBO-1.
Ferruginous hawk (*Buteo regalis*)	-	-	BCC, CDFW WL, SSHCP Covered Species	Rarely breeds in California (Lassen County); winter range includes grassland and shrubsteppe habitats from Northern California (except northeast and northwest corners) south to Mexico and east to Oklahoma, Nebraska, and Texas.	September-March (wintering)	Potential to Occur. SSHCP Modeled Species Habitat present.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Golden eagle (*Aquila chrysaetos*)	-	-	BCC, CFP	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/savannah, and chaparral. Nesting occurs on cliff ledges, river banks, trees, and human-made structures (e.g. windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter.	Nest (February–August); winter CV (October–February)	Potential to Occur. Winter foraging habitat present.
Grasshopper sparrow (*Ammodramus savannarum*)	-	-	SSC	In California, breeding range includes most coastal counties south to Baja California; western Sacramento Valley and western edge of Sierra Nevada region. Nests in moderately open grasslands and prairies with patchy bare ground. Avoids grasslands with extensive shrub cover; more likely to occupy large tracts of habitat than small fragments; removal of grass cover by grazing often detrimental.	May–August	Potential to Occur. Nesting habitat present.
Loggerhead shrike (*Lanius ludovicianus*)	-	-	BCC, SSC, SSHCP Covered Species	Found throughout California in open country with short vegetation, pastures, old orchards, grasslands, agricultural areas, open woodlands. Not found in heavily forested habitats.	March-July	Potential to Occur. SSHCP Modeled Species Habitat present.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Merlin *(Falco columbarius)*	-	-	CDFW WL	Breeds in Oregon, Washington north into Canada. Winters in southern Canada to South America, including California. Breeds near forest openings, fragmented woodlots, and riparian areas. Wintering habitat includes wide variety, open forests, grasslands, tidal flats, plains, and urban settings.	September–April (wintering in the Central Valley); does not breed in California	Potential to Occur. Winter foraging habitat present.
Northern harrier (*Circus hudsonius*)	-	-	SSC, SSHCP Covered Species	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	April-September	Potential to Occur. SSHCP Modeled Species Habitat present.
Swainson's hawk (*Buteo swainsoni*)	-	CT	BCC, SSHCP Covered Species	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures	March-August	Potential to Occur. SSHCP Modeled Species Habitat present.
Tricolored blackbird (*Agelaius tricolor*)	-	CT	BCC, SSC, SSHCP Covered Species	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta Cos south to San Bernardino, Riverside and San Diego Counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc and Lassen Counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck and fava bean fields.	March-August	Present. SSHCP Modeled Species Habitat present, evidence of past nesting observed during survey per SSHCP AMM TCB-1; however, species is nomadic and may not be present every year.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
White-tailed kite (*Elanus leucurus*)	-	-	CFP, SSHCP Covered Species	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March-August	Potential to Occur. SSHCP Modeled Species Habitat present.
Yellow-billed magpie (*Pica nuttallii*)	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County.; nesting habitat includes oak savannah with large in large expanses of open ground; also found in urban parklike settings.	April–June	Potential to Occur. Nesting habitat present.
Mammals						
Pallid bat *(Antrozous pallidus)*	-	-	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g. basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (Western Bat Working Group [WBWG] 2018).	April–September	Potential to Occur. Structures onsite represent potential hibernacula.
Western red bat (*Lasiurus blossevillii*)	-	-	SSC, SSHCP Covered Species	Roosts in foliage of trees or shrubs; Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2017).	April-September	Potential to Occur. SSHCP Modeled Species Habitat present; potential hibernacula habitat identified during survey per SSHCP AMM BAT-1.
American badger *(Taxidea taxus)*	-	-	SSC, SSHCP Covered Species	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Potential to Occur. SSHCP Modeled Species Habitat present.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			

Status Codes:

ESA	Endangered Species Act
CESA	California Endangered Species Act
FE	ESA listed, Endangered.
FT	ESA listed, Threatened.
BCC	USFWS Bird of Conservation Concern
CFP	California Fish and Game Code Fully Protected Species
CE	CESA or NPPA listed, Endangered.
CT	CESA or NPPA listed, Threatened.
CNDDB	California Natural Diversity Database
CDFW WL	CDFW Watch List
SSC	CDFW Species of Special Concern
SSHCP	South Sacramento Habitat Conservation Plan-covered species
1B	California Rare Plant Ranks (CRPRs)/Rare or Endangered in California and elsewhere.
4	CRPR /Plants of Limited Distribution - A Watch List.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

4.5.1 Special-Status Plants

Special-status plant surveys were conducted within the Study Area, and accessible areas of the Offsites, for all plant species listed in Table 2 during spring and summer 2019. Attachment D provides the results of the special-status plant surveys. No special-status plants were documented within the Project site. However, there is potential for two species to occur in areas of the Raymer Way Offsite that were inaccessible at the time surveys were conducted. Brief descriptions of these species are presented below.

Stinkbells

Stinkbells (*Fritillaria agrestis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a perennial bulbiferous herb that occurs in clay, sometimes serpentine areas in chaparral, cismontane woodland, pinyon and juniper woodland, and Valley and foothill grassland (CNPS 2018a). Stinkbells bloom from March to June and is known to occur at elevations ranging from 33 to 5,102 feet above MSL (CNPS 2018a). The current range of this species in California includes Alameda, Contra Costa, Fresno, Kern, Mendocino, Merced, Monterey, Mariposa, Placer, Sacramento, Santa Barbara, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Stanislaus, Tuolumne, Ventura, and Yuba counties, and is considered to be extirpated from Santa Cruz and San Mateo counties (CNPS 2018a).

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). However, the grassland within the Study Area provides suitable habitat for this species according to SSHCP Modeled Species Habitat. Stinkbells has potential to occur within the Raymer Way Offsite.

Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in mesic areas in Valley and foothill grasslands (CNPS 2018a). This species also appears to have an affinity for slight disturbance since it has been found on farmed fields and gopher turnings (USFWS 2005a). Ahart's dwarf rush blooms from March through May and is known to occur at elevations ranging from 98 to 751 feet above MSL (CNPS 2018a, USFWS 2005a). Ahart's dwarf rush is endemic to California; the current range of this species includes Butte, Calaveras, Placer, Sacramento, Tehama, and Yuba counties (CNPS 2018a).

There are two documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Ahart's dwarf rush is a SSHCP Covered Species, and the aquatic features and grassland within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Ahart's dwarf rush has Potential to Occur within the Raymer Way Offsite.

4.5.2 Invertebrates

Four Covered Species invertebrates were determined to have the potential to occur within the Study Area based on SSHCP Modeled Species Habitat, and one other species was identified as having the potential to occur within the Study Area based on the literature review (Attachment G). Brief descriptions of these species are presented below.

Conservancy Fairy Shrimp

The Conservancy fairy shrimp (*Branchinecta conservatio*) is listed as endangered pursuant to the federal ESA. Critical Habitat units were designated for this species in the following counties: Butte, Colusa, Mariposa, Merced, Solano, Stanislaus, Tehama, and Ventura (USFWS 2006). This species is usually associated with cool-water pools, which are low to moderate in dissolved solids (Eriksen and Belk 1999). The species appears to be most commonly associated with relatively large, turbid vernal pools (USFWS 1994, Eriksen and Belk 1999, USFWS 2007). Conservancy fairy shrimp have been netted from November to late April, at water temperatures ranging from as low as 41°F (5°C) early in the ponding cycle, to as high as 75°F (24°C) near the end of the season (Syrdahl 1993, *as cited in* Eriksen and Belk 1999). Hatching generally occurs in the week following inundation of the pool at temperatures around 50°F (10°C). Maturation takes at least 19 days; if pool temperatures slowly increase to at least 68°F (20°C); however, the average time to maturity is 49 days (Eriksen and Belk 1999). The distribution of Conservancy fairy shrimp is limited to the northern two-thirds of the Central Valley at an elevation range of approximately 16 – 475 feet (5 – 145 meters) above mean sea level (Eriksen and Belk 1999). Populations of this species have been documented at eight widely separated locations, which include Vina Plains, Butte and Tehama counties; Sacramento National Wildlife Refuge, Glenn County; Yolo Bypass Wildlife Area, Yolo County; Jepson Prairie, Solano County; Mapes Ranch, Stanislaus County; University of California Merced area, Merced County; Grasslands Ecological Area, Merced County; and Los Padres National Forest, Ventura County (CDFG 2003; USFWS 2007).

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). However, the vernal pools within the Study Area provide suitable habitat for this species. Conservancy fairy shrimp has potential to occur within the Study Area.

Mid-Valley Fairy Shrimp

The Midvalley fairy shrimp (*Branchinecta mesovallensis*) is not listed pursuant to either the California or federal Endangered Species Acts, but occurrences of this species are tracked by the CNDDB. The Midvalley fairy shrimp was formally described as a species in 2000 (Belk and Fugate 2000). This species typically occurs in small, shallow vernal pools, swales, and various artificial ephemeral wetland types (e.g., roadside puddles, scrapes and ditches, and railroad toe-drain pools) (Belk and Fugate 2000; USFWS 2004). Midvalley fairy shrimp have been collected from late January to early April (Eriksen and Belk 1999). The cysts typically hatch in the first week of pool filling if water temperatures are near 10°C (50°F) (Eriksen and Belk 1999). This species has been documented in several California counties including: Sacramento, Solano, Contra Costa, San Joaquin, Madera, Merced, Fresno, and Yolo (Belk and Fugate 2000; USFWS 2004).

There are two documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Midvalley fairy shrimp is a SSHCP Covered Species, and the vernal pools and grassland within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Mid-valley fairy shrimp has potential to occur within the Study Area.

Ricksecker's Water Scavenger Beetle

Ricksecker's water scavenger beetle (*Hydrochara ricksecker*i) is not listed and protected under either CESA or FESA but is currently tracked by CDFW in the CNDDB. Ricksecker's water scavenger beetles inhabit ponds in the Coast Range and Central Valley.

There is one documented CNDDB occurrence of this species located within five miles of the Study Area (CDFW 2018a). Ricksecker's water scavenger beetle is a SSHCP Covered Species, and the vernal pools within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Ricksecker's water scavenger beetle has potential to occur within the Study Area.

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened in accordance with the federal Endangered Species Act. Vernal pool fairy shrimp may occur in seasonal ponds, vernal pools, and swales during the wet season, which generally occurs from December through May. This species can be found in a variety of pool sizes, ranging from less than 0.001 acre to over 24.5 acres (Eriksen and Belk 1999). The shrimp hatch from cysts when colder water (10°C [50°F] or less) fills the pool and mature in as few as 18 days, under optimal conditions (Eriksen and Belk 1999). At maturity, mating takes place and cysts are dropped. Vernal pool fairy shrimp occur in disjunct patches dispersed across California's Central Valley from Shasta County to Tulare County, the central and southern Coast Ranges from northern Solano County to Ventura County, and three areas in Riverside County (USFWS 2003).

There are 16 documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Vernal pool fairy shrimp is a SSHCP Covered Species, and the vernal pools and grassland within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Vernal pool fairy shrimp has potential to occur within the Study Area.

Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp (*Lepidurus packardi*) is listed as endangered pursuant to the federal ESA. This species inhabits vernal pools containing clear to highly turbid water, ranging in size from 0.001 to 89.0 acres (USFWS 1994). Vernal pool tadpole shrimp are distinguished from other vernal pool branchiopods discussed in this report by a large, shield like carapace that covers the anterior half of their body (USFWS 2003). Cysts hatch during the wet season and the shrimp reach maturity in a few weeks. This species matures slowly and is long lived, relative to other species. Vernal pool tadpole shrimp will continue to grow as long as the pools they occur in remain inundated, and in some instances can survive for six months or longer (USFWS 2003). The geographic range of vernal pool tadpole shrimp extends from Shasta County to northern Tulare County in California's Central Valley, and in the central coast range from Solano County to Alameda County (USFWS 2003).

There is one documented CNDDB occurrence polygon for this species which overlaps the Study Area, and 32 other documented occurrences of this species located within five miles of the Study Area (CDFW 2018a). Vernal pool tadpole shrimp is a SSHCP Covered Species, and the vernal pools and grassland within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Vernal pool tadpole shrimp is considered Present within the Study Area.

4.5.3 Amphibians

One Covered Species amphibian was determined to have the potential to occur within the Study Area based on SSHCP Modeled Species Habitat. A brief description of this species is presented below.

Western Spadefoot

The western spadefoot (*Spea hammondii*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a CDFW SSC. Necessary habitat components of the western spadefoot include loose, friable soils in which to burrow in upland habitats and breeding ponds. Breeding sites include temporary rain pools, such as vernal pools and seasonal wetlands, or pools within portions of intermittent drainages (Jennings and Hayes 1994). Spadefoots spend most of their adult life within underground burrows or other suitable refugia, such as rodent burrows. In California, western spadefoot toads are known to occur from the Redding area, Shasta County southward to northwestern Baja California, at elevations below 4,475 ft (Jennings and Hayes 1994).

There are three documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Western spadefoot is a SSHCP Covered Species, and the grassland and aquatic areas within the Study Area provide suitable foraging habitat for this species according to SSHCP Modeled Species Habitat. Western spadefoot has potential to occur within the Study Area.

4.5.4 Reptiles

One reptile species were determined to have the potential to occur within the Study Area based on the literature review (Attachment G). A brief description of this species is presented below.

Western Pond Turtle

The western pond turtle (*Actinemys marmorata*) is not listed pursuant to either the California or federal Endangered Species Acts; however, it is designated as a CDFW species of special concern (SSC). Western pond turtles occur in a variety of fresh and brackish water habitats including marshes, lakes, ponds, and slow-moving streams (Jennings and Hayes 1994). This species is primarily aquatic; however, they typically leave aquatic habitats in the fall to reproduce and to overwinter (Jennings and Hayes 1994). Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops is optimal for basking and thermoregulation. Although adults are habitat generalists, hatchlings and juveniles and hatchlings require shallow edgewater with relatively dense submergent or short emergent vegetation in which to forage.

Western pond turtles are typically active between March and November. Mating generally occurs during late April and early May and eggs are deposited between late April and early August (Jennings and Hayes 1994). Eggs are deposited within excavated nests in upland areas, with substrates that typically have high clay or silt fractions (Jennings and Hayes 1994). The majority of nesting sites are located within 650 ft (200 m) of the aquatic sites; however, nests have been documented as far as 1,310 ft (400 m) from the aquatic habitat.

There are four documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Western pond turtle is a SSHCP Covered Species. While there was no SSHCP Modeled Species Habitat present within the site, the ponded areas along Morrison Creek may provide suitable aquatic habitat and the adjacent grasslands provide suitable upland habitat for this species. Western pond turtle is considered to have potential to occur within the Study Area.

4.5.5 Birds

Seven Covered Species birds were determined to have the potential to occur within the Study Area based on SSHCP Modeled Species Habitat, and three other species were identified as having the potential to occur within the Study Area based on the literature review (Attachment G). Brief descriptions of these species are presented below.

Burrowing Owl

The burrowing owl (*Athene cunicularia*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a bird of conservation concern by the USFWS and a SSC by the CDFW. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. They can also inhabit developed areas such as golf courses, cemeteries, roadsides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds (Poulin et al. 2011). This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel

(*Spermophilus beecheyi*), but may also use man-made structures such as cement culverts or pipes; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (CDFG 2012). The breeding season typically occurs between February 1 and August 31 (California Burrowing Owl Consortium [CBOC] 1993; CDFG 2012).

There are seven documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Western burrowing owl is a SSHCP Covered Species, and the grassland within the Study Area provides suitable nesting and foraging habitat for this species, and the aquatic features provide suitable foraging habitat, according to SSHCP Modeled Species Habitat. Burrowing owls and occupied burrows were observed along the southeastern boundary of the site during a preliminary survey of potential habitat (Attachment C). Burrowing owl is considered Present within the Study Area.

Ferruginous Hawk

Ferruginous hawks (*Buteo regalis*) are not listed pursuant to either the California or federal ESAs. However, they are a CDFW "watch list" species and USFWS bird of conservation concern. This species typically occurs in open environments and nests from Oregon to Canada, though nesting has recently been documented in Lassen County, California (Small 1994). For the remainder of the state, including the Central Valley, ferruginous hawk occurrences are restricted to the non-breeding season (approximately September through March) (Small 1994). Winter foraging habitat includes a variety of open communities including annual grasslands, agricultural areas, deserts, and savannahs. Ferruginous hawks do not nest in the region but may occasionally forage within grassland and other open vegetation communities on-site during winter or migration.

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). However, ferruginous hawk is a SSHCP Covered Species, and the grassland and aquatic areas within the Study Area provide suitable foraging habitat for this species according to SSHCP Modeled Species Habitat. Ferruginous hawk has potential to occur within the Study Area.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is not listed pursuant to either the California or federal ESAs, but it is designated as a SSC by the CDFW. The grasshopper sparrow is an uncommon and local, summer resident and breeder along the western edge of the Sierra Nevada and most coastal counties south to Baja California (Small 1994; Vickery 1996). This species generally inhabits moderately open grasslands and prairies with patchy bare ground and scattered shrubs (Vickery 1996). Grasshopper sparrows are more likely to occupy large tracts of habitat than small fragments (Samson 1980; Herkert 1994a; Vickery et al. 1994 as cited in Vickery 1996). Breeding generally occurs from early May through August.

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). However, the grassland within the Study Area provide suitable nesting habitat for this species. Grasshopper sparrow has potential to occur within the Study Area.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not listed pursuant to either the California or federal ESAs; but is considered a bird of conservation concern by the USFWS and a SSC by the CDFW. Loggerhead shrikes nest throughout California except the northwestern corner, montane forests, and high deserts (Small 1994). Loggerhead shrikes nest in small trees and shrubs in open country with short vegetation such as pastures, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands (Yosef 1996). The nesting season extends from March through July.

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Loggerhead shrike is a SSHCP Covered Species, and the grassland within the Study Area provides suitable nesting and foraging habitat for this species, and the aquatic features provide suitable foraging habitat, according to SSHCP Modeled Species Habitat. Loggerhead shrike has potential to occur within the Study Area.

Merlin

The Merlin (*Falco columbarius*) is not listed pursuant to either the California or federal ESAs, but is a CDFW "watch list" species and currently tracked in the CNDDB. This falcon breeds in Canada and Alaska and occurs in California as a migrant and during the non-breeding season (September through April). Foraging habitat in winter includes open forests, grasslands, and tidal flats (Warkentin et al. 2005). Merlin do not nest in the region but may occasionally forage within grassland and woodland communities on-site during winter or migration.

There is one documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). The grassland within the Study Area provides suitable wintering habitat for this species. Merlin has potential to occur within the Study Area.

Northern Harrier

The northern harrier (*Circus cyaneus*) is not listed pursuant to either the California or federal ESAs; however, it is considered to be a SSC by the CDFW. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. The northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah communities usually in areas with dense vegetation (Smith et al. 2011). Foraging occurs within a variety of open environments such as marshes, agricultural fields, and grasslands. Nesting occurs during April through September.

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Northern harrier is a SSHCP Covered Species, and the grassland within the Study Area provides suitable nesting and foraging habitat for this species, and the aquatic features provide suitable foraging habitat, according to SSHCP Modeled Species Habitat. Northern harrier has potential to occur within the Study Area.

Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) is listed as a threatened species pursuant to the California ESA. This species nests in North America (Canada, western United States, and Mexico) and typically winters from South America north to Mexico. However, a small population has been observed wintering in the Sacramento-San Joaquin River Delta (Bechard et al. 2010). In California, the nesting season for Swainson's hawk ranges from mid-March to late August. Swainson's hawks nest within tall trees in a variety of wooded communities including riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas, among others. Foraging habitat includes open grassland, savannah, low-cover row crop fields, and livestock pastures. In the Central Valley, Swainson's hawks typically feed on a combination of California vole (*Microtus californicus*), California ground squirrel (*Spermophilus beecheyi*), ring-necked pheasant (*Phasianus colchicus*), many passerine birds, and grasshoppers (*Melanopulus* species). Swainson's hawks are opportunistic foragers and will readily forage in association with agricultural mowing, harvesting, disking, and irrigating (Estep 1989). The removal of vegetative cover by such farming activities results in more readily available prey items for this species.

There are seven documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Swainson's hawk is a SSHCP Covered Species, and the grassland and aquatic areas within the Study Area provide suitable foraging habitat for this species according to SSHCP Modeled Species Habitat. In addition, a preliminary survey of potential habitat found several trees within the Survey Area and survey buffers that represent potential nesting habitat. Swainson's hawk has potential to occur within the Study Area.

Tricolored Blackbird

The tricolored blackbird (*Agelaius tricolor*) is listed as threatened pursuant to the California ESA. In addition, it is currently considered a USFWS bird of conservation concern and a CDFW SSC. This colonial nesting species is distributed widely throughout the Central Valley, Coast Range, and into Oregon, Washington, Nevada, and Baja California (Meese et al. 2014). Tricolored blackbirdnest in colonies that can range from several pairs to several thousand pairs, depending on prey availability, the presence of predators, or level of human disturbance. Tricolored blackbird nesting habitat includes emergent marsh, riparian woodland/scrub, blackberry thickets, densely vegetated agricultural and idle fields (e.g., wheat, triticale, safflower, fava bean fields, thistle, mustard, cane, and fiddleneck), usually with some nearby standing water or ground saturation (Meese et al. 2014). They feed mainly on grasshoppers during the breeding season, but may also forage upon a variety of other insects, grains, and seeds in open grasslands, wetlands, feedlots, dairies, and agricultural fields (Meese et al. 2014). The nesting season is generally from March through August.

There are 10 documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). Tricolored blackbird is a SSHCP Covered Species, and the grassland within the Study Area provides suitable nesting and foraging habitat for this species, and the aquatic features provide suitable foraging habitat, according to SSHCP Modeled Species Habitat. In addition, a preliminary survey of potential habitat documented evidence of previous tricolored blackbird nesting within patches of bull

thistle (*Cirsium vulgare*) in the central portion of the site, and a small area of riparian habitat along Morrison Creek was also determined to represent potential nesting habitat (Attachment C). However, tricolored blackbirds were not observed nesting during a site visit on June 13, 2019. This species is nomadic and may or may not return to the site. Tricolored blackbirds are considered to be present within the Study Area.

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not listed pursuant to either the California or federal ESAs; however, the species is fully protected pursuant to Section 3511 of the California Fish and Game Code. This species is a common resident in the Central Valley and the entire length of the California coast, and all areas up to the Sierra Nevada foothills and southeastern deserts (Dunk 1995). In northern California, white-tailed kite nesting occurs from March through early August, with nesting activity peaking from March through June. Nesting occurs in trees within riparian, oak woodland, savannah, and agricultural communities that are near foraging areas such as low elevation grasslands, agricultural, meadows, farmlands, savannahs, and emergent wetlands (Dunk 1995).

There are five documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). White-tailed kite is a SSHCP Covered Species, and the grassland and aquatic areas within the Study Area provide suitable foraging habitat for this species according to SSHCP Modeled Species Habitat. White-tailed kite has potential to occur within the Study Area.

Yellow-Billed Magpie

The yellow-billed magpie (*Pica nuttalli*) is not listed pursuant to either the California or federal ESAs but is considered a USFWS bird of conservation concern. This endemic species is a yearlong resident of the Central Valley and Coast Ranges from San Francisco Bay to Santa Barbara County. Yellow-billed magpies build large, bulky nests in trees in a variety of open woodland habitats, typically near grassland, pastures or cropland. Nest building begins in late-January to mid-February, which may take up to 6-8 weeks to complete, with eggs laid during April-May, and fledging during May-June (Koenig and Reynolds 2009). The young leave the nest at about 30 days after hatching (Koenig and Reynolds 2009). Yellow-billed magpies are highly susceptible to West Nile Virus, which may have been the cause of death to thousands of magpies during 2004-2006 (Koenig and Reynolds 2009).

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). However, the grassland and trees within the Study Area provide suitable nesting habitat for this species. Yellow-billed magpie has potential to occur within the Study Area.

4.5.6 Mammals

Two Covered Species mammals were determined to have potential to occur within the Study Area based on SSHCP Modeled Species Habitat, and one other species was identified as having the potential to occur within the Study Area based on the literature review (Attachment G). Brief descriptions of these species are presented below.

American Badger

The American badger (*Taxidea taxus*) is not listed pursuant to either the federal or California ESAs; however, this species is considered a SSC by CDFW. American badger historically ranged throughout much of the state, except in humid coastal forests. American badgers were once numerous in the Central Valley; however, populations now occur in low numbers in the surrounding peripheral parts of the Central Valley and in the adjacent lowlands of eastern Monterey, San Benito, and San Luis Obispo counties (Williams 1986). American badgers occupy a variety of habitats, including grasslands and savannas. The principal requirements seem to be significant food supply, friable soils, and relatively open, uncultivated ground (Williams 1986).

There is one documented CNDDB occurrence of this species located within five miles of the Study Area (CDFW 2018a). American badger is a SSHCP Covered Species, and the grassland and wetland areas within the Study Area provide suitable foraging habitat for this species according to SSHCP Modeled Species Habitat. American badger has potential to occur within the Study Area.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either the California or federal ESAs; however, this species is considered a SSC by CDFW. The pallid bat is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. This species ranges throughout North America from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits low elevation (below 6,000 ft) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 ft). This species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges, and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards. Although this species utilizes echolocation to locate prey, often they use only passive acoustic cues. This species is not thought to migrate long distances between summer and winter sites (WBWG 2017).

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). However, some of the structures within the Study Area represent potential hibernacula (see Attachment C). Pallid bat has potential to occur within the Study Area.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is not listed pursuant to either the California or federal Endangered Species Acts; however, this species is considered a SSC by CDFW. The western red bat is easily distinguished from other western bat species by its distinctive red coloration. This species is broadly distributed, its range extending from southern British Columbia in Canada through Argentina and Chile in South America, and including much of the western United States. This solitary species day roosts primarily in the foliage of trees or shrubs in edge habitats bordering streams or open fields, in orchards, and occasionally urban areas. They may be associated with intact riparian habitat, especially with willows,

cottonwoods, and sycamores. This species may occasionally utilize caves for roosting as well. They feed on a variety of insects, and generally begin to forage one to two hours after sunset. This species is considered highly migratory; however, the timing of migration and the summer ranges of males and females may be different. Winter behavior of this species is poorly understood (WBWG 2017).

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2018a). However, western red bat is a SSHCP Covered Species. The grassland and wetland areas within the Study Area provide suitable foraging habitat. The Raymer Way offsite contains roosting-foraging habitat for this species according to SSHCP Modeled Species Habitat; however, site assessment did not find evidence of potential roosting habitat within the Raymer Way Offsite (Attachment C). A preliminary survey of potential habitat identified some of the trees with cavities along Morrison Creek as potential hibernacula (Attachment C). Western red bat has potential to occur within the Study Area.

4.6 Wildlife Movement/Corridors

The Study Area is located in an undeveloped area within the limits of the City of Rancho Cordova, roughly four miles south of U.S. Highway 50. The Study Area does not fall within an Essential Habitat Connectivity area mapped by the CDFW (CDFW 2018a). The upper reach of Morrison Creek runs along the northern boundary of the Study Area. Though Morrison Creek is ephemeral, the permanently ponded open waters and the small patches of riparian habitat along the creek may represent a marginal wildlife movement corridor; however, this area lies outside of the Study Area with the exception of the Morrison Creek Offsite.

4.7 Sensitive Natural Communities

Five sensitive natural communities were initially identified as having the potential to occur within the Study Area based on the literature review (CDFW 2018a). These included Great Valley Valley Oak Riparian Forest, Ione Chaparral, Northern Hardpan Vernal Pool, Northern Volcanic Mudflow Vernal Pool, and Valley Needlegrass Grassland. Valley oaks are not present within the Study Area; therefore, Great Valley Oak Riparian Forest does not occur onsite. Vernal pool communities are present onsite, and are discussed separately in Section 4.3.2. No chaparral vegetation is present within the Study Area and there are no Ione formation soils present; therefore, Ione chaparral is not present. The "Valley Needlegrass Grassland" vegetation alliance name used by the CNDDB is no longer in use, and instead "Needlegrass-Melic Grass Grassland" as well as other associations containing needlegrass (*Stipa* spp.) are now used by the California Vegetation Manual (CNPS 2018b) and the CDFW-maintained list of sensitive natural communities. No needlegrass species were found during special-status plant surveys (Attachment D). Therefore, vernal pool communities are the only sensitive natural community known to occur within the Study Area.

4.8 Trees

An arborist survey was conducted for the Study Area in October 2018 and June 2019 (Attachment H). A total of 247 trees greater than 6 inches dsh were mapped within the Study Area, and all tree species are nonnative to the region. There are 149 trees that have a dsh equal to or greater than 12 inches and therefore meet the definition of a Protected Tree as defined in the City of Rancho Cordova's Tree

Preservation Ordinance. The 149 Protected Trees include redwood (*Sequoia sempervirens*), eucalyptus (*Eucalyptus* spp.), callery pear (*Pyrus calleryana*), American sweetgum (*Liquidambar styraciflua*), Brazilian pepper-tree (*Schinus terabinthifolia*), deodar cedar (*Cedrus deodara*), white mulberry (*Morus alba*).

5.0 IMPACT ANALYSIS

5.1 Special-Status Species

The Project would require mass grading of the site. As such, the Project would have the potential to have a substantial adverse effect, either directly or through habitat modifications, on special-status species identified by CDFW, and/or USFWS. In addition, the Project is located within the USFWS Mather Core Area, an area prioritized for the conservation and recovery of federally threatened and endangered vernal pool species.

Of the 27 species identified as Present or Potential to Occur within the Study Area, 20 species are SSHCP Covered Species and are considered adequately conserved by the SSHCP. Project impacts on special-status species habitat are anticipated to be mitigated through the SSHCP In-Lieu Fee Program, and the Project proponents will comply with SSHCP AMMs as described in Section 6.0. The SSHCP also considers priorities for conservation and recovery of vernal pool species within the Mather Core Area.

The remaining seven species having Potential to Occur or Low Potential to Occur onsite that are not SSHCP Covered Species include one plant, one vernal pool invertebrate, one bat, and four birds. Though not Covered Species, the potential impacts to these species are also anticipated to be mitigated by SSHCP AMMs and by the restoration, enhancement and preservation of habitats accomplished by the SSHCP in-lieu fee program. Section 6.0 provides recommended mitigation measures. Measures BIO-5 through 14 are recommended to be implemented in order to minimize effects on special-status species.

5.2 Sensitive Natural Communities

The Study Area primarily consists of Valley Grassland that supports mostly nonnative grass and forb species, and aquatic features including vernal pool habitat. Project impacts to vernal pool communities are discussed in Section 5.3 and addressed by Mitigation Measures BIO-1 and BIO-5 (Section 6.0).

5.3 Federally Protected Wetlands and Waters of the U.S.

The Project is anticipated to impact (fill) up to roughly 4.727 acres of Waters of the U.S. The Project applicants are anticipated to apply for CWA Section 404 and 401 authorization under the SSHCP ARP, and to mitigate for Project impacts using the SSHCP In-Lieu Fee Program. Mitigation Measures BIO-1, BIO-2, and BIO-5 are recommended to address impacts to wetlands and other Waters of the U.S.

5.4 Wildlife Corridors and Nursery Sites

The Study Area does not fall within an Essential Habitat Connectivity area mapped by the CDFW (CDFW 2018a). In addition, the Project will have minimal impacts to Morrison Creek. Recommended Mitigation Measure BIO-3 requires a 100-foot setback from Morrison Creek for certain development activities that

are considered detrimental to stream/creek corridors. Morrison Creek is the only potential wildlife corridor near the site; therefore, no impacts on wildlife corridors are anticipated as a result of Project development.

5.5 Local Policies and Ordinances

The Project would remove ±142 of the 149 Protected Trees (as defined by the City of Rancho Cordova Tree Preservation Ordinance) from the Project area. The nine trees within the Morrison Creek Offsite will be avoided.

The Protected Trees onsite may provide nesting habitat for birds and roosting habitat for bats; however, none of the trees to be removed are native to the Central Valley, and several of the species are considered potentially invasive according to the California Invasive Plant Council Inventory (i.e., eucalyptus, callery pear, Brazilian pepper-tree).

Per the City of Rancho Cordova Tree Preservation Ordinance Section 19.12.070, the Public Works Director will consider the potential for the trees being removed to be a public nuisance and the overall impact on the environment (among other considerations). Removal of these trees is not anticipated to result in negative impacts on the environment aside from potential effects on nesting habitat, and the invasive tree species may become a public nuisance. For example, invasion by eucalyptus species can lead to increased fire hazard, increased soil erosion, and poor wildlife habitat quality (Rejmanek and Richardson 2011). Eucalyptus trees were planted along roadsides and around buildings within the Study Area, but appear to have invaded the adjacent riparian area along Morrison Creek. Replacement of trees with similar species is not recommended; however, incorporating locally native trees into the Project's landscaping design will maintain habitat for bird species and reduce invasion of nonnative species into adjacent habitats. Recommended Mitigation Measure BIO-14 addresses impacts to Protected Trees.

5.6 Habitat Conservation Plans

The Project is anticipated to apply for permits through the SSHCP and the ARP and the Project will comply with the SSHCP's requirements and AMMs as discussed in the recommended Mitigation Measures in Section 6.0 (full text of AMMs is provided as Attachment I). The Project impacts are anticipated to be mitigated through the SSHCP In-Lieu Fee Program as discussed in BIO-5.

6.0 RECOMMENDATIONS

The following Mitigation Measures are recommended prior to Project implementation in order to mitigate impacts on biological resources. Many of the Mitigation Measures reference SSHCP AMMs, the full text of which can be found in Attachment I.

BIO-1. Obtain Clean Water Act Section 404 Permit and Section 401 Permit and Implement All Permit Conditions:

Before the approval of grading and improvement plans and before any groundbreaking activity associated with the project, the Project applicants shall ensure that authorization pursuant to CWA Section 404 from the USACE and CWA Section 401 from the Central Valley RWQCB is obtained. CWA

Section 404 authorization is anticipated to be obtained through a Letter of Permission issued by USACE under the SSHCP ARP, and CWA Section 401 authorization is anticipated to be obtained through an individual Water Quality Certification issued by the RWQCB under the SSHCP ARP.

The construction contractor shall adhere to all conditions outlined in the permits. The Project applicants shall ensure that the project replaces, restores, or enhances on a "no net loss" basis (in accordance with the USACE and the Central Valley RWQCB) the acreage of all wetlands and other Waters of the U.S. that would be removed, lost, and/or degraded due to project implementation, either through the SSHCP In-Lieu Fee Program or by other methods agreeable to the USACE, the Central Valley RWQCB, and the City, as appropriate, depending on agency jurisdiction, and as determined during the Section 401 and Section 404 permitting processes.

BIO-2. Obtain and Implement CDFW 1602 Streambed Alteration Agreement:

Before the approval of grading and improvement plans and before any groundbreaking activity associated with the project, the Project applicants shall ensure that a CDFW 1602 Streambed Alteration Agreement has been obtained. The construction contractor shall adhere to all conditions outlined in the Streambed Alteration Agreement.

BIO-3. Setback from Morrison Creek:

The Project applicants shall comply with SSHCP AMM STREAM-2 and a 100-foot setback from Morrison Creek will be established and only allowed compatible uses described in the SSHCP will be sited within the setback.

BIO-4. Best Management Practices:

The Project applicants shall comply with SSHCP AMMs BMP-1 through BMP-11. Per BMP-7, an approved biologist will be onsite during the period of ground disturbance, and will train an individual to act as the onsite construction monitor for the remainder of construction once ground disturbance is complete. "Ground disturbance" shall be defined as the initial disturbance of native soil. Species-specific AMMs requiring certain monitoring practices shall take priority over BMP-7.

BIO-5. Mitigate for Impacts to Aquatic Features and Habitat:

Before the approval of grading and improvement plans and before any groundbreaking activity associated with the project, or timed as required by the applicable permits if the Project is constructed in phases, the Project applicants shall ensure that mitigation for impacts to aquatic features and other habitat for special-status species has been implemented through the SSHCP In-Lieu Fee Program or by other methods agreeable to the USACE, RWQCB, USFWS, CDFW, City, and South Sacramento Conservation Agency as appropriate, depending on agency jurisdiction.

BIO-6. Special-Status Plant Surveys and Protection:

Special-status plant surveys were conducted in spring and summer 2019 within the Study Area but excluding inaccessible portions of the Raymer Way Offsite (Attachment D). No special-status plants or

sensitive natural communities were detected. For the Raymer Way Offsite, Project applicants shall comply with SSHCP AMM PLANT 1 (Rare Plant Surveys) conduct special-status plant surveys prior to construction. Habitat for *Orcuttia* species was determined to be absent from the Raymer Way Offsite; therefore, ORCUTT-1 does not apply. Though stinkbells is not considered an SSHCP Covered Species, special-status plant surveys conducted per PLANT-1 shall identify whether this species is present onsite.

If any SSHCP-covered plants are determined to be present, PLANT-2 (Rare Plant Protection) will be implemented. If stinkbells is determined to be present, a mitigation plan shall be prepared for review and approval by the City of Rancho Cordova and mitigation may include harvesting and transplanting of impacted bulbs into a preserved area with suitable habitat. Avoided areas containing stinkbells shall be fenced with orange construction fencing.

BIO-7. Western Spadefoot:

The Project applicants shall comply with SSHCP AMMs WS-1 through WS-6.

BIO-8. Western Pond Turtle:

There is no SSHCP Modeled Habitat for western pond turtle within the Project; however, the ponded areas along Morrison Creek may provide potential habitat for western pond turtle. Therefore, pre-construction surveys will be conducted per SSHCP AMM WPT-1. If western pond turtles are detected, WPT-2 through WPT-9 will be implemented.

BIO-9. Tricolored Blackbird:

The Project applicants shall comply with SSHCP AMMs TCB-2 through TCB-5. If tricolored blackbirds are found within the survey area during the pre-construction survey conducted per TCB-2, then TCB-3 through TCB-5 will be implemented as required based on the results of surveys conducted per TCB-2.

BIO-10. Swainson's Hawk:

The Project applicants shall comply with SSHCP AMMs SWHA-2 through SWHA-4. If Swainson's hawk nesting is found within the survey area during the pre-construction survey conducted per SWHA-2, then SWHA-3 and SWHA-4 will be implemented as required based on the results of surveys conducted per SWHA-2.

BIO-11. Western Burrowing Owl:

The Project applicants shall comply with SSHCP AMMs WBO-2 through WBO-7. If western burrowing owl is found within the survey area, WBO-3 through 7 shall be implemented as required based on the results of surveys conducted per WBO-2.

BIO-12. Other Raptors:

The Project applicants shall comply with SSHCP AMMs RAPTOR-2 through RAPTOR-4. Raptor surveys conducted per RAPTOR-2 shall include surveying for golden eagle although it is not a SSHCP Covered Species. If raptor species (including golden eagles) are found nesting within the survey area, RAPTOR-3

and RAPTOR-4 shall be implemented as required based on the results of surveys conducted per RAPTOR-2.

BIO-13. Other Nesting Birds:

A qualified biologist shall conduct a preconstruction nesting bird survey of all areas associated with construction activities, and a 100-foot buffer around these areas, within 14 days prior to commencement of construction if construction occurs during the nesting season (February 1 through August 31). If active nests are found for any SSHCP Covered Species, the applicable SSHCP AMM(s) will be implemented (i.e. TCB-3 through -5, SWHA-3 through -4, WBO-3 through -6, and RAPTOR-3 through -4). If active nests are found for any other species, a no-disturbance buffer around the nest shall be established. The buffer distance shall be established by a qualified biologist in consultation with the CDFW. The buffer shall be maintained until the fledglings are capable of flight and become independent of the nest, to be determined by a qualified biologist. Once the young are independent of the nest, no further measures are necessary.

BIO-14. Bat Species:

The Project applicants shall comply with SSHCP AMMs BAT-2 through BAT-5. Winter hibernaculum surveys conducted per BAT-2 shall also include surveying for pallid bat although it is not an SSHCP Covered Species. If winter hibernacula of western red bat or pallid bat are found within the survey area, then BAT-3 through BAT-5 will be implemented as required based on the results of surveys conducted per BAT-2.

BIO-15. American Badger:

A qualified biologist shall conduct a preconstruction survey for American badger within 14 days prior to commencement of construction and results of the survey will be provided to the City's Planning Department. If badgers or dens with signs of recent badger use are detected (i.e., fresh scat, claw marks), CDFW will be consulted and a non-disturbance buffer will be established around any active dens. The den(s) will be monitored daily by the qualified biologist during construction. No work will occur within the non-disturbance buffer until the qualified biologist determines that the badger(s) have left the work area, or as determined in consultation with CDFW.

BIO-16. Protected Tree Removal and Incorporating Native Trees into Landscaping Design:

A tree removal permit shall be procured from the City for removal of any Protected Trees. In addition, tree species that are native to the Central Valley and Sierra Nevada foothills such as interior live oak (*Quercus wislizeni*), valley oak (*Quercus lobata*), blue oak (*Quercus douglasii*), Fremont cottonwood (*Populus fremontii*), black walnut (*Juglans hindsii*), and western redbud (*Cercis occidentalis*) shall be incorporated into the planned landscaping design in public spaces such as open space, parks and parkways. Enough plantings of these native trees shall be incorporated into the landscaping such that the number of surviving native trees after five years is equal to or greater than the number of non-native trees removed. Landscaping plans detailing the tree species to be planted will be provided to the City for approval prior to tree planting.

BIO-17. South Sacramento Habitat Conservation Plan

The Project applicants shall comply with SSHCP requirements and all relevant AMMs set forth in the SSHCP Permit obtained for the Project.

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LIST OF ATTACHMENTS

Attachment A – Representative Site Photographs

Attachment B – SSHCP Modeled Species Habitat Maps

Attachment C – Results of SSHCP Habitat Surveys

Attachment D – Special-Status Plant Survey Report

Attachment E – Special-Status Species Evaluated for the Study Area

Attachment F – Aquatic Resources Delineation

Attachment G – Wildlife Observed Onsite

Attachment H – Arborist Report

Attachment I – SSHCP Avoidance and Minimization Measures

ATTACHMENT A

Representative Site Photographs



Photo 1: Gravel road north of Edington Drive in central portion of Project site. View south. Photo taken October 12, 2018.



Photo 2: Grasslands west of Edington Drive in southwestern portion of Project site. View northwest. Photo taken October 12, 2018.



Photo 3: Stream/Creek along western boundary of Project site. View north. Photo taken October 12, 2018.



Photo 4: Large vernal pool in northwestern portion of Project site. View northeast. Photo taken October 12, 2018.

ATTACHMENT B

SSHCP Modeled Species Habitat Maps

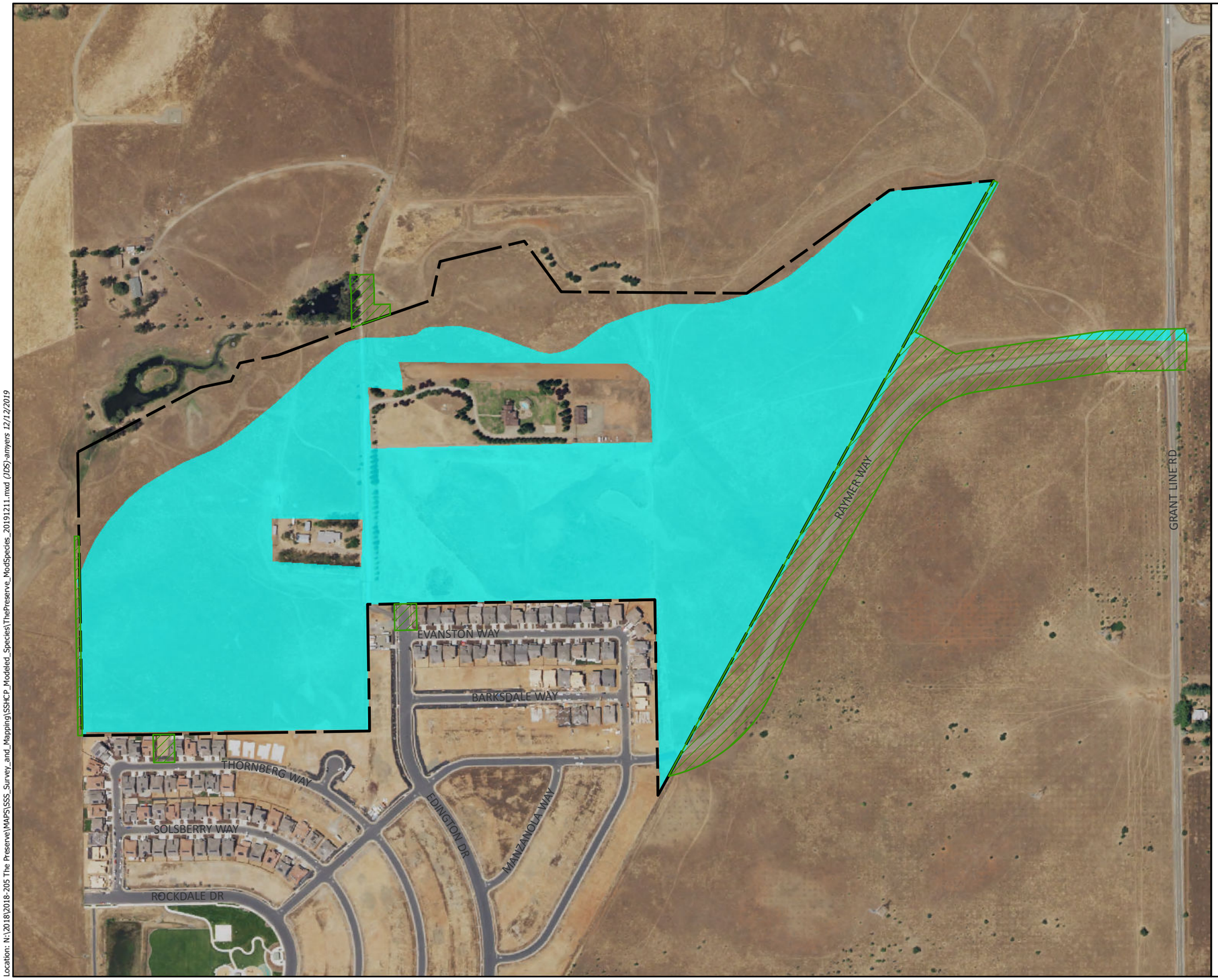
The Preserve
Modeled Species Habitat
Ahart's Dwarf Rush

Map Features

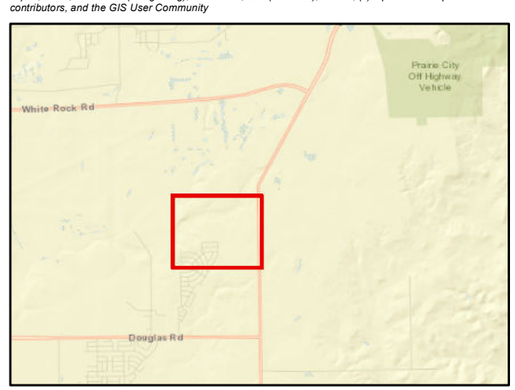
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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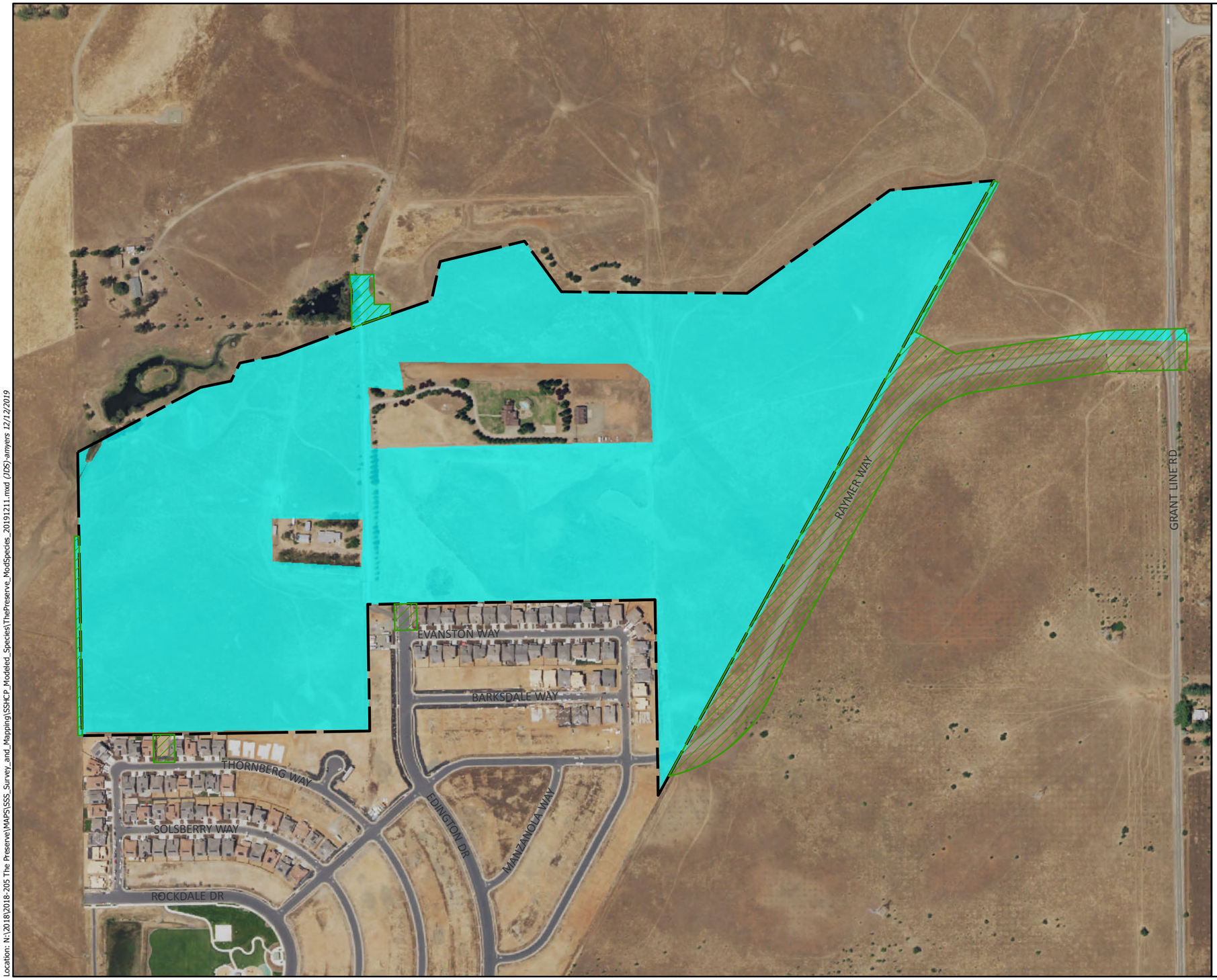
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2018-205 The Preserve

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Photo Source: 2016, NAIP
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Base Data: RJA
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The Preserve
Modeled Species Habitat
American Badger

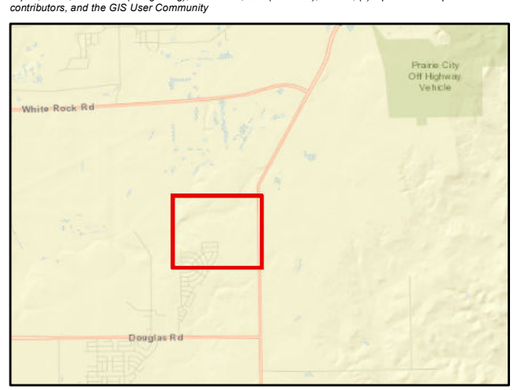
Map Features

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- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat

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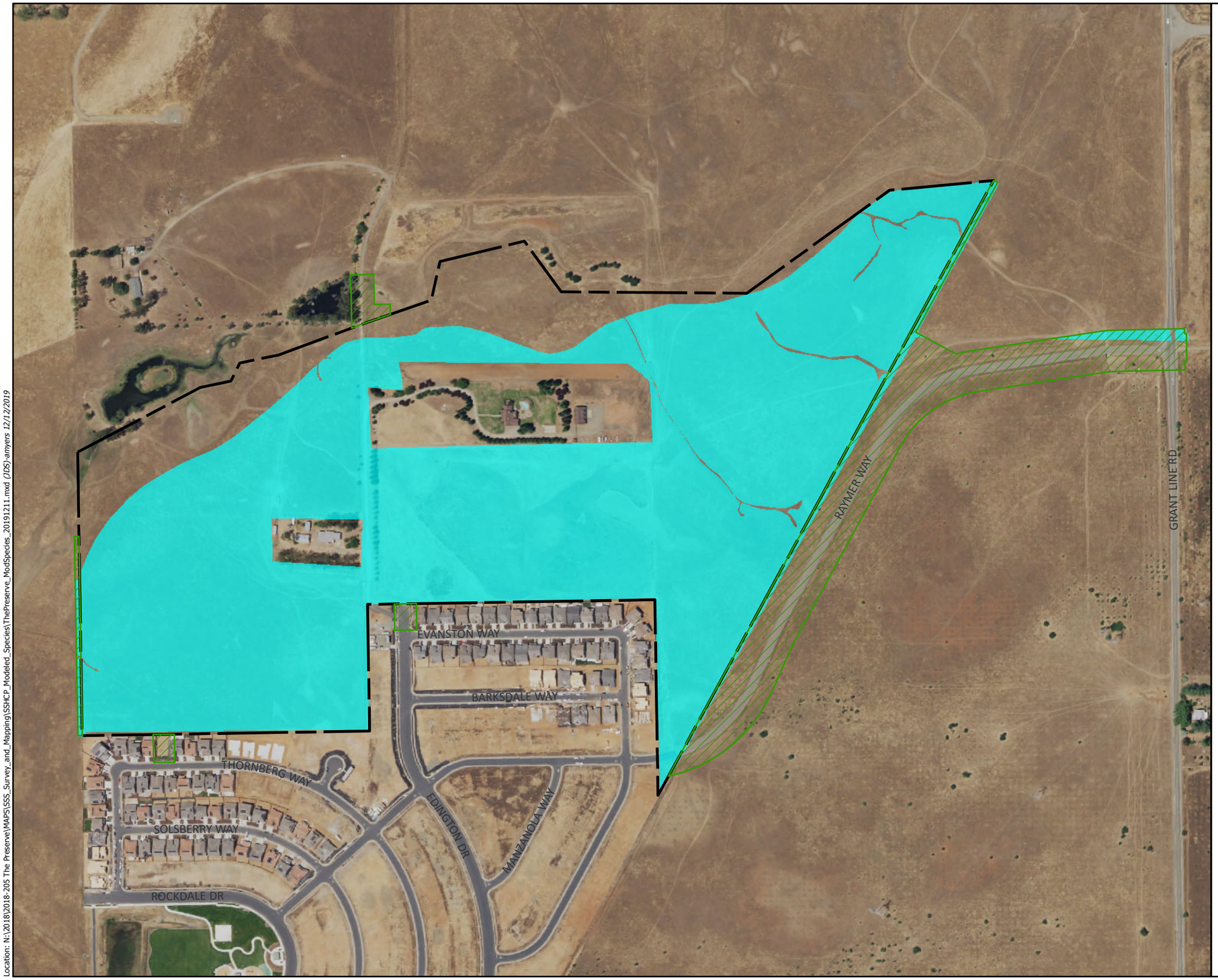
The Preserve
Modeled Species Habitat
Bogg's Lake Hedge-hyssop

Map Features

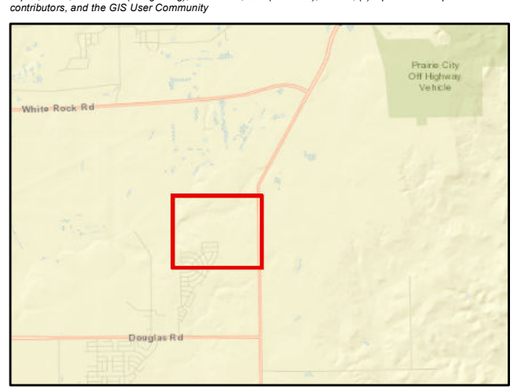
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat



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The Preserve
Modeled Species Habitat
Burrowing Owl

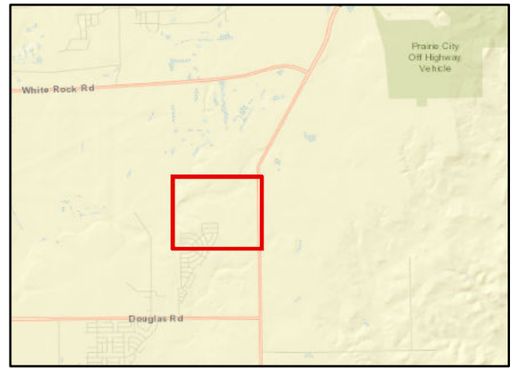
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Nesting
- Wintering

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The Preserve
Modeled Species Habitat
Ferruginous Hawk

Map Features

Project Boundary - 98.92 acres

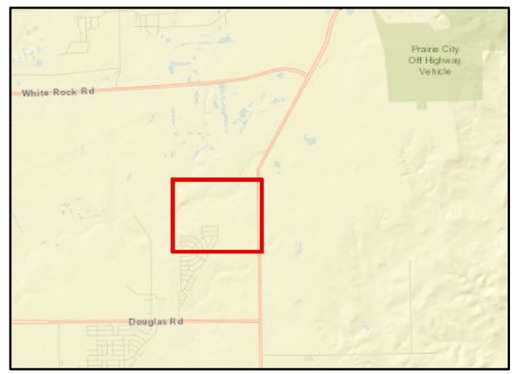
Potential Offsite Areas - 13.16 acres

Modeled Habitat

Foraging

EVANSTON WAY
BARKSDALE WAY
THORNBERG WAY
SOLSBERRY WAY
ROCKDALE DR
EDINGTON DR
MANZANOLA WAY
RAYMER WAY
GRANT LINE RD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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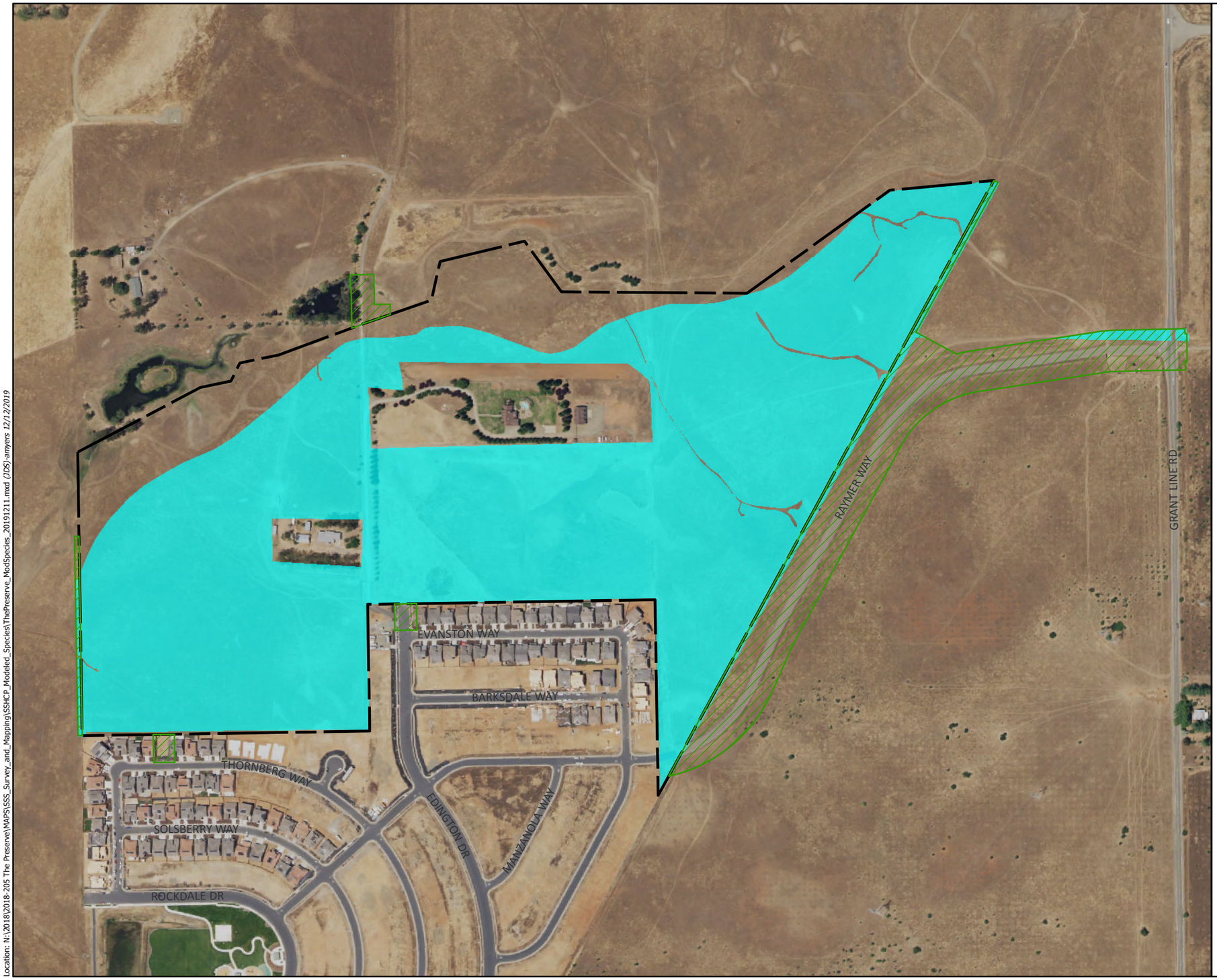
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Map Date: 12/12/2019

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\SSHCP_Modeled_Species\ThePreserve_ModSpecies_20191211.mxd (JDS)-amyers 12/12/2019



The Preserve
Modeled Species Habitat
Legenere

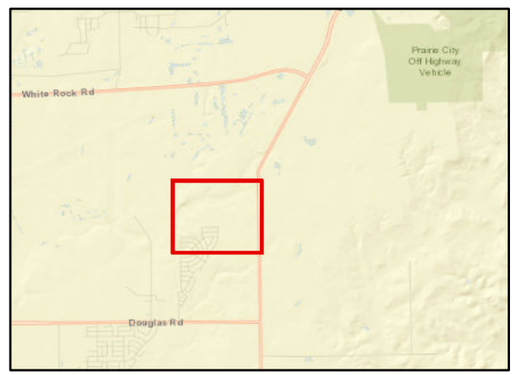
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
165018 BNDY -WINN BINDED.dwg
165018 Base.dwg

Map Date: 12/12/2019



The Preserve
Modeled Species Habitat
Loggerhead Shrike

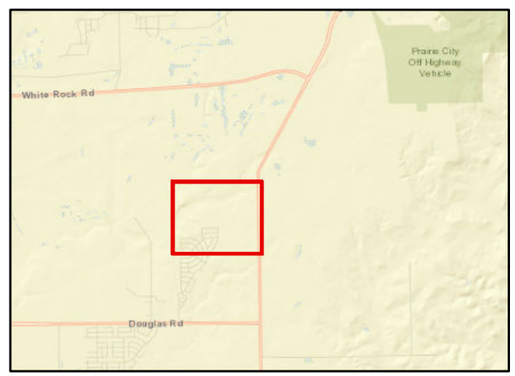
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Foraging
- Nesting-Foraging

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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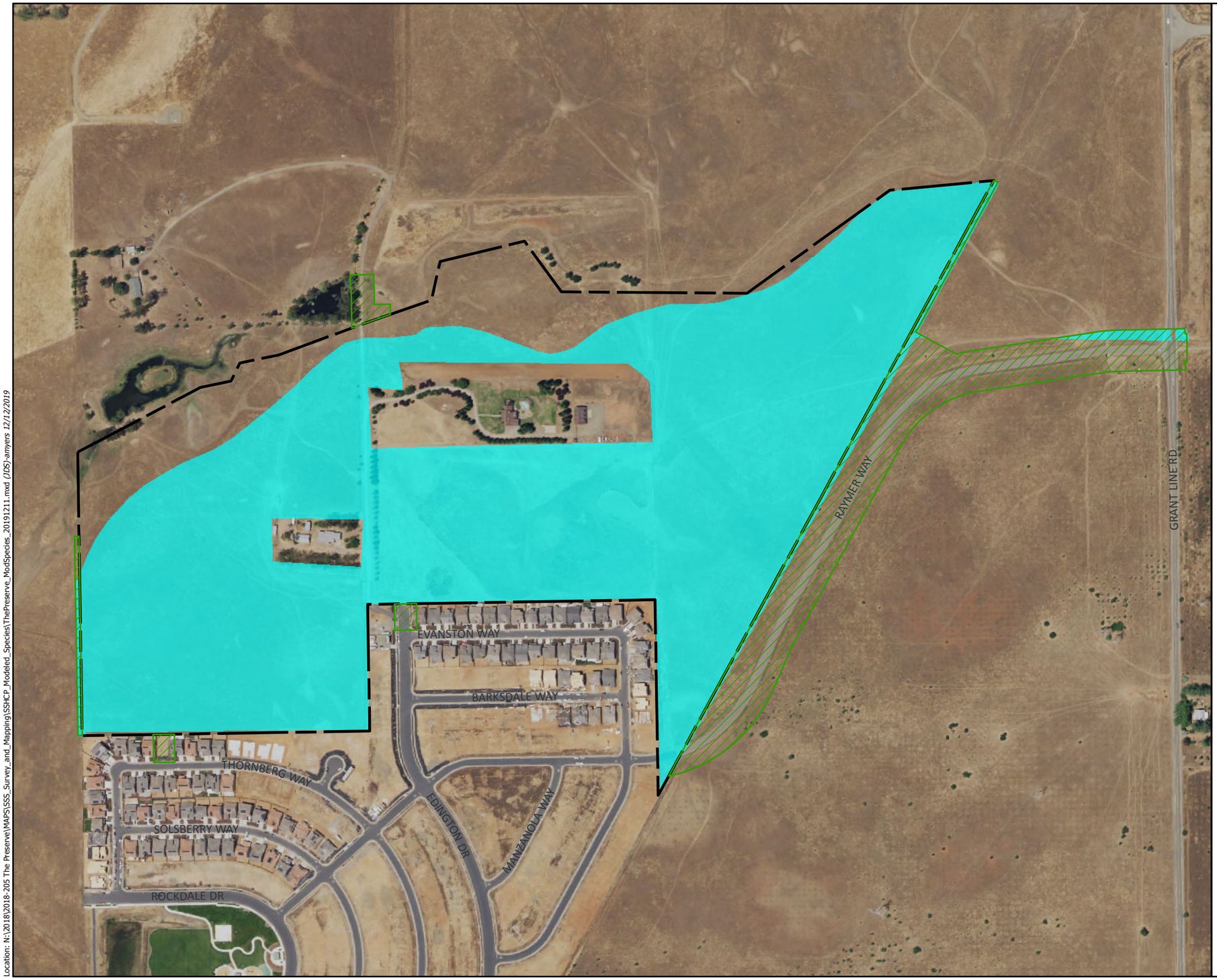
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2018-205 The Preserve

Scale in Feet
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Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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165018 Base.dwg

Map Date: 12/12/2019



The Preserve
Modeled Species Habitat
Mid-valley Fairy Shrimp

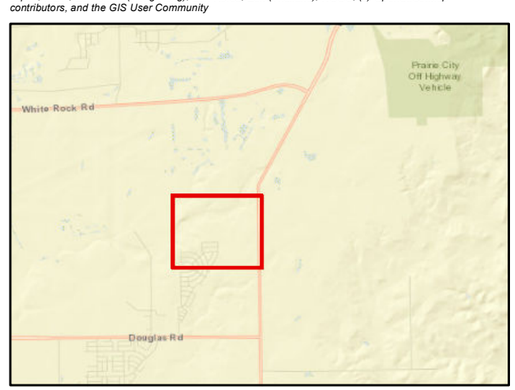
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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Map Date: 12/12/2019



The Preserve
Modeled Species Habitat
Northern Harrier

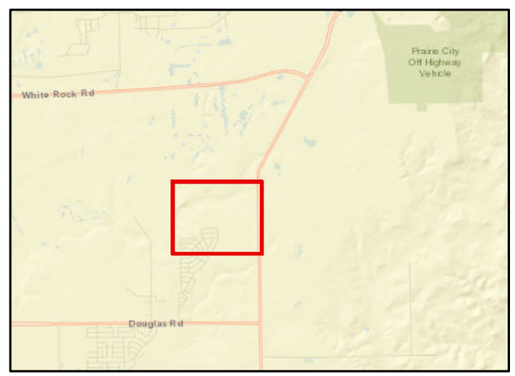
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Foraging
- Nesting-Foraging

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
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165018 Base.dwg

Map Date: 12/12/2019

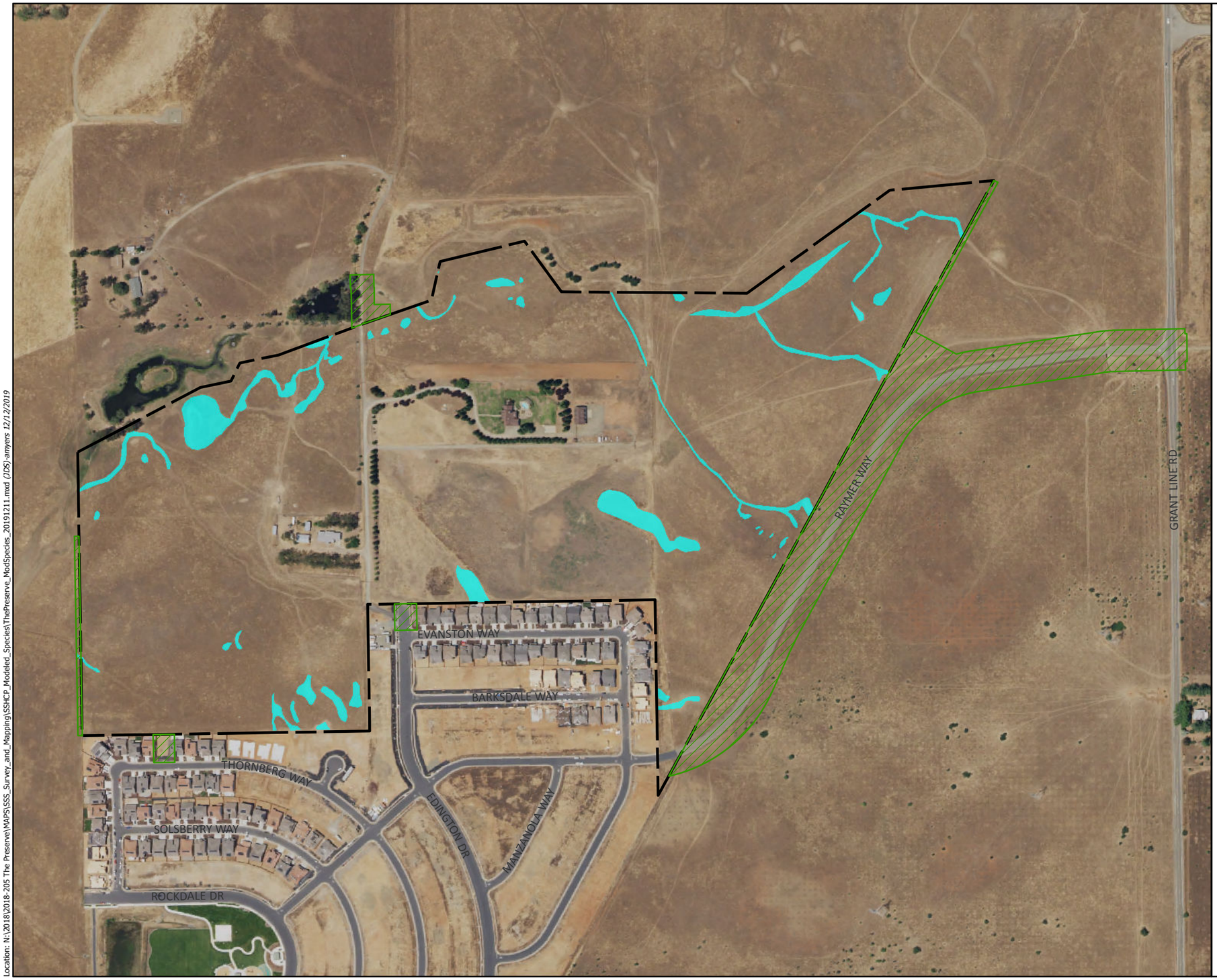
The Preserve
Modeled Species Habitat
Ricksecker's Water Scavenger Beetle

Map Features

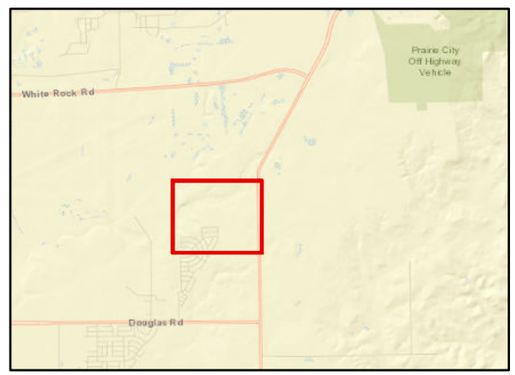
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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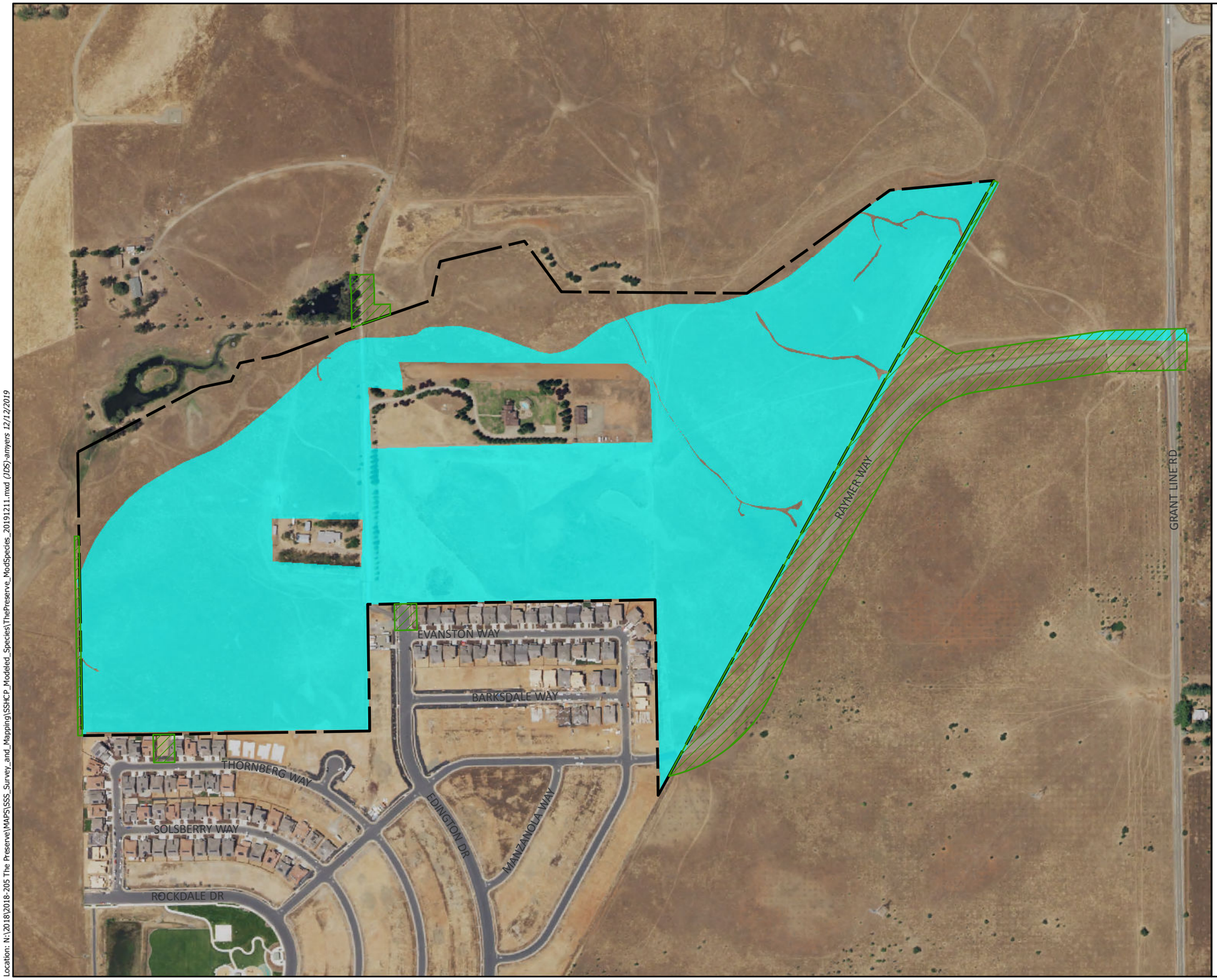
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2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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165018 Base.dwg

Map Date: 12/12/2019



The Preserve
Modeled Species Habitat
Sacramento Orcutt Grass

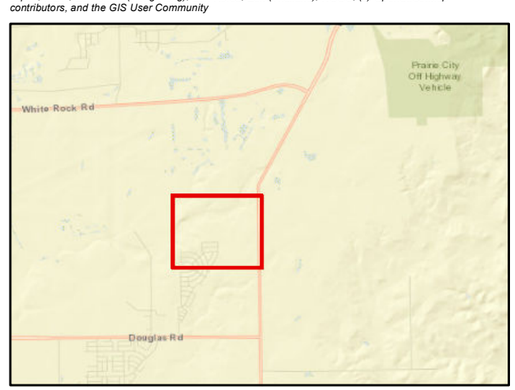
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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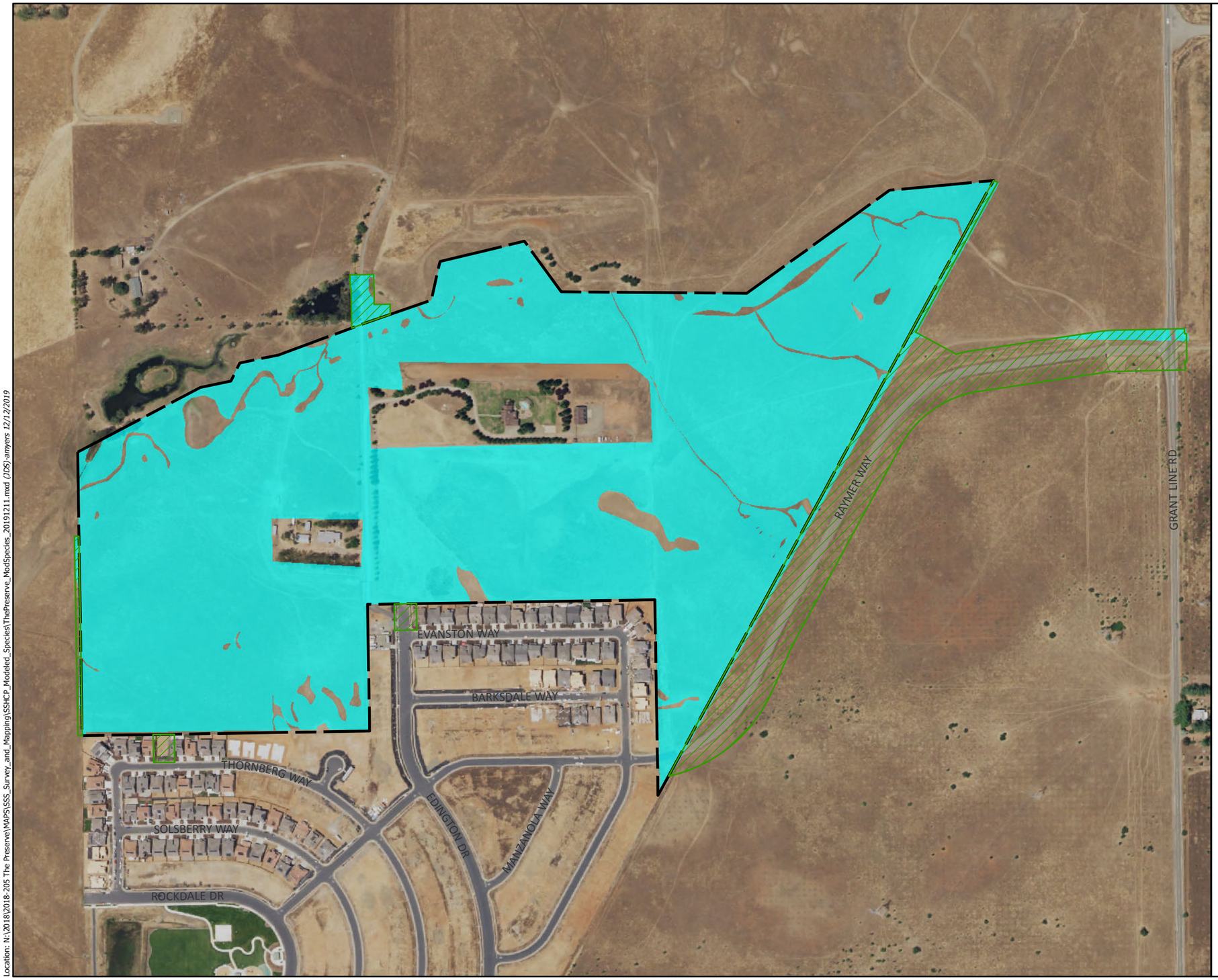
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2018-205 The Preserve

Scale in Feet
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Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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165018 Base.dwg

Map Date: 12/12/2019



The Preserve
Modeled Species Habitat
Sanford's Arrowhead

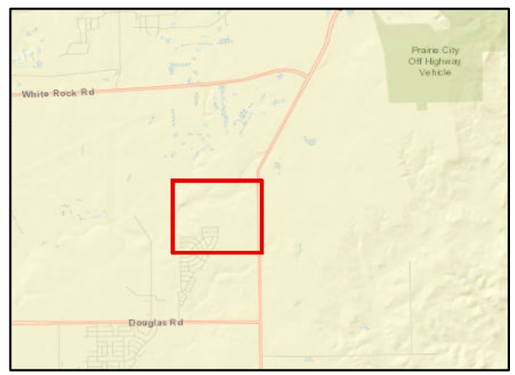
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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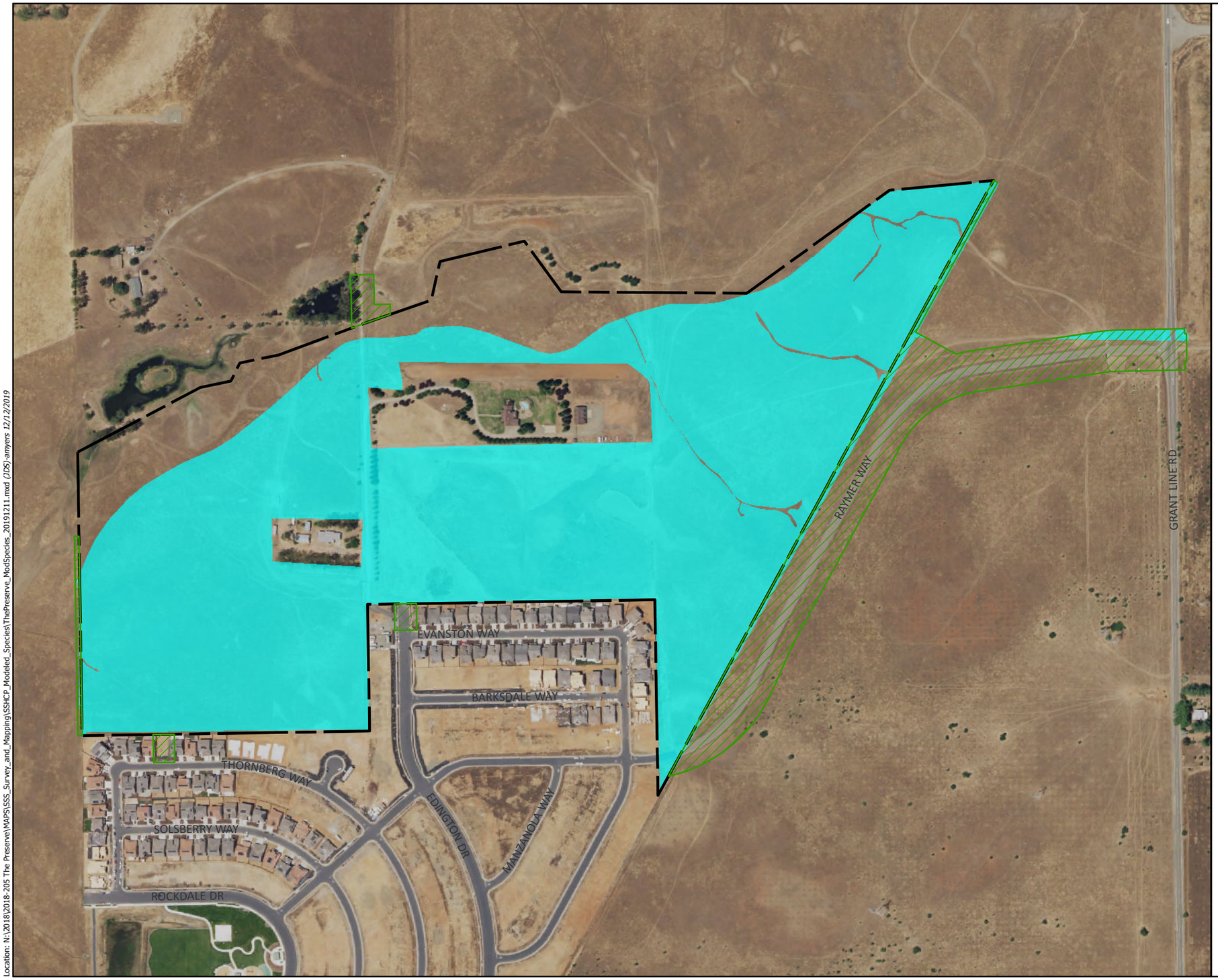
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2018-205 The Preserve

Scale in Feet
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Photo Source: 2016, NAIP
Habitat Data: SSHCP
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165018 Base.dwg

Map Date: 12/12/2019



The Preserve
Modeled Species Habitat
Slender Orcutt Grass

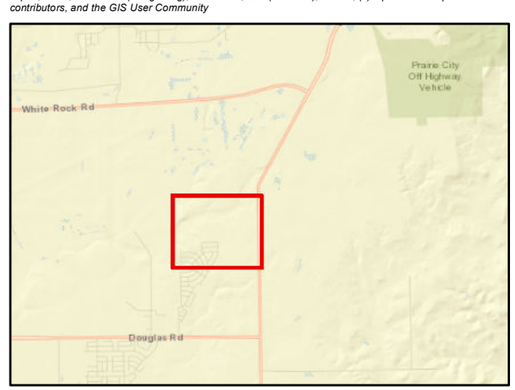
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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ENVIRONMENTAL CONSULTANTS

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\SSHCP_Modeled_Species\ThePreserve_ModSpecies_20191211.mxd (JDS)-amyers 12/12/2019

2018-205 The Preserve

Scale in Feet
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Photo Source: 2016, NAIP
Habitat Data: SSHCP
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165018 Base.dwg

Map Date: 12/12/2019

The Preserve
Modeled Species Habitat
Swainson's Hawk

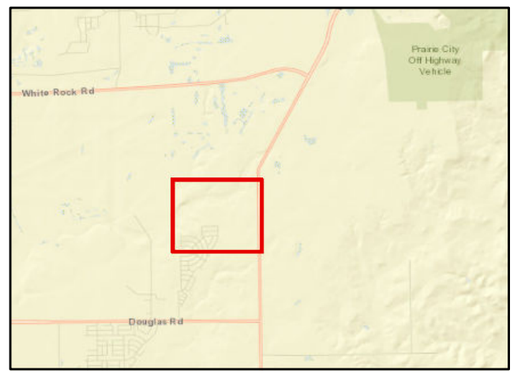
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Foraging

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
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Photo Source: 2016, NAIP
Habitat Data: SSHCP
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Map Date: 12/12/2019

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\SSHCP_Modeled_Species\ThePreserve_ModSpecies_20191211.mxd (JDS)-amyers 12/12/2019



The Preserve
Modeled Species Habitat
Tricolored Blackbird

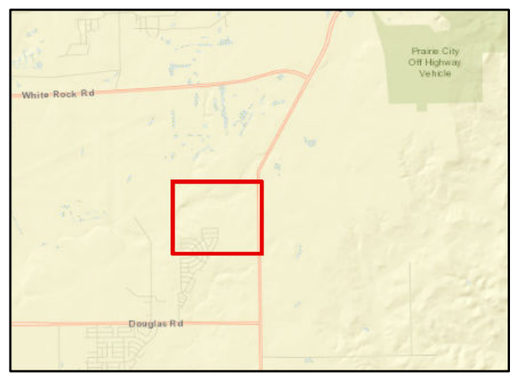
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Foraging
- Nesting-Foraging

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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2018-205 The Preserve

Scale in Feet
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Base Data: RJA
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Map Date: 12/12/2019

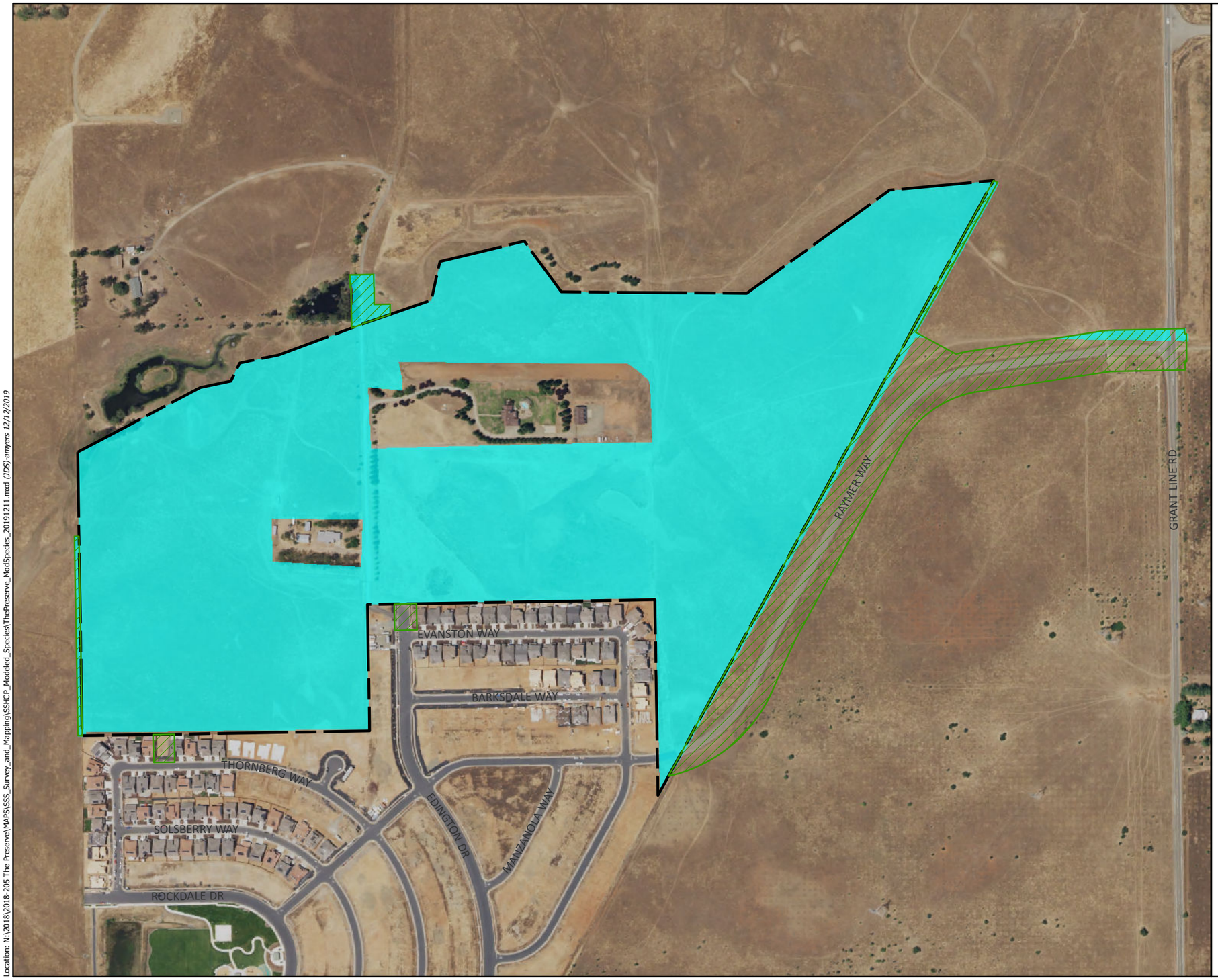
The Preserve
Modeled Species Habitat
Vernal Pool Fairy Shrimp

Map Features

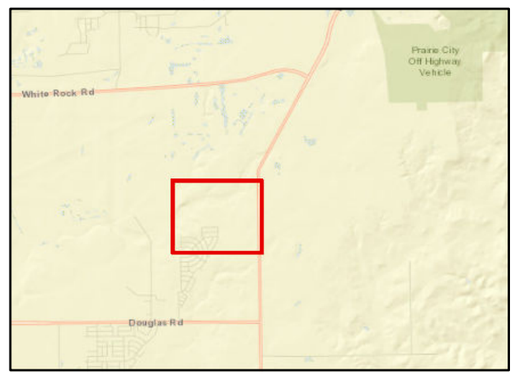
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
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Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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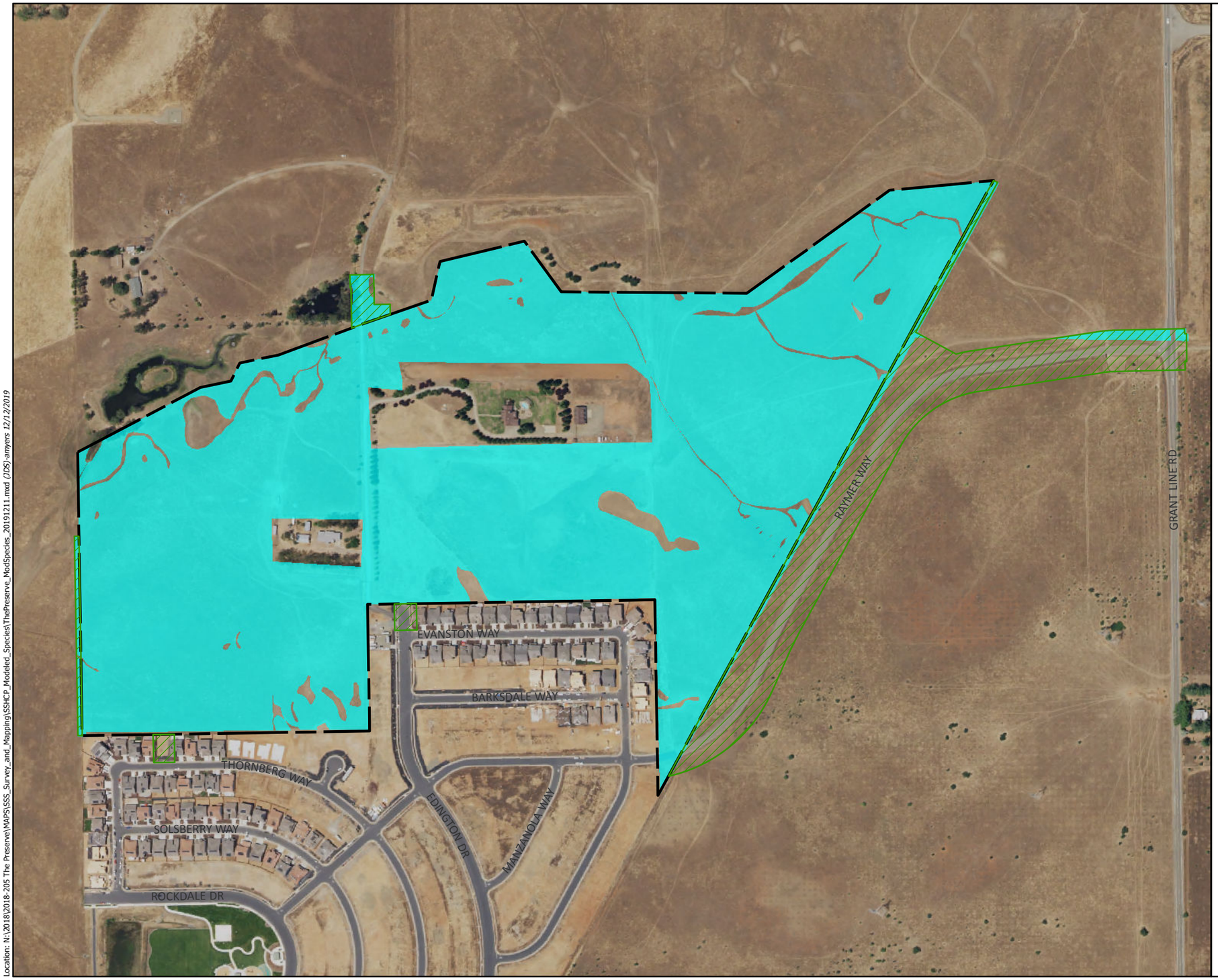
The Preserve
Modeled Species Habitat
Vernal Pool Tadpole Shrimp

Map Features

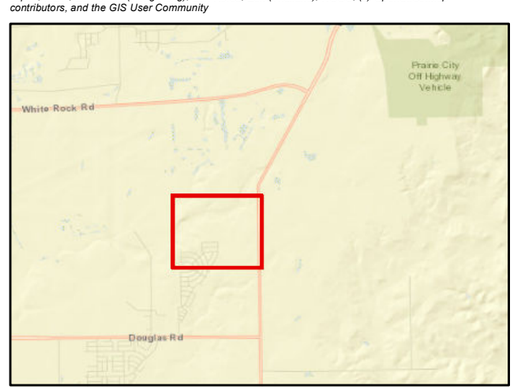
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Habitat



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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165018 Base.dwg

Map Date: 12/12/2019

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\SSHCP_Modeled_Species\ThePreserve_ModSpecies_20191211.mxd (JDS)-amyers 12/12/2019

The Preserve
Modeled Species Habitat
Western Red Bat

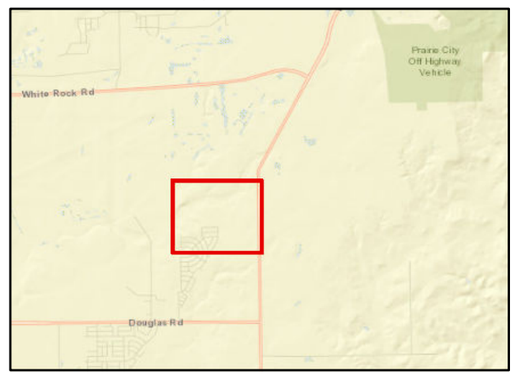
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Foraging
- Roosting-Foraging

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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ENVIRONMENTAL CONSULTANTS

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\SSHCP_Modeled_Species\ThePreserve_ModSpecies_20191211.mxd (JDS)-amyers 12/12/2019

2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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165018 Base.dwg

Map Date: 12/12/2019

The Preserve
Modeled Species Habitat
Western Spadefoot

Map Features

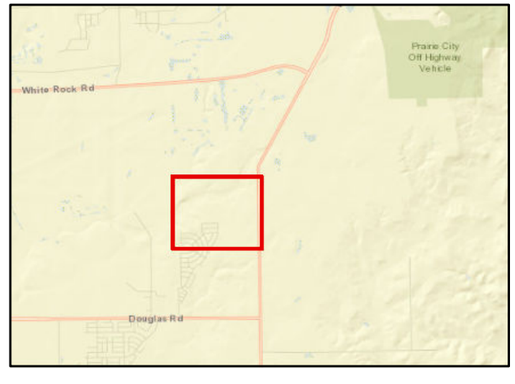
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres

Modeled Habitat

- Aquatic Habitat
- Upland Habitat

EVANSTON WAY
BARKSDALE WAY
THORNBERG WAY
SOLSBERRY WAY
ROCKDALE DR
EDINGTON DR
MANZANOLA WAY
RAYMER WAY
GRANT LINE RD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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ENVIRONMENTAL CONSULTANTS

2018-205 The Preserve

Scale in Feet
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Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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Map Date: 12/12/2019

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\SSHCP_Modeled_Species\ThePreserve_ModSpecies_20191211.mxd (JDS)-amyers 12/12/2019

The Preserve
Modeled Species Habitat
White-tailed Kite

Map Features

Project Boundary - 98.92 acres

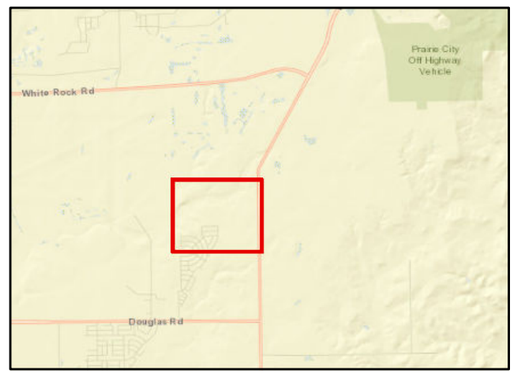
Potential Offsite Areas - 13.16 acres

Modeled Habitat

Foraging

EVANSTON WAY
BARKSDALE WAY
THORNBERG WAY
SOLSBERRY WAY
ROCKDALE DR
EDINGTON DR
MANZANOLA WAY
RAYMER WAY
GRANT LINE RD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Habitat Data: SSHCP
Base Data: RJA
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Map Date: 12/12/2019

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\SSHCP_Modeled_Species\ThePreserve_ModSpecies_20191211.mxd (JDS) amyers 12/12/2019

ATTACHMENT C

Results of SSHCP Habitat Surveys

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

June 21, 2019

Mr. George Carpenter
Winn Communities
3001 I Street, Suite 300
Sacramento, CA 95816

RE: Bird and Bat Potential Habitat Assessment Surveys – The Preserve Development Project, Rancho Cordova, California

Dear Mr. Carpenter:

At the request of Winn Communities, Inc., ECORP Consulting, Inc. has conducted surveys for bird and bat habitat within the ±98.92-acre The Preserve Development Project (Project) and the ±9.33-acre potential Offsite areas. The Project is located northwest of Raymer Way and Grant Line Road in the City of Rancho Cordova, Sacramento County, California (Figure 1. *Project Location and Vicinity*). This letter supercedes the letter sent on December 10, 2018.

As required by the South Sacramento Habitat Conservation Plan (SSHCP) Avoidance and Minimization Measures (AMMs), surveys for potential habitat were conducted for tricolored blackbird (TRBL, *Agelaius tricolor*), Swainson's hawk (SWHA; *Buteo swainsoni*) and other raptors, burrowing owls (BUOW; *Athene cunicularia*), and western red bats (LABL; *Lasiurus blossevillii*). In addition, potential habitat for pallid bat (ANPA; *Antrozous pallidus*) was also assessed. Each survey also included buffers around the Project and Offsite areas as required by the AMMs for each species, as described below in the *Survey Methods* section.

REGULATORY CONTEXT

South Sacramento Habitat Conservation Plan

The SSHCP is a regional effort that will provide development and infrastructure projects with streamlined federal and state permitting processes while creating a preserve system to protect habitat, open space, and agricultural lands (County of Sacramento et al. 2018). The SSHCP allows project proponents within the Plan Area to simplify and expedite the state and federal ESA permitting process. In addition to streamlining the ESA permitting processes, a parallel Aquatic Resources Program (ARP) has been developed to address permitting pursuant to the Clean Water Act Section 404 and 401 permitting process. In addition, a Master Streambed Alternation Agreement will be requested by the SSHCP Implementing Entities to address Section 1602 of the California Fish and Game Code. The SSHCP will allow Sacramento County, the City of Rancho Cordova, City of Galt, and the Southeast Connector Joint Powers Authority to receive Incidental Take Permits (ITP) for Covered Species from USFWS and CDFW for activities and projects they conduct. In addition, the three local Land Use Authority Permittees (the County, Galt, and Rancho Cordova) can extend incidental take coverage provided by the SSHCP ITPs to activities and

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projects implemented by Third-Party Project Proponents that are under the jurisdiction of that Land Use Authority Permittee. See www.southsachcp.com for more information.

SSHCP Covered Species

TRBL, SWHA, BUOW and LABL are SSHCP Covered Species. Habitat surveys for these species were determined to be required for the Project by the following SSHCP AMMs: TCB-1, SWHA-1, RAPTOR-1, WBO-1, and BAT-1.

Pallid Bat

ANPA is not an SSHCP covered species although it is considered a species of special concern by CDFW. A California Natural Diversity Database search revealed a nearby occurrence of ANPA. Therefore, although not an SSHCP-covered species, ANPA was included in the bat habitat assessment for informational purposes.

SURVEY METHODS

Bird Survey

ECORP biologists Keith Kwan and Angela Haas conducted surveys for potential SSHCP-covered bird species habitat within the Project on November 27, 2018. ECORP biologist Matthew Spaulding conducted surveys for potential SSHCP-covered bird species habitat within the potential Offsite areas on June 13, 2019. Inaccessible Offsite areas and surrounding buffers were visually assessed from within the Project or from publicly accessible roads.

Before starting the surveys, the biologists scanned all visible areas of the Project area with binoculars (10X42 magnification). The entire Project Area was visually surveyed on foot, while the surrounding buffers were visually assessed from within the Project or from publicly accessible roads due to private property. During the surveys, all potential nesting habitat were identified and all wildlife species present recorded. The methods below were enacted during surveys as per the SSHCP AMMs.

TCB-1

The biologists walked transects and visually scanned the entire Project area and the accessible portions of the Offsite areas, and visually scanned a 500-foot buffer. All potential TRBL nesting and foraging habitat was recorded and mapped.

SWHA-1 & RAPTOR-1

The biologists walked transects and visually scanned the entire Project and the accessible portions of the Offsite areas. In the surrounding 0.25-mile buffer, accessible public roads were driven, and private property was visually scanned for the presence of SWHA and other raptor nesting habitat. All potential SWHA and raptor nesting trees were recorded and mapped.

WBO-1

The biologists walked transects and visually surveyed the Project area and the accessible portions of the Offsite areas for the presence of burrows and/or evidence of BUOW. Transects were spaced 50 feet apart due to good visibility and a lack of dense vegetation. A 250-foot buffer was also visually scanned but not walked due to inaccessible private property. All potential or occupied burrows were recorded and mapped.

Bat Survey

ECORP biologist Matthew Spaulding conducted a survey for potential LABL and ANPA hibernacula on December 4, 2018 and on June 13, 2019. All potential winter hibernaculum habitat was visually scanned with binoculars (10X42 magnification) and assessed for suitability for these species. External physical features of the trees and structures located within the Project area and the Offsite area, including a 300-foot buffer, were examined for evidence of bat use (e.g., presence of guano, evidence of day roost use, culled insect parts, urine staining, odors associated with bats). Mr. Spaulding also listened for chatter indicative of roosting bats at each tree. Inaccessible Offsite areas and surrounding buffers were visually assessed from within the Project or from publicly accessible roads.

The following methods were enacted during the survey as per the SSHCP AMM BAT-1:

BAT-1

Mr. Spaulding walked and visually scanned the Project area and the accessible portions of the Offsite areas, and visually scanned a 300-foot buffer for the presence of LABL winter hibernaculum habitat. All potential LABL winter hibernaculum trees were recorded and mapped.

In addition, the same methods were used for ANPA, though not an SSHCP Covered Species.

RESULTS

Project Setting

The Project is situated at an elevation of approximately 220-240 feet above mean sea level. The Project site included a mix of rural residential and undeveloped rangeland. Two rural residences and associated outbuildings are present within the Project Area. Some horticultural tree stands occur around the residences, as well as eucalyptus (*Eucalyptus* sp.), cottonwood (*Populus* sp.) and oak (*Quercus* sp.). The remaining area is primarily annual grassland used for cattle grazing. A full list of the wildlife species observed on November 27, 2018 and June 13, 2019 are included as Attachments A and B, respectively.

Bird Survey

Potential nesting habitat for TRBL, SWHA and other raptors, and BUOW occurred within the Project and buffer areas, but not within the Offsites. One BUOW was observed within the Project.

Potential nesting habitat for TRBL was found within the Project and within the associated buffer (Figure 2. *Potential Tricolored Blackbird Nesting Habitat*). The potential nesting habitat features mapped consisted of

patches of bull thistle (*Cirsium vulgare*). Evidence of TRBL nesting during the previous year's (2018) nesting season was present within these patches, and TRBL was observed onsite during the November 27, 2018 survey; however, no evidence of active nesting was observed during the June 13, 2019 survey. Potential foraging habitat for TRBL included the grassland and wetland habitats within the Project and Offsites.

Potential nesting habitat for SWHA and other raptors occurred within the Project and within the associated buffer (Figure 3. *Potential Swainson's Hawk and Raptor Nesting Habitat*). Potential SWHA nesting habitat included large trees, while potential nesting habitat for other raptors included large and medium-sized trees.

Potential nesting habitat for BUOW occurred within the Project. Numerous unoccupied burrows were mapped along the eastern boundary and the southeastern portion of the Project site (Figure 4. *Potential Western Burrowing Owl Burrow Habitat*). Of these, one burrow had an individual BUOW present at the time of the survey (noted as "Burrow, Occupied" on Figure 4) and evidence of BUOW presence (e.g. white wash, pellets) was observed at three other burrow locations (noted as "Burrow, with Evidence"). No potential or occupied burrows could be seen within the 250-foot buffer. However, due to access limitations, the surrounding buffer could not be adequately surveyed to rule out the potential presence of suitable burrows or BUOW presence.

Bat Survey

Potential hibernaculum habitat for LABL occurred within the 300-foot buffer but not within the Project or Offsite areas. Potential hibernaculum occurred in the form of a large snag, two cottonwood trees, large eucalyptus trees all with suitable cavities and/or exfoliating bark (Figure 5. *Potential Western Red Bat and Pallid Bat Hibernacula*). There was no visible sign indicating bats were currently using the habitat.

Potential hibernaculum habitat for ANPA occurred within the Project site, but not within the buffer or Offsite areas. Potential hibernacula for ANPA were present in the form of structures with gaps or vents that could allow access to buildings (Figure 5. *Potential Western Red Bat and Pallid Bat Hibernacula)*. There was no visible sign indicating bats were currently using the habitat.

RECOMMENDATIONS

As per requirements of the SSHCP, subsequent AMMs may need to be implemented based on the results of these surveys. Please refer to Section 5.4.2 of the SSHCP for more information on required AMMs.

If you have any questions, please call me or Taraneh Emam at (916) 782-9100.

Sincerely,



Keith Kwan
Senior Biologist

LIST OF FIGURES

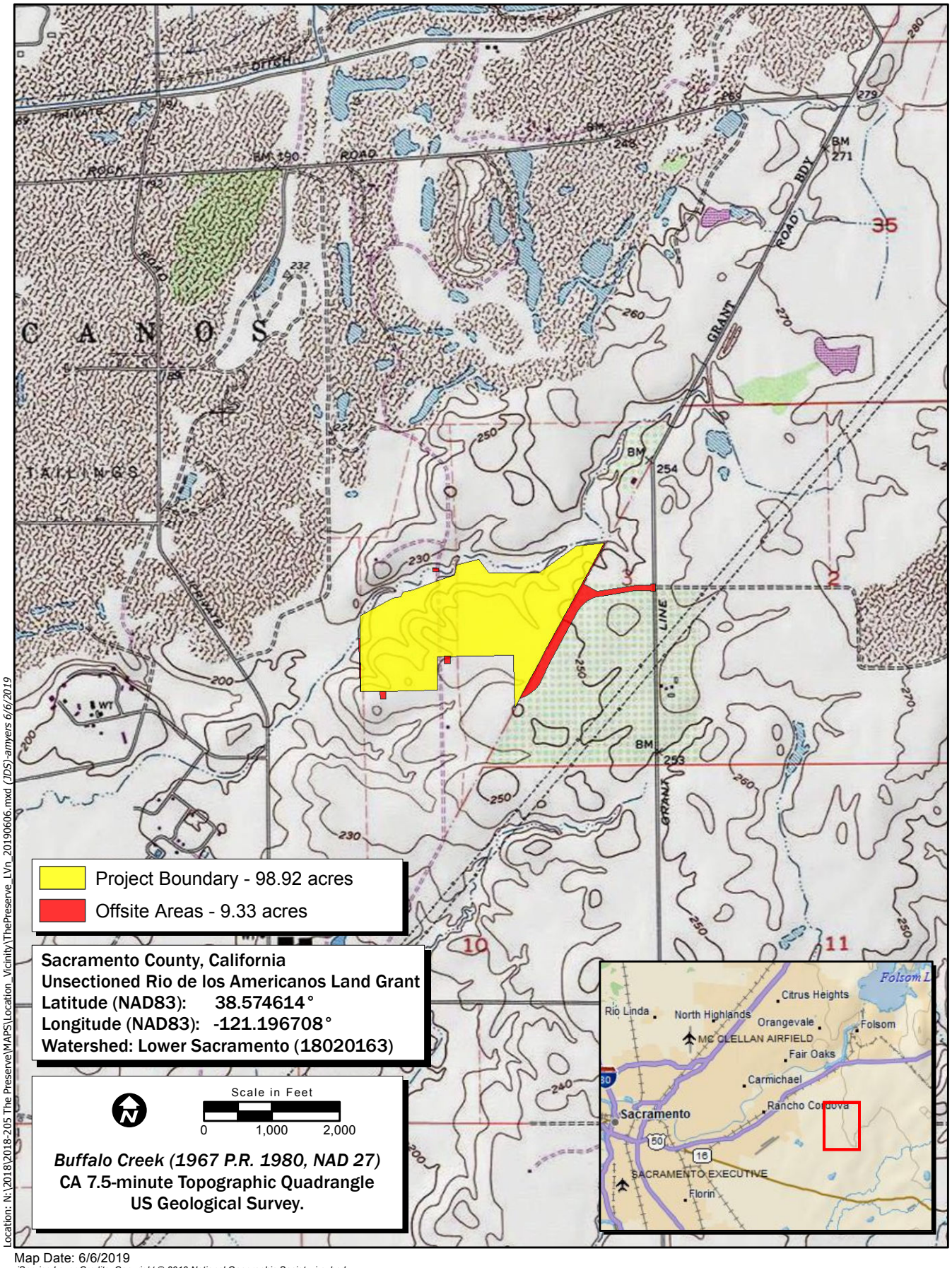
Figure 1. Project Location and Vicinity

Figure 2. Potential Tricolored Blackbird Nesting Habitat

Figure 3. Potential Swainson's Hawk and Raptor Nesting Habitat

Figure 4. Potential Western Burrowing Owl Burrow Habitat

Figure 5. Potential Western Red Bat and Pallid Bat Hibernacula



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Map Date: 6/6/2019

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Figure 1. Project Location and Vicinity

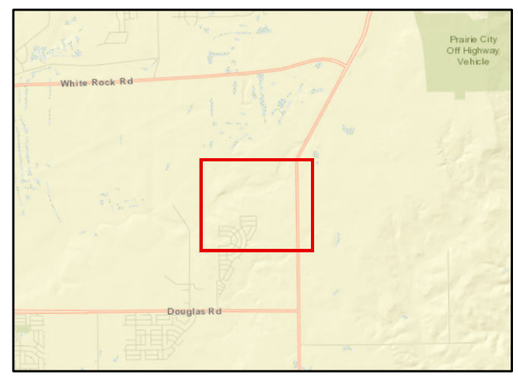
2018-205 The Preserve

Figure 2. Potential Tricolored Blackbird Nesting Habitat

Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 9.33 acres
- 500-foot Buffer
- Potential Tricolored Blackbird Nesting Habitat

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 500

Photo Source: 2016, NAIP

Map Date: 6/20/2019

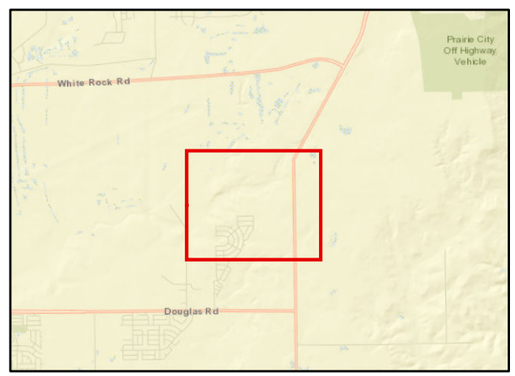
Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\TRBL\ThePreserve_SpSpeciesPotHab_TRBL.mxd (SAB)-amyers 6/20/2019

Figure 3. Potential Swainson's Hawk and Raptor Nesting Habitat

Map Features

- Potential Offsite Areas - 9.33 acres
- Project Boundary - 98.92 acres
- 1/4-mile Buffer
- Potential Swainson's Hawk Nesting Habitat
- Potential Raptor Species Nesting Habitat

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 600

Photo Source: 2016, NAIP

Map Date: 6/20/2019

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\SWHA\ThePreserve_SpSpeciesPotHab_SWHA.mxd (SAB)-amyers 6/20/2019

Figure 4. Potential Western Burrowing Owl Burrow Habitat

Map Features

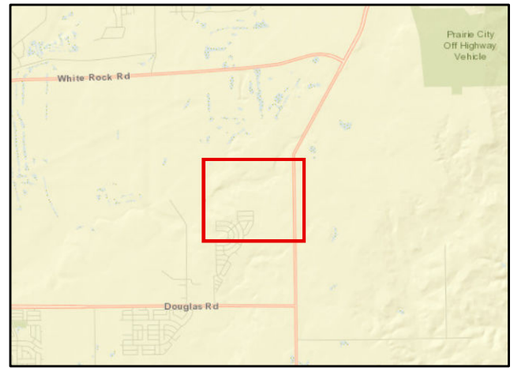
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 9.33 acres
- 250-foot Buffer

Burrowing Owl Habitat Features

- Burrow, Occupied
- Potential Burrow with Evidence
- Potential Burrow, Not Occupied

BARKSDALE WAY
THORNBERG WAY
SOLSBERRY WAY
ROCKDALE DR
EDINGTON DR
MANZANOLA WAY
EVANSTON WAY
RAYMER WAY
GRANT LINE RD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Photo Source: 2016, NAIP

Map Date: 6/20/2019

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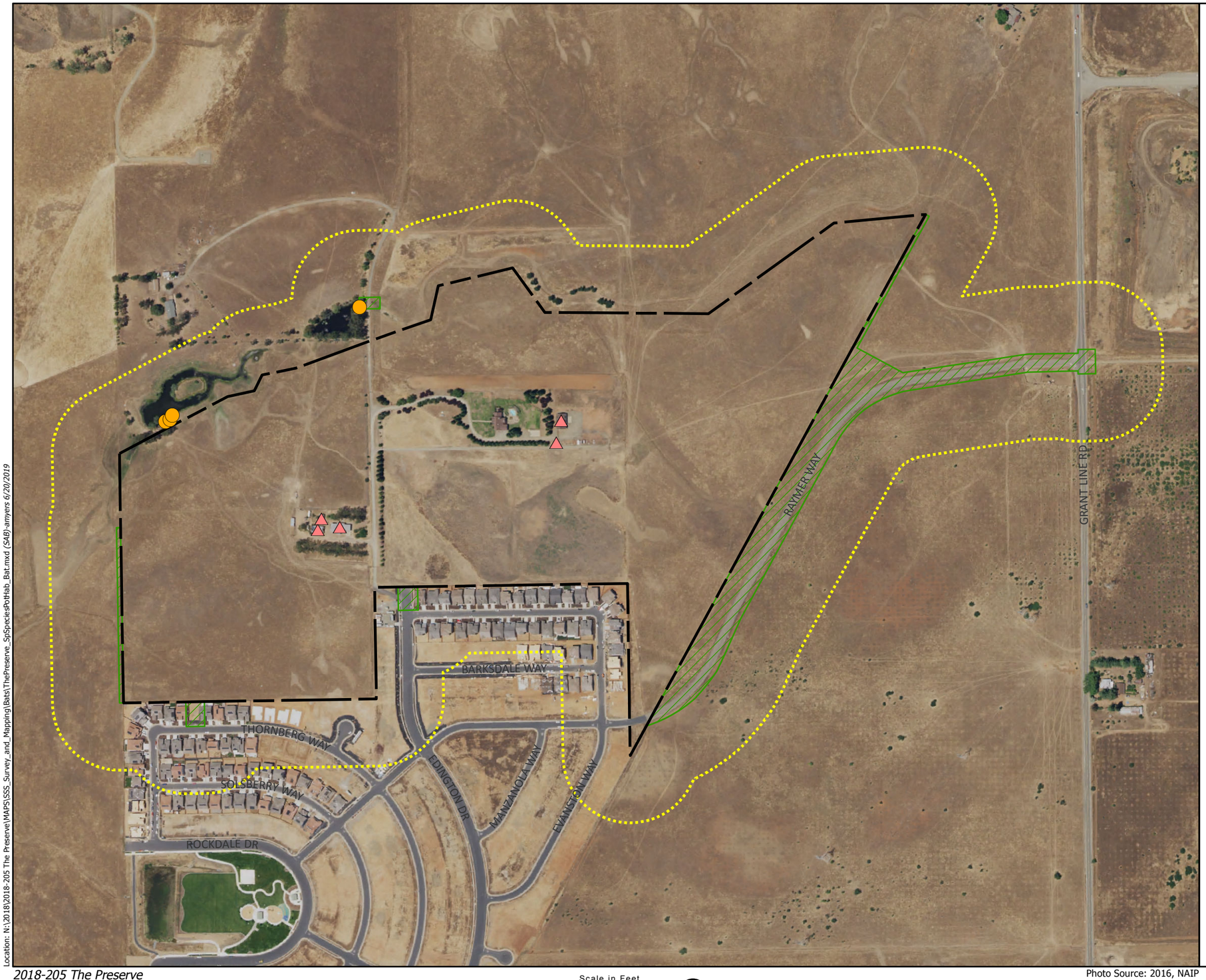
Figure 5. Potential Western Red Bat and Pallid Bat Hibernacula

Map Features

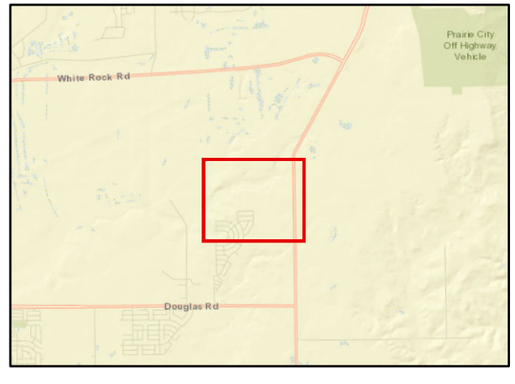
- Project Boundary - 98.92 acres
- Potential Offsite Areas - 9.33 acres
- 300-foot Buffer

Bat Roosting Features

- Structure
- Tree



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

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Photo Source: 2016, NAIP

Map Date: 6/20/2019

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ATTACHMENT A

Wildlife Species Observed Onsite (November 27, 2018)

Attachment A

Wildlife Species Observed Onsite
(November 27, 2018)

Common Name	Scientific Name
Birds	
Canada Goose	*Branta canadensis*
Mourning Dove	*Zenaida macroura*
Anna's Hummingbird	*Calypte anna*
Ring-billed Gull	*Larus delawarensis*
California Gull	*Larus californicus*
Double-crested Cormorant	*Phalacrocorax auritus*
Great Egret	*Ardea alba*
Red-tailed Hawk	*Buteo jamaicensis*
Burrowing Owl	*Athene cunicularia*
Northern Flicker	*Colaptes auratus*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Loggerhead shrike	*Lanius ludovicianus*
California Scrub-Jay	*Aphelocoma californica*
American Crow	*Corvus brachyrhynchos*
Horned Lark	*Eremophila alpestris*
Ruby-crowned Kinglet	*Regulus calendula*
Northern Mockingbird	*Mimus polyglottos*
American Pipit	*Anthus rubescens*
House Finch	*Haemorhous mexicanus*
American Goldfinch	*Spinus tristis*
Dark-eyed Junco	*Junco hyemalis*
White-crowned Sparrow	*Zonotrichia leucophrys*
Savannah Sparrow	*Passerculus sandwichensis*
Western Meadowlark	*Sturnella neglecta*
Red-winged Blackbird	*Agelaius phoeniceus*
Tricolored Blackbird	*Agelaius tricolor*
Brewer's Blackbird	*Euphagus cyanocephalus*
Yellow-rumped Warbler	*Setophaga coronata*
Mammals	
Black-tailed Jackrabbit	*Lepus californicus*

ATTACHMENT B

Wildlife Species Observed Onsite (June 13, 2019)

Attachment B

Wildlife Species Observed Onsite
(June 13, 2019)

Common Name	Scientific Name
Birds	
Mourning Dove	*Zenaida macroura*
Anna's Hummingbird	*Calypte anna*
Turkey Vulture	*Catgartes aura*
House Finch	*Haemorhous mexicanus*
Ash-throated flycather	*Myiarchus cinerascens*
Western Kingbird	*Tyrrannus verticalis*
Black Phoebe	*Sayornis nigricans*
Savannah Sparrow	*Passerculus sandwichensis*
Western Meadowlark	*Sturnella neglecta*
Mammals	
Black-tailed Jackrabbit	*Lepus californicus*
Amphibians	
American Bullfrog	*Lithobates catesbeianus*

ATTACHMENT D

Special-Status Plant Survey Report

Special-Status Plant Survey Report

The Preserve Development

Rancho Cordova, California

Prepared for:
Winn Communities

June 27, 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, and construction monitoring and reporting.

Citation: ECORP Consulting, Inc. 2019. Special-Status Plant Survey Report for The Preserve Development, Rancho Cordova, California. Prepared for Winn Communities. June 27, 2019.

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LIST OF ACRONYMS AND ABBREVIATIONS

CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	Sacramento County
CRPR	California Rare Plant Rank
ESA	Endangered Species Act
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
Offsites	Five potential offsite areas outside of the Project boundary
Project	The Preserve Development Project
SSHCP	South Sacramento Habitat Conservation Plan
Study Area	The combined Project and Offsites
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

ECORP Consulting, Inc. has conducted a special-status plant survey for the proposed The Preserve Development (Project) located in Rancho Cordova, California. The purpose of this survey was to identify and map the locations of special-status plant species observed within the Project.

1.1 Project Location

The Study Area includes the 98.92-acre Project area, as well as five potential Offsite areas totaling 9.33 acres. In this document the Offsite areas are referred to as the Rio del Oro Offsite (located to the west of the Project), the Raymer Way Offsite (located to the east of the Project), the Morrison Creek Offsite (located to the north of the Project around an existing crossing of Morrison Creek), and the North Douglas Offsites (two road stubs located to the south of the Project within the existing North Douglas development).

The Study Area is located to the west of Raymer Way and Grant Line Road in Rancho Cordova, California. The Study Area corresponds to an unsectioned portion of the Rio de los Americanos Land Grant within the "Buffalo Creek, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1980) (Figure 1. *Study Area Location and Vicinity*). The approximate center of the site is located at 38.574614° North and -121.196708° West within the Lower Sacramento Watershed (Hydrologic Unit Code #18020163, USGS 2016).

1.2 Definition of Special-Status Plant Species

For the purposes of this report, "special-status plants" are defined as plants which meet one or more of the following:

- Plants listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- Plants listed, proposed for listing, or candidates for future listing as threatened or endangered under the California ESA;
- Plants that meet the definitions of endangered or rare under Section 15380 of the State California Environmental Quality Act (CEQA) Guidelines;
- Plants listed as rare under the California Native Plant Protection Act (California Department of Fish and Game [CDFG] Code of California, Section 1900 et seq.);
- Plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" [California Rare Plant Rank (CRPR) 1B and 2] (see Section 1.3);
- Plants listed by CNPS as species about which more information is needed to determine their status (CRPR 3), and plants of limited distribution (CRPR 4); and
- Plants that are South Sacramento Habitat Conservation Plan (SSHCP) Covered Species (see Section 1.4).

1.3 California Rare Plant Ranks

CNPS maintains the Inventory of Rare and Endangered Plants of California (CNPS 2019), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, and/or low populations. Plant species meeting one of these criteria are assigned to one of six ranks (i.e., CRPR).

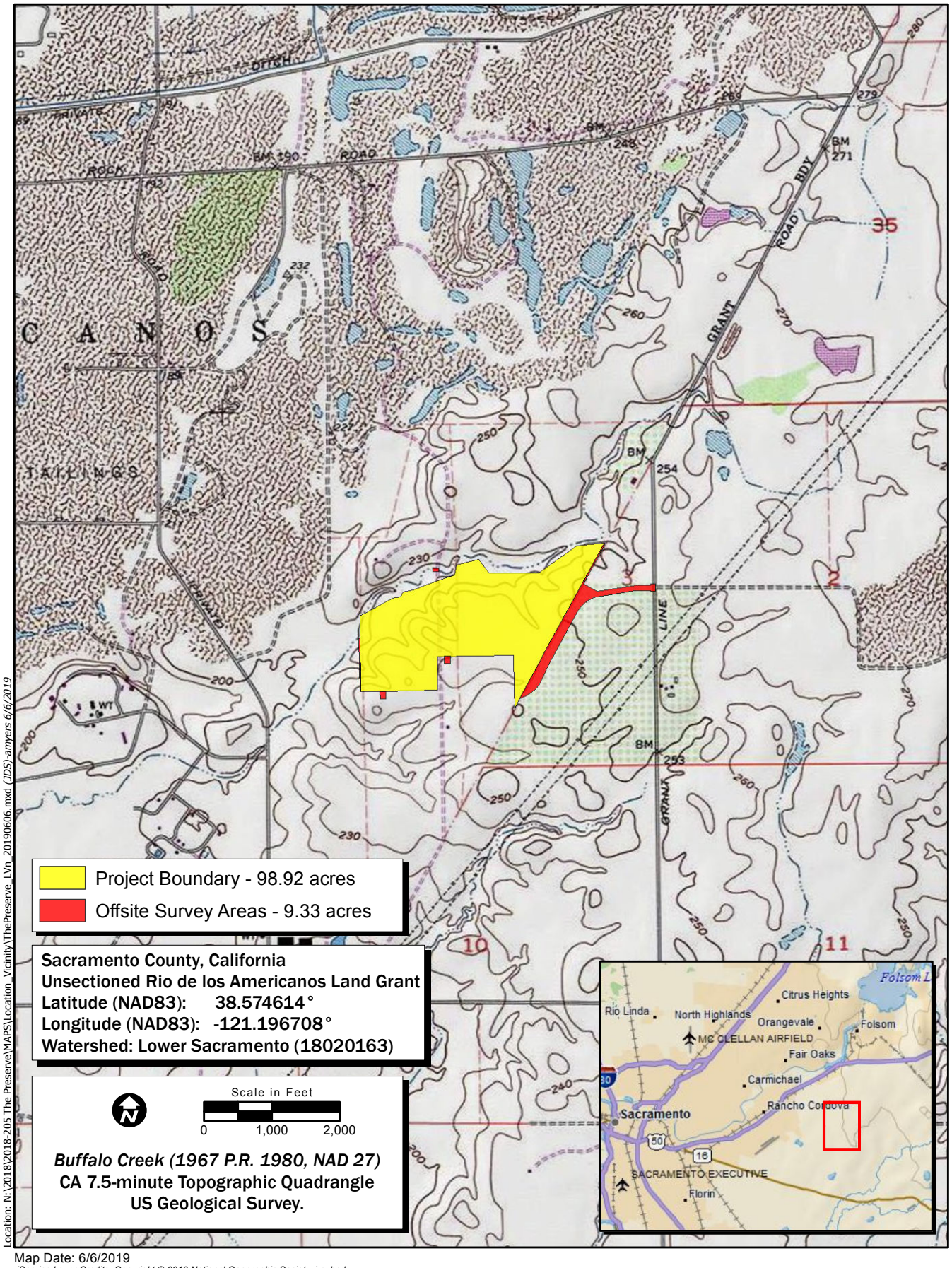
The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by the California Department of Fish and Wildlife (CDFW) and the CNPS. The ranks are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

- CRPR 1A – presumed extirpated in California and either rare or extinct elsewhere;
- CRPR 1B – rare, threatened, or endangered in California and elsewhere;
- CRPR 2A – presumed extirpated in California, but more common elsewhere;
- CRPR 2B – rare, threatened, or endangered in California but more common elsewhere;
- CRPR 3 – a review list of plants about which more information is needed; and
- CRPR 4 – a watch list of plants of limited distribution.

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 0.1 through 0.3, with 0.1 being the most threatened and 0.3 being the least threatened. Threat Ranks are generally assigned for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat);
- Threat Rank 0.2 – Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat); and
- Threat Rank 0.3 – Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known).

Factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in assigning the Threat Rank, and differences in Threat Ranks do not constitute additional or different protection (CNPS 2019). Depending on the policy of the lead agency, substantial impacts to plants listed as CRPR 1A, 1B, 2, and 3 (regardless of threat rank) are typically considered significant under CEQA Guidelines Section 15380. For CRPR 4 species (regardless of threat rank), significance under CEQA is typically evaluated if the lead agency has determined those plants to be of local significance or regional importance. Such plants may be identified in local Habitat Conservation Plans (HCPs) or City or County General Plans.



Map Date: 6/6/2019

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Figure 1. Project Location and Vicinity

2018-205 The Preserve

1.4 South Sacramento Habitat Conservation Plan

The SSHCP is a regional effort that will provide development and infrastructure projects with streamlined federal and state permitting processes while creating a preserve system to protect habitat, open space, and agricultural lands (County of Sacramento et al. 2018). The SSHCP allows project proponents within the Plan Area to simplify and expedite the state and federal ESA permitting process. The SSHCP will allow Sacramento County, the City of Rancho Cordova, City of Galt, and the Southeast Connector Joint Powers Authority to receive Incidental Take Permits (ITP) for 28 Covered Species from U.S. Fish and Wildlife Service and CDFW for activities and projects they conduct. In addition, the three local Land Use Authority Permittees (the County, Galt, and Rancho Cordova) can extend incidental take coverage provided by the SSHCP ITPs to activities and projects implemented by Third-Party Project Proponents that are under the jurisdiction of that Land Use Authority Permittee. The SSHCP provides Modeled Species Habitat data for each Covered Species to determine whether Covered Species have potential to occur within a project site. The SSHCP also sets forth Avoidance and Minimization Measures with which permittees must comply. See www.southsachcp.com for more information.

Table 1 provides a list of all plant species that are considered SSHCP Covered Species, adapted from Table 1-2 of the SSHCP (County of Sacramento et al. 2018).

Table 1. SSHCP Covered Species - Plants

Scientific Name Common Name	Status		
	Federal	State	CRPR
Downingia pusilla Dwarf downingia	—	—	2.2
Gratiola heterosepala Boggs Lake hedge-hyssop	—	E	1B.2
Juncus leiospermus var. ahartii Ahart's dwarf rush	—	—	1B.2
Legenere limosa Legenere	—	—	1B.1
Navarretia myersii Pincushion navarretia	—	—	1B.1
Orcuttia tenuis Slender Orcutt grass	T	E	1B.1
Orcuttia viscida Sacramento Orcutt grass	E	E	1B.1
Sagittaria sanfordii Sanford's arrowhead	—	—	1B.2

Status Definitions

Federal:
E = Endangered under the federal ESA
T = Threatened under the federal ESA
— = No federal ESA listing

State:
E = Endangered under state ESA
T = Threatened under state ESA
— = No state status

CRPR:
1B = Rare, threatened, or endangered in California and elsewhere
2 = Rare, threatened, or endangered in California but more common elsewhere

CRPR Threat Ranks
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

2.0 METHODS

2.1 Literature Review

Prior to conducting field surveys, background information was collected on the potential presence of special-status plants within or near the survey area from a variety of sources. This included a review of resource agency species lists, literature review, on-line database query, voucher specimen review, and reference population review. The following resources were used as part of the literature review:

- CDFW California Natural Diversity Database (CNDDB) data for the "Buffalo Creek, California" 7.5-minute quadrangle as well as the eight surrounding USGS quadrangles (CDFW 2019);
- USFWS Resource Report List Federal Endangered and Threatened Species that may be affected by the Project (USFWS 2019); and
- CNPS's electronic *Inventory of Rare and Endangered Plants of California* for the "Buffalo Creek, California" 7.5-minute quadrangle as well as the eight surrounding USGS quadrangles (CNPS 2019).
- SSHCP Modeled Species Habitat for the Study Area.

2.2 Special-Status Plants Considered for the Project

Based on species occurrence information from the CNDDB, the literature review, and general site knowledge, a list of special-status plant species that are known to occur or have the potential to occur within the survey area was generated (Attachment A). Only special-status plants as defined in Section 1.2 were included in this analysis. Each of these species' potential to occur within the survey area was assessed based on the following criteria:

- **Present** - Species was previously observed during field surveys or is known to occur within the Study Area based on documented occurrences within the CNDDB, SSHCP, or other literature.
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the Study Area based on site assessment, literature research, or SSHCP Modeled Species Habitat data.
- **Low Potential to Occur** - Marginal or limited amounts of habitat occur, and/or the species is not known to occur within the vicinity of the Study Area based on CNDDB records and other available documentation. This designation is only used for species that are not SSHCP Covered Species.
- **Absent** - No suitable habitat (including soils and elevation requirements) and/or the species is not known to occur within the vicinity of the Study Area based on CNDDB records and other documentation and SSHCP Modeled Species Habitat data does not indicate that habitat for the species occurs within the site.

2.3 Target Species

Based on the analysis of potentially occurring special-status plant species for the survey area, the plants listed in Table 2 were considered to be the Target List for this survey effort. Species determined to be Absent are not included in the target list.

Table 2. Target Species for Special-Status Plant Survey

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Stinkbells (Fritillaria agrestis)	-	-	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, Pinyon and juniper woodland, and Valley and foothill grassland (33' - 5,102').	March–June	Potential to Occur. Valley grassland represents suitable habitat.
Boggs Lake hedge–hyssop (Gratiola heterosepala)	–	CE	1B.2, SSHCP Covered Species	Marshes, swamps, lake margins, and vernal pools (33'–7,792').	April–August	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Ahart's dwarf rush (Juncus leiospermus var. ahartii)	–	–	1B.2, SSHCP Covered Species	Mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields (USFWS 2005a) (98'–751').	March–May	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Legenere (Legenere limosa)	–	–	1B.1, SSHCP Covered Species	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005b) (3'–2,887').	April–June	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Slender Orcutt grass (Orcuttia tenuis)	FT	CE	1B.1, SSHCP Covered Species	Vernal pools, often gravelly (115'–5,774').	May–September	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Sacramento Orcutt grass (Orcuttia viscida)	FE	CE	1B.1, SSHCP Covered Species	Vernal pools (98'–328').	April–July	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Sanford's arrowhead (Sagittaria sanfordii)	–	–	1B.2, SSHCP Covered Species	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Potential to Occur. SSHCP Modeled Species Habitat present onsite.

Status Codes:

ESA	Endangered Species Act
CESA	California Endangered Species Act
FE	ESA listed, Endangered
FT	ESA listed, Threatened
1B	California Rare Plant Ranks (CRPRs)/Rare or Endangered in California and elsewhere.
2B	CRPR /Rare or Endangered in California, more common elsewhere.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

2.4 Reference Site Visits

Reference populations, where available, for the seven target species were visited to assess bloom phenology and to observe species morphology. When reference populations were not available, photographs from Calflora (Calflora 2019) and *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012) were used as a reference. Attachment B identifies the reference source for each of the target species including the location of the population, dates of visits, and phenological stage of the species at the time of the field visits.

2.5 Field Surveys

Determinate-level field surveys were conducted in accordance with SSHCP Avoidance and Minimization Measures PLANT-1 and ORCUTT-1, as well as guidelines promulgated by USFWS (USFWS 2000), CDFW (CDFW 2018), and CNPS (CNPS 2001). The special-status plant surveys were conducted on April 29, 2019 and June 13, 2019 by ECORP biologist Casey Peters and Benjamin Waitman. A list of field personnel qualifications is included as Attachment C. The surveys coincided with the optimum identifiable periods for each of the target species.

Within the Project, Morrison Creek Offsite, and North Douglas Offsite, the biologists walked meandering transects to ensure complete coverage of all suitable habitat for all target species. The Rio del Oro Offsite and Raymer Way Offsite were assessed to the degree possible from accessible areas (i.e. within the Project and along roads), but transects across these offsites were not surveyed.

A complete plant list of all plants observed during the surveys was generated (Attachment D). All species were identified to the lowest possible taxonomic level required to assess rarity. Plant species identification, nomenclature, and taxonomy followed *The Jepson Manual* (Baldwin et al. 2012). Vegetation community classification was based on the classification systems presented in *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009).

3.0 EXISTING SITE CONDITIONS

The Study Area is situated at an elevation range between approximately 200 and 250 feet above mean sea level (MSL) in Rancho Cordova, California. The Study Area is located in the Great Valley region, Sacramento Valley subregion of the California Floristic Province (Baldwin et al. 2012). This region is characterized by agricultural areas, grasslands, wetlands, and valley oaks (Baldwin et al. 2012). The average annual precipitation for the region is 36.9 inches (with the wettest period during November-March), and average daily temperatures range from 47.7˚F in winter to 73.8˚F in summer (National Oceanic and Atmospheric Administration [NOAA] 2018).

The Study Area is characterized by flat to gently rolling terrain and consists primarily of grazed annual grasslands with two residences and other outbuildings. A private road, sometimes identified as Douglas Road, leads from south of the Study Area into the two residences. The Study Area is located within the USFWS Mather Core Area (USFWS 2005a). Core Areas are areas prioritized for the conservation and recovery of threatened and endangered vernal pool species.

3.1 Land Cover Types

SSHCP land cover data within the Study Area were reviewed and field-revised as needed. Revised land cover types are shown in Figure 2. More information on land cover types is provided in the Biological Resources Assessment for the Project (ECORP 2019).

3.1.1 Terrestrial Land Cover Types

The Study Area primarily contains the Valley Grassland SSHCP land cover type. The Study Area also contains Low Density Development and a small amount of Disturbed and Major Roads land cover.

Valley Grassland

The Valley Grassland land cover type is predominantly characterized by non-native (naturalized) annual grasses. Within the Study Area, the common plant species found in Valley Grassland are a mixture of nonnative annual grasses, including medusahead grass (*Elymus caput-medusae*), soft brome (*Bromus hordeaceus*), wild oats (*Avena fatua*), and brome fescue (*Festuca bromoides*). Narrow tarplant (*Holocarpha virgata*), a native perennial forb, is also common in this land cover type within the Study Area.

Low Density Development

The Low Density Development land cover type consists of existing homesteads including buildings/structures and horticultural trees.

Disturbed/Major Roads

The Disturbed and Major Roads land cover types consists of sections of paved road within the Study Area.

3.1.2 Aquatic Land Cover Types

An aquatic resources delineation was conducted for the Study Area, in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008).

A discussion of the aquatic resources found onsite is presented below, and Figure 2 includes aquatic land cover types (field delineation was used to revise the SSHCP baseline land cover data for aquatic resources).

Vernal Pool

Vernal pools are seasonal ephemeral wetlands that fill and dry each year, forming in shallow depressions within Valley Grassland that are underlaid by an impermeable layer (e.g. a hardpan). Water collects in the depressions during the winter rainy season and recedes during the spring. Soils typically remain moist until late spring before becoming desiccated, and then remain dry throughout the summer. Vernal pools provide habitat for several special-status species, including invertebrates, plants, and amphibians.

Vernal pools occur throughout the Study Area. These features are variously dominated by Great Valley button-celery (*Eryngium castrense*), stalked popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), Mediterranean barley (*Hordeum marinum*), waxy mannagrass (*Glyceria declinata*), hairy hawkbit (*Leontodon saxatilis*), and toad rush (*Juncus bufonius*).

Swale

Swales are shallow ephemeral drainages found in flat to gently rolling Valley Grassland in association with vernal pool complexes, on soils with an impermeable layer. Swales convey runoff as shallow, gently sloping ephemeral wetlands during and shortly after winter rainstorms, but usually maintain soil saturation for longer periods during the growing season. They typically have hydric soils and support hydrophytic vegetation but lack an ordinary high-water mark (OHWM). Swales serve as habitat for many vernal pool species and provide hydrological connections between vernal pools that allows movement/dispersal of amphibian species, plant seeds, and vernal pool invertebrates (both adults and cysts).

Swales occur throughout the Study Area, and are dominated by Italian ryegrass (*Festuca perennis*), Fitch's spikeweed (*Centromadia fitchii*), and Mediterranean barley.

Stream/Creek

The Stream/Creek land cover type includes intermittent and perennial linear water features such as rivers, streams, creeks, drainages, and roadside and irrigation ditches. These features typically exhibit a bed and bank and an OHWM. Morrison Creek is located to the north of the Study Area, and several small headwater tributaries to the creek flow through the Study Area into Morrison Creek. Stream/creek features occur throughout the Study Area, flowing north to Morrison Creek, and vary from steep, unvegetated features, to gently sloping features that are sparsely vegetated with creeping spikerush (*Eleocharis macrostachya*).

3.2 Soils

According to the *Web Soil Survey* (NRCS 2018), two soil units, or types, have been mapped within the Study Area (Figure 2. *Natural Resources Conservation Service Soil Types*):

- (159) Hicksville gravelly loam, 0 to 2 percent slopes, occasionally flooded
- (193) Red Bluff-Redding complex, 0 to 5 percent slopes

Hicksville and Red Bluff soils are formed in alluvium derived from mixed rock sources. Redding soils are formed in gravelly and cobbly alluvium derived from mixed rock sources (NRCS 2018). No soil units derived from serpentinite or other ultramafic parent materials have been reported to occur within the Study Area or its immediate vicinity (NRCS 2018). Furthermore, no apparent inclusions of ultramafic rocks or soils were observed during the field survey.

4.0 SPECIES DESCRIPTIONS

As listed in Section 2.3, seven special-status plants were considered to be target species for this survey. A description of each target species is provided in the following sections.

4.1 Stinkbells

Stinkbells (*Fritillaria agrestis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a perennial bulbiferous herb that occurs in clay, sometimes serpentine areas in chaparral, cismontane woodland, pinyon and juniper woodland, and

Figure 2.
The Preserve
Revised SSHCP Land Cover

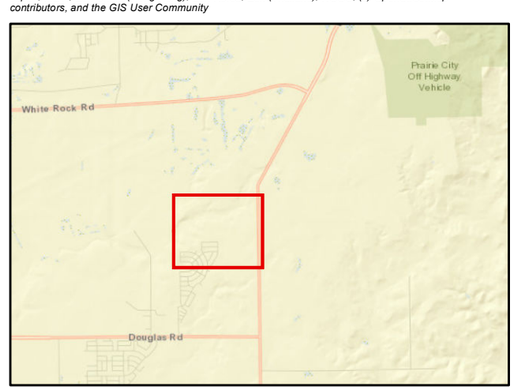
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 9.33 acres

Modified SSHCP Land Cover

- Major Roads
- Open Water
- Stream/Creek
- Swale
- Vernal Pool
- Valley Grassland
- Disturbed
- Low Density Development

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2016, NAIP
Landcover Data: SSHCP/ECORP
Base Data: RJA
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165018 Base.dwg

Map Date: 6/21/2019

Valley and foothill grassland (CNPS 2019). Stinkbells bloom from March to June and is known to occur at elevations ranging from 33 to 5,102 feet above MSL (CNPS 2019). The current range of this species in California includes Alameda, Contra Costa, Fresno, Kern, Mendocino, Merced, Monterey, Mariposa, Placer, Sacramento, Santa Barbara, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Stanislaus, Tuolumne, Ventura, and Yuba counties, and is considered to be extirpated from Santa Cruz and San Mateo counties (CNPS 2019).

There are no documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2019). However, the grassland within the Study Area provides suitable habitat for this species. Stinkbells has potential to occur within the Study Area.

4.2 Ahart's Dwarf Rush

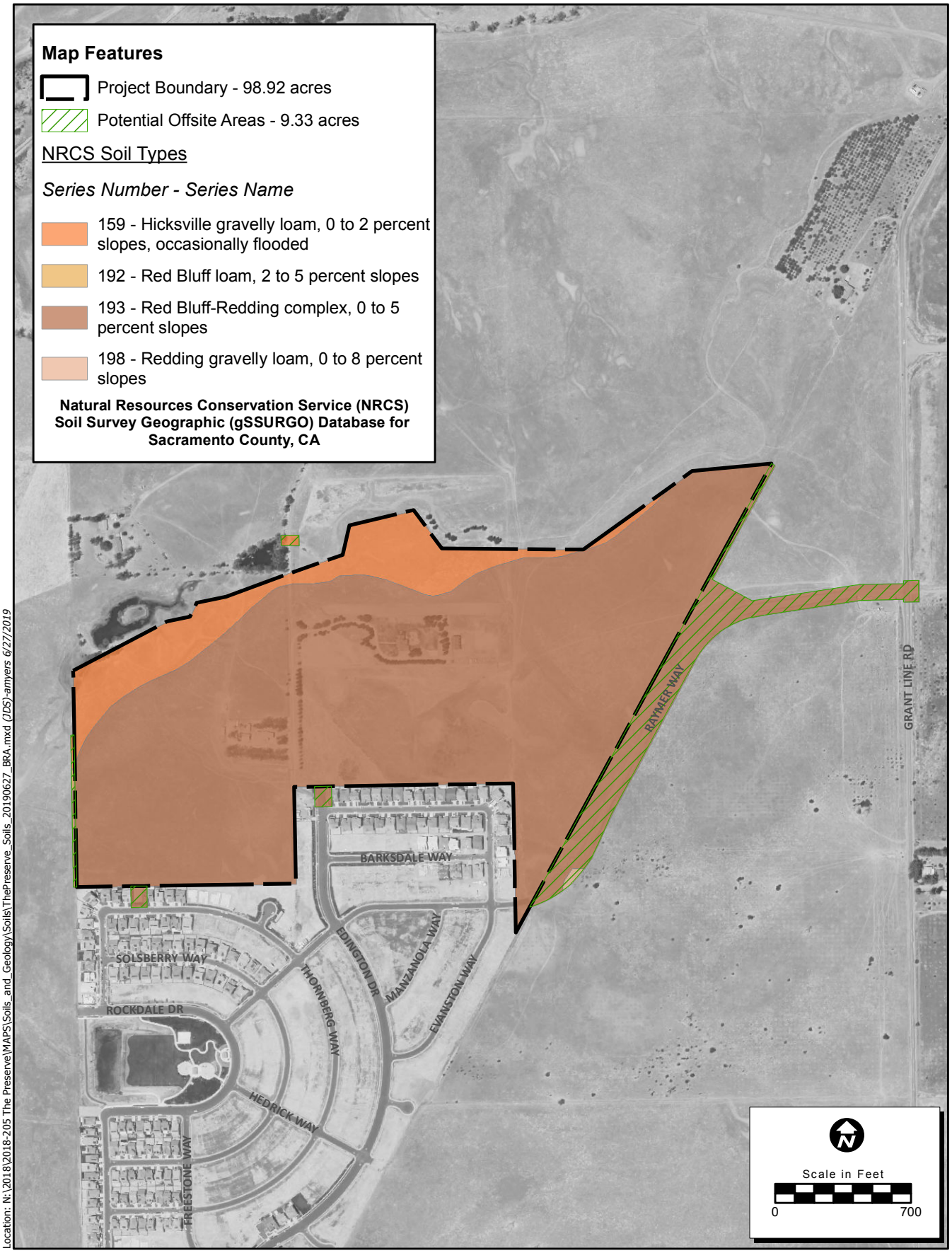
Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in mesic areas in Valley and foothill grasslands (CNPS 2019). This species also appears to have an affinity for slight disturbance since it has been found on farmed fields and gopher turnings (USFWS 2005a). Ahart's dwarf rush blooms from March through May and is known to occur at elevations ranging from 98 to 751 feet above MSL (CNPS 2019, USFWS 2005a). Ahart's dwarf rush is endemic to California; the current range of this species includes Butte, Calaveras, Placer, Sacramento, Tehama, and Yuba counties (CNPS 2019).

There are two documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2019). Ahart's dwarf rush is a SSHCP Covered Species, and the aquatic features and grassland within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Ahart's dwarf rush has Potential to Occur within the Study Area.

4.3 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not listed pursuant to the federal ESA, but is listed as endangered pursuant to the California ESA, and a CRPR 1B.2 species. This species is an herbaceous annual that occurs in marshes, swamps, lake margins, and vernal pools (CNPS 2019). Boggs Lake hedge-hyssop blooms from April through August and is known to occur at elevations ranging from 33 to 7,792 feet above MSL (CNPS 2019). The current range of this species in California includes Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, Sonoma, and Tehama counties (CNPS 2019).

There are five documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2019). Bogg's lake hedge-hyssop is a SSHCP Covered Species, and the grassland and



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Map Date: 6/27/2019
Photo Source: 2016, NAIP

Figure 3. Natural Resources Conservation Service Soil Types

2018-205 The Preserve

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vernal pools within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Boggs lake hedge-hyssop has potential to occur within the Study Area.

4.4 Legenere

Legenere (*Legenere limosa*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in a variety of seasonally inundated environments including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005b). Legenere blooms from April through June and is known to occur at elevations ranging from 3 feet to 2,887 feet above MSL (CNPS 2019). Legenere is endemic to California; the current range of this species includes Alameda, Lake, Monterey, Napa, Placer, Sacramento, Santa Clara, San Joaquin, Shasta, San Mateo, Solano, Sonoma, Stanislaus, Tehama and Yuba counties and is believed to be extirpated from Stanislaus County (CNPS 2019).

There are 10 documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2019). Legenere is a SSHCP Covered Species, and the grassland and vernal pools within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Legenere has potential to occur within the Study Area.

4.5 Sacramento Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is listed as endangered pursuant to both the federal and California ESAs, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal pools (CNPS 2017). The median area of occupied pools discovered prior to 1988 was 0.69 acre and ranged from 0.25 to 2.03 acres (USFWS 2005a). Sacramento Orcutt grass blooms from April through September and is known to occur at elevations ranging from 98 to 328 feet above MSL (CNPS 2017). Sacramento Orcutt grass is endemic to California and to the southeastern Sacramento Valley (Keeler-Wolf et al. 1998, as cited in USFWS 2005a), with all known occurrences restricted to Sacramento County. Known occurrences of this species within the general region are limited to a small area east of Mather Field, Phoenix Field Ecological Reserve, Phoenix Park (introduced population), and an area near Rancho Seco Lake (USFWS 2005a).

There are six documented CNDDB occurrences of this species located within five miles of the Study Area (CDFW 2019). Sacramento Orcutt Grass is a SSHCP Covered Species, and the grassland and vernal pools within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Sacramento Orcutt grass has potential to occur within the Study Area.

4.6 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not listed pursuant to the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a rhizomatous, herbaceous perennial that occurs in shallow marshes and freshwater swamps (CNPS 2019). Sanford's arrowhead blooms from May through November and is known to occur at elevations ranging from sea level to 2,133 feet above MSL (CNPS 2019). Sanford's arrowhead is endemic to California; the current range of this species includes Butte, Del Norte, El Dorado, Fresno, Merced, Mariposa, Marin, Napa, Orange, Placer, Sacramento, San Bernardino, San Joaquin,

Shasta, Solano, Tehama, Tulare, Ventura and Yuba counties; it is believed to be extirpated from both Orange and Ventura counties (CNPS 2019).

There is one documented CNDDB occurrence of this species located within five miles of the Study Area (CDFW 2019). Sanford's arrowhead is a SSHCP Covered Species, and the grassland within the Study Area provides suitable habitat for this species according to SSHCP Modeled Species Habitat. Sanford's arrowhead has potential to occur within the Study Area.

4.7 Slender Orcutt Grass

Slender Orcutt grass (*Orcuttia tenuis*) is listed as threatened and endangered pursuant to both the federal and California ESAs, respectively, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal pools (CNPS 2019) primarily on substrates of volcanic origin (Crampton 1959, Corbin and Schoolcraft 1989; as cited in USFWS 2005a). This species is known to occur in the same type of vernal pool complexes as Sacramento Orcutt grass in Sacramento County; however, these species have not been observed co-existing in the same vernal pool (USFWS 2005a). The median area of pools occupied by populations studied by Stone et al. (1988, as cited in USFWS 2005a) was 1.6 acres and ranged from 0.2 to 111.0 acres (USFWS 2005a). Slender Orcutt grass blooms from May through October and is known to occur at elevations ranging from 115 to 5,774 feet above MSL (CNPS 2019). Slender Orcutt grass is endemic to California; the current range for this species includes Butte, Lake, Lassen, Modoc, Plumas, Sacramento, Shasta, Siskiyou, and Tehama counties (CNPS 2019).

There is one documented CNDDB occurrence of this species located within five miles of the Study Area (CDFW 2019). Slender Orcutt grass is a SSHCP Covered Species, and the grassland and vernal pools within the Study Area provide suitable habitat for this species according to SSHCP Modeled Species Habitat. Slender Orcutt grass has potential to occur within the Study Area.

5.0 RESULTS

ECORP conducted special-status plant surveys on April 29, 2019 and June 13, 2019 within the Study Area. The Rio del Oro Offsite and Raymer Way Offsite were assessed to the degree possible from accessible areas, but transects across these offsites were not surveyed. No special-status plant species were observed during the special-status plant surveys. However, the Raymer Way Offsite was not accessible for a complete survey, and the grassland within this offsite may represent potential habitat for stinkbells and Ahart's dwarf rush.

White-headed navarretia (*Navarretia leucocephala*) was observed within the Project. White-headed navarretia is a common species with no special status, but is difficult to distinguish from pincushion navarretia (*Navarretia myersii*), which has a CRPR of 1B.1 and is an SSHCP Covered Species. While pincushion navarretia was not considered a target species for the surveys because no SSHCP Modeled Species Habitat was mapped within the Study Area, ECORP consulted with experts at the University of California, Davis Herbarium, and identification of the species as white-headed navarretia was confirmed based on the following characteristics:

- Stems greater than 2.5cm
- Sparseness of puberulent hairs on the calyx
- Flower tubes shorter than typical for pincushion navarretia

- Inflorescence is a tightly packed cyme, rather than a true head

6.0 CONCLUSION

No special-status plant species were documented within the Project or publicly accessible portions of the Offsites. However, there is potential for stinkbells and Ahart's dwarf rush to occur in unsurveyed areas of the Raymer Way Offsite.

While the SSHCP Modeled Species Habitat was used to determine the target species list for this survey, the survey was comprehensive and included identification of each species encountered.

7.0 REFERENCES

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LIST OF ATTACHMENTS

Attachment A – Full Species Search Table

Attachment B – Target Species Reference Source

Attachment C – Statement of Qualifications

Attachment D – Plant Species Observed On-Site (April 29 and June 13, 2019)

ATTACHMENT A

Full Species Search Table

Attachment A. Special-Status Plant Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Plants						
Ione Manzanita *(Arctostaphylos myrtifolia)*	FT	-	1B.2	Chaparral and cismontane woodlands associated with very acidic, nutrient-poor, coarse soils typical of the Ione Formation (196'–1,903').	November–March	Absent. Suitable habitat not present onsite.
Brewer's calandrinia *(Calandrinia breweri)*	–	–	4.2	Sandy or loamy soils, disturbed sites, and burns within chaparral and coastal scrub (33'–4,003').	March–June	Absent. Suitable habitat not present onsite.
Pine Hill ceanothus *(Ceanothus roderickii)*	FE	CR	1B.1	Rocky serpentinite or gabbroic soil in chaparral and cismontane woodland (804'–3,576').	April–June	Absent. Suitable habitat not present onsite.
Red Hills soaproot *(Chlorogalum grandiflorum)*	–	–	1B.2	Serpentinite or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest, occasionally on non–ultramafic soils (804'–5,545').	May–June	Absent. Suitable habitat not present onsite.
Brandegee's clarkia *(Clarkia biloba* ssp. *brandegeeae)*	-	-	4.2	Chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts (246' - 3,002').	May–July	Absent. Suitable habitat not present onsite.
Bisbee Peak rush–rose *(Crocanthemum suffrutescens)*	–	–	3.2	Often gabbroic or Ione soil or in burned or disturbed areas within chaparral (246'–2,198').	April–August	Absent. Suitable habitat not present onsite.
Dwarf downingia *(Downingia pusilla)*	–	–	2B.2, SSHCP Covered Species	Mesic areas in valley and foothill grassland, and vernal pools. Species appears to have an affinity for slight disturbance (i.e., scraped depressions, ditches, etc.) (Baldwin et al. 2012, CDFW 2018) (3'–1,460').	March–May	Absent. No SSHCP Modeled Species Habitat onsite.
Ione Buckwheat *(Eriogonum apricum* var. *apricum)*	FE	CE	1B.1	Openings in chaparral communities found on Ione soils (197'–476').	July–October	Absent. Suitable habitat not present onsite.
Irish Hill Buckwheat *(Eriogonum apricum* var. *prostratum)*	FE	CE	1B.1	Openings in chaparral communities found on Ione soils (295'–394').	June–July	Absent. Suitable habitat not present onsite.
Jepson's woolly sunflower *(Eriophyllum jepsonii)*	–	–	4.3	Chaparral, cismontane woodland, and coastal scrub, sometimes on serpentinite (656'–3,363').	April–June	Absent. Suitable habitat not present onsite.

Attachment A. Special-Status Plant Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Tuolumne Button–celery *(Eryngium pinnatisectum)*	–	–	1B.2	Vernal pools and other mesic conditions in cismontane woodland and lower montane coniferous forests (230'–3,002').	May–August	Absent. Suitable habitat not present onsite.
Pine Hill flannelbush *(Fremontodendron decumbens)*	FE	CR	1B.2	Serpentine or gabbro rock outcrops in chaparral and cismontane woodland (1,394'–2,493').	April–July	Absent. Suitable habitat not present onsite.
Stinkbells *(Fritillaria agrestis)*	-	-	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, Pinyon and juniper woodland, and Valley and foothill grassland (33' - 5,102').	March–June	Potential to Occur. Valley grassland represents suitable habitat.
El Dorado bedstraw *(Galium californicum* ssp. *sierrae)*	FE	CR	1B.2	Gabbroic soil in chaparral, cismontane woodland and lower montane coniferous forest communities (328'–1,919').	May–June	Absent. Suitable habitat not present onsite.
Boggs Lake hedge–hyssop *(Gratiola heterosepala)*	–	CE	1B.2, SSHCP Covered Species	Marshes, swamps, lake margins, and vernal pools (33'–7,792').	April–August	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Parry's horkelia *(Horkelia parryi)*	–	–	1B.2	Ione and other soil formations in chaparral and cismontane woodlands (262'–3,510').	April–September	Absent. Suitable habitat not present onsite.
Ahart's dwarf rush *(Juncus leiospermus* var. *ahartii)*	–	–	1B.2, SSHCP Covered Species	Mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields (USFWS 2005) (98'–751').	March–May	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Legenere *(Legenere limosa)*	–	–	1B.1, SSHCP Covered Species	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005) (3'–2,887').	April–June	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Hoary navarretia *(Navarretia eriocephala)*	-	-	4.3	Vernally mesic areas in cismontane woodland and Valley and foothill grassland (345' - 1,312').	May-June	Absent. Suitable habitat not present onsite.
Pincushion navarretia *(Navarretia myersii* ssp. *myersii)*	–	–	1B.1, SSHCP Covered Species	Often acidic soils in vernal pools (66'–1,083').	April–May	Absent. No SSHCP Modeled Species Habitat onsite.

Attachment A. Special-Status Plant Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA	Other			
Slender Orcutt grass *(Orcuttia tenuis)*	FT	CE	1B.1, SSHCP Covered Species	Vernal pools, often gravelly (115'–5,774').	May–September	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Sacramento Orcutt grass *(Orcuttia viscida)*	FE	CE	1B.1, SSHCP Covered Species	Vernal pools (98'–328').	April–July	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Layne's ragwort (*Packera layneae*)	FT	CR	1B.2	Rocky serpentinite or gabbroic soil in chaparral and cismontane woodland communities (656'–3,560').	April–August	Absent. Suitable habitat not present onsite.
Sanford's arrowhead *(Sagittaria sanfordii)*	–	–	1B.2, SSHCP Covered Species	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
El Dorado County Mule Ears *(Wyethia reticulata)*	–	–	1B.2	Clay or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest communities (607'–2,067').	April–August	Absent. Suitable habitat not present onsite.

Status Codes:

AMM	SSHCP Avoidance and Minimization Measure
ESA	Endangered Species Act
CESA	California Endangered Species Act
FE	ESA listed, Endangered.
FT	ESA listed, Threatened.
CE	CESA or NPPA listed, Endangered.
CR	CESA- or NPPA-listed, Rare.
CT	CESA or NPPA listed, Threatened.
CC	Candidate for CESA listing as Endangered or Threatened.
SSHCP	South Sacramento Habitat Conservation Plan
1B	California Rare Plant Ranks (CRPRs)/Rare or Endangered in California and elsewhere.
2B	CRPR /Rare or Endangered in California, more common elsewhere.
2	CRPR /Rare or Endangered in California, more common elsewhere.
4	CRPR /Plants of Limited Distribution - A Watch List.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

ATTACHMENT B

Target Species Reference Source

Target Species Reference Source[1]				
Name	**Location of Observation**	**Dates of Observation**	**Phenology**	**Remarks**
Stinkbells *Fritillaria agrestis*	Calflora Website	NA	Photographs from Calflora and the Jepson manual were used as a reference as reference populations were not available.	Reference population not available.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	Calflora Website	NA	Photographs from Calflora and the Jepson manual were used as a reference as reference populations were not available.	Reference population not available.
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	Calflora Website	NA	Photographs from Calflora and the Jepson manual were used as a reference as reference populations were not available.	Reference population not available.
Legenere *Legenere limosa*	Calflora Website	NA	Photographs from Calflora and the Jepson manual were used as a reference as reference populations were not available.	Reference population not available.
Slender Orcutt grass *Orcuttia tenuis*	Calflora Website	NA	Photographs from Calflora and the Jepson manual were used as a reference as reference populations were not available.	Reference population not available.
Sacramento Orcutt grass *Orcuttia viscida*	Calflora Website	NA	Photographs from Calflora and the Jepson manual were used as a reference as reference populations were not available.	Reference population not available.
Sanford's arrowhead *Sagittaria sanfordii*	Near Rancho Cordova, Sacramento County	30 May 2019	Population vegetative, then observed in fruit	Distinctive triangular stems were noted.

[1] Calflora and/or The Jepson Manual were used as reference for any species not listed in this table.

ATTACHMENT C

Statement of Qualifications

Attachment C

Statement of Qualifications

Casey Peters, PhD

Associate Biologist, ECORP Consulting, Inc.

Casey Peters is a botanist/biologist with experience in general floristic surveys, special-status plant surveys, and restoration planning, implementation, and monitoring. Dr. Peters holds a PhD in Ecology with an emphasis in plant communities and a certificate in conservation management. He has conducted scientific research in plant communities throughout California including annual grassland, oak savannah, mixed-conifer forest, sub-alpine forest, coastal dune, coastal prairie, annual forbland, and desert plant communities. He has also taught courses in California floristics and plant ecology.

Benjamin Waitman, MS

Staff Biologist, ECORP Consulting, Inc.

Ben Waitman is a botanist/biologist with a wide range of experience conducting research and designing and managing projects throughout California and Nevada. Mr. Waitman received an M.S. in Biology from the University of Nevada and is a PhD candidate in Ecology at the University of California, Davis. He has published and presented on a variety of species of plants, animals and fungi. Mr Waitman has over 10 years of experience conducting plant surveys in California, including surveys in valley grasslands, oak woodlands, riparian woodlands, alpine meadows, and Mojave desert ecosystems. Mr. Waitman is an ISA-certified arborist and has performed numerous tree surveys.

ATTACHMENT D

Plant Species Observed On-Site (April 29 and June 13, 2018)

The Preserve Development
Plant Species Observed on April 29, 2019

Scientific Name	Common Name
ASTERACEAE	**SUNFLOWER FAMILY**
Agoseris heterophylla	Annual mountain dandelion
Alopecurus saccatus	Goldfields
*Carduus pycnocephalus**	Italian thistle
*Cotula coronopifolia**	Brassbuttons
*Hypochaeris glabra**	Smooth cat's-ear
*Hypochaeris radicata**	Perennial cat's-ear
Lasthenia californica	California goldfields
Lasthenia fremontii	Fremont's goldfields
Lasthenia glaberrima	Smooth goldfields
*Leontodon saxatilis**	Hairy hawkbit
Psilocarphus oregonus	Oregon woolly-heads
Psilocarphus tenellus	Slender woolly-heads
*Silybum marianum**	Milk thistle
BORAGINACEAE	**BORAGE FAMILY**
Plagiobothrys stipitatus	Slender popcorn-flower
BRASSICACEAE	**MUSTARD FAMILY**
*Capsella bursa-pastoris**	Shepherd's purse
Cardamine oligosperma	Few-seed bitter-cress
Lepidium latipes	Dwarf pepper grass
*Raphanus sativus**	Purple wild radish
CAMPANULACEAE	**BELLFLOWER FAMILY**
Downingia bicornuta	Double-horn downingia
CARYOPHYLLACEAE	**PINK FAMILY**
*Spergularia rubra**	Purple sandspurry
CYPERACEAE	**SEDGE FAMILY**
Eleocharis macrostachya	Creeping spikerush
CUPRESSACEAE	**CYPRESS FAMILY**
Sequoia sempervirens	Coast Redwood
FABACEAE	**LEGUME FAMILY**
Lupinus bicolor	Bicolored lupine
*Medicago polymorpha**	Bur clover
Trifolium ciliolatum	Foothill clover
*Trifolium dubium**	Shamrock clover
*Trifolium hirtum**	Rose clover
*Trifolium repens**	White clover
*Trifolium subterraneum**	Subterranean clover
Trifolium variegatum	White-tip clover
GENTIANACEAE	**GENTIAN FAMILY**
Cicendia quadrangularis	Oregon timwort
GERANIACEAE	**GERANIUM FAMILY**
*Erodium botrys**	Broad leaf filaree
*Erodium cicutarium**	Cut leaf filaree
*Geranium dissectum**	Cut-leaved geranium
HAMAMELIDACEAE	**WITCH-HAZEL FAMILY**
*Liquidambar styraciflua**	Sweetgum
JUNCACEAE	**RUSH FAMILY**
Juncus bufonius	Toad rush
Juncus effusus	Soft rush

Juncus xiphioides	Iris-leaf rush
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	Common horehound
LYTHRACEAE	**LOOSESTRIFE FAMILY**
*Lythrum hyssopifolia**	Hyssop loosestrife
MALVACEAE	**MALLOW FAMILY**
*Malva parviflora**	Cheeseweed
OROBANCHACEAE	**BROOMRAPE FAMILY**
Castilleja attenuata	Valley tassels
Castilleja campestris ssp. *campestris*	Field owl's-clover
PHRYMACEAE	**LOPSEED FAMILY**
Mimulus guttatus	Common large monkey-flower
PLANTAGINACEAE	**PLANTAIN FAMILY**
Gratiola ebracteata	Bractless hedgehyssop
POACEAE	**GRASS FAMILY**
*Aira caryophyllea**	Silver hairgrass
Alopecurus saccatus	Pacific foxtail
*Avena barbata**	Slender wild oat
*Briza minor**	Little quaking grass
*Bromus diandrus**	Ripgut brome
*Bromus hordeaceus**	Soft brome
Deschampsia danthonioides	Annual hairgrass
*Festuca myuros**	Rat-tail vulpia
*Festuca perennis**	Italian Ryegrass
*Glyceria declinata**	Mannagrass
Hordeum marinum ssp. *gussoneanum**	Mediterranean barley
Hordeum murinum ssp. *glaucum**	Foxtail barley
*Poa annua**	Annual bluegrass
POLEMONIACEAE	**PHLOX FAMILY**
Navarretia leucocephala	White-head navarretia
POLYGONACEAE	**BUCKWHEAT FAMILY**
*Rumex pulcher**	Fiddle dock
RANUNCULACEAE	**BUTTERCUP FAMILY**
Ranunculus aquatilis	White water buttercup
Ranunculus bonariensis var. *trisepalus*	Carter's buttercup
*Ranunculus muricatus**	Spiny-fruit buttercup
ROSACEAE	**ROSE FAMILY**
Pyrus calleryana	Callery pear
RUBIACEAE	**MADDER FAMILY**
Galium aparine	Common bedstraw
THEMIDACEAE	**BRODIAEA FAMILY**
Brodiaea elegans	Harvest brodiaea
VITACEAE	**GRAPE FAMILY**
Vitis vinifera	Cultivated grape

An asterisk (*) indicates a non-native species.

The Preserve Development
Plant Species Observed on June 13, 2019

Scientific Name	Common Name
ALISMATACEAE	**WATER-PLANTAIN FAMILY**
Alisma triviale	Broad-leaf water plantain
ANACARDIACEAE	**SUMAC FAMILY**
*Schinus terebinthifolius**	Brazilian pepper-tree
APIACEAE	**CARROT FAMILY**
Eryngium castrense	Button-celery
*Torilis arvensis**	Torilis (hedge parsley)
APOCYNACEAE	**DOGBANE FAMILY**
Asclepias fascicularis	Narrow-leaf milkweed
ASTERACEAE	**SUNFLOWER FAMILY**
*Carduus pycnocephalus**	Italian thistle
*Centaurea solstitialis**	Yellow star-thistle
Centromadia fitchii	Fitch's spikeweed
*Cotula coronopifolia**	Brassbuttons
Heliotropium curassavicum	Seaside heliotrope
Holocarpha virgata	Sticky tarweed
*Lactuca serriola**	Prickly lettuce
*Leontodon saxatilis**	Hairy hawkbit
Pseudognaphalium californicum	Everlasting
Psilocarphus oregonus	Oregon woolly-heads
*Senecio vulgaris**	Common groundsel
Stephanomeria virgata	Rod wirelettuce
BRASSICACEAE	**MUSTARD FAMILY**
*Capsella bursa-pastoris**	Shepherd's purse
*Hirschfeldia incana**	Shortpod mustard
*Raphanus sativus**	Purple wild radish
CARYOPHYLLACEAE	**PINK FAMILY**
*Spergularia rubra**	Purple sandspurry
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
*Chenopodium album**	White goosefoot
CONVOLVULACEAE	**MORNING-GLORY FAMILY**
*Convolvulus arvensis**	Field bindweed
CUPRESSACEAE	**CYPRESS FAMILY**
Sequoia sempervirens	Redwood
CYPERACEAE	**SEDGE FAMILY**
Cyperus eragrostis	Tall flatsedge
Eleocharis macrostachya	Creeping spikerush
EUPHORBIACEAE	**SPURGE FAMILY**
Croton setigerus	Turkey mullein
FABACEAE	**LEGUME FAMILY**
Acmispon americanus	American bird's foot trefoil
*Medicago polymorpha**	Bur clover
*Trifolium dubium**	Shamrock clover
*Trifolium hirtum**	Rose clover
*Vicia sativa**	Common vetch
*Vicia villosa**	Winter vetch
GENTIANACEAE	**GENTIAN FAMILY**
Zeltnera muehlenbergii	Muhlenberg's centaury
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	Cut leaf filaree

*Erodium moschatum**	White stemmed filaree
HAMAMELIDACEAE	**WITCH-HAZEL FAMILY**
*Liquidambar styraciflua**	Liquidambar
JUNCACEAE	**RUSH FAMILY**
Juncus bufonius	Toad rush
Juncus effusus	Soft rush
Juncus xiphioides	Iris-leaf rush
LAMIACEAE	**MINT FAMILY**
Trichostema lanceolatum	Vinegar weed
LYTHRACEAE	**LOOSESTRIFE FAMILY**
*Lythrum portula**	Broad-leaved loosestrife
MALVACEAE	**MALLOW FAMILY**
*Malva parviflora**	Cheeseweed
MARSILEACEAE	**MARSILEA FAMILY**
Marsilea vestita	Hairy water fern
MYRTACEAE	**MYRTLE FAMILY**
*Eucalyptus polyanthemos**	Silver dollar gum
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Epilobium brachycarpum	Panicled willow-herb
Epilobium campestre	Smooth spike primrose
OROBANCHACEAE	**BROOMRAPE FAMILY**
*Parentucellia viscosa**	Yellow parentucellia
PLANTAGINACEAE	**PLANTAIN FAMILY**
*Plantago coronopus**	Cut-leaf plantain
*Plantago lanceolata**	English plantain
POACEAE	**GRASS FAMILY**
*Aegilops triuncialis**	Barbed goatgrass
*Aira caryophyllea**	Silver hairgrass
Alopecurus saccatus	Pacific foxtail
*Avena barbata**	Slender wild oat
*Briza minor**	Little quaking grass
*Bromus tectorum**	Cheatgrass
*Cynodon dactylon**	Bermuda grass
*Elymus caput-medusae**	Medusahead grass
*Festuca myuros**	Rat-tail vulpia
*Festuca perennis**	Italian Ryegrass
Hordeum marinum ssp. *gussoneanum**	Mediterranean barley
*Hordeum murinum**	Foxtail barley
*Polypogon monspeliensis**	Annual rabbit-foot grass
*Triticum aestivum**	Cultivated wheat
POLYGONACEAE	**BUCKWHEAT FAMILY**
Polygonum aviculare ssp. *depressum*	Prostrate knotweed
*Rumex crispus**	Curly dock
SALICACEAE	**WILLOW FAMILY**
Salix exigua	Sandbar willow
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	Sacred thornapple
Nicotiana attenuata	Coyote tobacco
Solanum americanum	Nightshade
Solanum rostratum	Buffalobur nightshade
THEMIDACEAE	**BRODIAEA FAMILY**
Brodiaea elegans	Harvest brodiaea
VITACEAE	**GRAPE FAMILY**
Vitis vinifera	Cultivated grape
ZYGOPHYLLACEAE	**CALTROP FAMILY**

*Tribulus terrestris**	Puncture vine

An asterisk (*) indicates a non-native species.

ATTACHMENT E

Special-Status Species Evaluated for the Study Area

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Plants						
Ione Manzanita *(Arctostaphylos myrtifolia)*	FT	-	1B.2	Chaparral and cismontane woodlands associated with very acidic, nutrient-poor, coarse soils typical of the Ione Formation (196'–1,903').	November–March	Absent. Suitable habitat not present onsite.
Brewer's calandrinia *(Calandrinia breweri)*	–	–	4.2	Sandy or loamy soils, disturbed sites, and burns within chaparral and coastal scrub (33'–4,003').	March–June	Absent. Suitable habitat not present onsite.
Pine Hill ceanothus *(Ceanothus roderickii)*	FE	CR	1B.1	Rocky serpentinite or gabbroic soil in chaparral and cismontane woodland (804'–3,576').	April–June	Absent. Suitable habitat not present onsite.
Red Hills soaproot *(Chlorogalum grandiflorum)*	–	–	1B.2	Serpentinite or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest, occasionally on non–ultramafic soils (804'–5,545').	May–June	Absent. Suitable habitat not present onsite.
Brandegee's clarkia *(Clarkia biloba* ssp. *brandegeeae)*	-	-	4.2	Chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts (246' - 3,002').	May–July	Absent. Suitable habitat not present onsite.
Bisbee Peak rush–rose *(Crocanthemum suffrutescens)*	–	–	3.2	Often gabbroic or Ione soil or in burned or disturbed areas within chaparral (246'–2,198').	April–August	Absent. Suitable habitat not present onsite.
Dwarf downingia *(Downingia pusilla)*	–	–	2B.2, SSHCP Covered Species	Mesic areas in valley and foothill grassland, and vernal pools. Species appears to have an affinity for slight disturbance (i.e., scraped depressions, ditches, etc.) (Baldwin et al. 2012, CDFW 2018) (3'–1,460').	March–May	Absent. No SSHCP Modeled Species Habitat onsite.
Ione Buckwheat *(Eriogonum apricum* var. *apricum)*	FE	CE	1B.1	Openings in chaparral communities found on Ione soils (197'–476').	July–October	Absent. Suitable habitat not present onsite.
Irish Hill Buckwheat *(Eriogonum apricum* var. *prostratum)*	FE	CE	1B.1	Openings in chaparral communities found on Ione soils (295'–394').	June–July	Absent. Suitable habitat not present onsite.
Jepson's woolly sunflower *(Eriophyllum jepsonii)*	–	–	4.3	Chaparral, cismontane woodland, and coastal scrub, sometimes on serpentinite (656'–3,363').	April–June	Absent. Suitable habitat not present onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Tuolumne Button–celery *(Eryngium pinnatisectum)*	–	–	1B.2	Vernal pools and other mesic conditions in cismontane woodland and lower montane coniferous forests (230'–3,002').	May–August	Absent. Suitable habitat not present onsite.
Pine Hill flannelbush *(Fremontodendron decumbens)*	FE	CR	1B.2	Serpentine or gabbro rock outcrops in chaparral and cismontane woodland (1,394'–2,493').	April–July	Absent. Suitable habitat not present onsite.
Stinkbells *(Fritillaria agrestis)*	-	-	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, Pinyon and juniper woodland, and Valley and foothill grassland (33' - 5,102').	March–June	Absent within Project. Special-status plant surveys did not detect this species. Potential to Occur within Raymer Way Offsite; Valley grassland represents suitable habitat.
El Dorado bedstraw *(Galium californicum* ssp. *sierrae)*	FE	CR	1B.2	Gabbroic soil in chaparral, cismontane woodland and lower montane coniferous forest communities (328'–1,919').	May–June	Absent. Suitable habitat not present onsite.
Boggs Lake hedge–hyssop *(Gratiola heterosepala)*	–	CE	1B.2, SSHCP Covered Species	Marshes, swamps, lake margins, and vernal pools (33'–7,792').	April–August	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
Parry's horkelia *(Horkelia parryi)*	–	–	1B.2	Ione and other soil formations in chaparral and cismontane woodlands (262'–3,510').	April–September	Absent. Suitable habitat not present onsite.
Ahart's dwarf rush *(Juncus leiospermus* var. *ahartii)*	–	–	1B.2, SSHCP Covered Species	Mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields (USFWS 2005a) (98'–751').	March–May	Absent within Project. Special-status plant surveys did not detect this species. Small amounts of SSHCP Modeled Species Habitat present within unsurveyed Raymer Way Offsites.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Legenere *(Legenere limosa)*	–	–	1B.1, SSHCP Covered Species	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005b) (3'–2,887').	April–June	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
Hoary navarretia *(Navarretia eriocephala)*	-	-	4.3	Vernally mesic areas in cismontane woodland and Valley and foothill grassland (345' - 1,312').	May-June	Absent. Suitable habitat not present onsite.
Pincushion navarretia *(Navarretia myersii* ssp. *myersii)*	–	–	1B.1, SSHCP Covered Species	Often acidic soils in vernal pools (66'–1,083').	April–May	Absent. No SSHCP Modeled Species Habitat onsite.
Slender Orcutt grass *(Orcuttia tenuis)*	FT	CE	1B.1, SSHCP Covered Species	Vernal pools, often gravelly (115'–5,774').	May–September	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
Sacramento Orcutt grass *(Orcuttia viscida)*	FE	CE	1B.1, SSHCP Covered Species	Vernal pools (98'–328').	April–July	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
Layne's ragwort (*Packera layneae*)	FT	CR	1B.2	Rocky serpentinite or gabbroic soil in chaparral and cismontane woodland communities (656'–3,560').	April–August	Absent. Suitable habitat not present onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Sanford's arrowhead *(Sagittaria sanfordii)*	–	–	1B.2, SSHCP Covered Species	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Absent. Special-status plant surveys did not detect this species. Field surveys have determined that there is no habitat present for this species within the unsurveyed Raymer Way Offsite.
El Dorado County Mule Ears *(Wyethia reticulata)*	–	–	1B.2	Clay or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest communities (607'–2,067').	April–August	Absent. Suitable habitat not present onsite.
Invertebrates						
Conservancy fairy shrimp (*Branchinecta conservatio)*	FE	-	-	Vernal pools/wetlands.	November–April	Potential to Occur within vernal pool habitat onsite.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	-	SSHCP Covered Species	Vernal pools/wetlands.	November-April	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Midvalley fairy shrimp *(Branchinecta mesovallensis)*	-	-	CNDDB, SSHCP Covered Species	Vernal pools/wetlands.	November – April	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	-	SSHCP Covered Species	Elderberry shrubs.	Any season	Absent. No SSHCP Modeled Species Habitat onsite.
Ricksecker's water scavenger beetle *Hydochara rickseckeri*	-	-	SSHCP Covered Species	Vernal pools/wetlands.		Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	-	SSHCP Covered Species	Vernal pools/wetlands.	November-April	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Fish						
Delta smelt (*Hypomesus transpacificus*)	FT	CE	-	Sacramento-San Joaquin delta		Absent. Suitable habitat not present onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Steelhead (CA Central Valley DPS) (*Oncorhynchus mykiss irideus*)	FT	-	-	Undammed rivers, streams, and creeks		Absent. Suitable habitat not present onsite.
Amphibians						
California tiger salamander (Central California DPS) (*Ambystoma californiense*)	FT	CT	SSC, SSHCP Covered Species	Vernal pools, wetlands (breeding) and adjacent grassland or oak woodland; needs underground refuge (e.g., ground squirrel and/or gopher burrows). Largely terrestrial as adults.	March-May	Absent. No SSHCP Modeled Species Habitat onsite.
California red-legged frog (*Rana draytonii*)	FT	-	SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down.		Absent. Suitable habitat not present onsite.
Foothill yellow-legged frog (*Rana boylii*)	-	CC	SSC	Foothill yellow-legged frogs can be active all year in warmer locations, but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	May–October	Absent. Suitable habitat not present onsite.
Western spadefoot (*Spea hammondii*)	-	-	SSC, SSHCP Covered Species	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March-May	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Reptiles						
Giant garter snake (*Thamnophis gigas*)	FT	CT	SSHCP Covered Species	Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range.	April-October	Absent. No SSHCP Modeled Species Habitat onsite.
Western pond turtle (*Actinemys marmorata*)	-	-	SSC, SSHCP Covered Species	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Potential to Occur. No SSHCP Modeled Species Habitat present; however, ponded areas in Morrison Creek represent potential habitat.
Birds						

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Bald eagle (*Haliaeetus leucocephalus)*	Delisted	CE	CFP, BCC	Typically nests in forested areas near large bodies of water in the northern half of California; nest in trees and rarely on cliffs; wintering habitat includes forest and woodland communities near water bodies (e.g. rivers, lakes), wetlands, flooded agricultural fields, open grasslands	February–September (nesting); October-March (wintering)	Absent. Suitable habitat not present onsite.
Bank swallow (*Riparia riparia*)	-	CT	-	Nests colonially along coasts, rivers, streams, lakes, reservoirs, and wetlands in vertical banks, cliffs, and bluffs in alluvial, friable soils. May also nest in sand, gravel quarries and road cuts. In California, breeding range includes northern and central California.	May–July	Absent. Suitable habitat not present onsite.
Burrowing owl *(Athene cunicularia)*	-	-	BCC, SSC, SSHCP Covered Species	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g. prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February-August	Present. SSHCP Modeled Species Habitat present onsite, and evidence of burrow use onsite observed during survey conducted per SSHCP AMM WBO-1.
California black rail (*Laterallus jamaicensis coturniculus*)	-	CT	BCC, CFP	Salt marsh, shallow freshwater marsh, wet meadows, and flooded grassy vegetation. In California, primarily found in coastal and Bay-Delta communities, but also in Sierran foothills (Butte, Yuba, Nevada, Placer counties)	March–September (breeding)	Absent. Suitable habitat not present onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
California spotted owl *(Strix occidentalis occidentalis)*	-	-	BCC, SSC	Found in the southern Cascade Range and northern Sierra Nevada from Pit River, Shasta Co. south to Tehachapi Mountains, Kern Co, in the coastal ranges from Monterey Co. to Santa Barbara Co., in Transverse and Peninsular Ranges south to northern Baja California. At lower elevations, they breed in hardwood forests and coniferous forests at higher elevations. They use forests with greater complexity and structure.	March–September (breeding)	Absent. Suitable habitat not present onsite.
California thrasher (*Toxostoma redivivum*)	-	-	SSC	Resident and endemic to coastal and Sierra Nevada-Cascade foothill areas of California. Nests are usually well hidden in dense shrubs, including scrub oak, California lilac, and chamise.	February–July	Absent. Suitable habitat not present onsite.
Clark's grebe (*Aechmophorus clarkia*)	-	-	BCC	The breeding range of Clark's grebe includes all of California with major breeding areas such as Eagle Lake (Lassen County), Clear Lake (Lake County), Lake Almanor (Plumas County), Bridgeport Reservoir (Butte County), and Goose Lake (Modoc County). Clark's grebe occurs seasonally in suitable wetland habitat with a preference for large lakes. Clarke's grebe is a diving bird that forages primarily under water.	January–December	Absent. Suitable habitat not present onsite.
Cooper's hawk *(Accipiter cooperii)*	-	-	CDFW WL, SSHCP Covered Species	Nests in trees in riparian woodlands in deciduous, mixed and evergreen forests, as well as urban landscapes	March-July	Absent. No SSHCP Modeled Species Habitat onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Double-crested cormorant *(Phalacrocorax auritus)*	-	-	CDFW WL	Nests near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines and typically forages in shallow water. Non-nesters are found in many coastal and inland waters.	April–August	Absent. Suitable habitat not present onsite.
Ferruginous hawk (*Buteo regalis*)	-	-	BCC, CDFW WL, SSHCP Covered Species	Rarely breeds in California (Lassen County); winter range includes grassland and shrubsteppe habitats from Northern California (except northeast and northwest corners) south to Mexico and east to Oklahoma, Nebraska, and Texas.	September-March (wintering)	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Golden eagle (*Aquila chrysaetos*)	-	-	BCC, CFP	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/savannah, and chaparral. Nesting occurs on cliff ledges, river banks, trees, and human-made structures (e.g. windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter.	Nest (February–August); winter CV (October–February)	Potential to Occur. Winter foraging habitat present.
Grasshopper sparrow (*Ammodramus savannarum*)	-	-	SSC	In California, breeding range includes most coastal counties south to Baja California; western Sacramento Valley and western edge of Sierra Nevada region. Nests in moderately open grasslands and prairies with patchy bare ground. Avoids grasslands with extensive shrub cover; more likely to occupy large tracts of habitat than small fragments; removal of grass cover by grazing often detrimental.	May–August	Potential to Occur. Nesting habitat present.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Great blue heron (*Ardea herodias*)	-	-	CNDDB	Colonial nester; prefers to nest in vegetation on islands or in swamps but may also be found in upland habitats in trees, bushes, on the ground and on artificial structures. Foraging habitat is widely diverse and includes swamps, coastlines, estuaries, beaches, pastures, cultivated fields, and riparian areas.	February–July	Absent. Suitable habitat not present onsite.
Great egret *(Ardea alba)*	-	-	CNDDB	Colonial nester; nests in woody vegetation, shrubs and trees usually near lakes, ponds, marshes estuaries, human-made impoundments, or natural and human-made islands.	March–July	Absent. Suitable habitat not present onsite.
Greater sandhill crane *(Antigone canadensis tabida)*	-	CT	CFP, SSHCP Covered Species	Breeds in NE California, Nevada, Oregon, Washington, and BC, Canada; winters from CA to Florida. In winter, they forage in burned grasslands, pastures, and feed on waste grain in a variety of agricultural settings (corn, wheat, milo, rice, oats, and barley), tilled fields, recently planted fields, alfalfa fields, row crops and burned rice fields.	March-August (breeding); September-March (wintering)	Absent. No SSHCP Modeled Species Habitat onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Lawrence's goldfinch (*Spinus lawrencei*)	-	-	BCC	Breeds in Sierra Nevada and inner Coast Range foothills surrounding the Central Valley and the southern Coast Range to Santa Barbara County east through southern California to the Mojave Desert and Colorado Desert into the Peninsular Range. Nests in arid and open woodlands with chaparral or other brushy areas, tall annual weed fields, and a water source (e.g. small stream, pond, lake), and to a lesser extent riparian woodland, coastal scrub, evergreen forests, pinyon-juniper woodland, planted conifers, and ranches or rural residences near weedy fields and water.	March–September	Absent. Suitable habitat not present onsite.
Lewis' woodpecker (*Melanerpes lewis*)	-	-	BCC	In California, breeds in Siskiyou and Modoc Counties, Warmer Mountains, inner coast ranges from Tehama to San Luis Obispo Counties, San Bernardino Mountains, and Big Pine Mountain (Inyo Co.); nesting habitat includes open ponderosa pine forest, open riparian woodland, logged/burned forest, and oak woodlands. Does not breed on the west side of Sierran crest (Beedy and Pandalfino 2013).	April–September (breeding); September–March (winter in Central Valley).	Absent. Suitable habitat not present onsite.
Loggerhead shrike (*Lanius ludovicianus*)	-	-	BCC, SSC, SSHCP Covered Species	Found throughout California in open country with short vegetation, pastures, old orchards, grasslands, agricultural areas, open woodlands. Not found in heavily forested habitats.	March-July	Potential to Occur. SSHCP Modeled Species Habitat present onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Merlin *(Falco columbarius)*	-	-	CDFW WL	Breeds in Oregon, Washington north into Canada. Winters in southern Canada to South America, including California. Breeds near forest openings, fragmented woodlots, and riparian areas. Wintering habitat includes wide variety, open forests, grasslands, tidal flats, plains, and urban settings.	September–April (wintering in the Central Valley); does not breed in California	Potential to Occur. Winter foraging habitat present.
Northern harrier (*Circus hudsonius*)	-	-	SSC, SSHCP Covered Species	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	April-September	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Nuttall's woodpecker *(Picoides nuttallii)*	-	-	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April–July	Absent. Suitable habitat not present onsite.
Oak titmouse (*Baeolophus inornatus*)			BCC	Nests in tree cavities within dry oak or oak-pine woodland and riparian; where oaks are absent, they nest in juniper woodland, open forests (gray, Jeffrey, Coulter, pinyon pines and Joshua tree)	March–July	Absent. Suitable habitat not present onsite.
Rufous hummingbird *(Selasphorus rufus)*	-	-	BCC, SSHCP Covered Species	Breeds in extreme northwestern California north into British Columbia and Alaska. Winters in coastal Southern California south into Mexico. Common migrant during March-April in Sierra Nevada foothills and June-August in Lower Conifer to Alpine zone of Sierra Nevada. Nesting habitat includes secondary succession communities and openings, mature forests, parks and residential area.	April–July	Absent. Suitable habitat not present onsite.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	-	-	BCC, SSC	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along coast to San Diego Co.	March–July	Absent. Suitable habitat not present onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Song sparrow "Modesto" (*Melospiza melodia heermanni*)	-	-	BCC, SSC	Resident in central and southwest California, including Central Valley; nests in marsh, scrub habitat	April–June	Absent. Suitable habitat not present onsite.
Swainson's hawk (*Buteo swainsoni*)	-	CT	BCC, SSHCP Covered Species	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures	March-August	Potential to Occur. SSHCP Modeled Species Habitat present onsite.
Tricolored blackbird (*Agelaius tricolor*)	-	CT	BCC, SSC, SSHCP Covered Species	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta Cos south to San Bernardino, Riverside and San Diego Counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc and Lassen Counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck and fava bean fields.	March-August	Present. SSHCP Modeled Species Habitat present, evidence of past nesting observed during survey per SSHCP AMM TCB-1; however, species is nomadic and may not be present every year.
White-tailed kite (*Elanus leucurus*)	-	-	CFP, SSHCP Covered Species	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March-August	Potential to Occur. SSHCP Modeled Species Habitat present onsite.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Wrentit (*Chamaea fasciata*)	-	-	BCC	Resident bird found along the California and Oregon coast and California Central Valley regions. Breeds in many habitats that generally have a relatively dense understory including riparian oak woodlands, Douglas fir and redwood forests, riparian willow scrub, and mixed conifer habitats. This species will also nest in and use manzanita, scrubby oaks, coastal sage scrub, California lilac, coyote bush and blackberry thickets. Wrentit prefer to stay elevated and rarely forage on the ground for sources of food, which are primarily made up of arthropods including insects and spiders as well as fruit and seeds.	March–August	Absent. Suitable habitat not present onsite.
Yellow-billed magpie (*Pica nuttallii*)	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County.; nesting habitat includes oak savannah with large in large expanses of open ground; also found in urban parklike settings.	April–June	Potential to Occur. Nesting habitat present.
Mammals						
Pallid bat *(Antrozous pallidus)*	-	-	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g. basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (Western Bat Working Group [WBWG] 2018).	April–September	Potential to Occur. Structures onsite represent potential hibernacula.

Special-Status Species Evaluated for the Study Area						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA**	**Other**			
Western red bat (*Lasiurus blossevillii*)	-	-	SSC, SSHCP Covered Species	Roosts in foliage of trees or shrubs; Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2017).	April-September	Potential to Occur. SSHCP Modeled Species Habitat present; potential hibernacula habitat identified during survey per SSHCP AMM BAT-1.
American badger *(Taxidea taxus)*	-	-	SSC, SSHCP Covered Species	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Potential to Occur. SSHCP Modeled Species Habitat present onsite.

Status Codes:

AMM	SSHCP Avoidance and Minimization Measure
ESA	Endangered Species Act
CESA	California Endangered Species Act
FE	ESA listed, Endangered.
FT	ESA listed, Threatened.
FPD	Listed under ESA, but formally proposed for delisting.
FC	Candidate for ESA listing as Threatened or Endangered.
CFP	California Fish and Game Code Fully Protected Species
CE	CESA or NPPA listed, Endangered.
CR	CESA- or NPPA-listed, Rare.
CT	CESA or NPPA listed, Threatened.
CC	Candidate for CESA listing as Endangered or Threatened.
BCC	USFWS Bird of Conservation Concern
CDFW WL	CDFW Watch List
Delisted	Formally Delisted (delisted ESA species are monitored for 5 years).
SSC	CDFW Species of Special Concern
SSHCP	South Sacramento Habitat Conservation Plan
1B	California Rare Plant Ranks (CRPRs)/Rare or Endangered in California and elsewhere.
2B	CRPR /Rare or Endangered in California, more common elsewhere.
2	CRPR /Rare or Endangered in California, more common elsewhere.
4	CRPR /Plants of Limited Distribution - A Watch List.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

ATTACHMENT F

F-1. Aquatic Resources Delineation

F-2. USACE Verification

F-3. Addendum to Aquatic Resources Delineation

Aquatic Resources Delineation

The Preserve Development

Rancho Cordova, California

Prepared for:

Winn Communities, Inc.

November 26, 2018

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, and monitoring and compliance reporting.

Citation: ECORP Consulting, Inc. 2018. Aquatic Resources Delineation for The Preserve Development. Prepared for Winn Communities, Inc., Rocklin, California. November.

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Attachment C – Wetland Determination Data Forms - Arid West
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Attachment E – Representative Site Photographs
Attachment F – USACE ORM Aquatic Resources Table
Attachment G – Wetland Delineation Shape File (to be included with USACE submittal only)

LIST OF ACRONYMS AND ABBREVIATIONS

CARI	California Aquatic Resource Inventory
CFR	Code of Federal Register
CWA	Clean Water Act
CWR	Clean Water Rule
FAC	Facultative
FACW	Facultative wetland
FR	Federal Register
HQUSACE	Headquarters USACE
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
OBL	Obligate
OHWM	Ordinary high-water mark"
ORM	USACE Operations and Maintenance Business Information Link Regulatory Module
PJD	Preliminary Jurisdictional Determination
Project	The Preserve Development
SFEI	San Francisco Estuary Institute
SSHCP	South Sacramento Habitat Conservation Plan
TNW	Traditional Navigable Waters
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

1.0 INTRODUCTION

On behalf of Winn Communities, Inc., ECORP Consulting, Inc. conducted an aquatic resources delineation for the ±113.8-acre Delineation Area encompassing The Preserve Development (Project) located in Rancho Cordova, Sacramento County, California. The Delineation Area is located to the northwest of Raymer Way and Grant Line Road. The Delineation Area corresponds to an unsectioned portion of the Rio de los Americanos Land Grant within the "Buffalo Creek, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1980) (Figure 1. *Project Location and Vicinity*). The approximate center of the Delineation Area is located at 38.574873° latitude and -121.196728° longitude within the Lower Sacramento Watershed (Hydrologic Unit Code #18020163, Natural Resources Conservation Service [NRCS], USGS, and U.S. Environmental Protection Agency [USEPA] 2016). Driving directions to the Delineation Area are included as Attachment A.

This report describes aquatic resources identified within the Delineation Area that may be regulated by the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the federal Clean Water Act (CWA). The information presented in this report provides data required by the USACE Sacramento District's Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2016a). A Preliminary Jurisdictional Determination (PJD) was issued in 2012 for a ±72.6-acre portion of the Delineation Area, verifying the location and extent of aquatic resources delineated therein (USACE 2012, Attachment B). The aquatic resource boundaries depicted in this report, including those located in the previously verified portion of the Delineation Area, represent a calculated estimation of the jurisdictional area within the Delineation Area, and are subject to modification following the USACE verification process.

The purpose of this report is to provide adequate information to USACE for the issuance of a PJD covering the entirety of the Delineation Area.

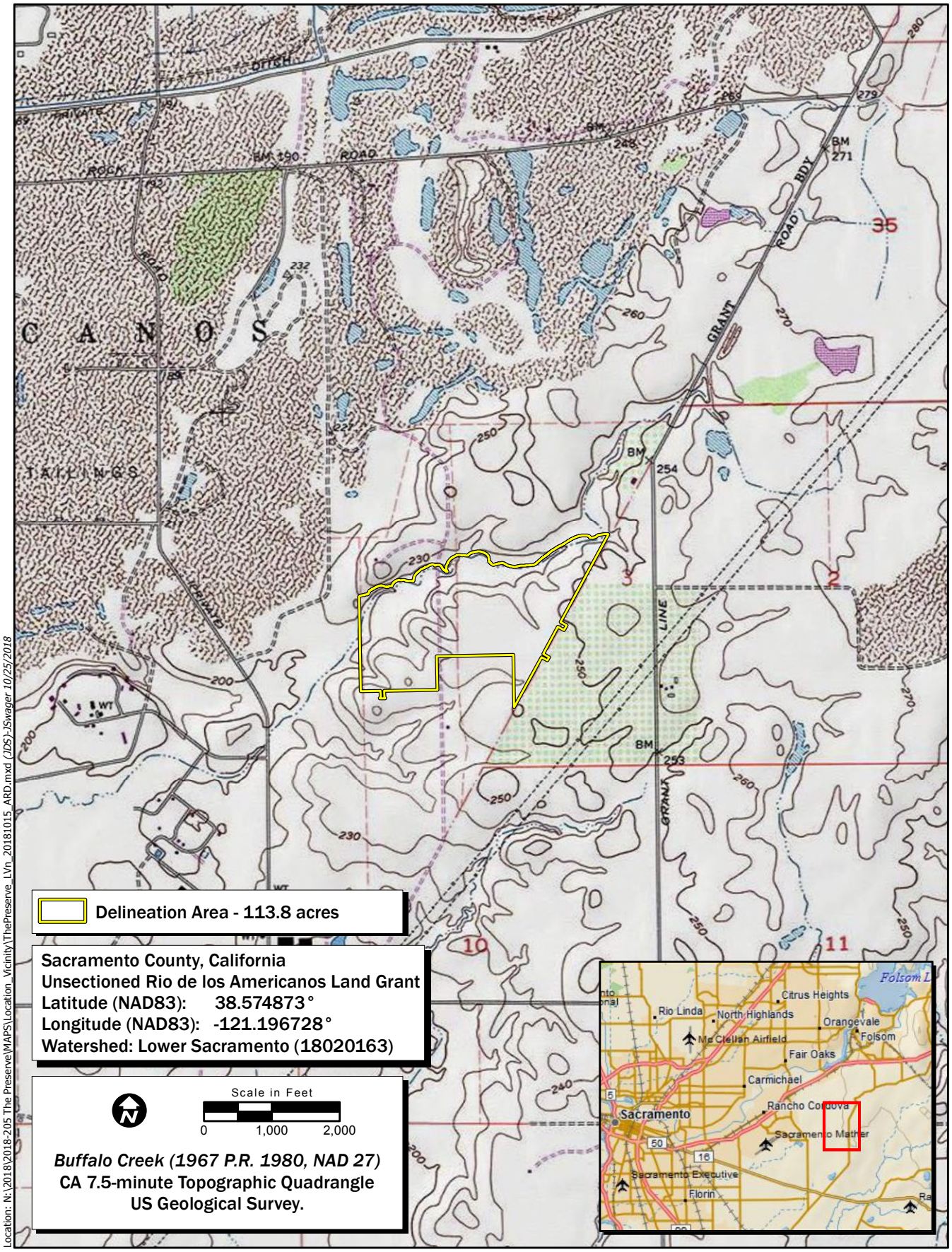
2.0 REGULATORY SETTING

2.1 Waters of the United States

This report describes aquatic resources, including wetlands that may be regulated by USACE under Section 404 of the federal CWA. The following sections define these regulations.

2.1.1 Wetlands

Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [51 Federal Register (FR) 41250, Nov. 13, 1986, as amended at 58 FR 45036, Aug. 25, 1993]. Wetlands can be perennial or intermittent.



Location: N:\2018\2018-205 The Preserve\MAPS\Location_Vicinity\ThePreserve_LVn_20181015_ARD.mxd (JDS)-JSwager 10/25/2018

Map Date: 10/25/2018

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Figure 1. Project Location and Vicinity

2018-205 The Preserve

2.1.2 Other Waters

Other waters are nontidal, perennial, and intermittent watercourses and tributaries to such watercourses [51 FR 41250, Nov. 13, 1986, as amended at 58 FR 45036, August 25, 1993]. The limit of USACE jurisdiction for nontidal watercourses (without adjacent wetlands) is defined in 33 Code of Federal Register (CFR) 328.4(c)(1) as the "ordinary high-water mark" (OHWM). The OHWM is defined as the "line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" approximation of the lateral limit of USACE jurisdiction. The upstream limits of other waters are defined as the point where the OHWM is no longer perceptible.

2.2 Clean Water Act

The USACE regulates discharge of dredged or fill material into Waters of the U.S. under Section 404 of the CWA. "Discharges of fill material" is defined as the addition of fill material into Waters of the U.S., including, but not limited to the following: placement of fill necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes, and subaqueous utility lines [33 CFR § 328.2(f)]. In addition, Section 401 of the CWA (33 U.S. Code 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Substantial impacts to wetlands, over 0.5 acre of impact, may require an individual permit. Projects that only minimally affect wetlands, less than 0.5 acre of impact, may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board.

2.3 Jurisdictional Assessment

The Clean Water Rule (CWR) was published in June 2015, but implementation of the rule was stayed until September 2018. It is currently (2018) in effect for 22 states, including California, the District of Columbia, and the U.S. territories. The CWR establishes categories of waters that are jurisdictional, waters that are excluded, and waters that require a case-specific significant nexus evaluation to determine if they are Waters of the U.S. By rule, the CWR defines Waters of the U.S. to include Traditional Navigable Waters (TNW), interstate waters, and territorial seas, impoundments of jurisdictional waters, and tributaries and adjacent (i.e., bordering, contiguous, or neighboring) waters to TNW, interstate waters, or territorial seas (USACE and USEPA 2015).

According to the CWR, neighboring is defined as waters located: within 100 feet of the OHWM of a jurisdictional feature, within the 100-year floodplain of a jurisdictional feature and within 1,500 feet of the

feature, or within 1,500 feet of the high tide line of TNW, interstate water, or territorial sea. Western vernal pools in California and several other location-specific aquatic feature types are evaluated on a case-by-case basis to determine whether they have a significant nexus to TNW, interstate waters, or territorial seas (USACE and USEPA 2015).

Feature types that are categorically excluded from CWA jurisdiction include waste treatment systems, prior converted cropland, ditches with intermittent or ephemeral flow that are not relocated tributaries or excavated in a tributary, ditches that do not flow, directly or indirectly, into a jurisdictional water, artificially irrigated areas that would revert to dry land in the absence of irrigation, artificial, constructed lakes or ponds created by excavating and/or diking dry land, small ornamental waters, artificial reflecting or swimming pools created by excavating and/or diking dry land, water-filled depressions created in dry land incidental to mining or construction activities, erosional features such as gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways, and puddles (USACE and USEPA 2015).

3.0 METHODS

This aquatic resources delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement) (USACE 2008). The boundaries of aquatic resources were delineated through standard field methods (e.g., paired sample set analyses) and aerial photograph interpretation. Field data were recorded on Wetland Determination Data Forms - Arid West Region (Attachment C). A color aerial photograph (1"=200' scale, NAIP 2016) used to assist with mapping and ground-truthing. *Munsell Soil Color Charts* (Kollmorgen Instruments Co. 1990) and the Web Soil Survey (NRCS 2018a) were used to aid in identifying hydric soils in the field. The Jepson Manual, 2nd Edition (Baldwin et al. 2012) was used for plant nomenclature and identification.

Field surveys were conducted on October 12, 2018 by ECORP biologist Clay DeLong. Mr. DeLong walked the entire ±41.2-acre unverified portion of the Delineation Area to determine the location and extent of aquatic resources. Paired locations were sampled to evaluate whether or not the vegetation, hydrology, and soils data supported an aquatic resource determination. At each paired location, one point was located such that it was within the estimated aquatic resource area, and the other point was situated outside the limits of the estimated aquatic resource area. Aquatic resources within the unverified portion of the Delineation Area were recorded in the field using a post-processing capable global positioning system unit with sub-meter accuracy (Trimble GeoXT). The previously verified portion of the Delineation Area was reviewed via aerial photograph interpretation and limited field reconnaissance.

3.1 Routine Determinations for Wetlands

To be determined a wetland, the following three criteria must be met:

- A majority of dominant vegetation species are wetland-associated species;

- Hydrologic conditions exist that result in periods of flooding, ponding, or saturation during the growing season; and
- Hydric soils are present.

3.1.1 Vegetation

Hydrophytic vegetation is defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanent or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present (Environmental Laboratory 1987). The definition of wetlands includes the phrase "a prevalence of vegetation typically adapted for life in saturated soil conditions." Prevalent vegetation is characterized by the dominant plant species comprising the plant community (Environmental Laboratory 1987). The dominance test is the basic hydrophytic vegetation indicator and was applied at each sampling point location. The "50/20 rule" was used to select the dominant plant species from each stratum of the community. The rule states that for each stratum in the plant community, dominant species are the most abundant plant species (when ranked in descending order of coverage and cumulatively totaled) that immediately exceed 50 percent of the total coverage for the stratum, plus any additional species that individually comprise 20 percent or more of the total cover in the stratum (Headquarters USACE [HQUSACE] 1992, USACE 2008).

Dominant plant species observed at each sampling point were then classified according to their indicator status (probability of occurrence in wetlands, Table 1), *North American Digital Flora: National Wetland Plant List* (Lichvar et al. 2016). If the majority (more than 50 percent) of the dominant vegetation on a site are classified as obligate (OBL), facultative wetland (FACW), or facultative (FAC), the site was considered to be dominated by hydrophytic vegetation.

Table 1. Classification of Wetland-Associated Plant Species[1]

Plant Species Classification	Abbreviation	Probability of Occurring in Wetland
Obligate	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands
Upland	UPL	Almost never occur in wetlands
Plants That Are Not Listed (assumed upland species)	N/L	Does not occur in wetlands in any region.

[1]Source: Lichvar et al. 2016

In instances where indicators of hydric soil and wetland hydrology were present, but the plant community failed the dominance test, the vegetation was re-evaluated using the Prevalence Index. The Prevalence Index is a weighted-average wetland indicator status of all plant species in the sampling plot, where each indicator status category is given a numeric code (OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5) and

weighting is by abundance (percent cover). If the plant community failed the Prevalence Index, the presence/absence of plant morphological adaptations to prolonged inundation or saturation in the root zone was evaluated.

3.1.2 Soils

A hydric soil is defined as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (NRCS 2003). Indicators that a hydric soil is present include, but are not limited to, histosols, histic epipedon, hydrogen sulfide, depleted below dark surface, sandy redox, loamy gleyed matrix, depleted matrix, redox dark surface, redox depressions, and vernal pools.

At each sampling point a soil pit was excavated to the depth needed to document an indicator, to confirm the absence of indicators, or until refusal at each sampling point. The soil was then examined for hydric soil indicators. Soil colors were determined while the soil was moist using the *Munsell Soil Color Charts* (Kollmorgen Instruments Co. 1990). Hydric soils are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds in a saturated and anaerobic environment. These processes and the features in the soil that develop can be identified by looking at the color and texture of the soils.

3.1.3 Hydrology

Wetlands, by definition, are seasonally or perennially inundated or saturated at or near (within 12 inches of) the soil surface. Primary indicators of wetland hydrology include, but are not limited to: visual observation of saturated soils, visual observation of inundation, surface soil cracks, inundation visible on aerial imagery, water-stained leaves, oxidized rhizospheres along living roots, aquatic invertebrates, water marks (secondary indicator in riverine environments), drift lines (secondary indicator in riverine environments), and sediment deposits (secondary indicator in riverine environments). The occurrence of one primary indicator is sufficient to conclude that wetland hydrology is present. If no primary indicators are observed, two or more secondary indicators are required to conclude wetland hydrology is present. Secondary indicators include, but are not limited to: drainage patterns, crayfish burrows, FAC-neutral test, and shallow aquitard.

4.0 RESULTS

4.1 Existing Site Conditions

The Delineation Area is located within flat to rolling terrain situated at an elevational range of approximately 210 - 250 feet above mean sea level in the Sacramento Valley Subregion of the Great Central Valley floristic region of California (Baldwin et al. 2012). The average winter low temperature in the vicinity of the Delineation Area is 41.5˚F and the average summer high temperature is 91.2˚F. Average annual precipitation is approximately 20 inches, which falls as rain (National Oceanic and Atmospheric Administration [NOAA] 2018a).

The Delineation Area is composed of a mixture of developed and undeveloped land. Developed areas include two single-family homes and several gravel roads. Rows of redwood (*Sequoia sempervirens*) and blue gum (*Eucalyptus globulus*) are planted at several locations adjacent to the roads and homes. Surrounding land uses include suburban residential developments, aggregate mines, and undeveloped grasslands.

The majority of the Delineation Area is composed of annual grassland, a vegetation community dominated primarily by a mixture of nonnative annual grasses, including medusahead grass (*Elymus caput-medusae*), soft brome (*Bromus hordeaceus*), wild oats (*Avena fatua*), and brome fescue (*Festuca bromoides*). Narrow tarplant (*Holocarpha virgata*), a native perennial forb, was also dominant in grasslands within the Delineation Area. See Section 4.2 for detailed descriptions of the vegetation associated with aquatic resources within the Delineation Area.

This aquatic resources delineation was conducted in late summer, outside the blooming season for most plant species. However, most plants were identifiable to species based upon vegetative or fruit morphology. Hydrologic conditions within the Delineation Area were typical for late summer (i.e., dry), and precipitation totals during the water year preceding the survey were only marginally below normal. During the 2017-2018 water year prior to the field survey (October 1, 2017 to October 1, 2018), approximately 17 inches of precipitation were recorded at the Sacramento 5 ESE reporting station (NOAA 2018b), located approximately 12 miles from the Study Area. The most recent significant precipitation event prior to the surveys occurred on May 25, 2018, resulting in 0.32 inches of rainfall (NOAA 2018b).

4.1.1 California Aquatic Resource Inventory

The California Aquatic Resource Inventory (CARI, San Francisco Estuary Institute [SFEI] 2017) is a statewide map of surface waters and related habitats combining multiple national and regional datasets, including the National Wetlands Inventory, and the National Hydrography Dataset. CARI includes aquatic resource features mapped using a variety of remote sensing and modeling techniques. As such, these aquatic features may or may not exist as represented. In addition, CARI data varies in detail, accuracy, and age, and is meant to be used as a tool to assist with an aquatic resource delineation but not as the only source of information (SFEI 2017).

According to CARI, there are several aquatic features mapped within the Delineation Area (Figure 2. *California Aquatic Resource Inventory Features*). These include stream features mapped as fluvial natural and fluvial unnatural, which roughly correspond to onsite streams and creeks. Figure 2 also shows CARI features mapped as individual vernal pools, depressional seasonal, depressional, and riverine, which roughly correspond to onsite vernal pools, open water features, swales, streams, and creeks.

4.1.2 Soils

According to the Web Soil Survey (NRCS 2018a), three soil units, or types, have been mapped within the Delineation Area (Figure 3. *Natural Resources Conservation Service Soil Types*):

- 159 – Hicksville gravelly loam, 0 to 2 percent slopes, occasionally flooded;

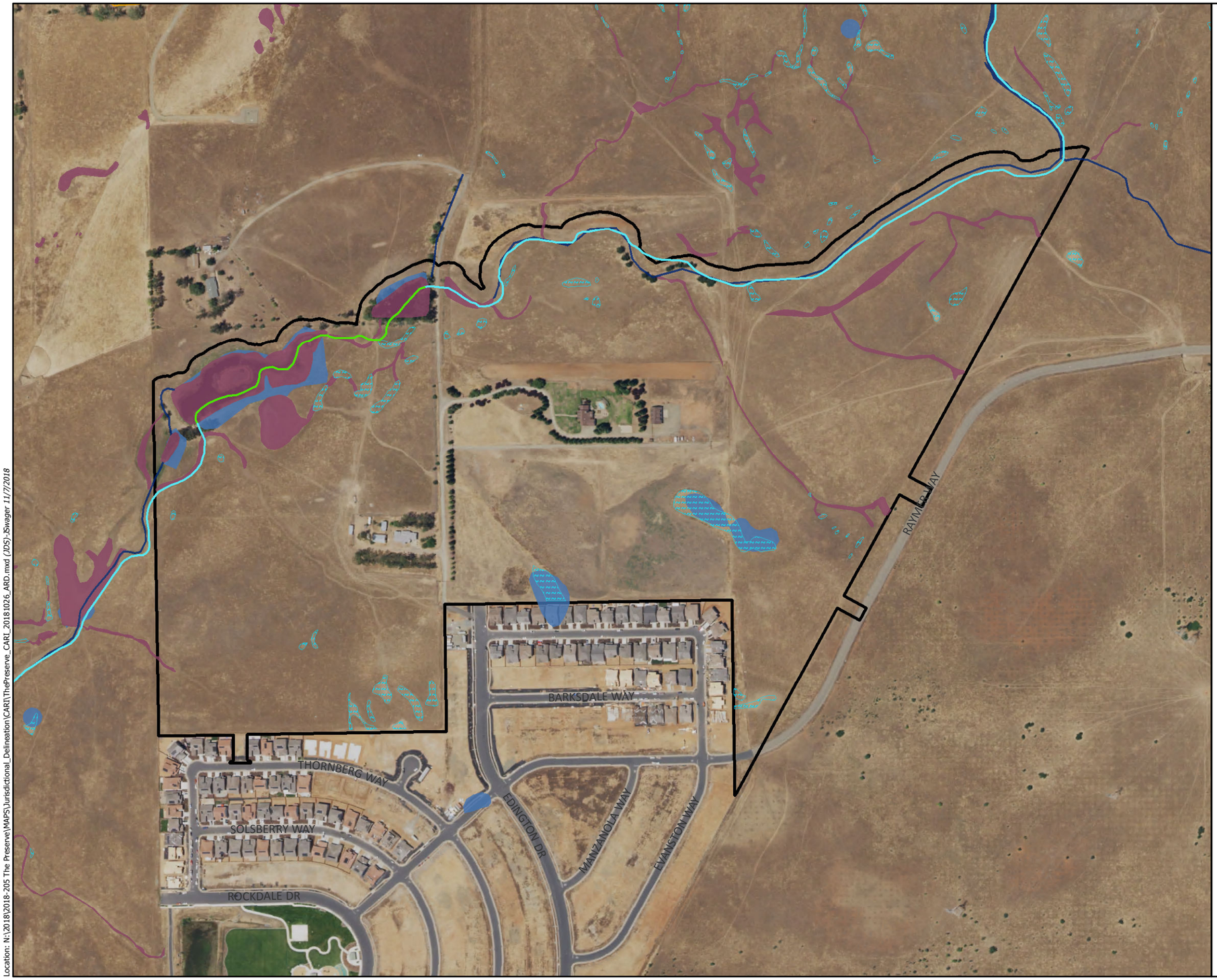


Figure 2.
California Aquatic Resources Inventory Features

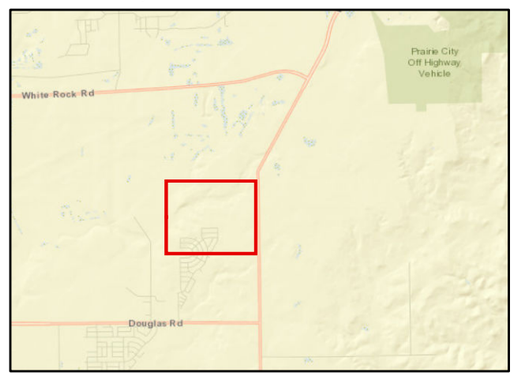
Map Features

- Delineation Area - 113.8 acres

CARI Data

- Fluvial Unnatural
- Fluvial Natural
- Individual Vernal Pool
- Depressional Seasonal
- Depressional
- Riverine

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



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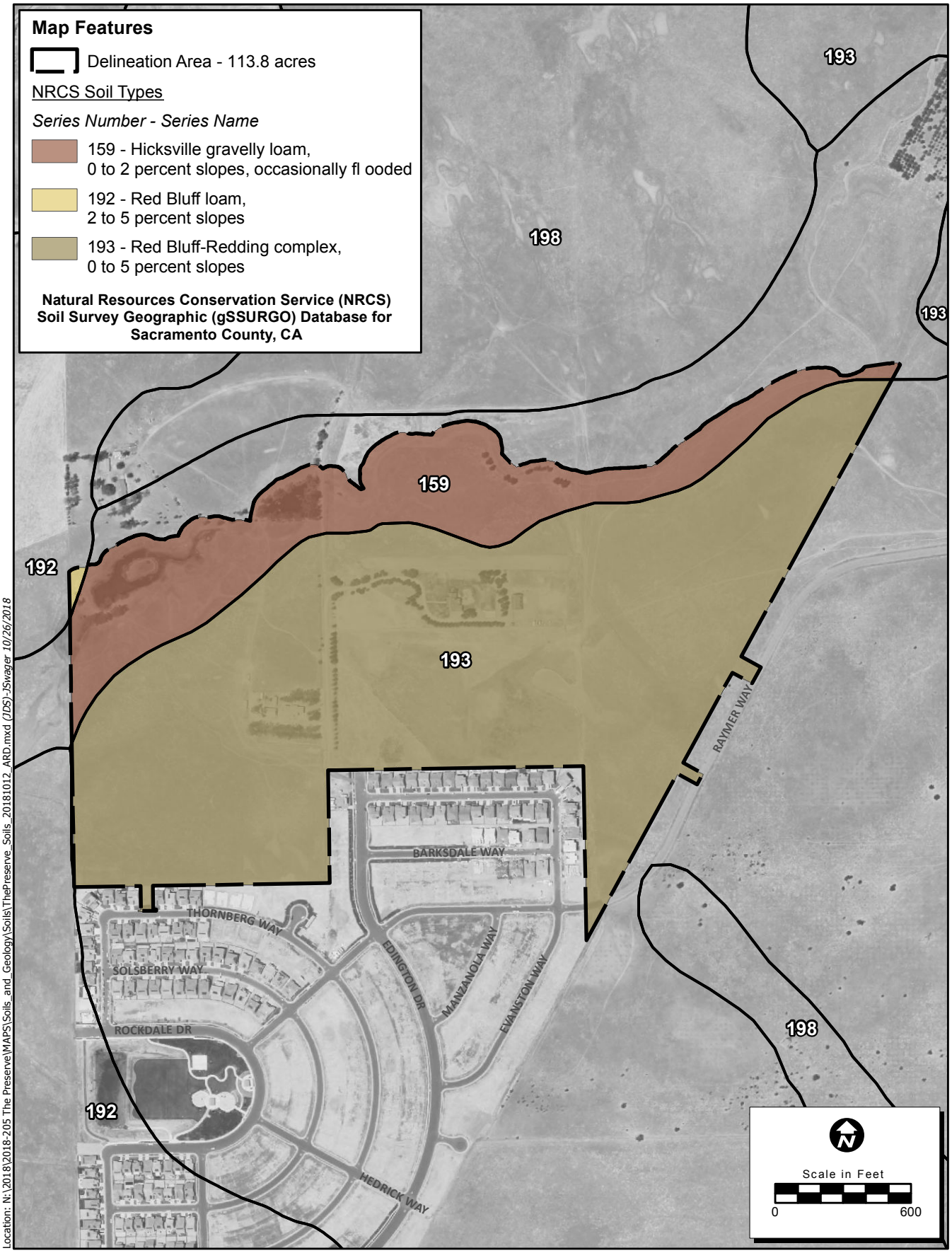
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2018-205 The Preserve

Scale in Feet
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Photo Source: 2016, NAIP
CARI Data: Version 0.3 (December 2017)
Base Data: RJA
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165018 Base.dwg

Map Date: 11/7/2018



Location: N:\2018\2018-205 The Preserve\MAPS\Soils_and_Geology\Soils\ThePreserve_Soils_20181012_ARD.mxd (JDS)-JSwager 10/26/2018

Map Date: 10/26/2018
Photo Source: 2016, NAIP

Figure 3. Natural Resources Conservation Service Soil Types

2018-205 The Preserve

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- 192 – Red Bluff loam, 2 to 5 percent slopes; and
- 193 – Red Bluff-Redding complex, 0 to 5 percent slopes.

Hicksville gravelly loam, 0 to 2 percent slopes (159) is partially composed of the Columbia and Cosumnes components, which are considered hydric when occurring on floodplains. Red Bluff loam, 2 to 5 percent slopes (192) and Red Bluff-Redding complex, 0 to 5 percent slopes (193), are partially composed of unnamed components that are considered hydric when occurring in depressions (NRCS 2018b).

4.2 Aquatic Resources

A total of 7.861 acres of aquatic resources have been mapped within the Delineation Area, including 5.107 acres of unverified aquatic resources and 2.755 acres of previously verified aquatic resources (Table 2). The wetland determination data forms are included in Attachment C, and a list of plant species observed within the Delineation Area is included as Attachment D. A discussion of the aquatic resources is presented below, and the aquatic resources delineation map is presented in Figure 4. *Aquatic Resources Delineation*.

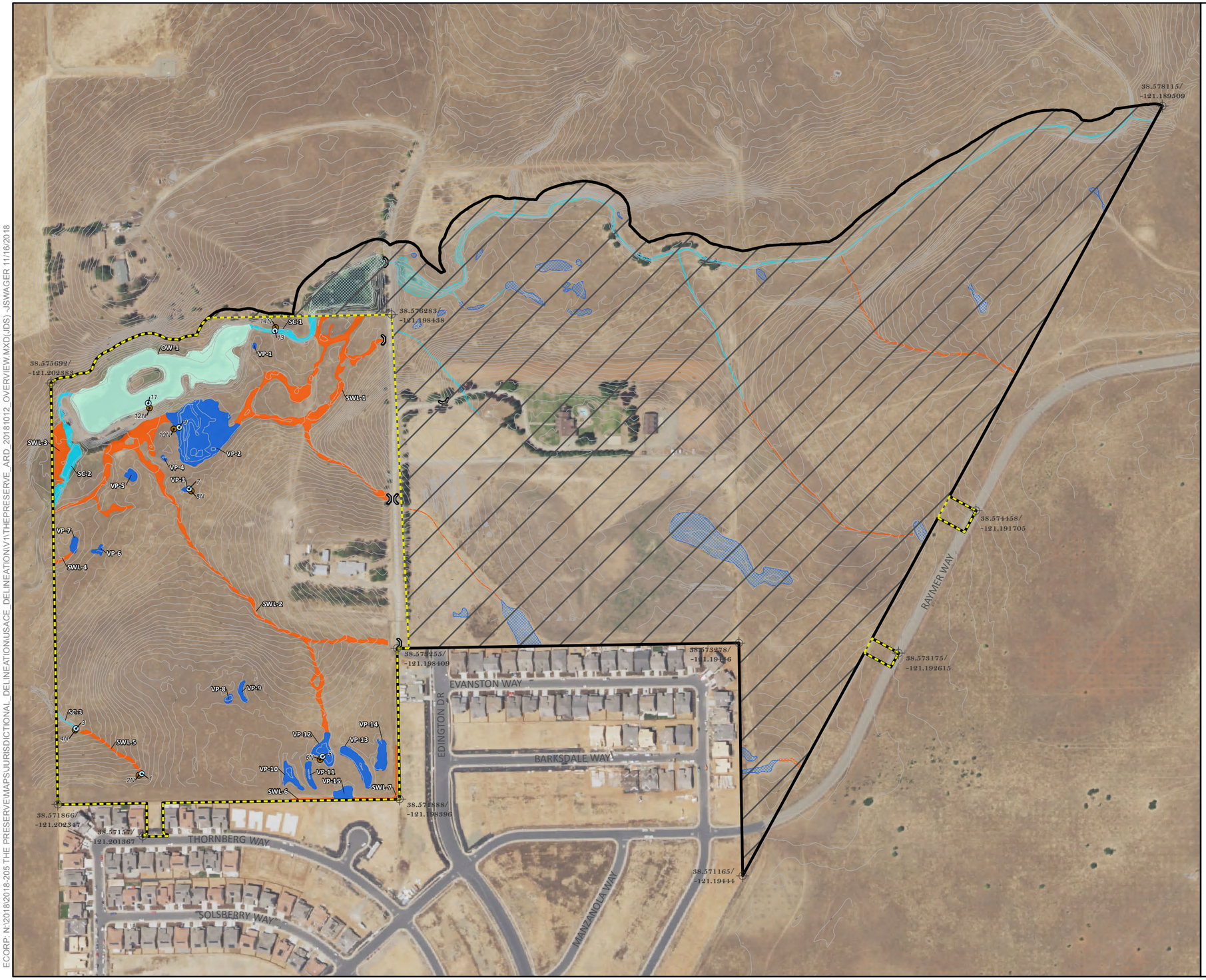
Representative site photographs are included as Attachment E. The USACE Operations and Maintenance Business Information Link Regulatory Module (ORM) aquatic resources table of potential Waters of the U.S. is included in Attachment F.

Table 2. Aquatic Resources

Type	Acreage[1]
Unverified Area	
Wetlands	
Vernal Pool	1.273
Swale	1.713
Other Waters	
Stream/Creek	0.307
Open Water	1.814
Previously Verified Area	
Wetlands	
Vernal Pool	1.373
Swale	0.128
Other Waters	
Stream/Creek	0.708
Open Water	0.546
Total:	7.861

[1]Acreages represent a calculated estimation and are subject to modification following the USACE verification process.

Figure 4.
Aquatic Resources Delineation Overview [1]



Map Features

- Delineation Area - 113.8 acres
- Previously Verified Area - 72.6 acres
- Unverified Area - 41.2 acres
- Reference Coordinate (NAD83)
- Culvert

Three Criteria Sample Points

- Waters Point
- Upland Point

Potential Aquatic Resources (Unverified) - 5.107 acres [1] *

- Vernal Pool - 1.273 acres
- Swale - 1.713 acres
- Stream/Creek - 0.307 acres
- Open Water - 1.814 acres

Verified Waters of the U.S. - 2.754 acres [2] *

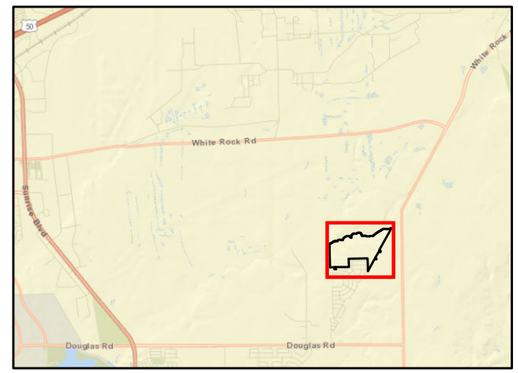
- Vernal Pool - 1.373 acres
- Swale - 0.128 acres
- Stream/Creek - 0.708 acres
- Open Water - 0.546 acres

[1] *Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.*

[2] *PJD for Wong-Wagner Issued 11/20/2012, SPK-2004-00666*

** The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.*

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 300

Photo Source: 2016, NAIP
Boundary Source: Ruggeri-Jensen-Azar & Associates
Delineator(s): C.DeLong (ECORP), Foothill Associates
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

Map Date: 11/16/2018

Figure 4.
Aquatic Resources Delineation
Unverified Portion [1]

Map Features

- Delineation Area - 113.8 acres
- Previously Verified Area - 72.6 acres
- Unverified Area - 41.2 acres
- Reference Coordinate (NAD83)
- Culvert

Three Criteria Sample Points

- Waters Point
- Upland Point

Potential Aquatic Resources (Unverified) - 5.107 acres [1] *

- Vernal Pool - 1.273 acres
- Swale - 1.713 acres
- Stream/Creek - 0.307 acres
- Open Water - 1.814 acres

Verified Waters of the U.S. [2]

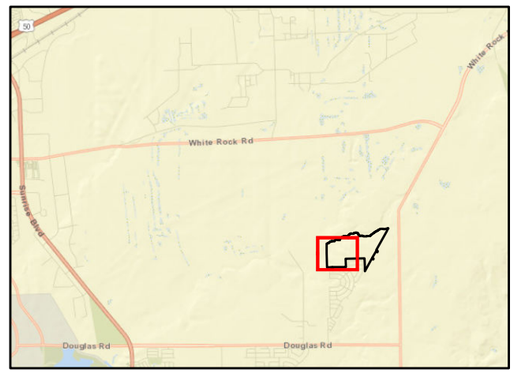
- Vernal Pool
- Swale
- Stream/Creek
- Open Water

[1] *Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.*

[2] *PJD for Wong-Wagner Issued 11/20/2012, SPK-2004-00666*

* *The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.*

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2018-205 The Preserve

Scale in Feet
0 200

Photo Source: 2016, NAIP
Boundary Source: Ruggeri-Jensen-Azar & Associates
Delineator(s): C.DeLong (ECORP), Foothill Associates
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

Map Date: 11/16/2018

ECORP: N:\2018\2018-205 THE PRESERVE\MAPS\JURISDICTIONAL_DELINEATION\USACE_DELINEATION\V1\THEPRESERVE_ARD_20181012_DETAIL.MXD(JDS) JSWAGER 11/16/2018

The feature types described in Table 2 were classified according to definitions within the South Sacramento Habitat Conservation Plan (SSHCP, County of Sacramento et al. 2018). However, previously verified features were given different classifications in the original delineation and PJD. Table 3 provides the classifications used in the PJD and the corresponding SSHCP land cover type used in this report.

Table 3. Previously Verified Feature Types and SSHCP Land Cover Types

Feature Types as defined in PJD	Corresponding SSHCP Feature Type
Wetlands	
Vernal Pool	Vernal Pool
Seasonal Wetland	Vernal Pool
Seasonal Wetland Swale	Swale
Other Waters	
Ephemeral Drainage	Stream/Creek
Ephemeral Drainage – Culverted	Stream/Creek
Pond	Open Water

4.2.1 Wetlands

Vernal Pool

Vernal pools are seasonal ephemeral wetlands that fill and dry each year, forming in shallow depressions within grasslands that are underlain by an impermeable layer (e.g., a hardpan). Water collects in the depressions during the winter rainy season and recedes during the spring. Soils typically remain moist until late spring before becoming desiccated, and then remain dry throughout the summer. Vernal pools occur throughout the Delineation Area. These features are variously dominated by Great Valley button-celery (*Eryngium castrense*), stalked popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), Mediterranean barley (*Hordeum marinum*), waxy mannagrass (*Glyceria declinata*), hairy hawkbit (*Leontodon saxatilis*), and toad rush (*Juncus bufonius*). Sampling points 5, 7, and 9 were collected within vernal pools.

Soil matrix colors within the vernal pools at sampling points 5, 7 and 9 ranged from 10YR4/1 to 7.5YR 4/2. Redox concentrations colored 5YR 4/6 were present at each of these sampling points. Soils at sampling points 5, 7, and 9 met the criteria for hydric soil indicators Depleted Matrix (F3) and Redox Depressions (F8). Wetland hydrology indicators observed within the vernal pools included Biotic Crust (B12). While hydric soils were observed at sampling points 6N and 10N, no other wetland parameters were observed at uplands adjacent to vernal pools.

Swale

Swales are generally linear wetland features that convey precipitation runoff and support a predominance of hydrophytic vegetation, but do not exhibit an OHWM. These are typically inundated for short periods during and immediately after rain events, but usually maintain soil saturation for longer periods during the wet season. Swales occur throughout the Delineation Area, and are dominated by Italian ryegrass

(*Festuca perennis*), Fitch's spikeweed (*Centromadia fitchii*), and Mediterranean barley. Sampling Point 1 was collected within a swale.

The soil matrix color within the swale at sampling point 1 was 10YR 4/2 with five percent redox concentrations colored 5YR 4/6. Soils at sampling point 1 were determined to be hydric based on the presence of hydric soil indicator Depleted Matrix (F3). Wetland hydrology indicators observed within on-site swales include Biotic Crust (B12). No wetland parameters were observed at Sampling Point 2N, located in an upland adjacent to Sampling Point 1.

4.2.2 Other Waters

Stream/Creek

Aquatic resources identified as stream/creek within the Delineation Area include ephemeral drainages and a seasonal creek (Morrison Creek). These are linear features that exhibit a bed and bank and an OHWM. They convey runoff seasonally for short to moderate duration, and may or may not be influenced by groundwater sources. Stream/creek features occur throughout the Delineation Area, and vary from steep, unvegetated features, to gently sloping features that are sparsely vegetated with creeping spikerush (*Eleocharis macrostachya*). Sampling points 3 and 13 were collected within stream/creek features.

Sampling Point 3 was collected within a steep, narrow ephemeral drainage along the western boundary of the Delineation Area. The soil matrix color at sampling point 3 was 7.5YR 4/2 with 10 percent redox features colored 5YR 4/6. Soils at sampling point 3 met the criteria for hydric soil indicator Depleted Matrix (F3). Wetland hydrology indicator Water Marks (B1) was observed at Sampling Point 3. No wetland parameters were observed at Sampling Point 4N, located in an upland adjacent to Sampling Point 3.

Sampling Point 13 was collected within Morrison Creek, a broad, gently sloped seasonal creek. The soil matrix color at sampling point 13 was 7.5YR 4/2 with 20 percent redox features colored 5YR 4/6. Soils at sampling point 3 met the criteria for hydric soil indicator Depleted Matrix (F3). Wetland hydrology indicators Water Marks (B1) and Biotic Crust (B12) were observed at Sampling Point 13. Hydric soil indicator Depleted Matrix (F3) was observed at Sampling Point 14N, located in an upland adjacent to Sampling Point 13. However, hydrophytic vegetation and wetland hydrology were absent at Sampling Point 14N.

Open Water

Open water features identified within the Delineation Area include two perennial ponds, which occur in the northwestern portion of the Delineation Area. These features are manmade impoundments of Morrison Creek. These features exhibit an OHWM and support hydrophytic vegetation along their fringes, while deeper portions are unvegetated. The vegetated fringes of the open water features are dominated by creeping spikerush and smartweed (*Persicaria* sp.). Sampling Point 11 was collected within an open water feature.

The soil matrix color at sampling point 11 was 7.5YR 4/1 with 30 percent redox concentrations colored 5YR 4/6. Soils at sampling point 11 met the criteria for hydric soil indicator Depleted Matrix (F3). Wetland

hydrology indicators observed at Sampling Point 11 include Surface Water (A1), Water Marks (B1), Biotic Crust (B12), and Aquatic Invertebrates (B13). No wetland parameters were observed at Sampling Point 12N, located in an upland adjacent to Sampling Point 13.

5.0 JURISDICTIONAL ASSESSMENT

As per Regulatory Guidance Letter 16-01, an applicant may request a PJD "in order to move ahead expeditiously to obtain a Corps permit authorization where the requestor determine*s* that it is in his or her best interest to do so ... even where initial indications are that the aquatic resources on a parcel may not be jurisdictional" (USACE 2016b). A significant nexus evaluation is not necessary to obtain a PJD. The following information on connectivity of wetlands and other waters in the Delineation Area to TNW is provided should an Approved Jurisdictional Determination be necessary.

The vernal pools, swales, and several stream/creek features within the Delineation Area flow directly or indirectly into Morrison Creek, or impoundments of Morrison Creek, along the northern boundary of the Delineation Area. Morrison Creek is a tributary to the Sacramento River. The USACE Sacramento District has identified the Sacramento River as TNW. Therefore, the aquatic resources within the Delineation Area likely have a significant nexus (affecting the chemical, physical, or biological integrity) with downstream TNW, and are likely subject to regulation under Section 404 of the CWA.

6.0 CONCLUSION

A total of 7.861 acres of aquatic resources have been mapped within the Delineation Area. This acreage represents a calculated estimation of the extent of aquatic resources within the Delineation Area, and is subject to modification following USACE review and/or the verification process. The placement of dredged or fill material into jurisdictional features would require a permit pursuant to Section 404 of the CWA and certification or waiver in compliance with Section 401 of the CWA.

7.0 REFERENCES

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LIST OF ATTACHMENTS

Attachment A – Driving Directions to Delineation Area

Attachment B – Preliminary Jurisdictional Determination for Wong & Wagner Property

Attachment C – Wetland Determination Data Forms - Arid West

Attachment D – Plant Species Observed Onsite

Attachment E – Representative Site Photographs

Attachment F – USACE ORM Aquatic Resources Table

Attachment G – Wetland Delineation Shape File (to be included with USACE submittal only)

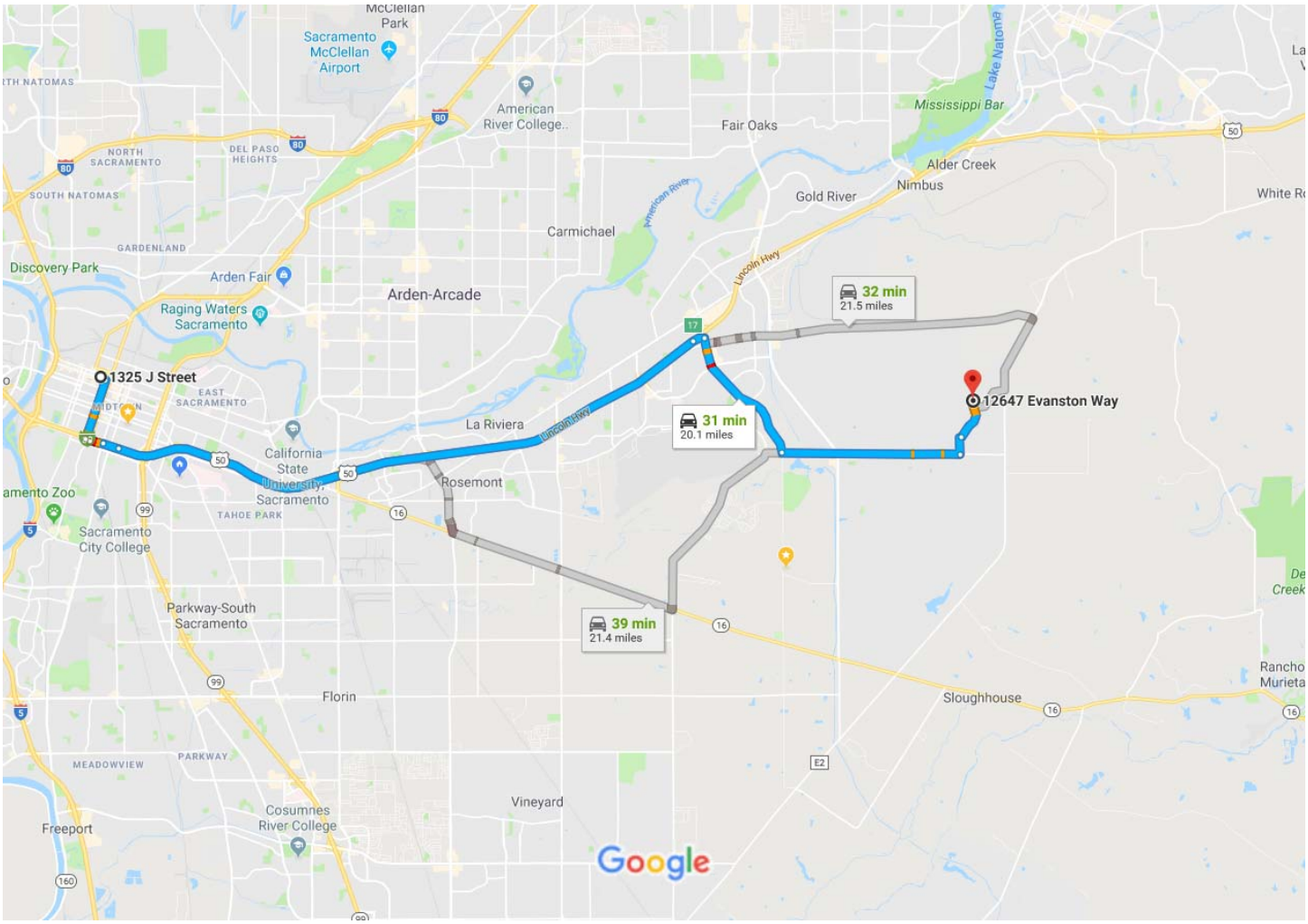
ATTACHMENT A

Driving Directions to Delineation Area

Google Maps

1325 J Street, Sacramento, CA to 12647 Evanston Way, Rancho Cordova, CA 95742

Drive 20.1 miles, 31 min



Map data ©2018 Google 2 mi

1325 J St

Sacramento, CA 95814

Get on I-80BL E from 15th St

6 min (1.6 mi)

1. Head east on J St toward 14th St

0.1 mi

2. Use the right 2 lanes to turn right onto 15th St

1.1 mi

3. Use the left 2 lanes to turn left onto X St

407 ft

4. Use the middle 2 lanes to turn slightly left onto the I-80 E ramp

0.3 mi

Follow US-50 E to Zinfandel Dr in Rancho Cordova. Take exit

17 from US-50 E

11 min (11.7 mi)

5. Merge onto I-80BL E

0.3 mi

6. Continue onto US-50 E

11.1 mi

7. Use the right lane to take exit 17 for Zinfandel Dr

0.2 mi

Continue on Zinfandel Dr. Take Douglas Rd to Edington Dr

13 min (6.9 mi)

8. Use the right 2 lanes to turn right onto Zinfandel Dr

2.6 mi

9. Use the left 2 lanes to turn left onto Douglas Rd

3.2 mi

10. Turn left onto Americanos Blvd

0.3 mi

11. Continue onto Edington Dr

0.8 mi

12647 Evanston Way

Rancho Cordova, CA 95742

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

RECEIVED
DEC 01 2012
By

REPLY TO
ATTENTION OF

November 20, 2012

Regulatory Division SPK-2004-00666

Mr. George Carpenter
Tom Winn Communities, Inc.
1130 Iron Point Road
Folsom, California 95630-8308

Dear Mr. Carpenter:

We are responding to your September 25, 2012, request for a preliminary jurisdictional determination (JD), in accordance with our Regulatory Guidance Letter (RGL) 08-02, for the Wong & Wagner or Heritage Falls site. The approximately 237-acre site is located on or near Morrison Creek, Section 2, Township 8 North, Range 7 East, MDBM, Latitude 38.578°, Longitude -121.195°, Rancho Cordova, Sacramento County, California.

Based on available information, we concur with the amount and location of wetlands and/or other water bodies on the site as depicted on the enclosed copy of the September 24, 2012, revised *Delineated Waters of the U.S. Wong & Wagner* drawing prepared by Foothill Associates. The approximately 6.85 acres of wetlands and/or other water bodies present within the survey area are potential waters of the United States regulated under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act.

A copy of our RGL 08-02 Preliminary Jurisdictional Determination Form for this site is enclosed. Please sign and return a copy of the completed form to this office. Once we receive the form with your signature we can accept and process a Pre-Construction Notification or permit application for your proposed project.

You should not start any work in potentially jurisdictional waters of the United States unless you have Department of the Army permit authorization for the activity. You may request an approved JD for this site at any time prior to starting work within waters. In certain circumstances, as described in RGL 08-02, an approved JD may later be necessary.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

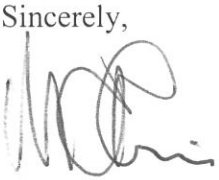
This preliminary determination has been conducted to identify the potential limits of wetlands and other water bodies which may be subject to Corps of Engineers' jurisdiction for the particular site identified in this request. A Notification of Appeal Process and Request for Appeal form is enclosed to notify you of your options with this determination. This

determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are U.S. Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey.*

Please refer to identification number SPK-2004-00666 in any correspondence concerning this project. If you have any questions, please contact me at Regulatory Division, 1325 J Street, Room 1350, Sacramento, California 95814-2922, email *Michael.C.Finan@usace.army.mil*, or telephone 916-557-5324. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

Sincerely,

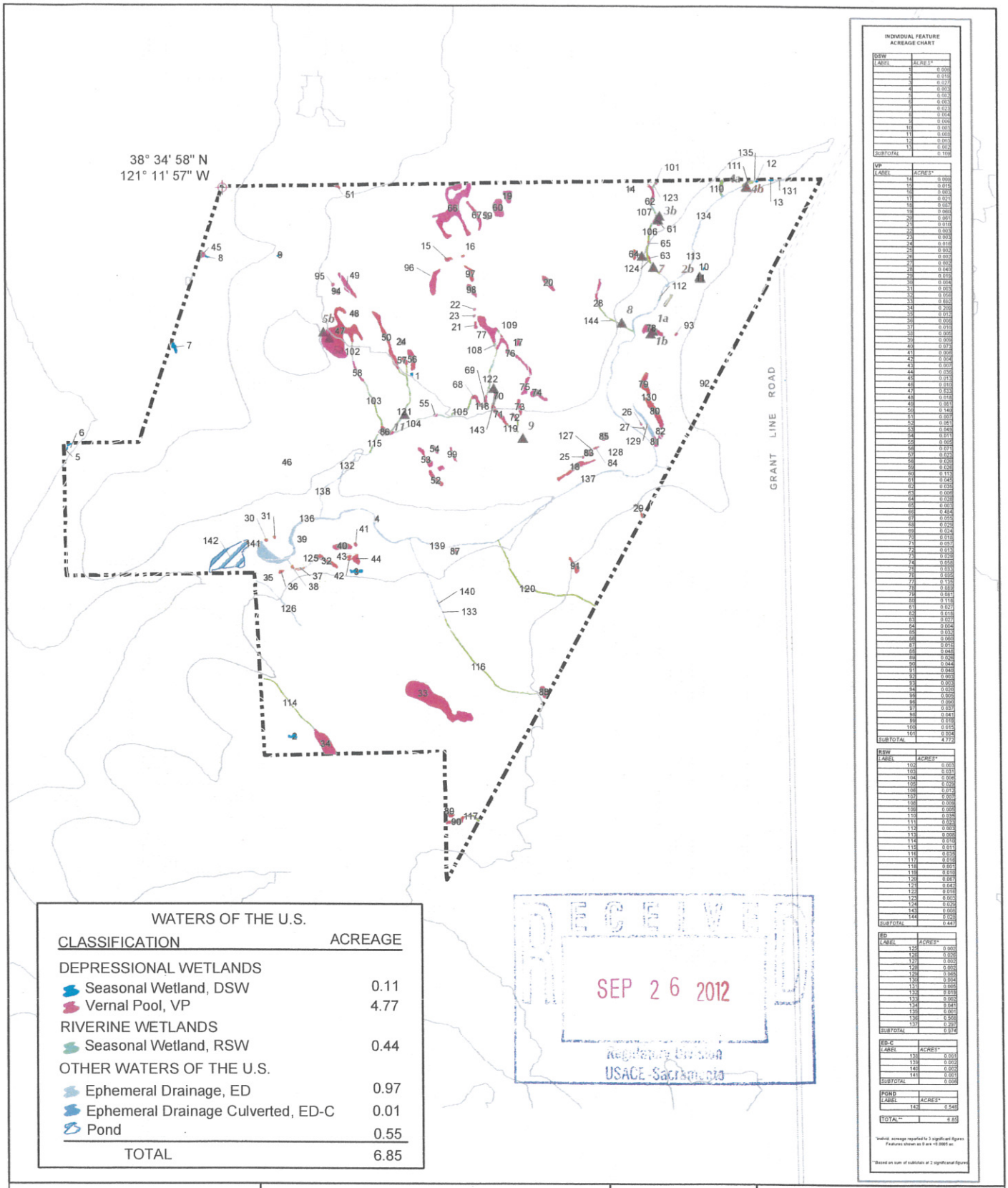


Michael Finan
Wetland Specialist
Regulatory Division

Enclosures

Copies Furnished without enclosures:

Mr. Ken Whitney, Foothill Associates, 590 Menlo Drive, Rocklin, California 95675-3724
Mr. Jason Brush, Chief, Wetlands Regulatory Office (WTR-8), U.S. Environmental Protection Agency, Region IX, 75 Hawthorne Street, San Francisco, California 94105-3901
Mr. Ken Sanchez, U.S. Fish and Wildlife Service, Endangered Species Division 2800 Cottage Way, W-2605, Sacramento, California 95825-1888
Mr. Kent Smith, California Department of Fish and Game Region 2, 1701 Nimbus Drive, Rancho Cordova, California 95670-4599



INDIVIDUAL FEATURE ACREAGE CHART

DSW LABEL	ACRES*
1	0.006
2	0.010
3	0.027
4	0.003
5	0.002
6	0.003
7	0.023
8	0.004
9	0.006
10	0.003
11	0.003
12	0.003
13	0.002
SUBTOTAL	0.109

VP LABEL	ACRES*
14	0.008
15	0.015
16	0.003
17	0.021
18	0.687
19	0.068
20	0.061
21	0.018
22	0.003
23	0.003
24	0.018
25	0.002
26	0.002
27	0.003
28	0.043
29	0.018
30	0.004
31	0.003
32	0.056
33	0.692
34	0.208
35	0.013
36	0.006
37	0.010
38	0.005
39	0.009
40	0.073
41	0.008
42	0.004
43	0.007
44	0.036
45	0.013
46	0.010
47	0.633
48	0.018
49	0.081
50	0.140
51	0.007
52	0.051
53	0.043
54	0.811
55	0.005
56	0.071
57	0.623
58	0.026
59	0.026
60	0.113
61	0.043
62	0.035
63	0.006
64	0.026
65	0.003
66	0.484
67	0.055
68	0.029
69	0.024
70	0.018
71	0.057
72	0.013
73	0.029
74	0.058
75	0.033
76	0.005
77	0.133
78	0.083
79	0.081
80	0.116
81	0.027
82	0.018
83	0.023
84	0.004
85	0.033
86	0.060
87	0.016
88	0.048
89	0.029
90	0.044
91	0.040
92	0.003
93	0.003
94	0.020
95	0.005
96	0.090
97	0.037
98	0.041
99	0.018
100	0.015
101	0.004
SUBTOTAL	4.777

RSW LABEL	ACRES*
102	0.003
103	0.010
104	0.006
105	0.029
106	0.015
107	0.007
108	0.009
109	0.005
110	0.035
111	0.020
112	0.003
113	0.008
114	0.010
115	0.011
116	0.015
117	0.016
118	0.001
119	0.011
120	0.087
121	0.043
122	0.010
123	0.003
124	0.029
143	0.008
144	0.028
SUBTOTAL	0.447

ED LABEL	ACRES*
125	0.003
126	0.026
127	0.003
128	0.005
129	0.045
130	0.044
131	0.099
132	0.018
133	0.062
134	0.041
135	0.007
136	0.508
137	0.297
SUBTOTAL	0.914

ED-C LABEL	ACRES*
138	0.003
139	0.002
140	0.002
141	0.001
SUBTOTAL	0.008

POND LABEL	ACRES*
142	0.548
TOTAL**	6.85

*Individ. acreage reported to 3 significant figures. Features shown as 0 are <0.0005 ac.

**Based on sum of subtotals at 2 significant figures.

WATERS OF THE U.S.

CLASSIFICATION	ACREAGE
DEPRESSIONAL WETLANDS	
Seasonal Wetland, DSW	0.11
Vernal Pool, VP	4.77
RIVERINE WETLANDS	
Seasonal Wetland, RSW	0.44
OTHER WATERS OF THE U.S.	
Ephemeral Drainage, ED	0.97
Ephemeral Drainage Culverted, ED-C	0.01
Pond	0.55
TOTAL	6.85

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SEP 26 2012
Regulatory Division
USACE-Sacramento

OTHER FEATURES

- Culvert
- Data Points
- Project Boundary
- Excavated Area

NOTES

- Delineated waters of the U.S. are subject to U.S. Army Corps of Engineers verification.
- Boundary derived from digital base data provided by Wood Rodgers, Inc.
- One meter topo data created from 7.5' digital elevation model for Buffalo Creek, 1978.
- The Hydrologic Unit Code for this site is 18020109.

REVERIFICATION

0 300 600
SCALE IN FEET

FIGURE 3

DELINEATED WATERS OF THE U.S.

WONG AND WAGNER

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

© 2012

FILE NAME: wetland_delineation_to_ACOE_rvsd_7-16-07_8x11.mxd
DATE: 03/18/04 DELINEATED BY: KDW (10/10/03 & 3/11/04), MJF (01/17/07)
REVISION: 01/18/07, 0716/07
REVISED: 09/24/12 DRAWN BY: MAB, MMJ, DSD

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: George Carpenter, Tom Winn mmunities, Inc.	File No.: SPK-2004-00666	Date: November 20, 2012
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
x	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at *http://www.usace.army.mil/cecw/pages/reg_materials.aspx* or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B. PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the eliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by ntacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM
Sacramento District

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Regulatory Branch: **California Delta** File/ORM #: **SPK-2004-00666** PJD Date: **November 20, 2012**

State: **CA** City/County: **Rancho Cordova, Sacramento County**
Nearest Waterbody:

Location (Lat/Long): **38.5783765977327°, -121.194835033837°**

Size of Review Area: **237** acres

Name/Address Of Property Owner/ Potential Applicant: **George Carpenter, Tom Winn Communities, Inc., 1130 Iron Point Road, Folsom, California 95630-8**

Identify (Estimate) Amount of Waters in the Review Area
Non-Wetland Waters:
linear feet ft wide **1.53** acre(s)
Stream Flow: **Perennial and Seasonal**

Wetlands: **5.32** acre(s) Cowardin Class: **Palustrine, emergent**

Name of any Water Bodies on the site identified as Section 10 Waters: Tidal: Non-Tidal:

☒ Office (Desk) Determination
☐ Field Determination:
Date(s) of Site Visit(s):

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply – checked items should be included in case file and, where checked and requested, appropriately reference sources below)

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Data sheets prepared by the Corps.
☐ Corps navigable waters' study.
☒ U.S. Geological Survey Hydrologic Atlas:
  ☒ USGS NHD data.
  ☐ USGS HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: **1:24K; CA-BUFFALO CREEK**
☒ USDA Natural Resources Conservation Service Soil Survey.
☒ National wetlands inventory map(s).
☐ State/Local wetland inventory map(s).
☐ FEMA/FIRM maps.
☐ 100-year Floodplain Elevation (if known):
☒ Photographs: ☒ Aerial ☒ Other
☒ Previous determination(s). File no. and date of response letter: **200400666; July 25, 2007**
☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

11/20/2012
Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD titutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a ered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

ATTACHMENT C

Wetland Determination Data Forms - Arid West Region

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 1

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): Concave Slope (%): 15

Subregion (LRR): C Lat: 38.572149 Long: -121.201385 Datum: NAD83

Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Seasonal wetland swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Festuca perennis	20	Y	FAC
2. Hordeum marinum	15	Y	FAC
3. Holocarpha virgata	5	N	N/L
4. Leontodon saxatilis	10	N	FACU
5. Juncus bufonius	10	N	FACW
6.			
7.			
8.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	95	5YR 4/6	5	C	M, PL		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 5

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 2N

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 25

Subregion (LRR): C Lat: 38.572131 Long: -121.201417 Datum: NAD83

Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland adjacent to seasonal wetland swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Elymus caput-medusae	30	Y	N/L
2. Hordeum marinum	20	Y	FAC
3. Holocarpha virgata	10	N	N/L
4. Leontodon saxatilis	10	N	FACU
5.			
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 2N

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/3	90	5YR 4/4	10	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 6

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 3

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): Concave Slope (%): 20

Subregion (LRR): C Lat: 38.572561 Long: -121.202139 Datum: NAD83

Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: Depressional seasonal

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Ephemeral drainage.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 3'x3')			
1. Hordeum marinum	2	N	FAC
2. Juncus bufonius	1	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	3 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 97 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Feature is less than 5% vegetated. Hydrophytic vegetation absent.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/2	90	5YR 4/6	10	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 6

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 4N

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 35

Subregion (LRR): C Lat: 38.572549 Long: -121.202151 Datum: NAD83

Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland adjacent to ephemeral drainage.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Elymus caput-medusae	50	Y	N/L
2. Bromus hordeaceus	20	Y	FACU
3. Leontodon saxatilis	15	N	FACU
4.			
5.			
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 4N

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 3/3	100						Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 5

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 5

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C Lat: 38.572288 Long: -121.199292 Datum: NAD83

Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: Ind. vernal pool

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Vernal pool.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Eryngium castrense	10		OBL
2. Plagiobothrys stipitatus	25	Y	FACW
3. Glyceria declinata	20	Y	FACW
4.			
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/1	85	5YR 4/6	15	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 6

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 6N

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 15

Subregion (LRR): C Lat: 38.57226 Long: -121.199323 Datum: NAD83

Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland adjacent to vernal pool.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Elymus caput-medusae	30	Y	N/L
2. Hordeum marinum	20	Y	FAC
3. Holocarpha virgata	15		N/L
4. Leontodon saxatilis	15		FACU
5. Bromus hordeaceus	5		FACU
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 6N

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 3/3	100						Clay loam
3-7	7.5YR 4/2	95	5YR 4/6	5	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 7

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 7

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C Lat: 38.574727 Long: -121.200809 Datum: NAD83

Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Seasonal wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Hordeum marinum	20	Y	FAC
2. Centromadia fitchii	10		FACU
3. Leontodon saxatilis	15	Y	FACU
4. Juncus bufonius	15	Y	FACW
5. Lythrum hyssopifolia	10		OBL
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 50

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 4/2	95	5YR 4/6	5	C	M, PL		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 5

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 8N

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 15

Subregion (LRR): C Lat: 38.574704 Long: -121.200786 Datum: NAD83

Soil Map Unit Name: Red Bluff-Redding complex, 0-5% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland adjacent to seasonal wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Elymus caput-medusae	80	Y	N/L
2. Holocarpha virgata	10		N/L
3. Festuca bromoides	15		FACU
4.			
5.			
6.			
7.			
8.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 8N

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/3	100						Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 6

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 9

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): C Lat: 38.575282 Long: -121.200916 Datum: NAD83

Soil Map Unit Name: Hicksville gravelly loam, 0-2% slopes, occasionally flooded NWI classification: Depressional seasonal

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Large, deep vernal pool.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Plagiobothrys stipitatus	20	Y	FACW
2. Eryngium castrense	5		OBL
3. Crypsis schoenoides	15	Y	FACW
4. Trichostema lanceolatum	2		FACU
5.			
6.			
7.			
8.			
	42 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 58 % Cover of Biotic Crust 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/2	85	5YR 4/6	15	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 6

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 10N

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 10

Subregion (LRR): C Lat: 38.575272 Long: -121.200979 Datum: NAD83

Soil Map Unit Name: Hicksville gravelly loam, 0-2% slopes, occasionally flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland adjacent to vernal pool.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Festuca bromoides	30	Y	FACU
2. Holocarpha virgata	10		N/L
3. Centromadia fitchii	20	Y	FACU
4. Leontodon saxatilis	15		FACU
5. Hordeum marinum	10		FAC
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 10N

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 4/2	98	5YR 4/6	2	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 5

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 11

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): Convex Slope (%): 50

Subregion (LRR): C Lat: 38.575505 Long: -121.201271 Datum: NAD83

Soil Map Unit Name: Hicksville gravelly loam, 0-2% slopes, occasionally flooded NWI classification: Depressional

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Perennial pond. Impoundment of imtermittent drainage.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Eleocharis macrostachya	90	Y	OBL
2. Persicaria sp.	15		OBL
3.			
4.			
5.			
6.			
7.			
8.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 4/1	70	5YR 4/6	30	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ✓ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 48

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 12N

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 70

Subregion (LRR): C Lat: 38.575462 Long: -121.201258 Datum: NAD83

Soil Map Unit Name: Hicksville gravelly loam, 0-2% slopes, occasionally flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland adjacent to perennial pond.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Bromus hordeaceus	70	Y	FACU
2. Holocarpha virgata	10		N/L
3. Acmispon americanus	10		UPL
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 12N

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	7.5YR 3/3	100						Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 7

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 13

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): Concave Slope (%): 10

Subregion (LRR): C Lat: 38.576156 Long: -121.199801 Datum: NAD83

Soil Map Unit Name: Hicksville gravelly loam, 0-2% slopes, occasionally flooded NWI classification: Fluvial unnatural

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Intermittent drainage.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Eleocharis macrostachya	50	Y	OBL
2. Cyperus eragrostis	5		FACW
3.			
4.			
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/2	80	5YR 4/6	20	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 6

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: The Preserve Development City/County: Rancho Cordova Sampling Date: 10/12/2018

Applicant/Owner: Winn Communities, Inc. State: CA Sampling Point: 14N

Investigator(s): Clay DeLong Section, Township, Range: Rio de los Americanos Land Grant

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 15

Subregion (LRR): C Lat: 38.576184 Long: -121.199792 Datum: NAD83

Soil Map Unit Name: Hicksville gravelly loam, 0-2% slopes, occasionally flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Upland adjacent to intermittent drainage.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5'x5')			
1. Leontodon saxatilis	30	Y	FACU
2. Acmispon americanus	5		UPL
3. Centromadia fitchii	5		FACU
4. Lythrum hyssopifolia	5		OBL
5. Dittrichia graveolens	5		N/L
6. Centaurium tenuiflorum	5		FACW
7. Festuca perennis	10	Y	FAC
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 14N

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 4/2	90	5YR 4/6	10	C	M		Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Refusal

Depth (inches): 5

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT D

Plant Species Observed On-Site

The Preserve Development:

Plant Species Observed On-Site (October 12, 2018)

SCIENTIFIC NAME	COMMON NAME	Indicator
APIACEAE	**CARROT FAMILY**	
Eryngium castrense	Button-celery	OBL
ASTERACEAE	**SUNFLOWER FAMILY**	
*Centaurea solstitialis**	Yellow star-thistle	N/L
Centromadia fitchii	Fitch's spikeweed	FACU
*Dittrichia graveolens**	Stinkwort	N/L
Holocarpha virgata	Sticky tarweed	N/L
*Leontodon saxatilis**	Hairy hawkbit	FACU
Psilocarphus brevissimus	Woolly marbles	FACW
BORAGINACEAE	**BORAGE FAMILY**	
Plagiobothrys stipitatus	Slender popcorn-flower	FACW
CUPRESSACEAE	**CYPRESS FAMILY**	
Sequoia sempervirens	Redwood	N/L
CYPERACEAE	**SEDGE FAMILY**	
Cyperus eragrostis	Tall flatsedge	FACW
Eleocharis macrostachya	Creeping spikerush	OBL
EUPHORBIACEAE	**SPURGE FAMILY**	
Croton setigerus	Turkey mullein	N/L
FABACEAE	**LEGUME FAMILY**	
Acmispon americanus	American bird's foot trefoil	UPL
GENTIANACEAE	**GENTIAN FAMILY**	
*Centaurium tenuiflorum**	Slender centaury	FACW
JUNCACEAE	**RUSH FAMILY**	
Juncus bufonius	Toad rush	FACW
LAMIACEAE	**MINT FAMILY**	
Trichostema lanceolatum	Vinegar weed	FACU
LYTHRACEAE	**LOOSESTRIFE FAMILY**	
*Lythrum hyssopifolia**	Hyssop loosestrife	OBL
MYRTACEAE	**MYRTLE FAMILY**	
*Eucalyptus globulus**	Blue gum	N/L
POACEAE	**GRASS FAMILY**	
*Avena fatua**	Wild oat	N/L

The Preserve Development:

Plant Species Observed On-Site (October 12, 2018)

SCIENTIFIC NAME	COMMON NAME	Indicator
POACEAE	**GRASS FAMILY**	
*Bromus diandrus**	Ripgut brome	N/L
*Bromus hordeaceus**	Soft brome	FACU
*Crypsis schoenoides**	Swamp grass	FACW
*Elymus caput-medusae**	Medusahead grass	N/L
*Festuca bromoides**	Brome fescue	FACU
*Festuca perennis**	Italian Ryegrass	FAC
*Glyceria declinata**	Mannagrass	FACW
Hordeum marinum ssp. *gussoneanum**	Mediterranean barley	FAC
Hordeum murinum ssp. *glaucum**	Foxtail barley	FACU
POLYGONACEAE	**BUCKWHEAT FAMILY**	
Persicaria sp.	Smartweed	OBL
SALICACEAE	**WILLOW FAMILY**	
Populus fremontii	Fremont's cottonwood	FAC
Salix exigua	Sandbar willow	FACW
Salix gooddingii	Goodding's black willow	FACW

ATTACHMENT E

Representative Site Photographs



Photo 1. Gravel road north of Edington Drive in central portion of Delineation Area. View south. Photo taken October 12, 2018.



Photo 2. Grasslands west of Edington Drive in southwestern portion of Delineation Area. View northwest. Photo taken October 12, 2018.



Photo 3. Vernal pool in southwestern portion of Delineation Area. View south. Photo taken October 12, 2018.



Photo 4. Large vernal pool in northwestern portion of Delineation Area. View northeast. Photo taken October 12, 2018.



Photo 5. Open water feature in northwestern portion of Delineation Area. View northeast. Photo taken October 12, 2018.



Photo 6. Stream/creek in northwestern portion of Delineation Area. View southwest. Photo taken October 12, 2018.



Photo 3. Stream/creek in central portion of Delineation Area. View southwest. Photo taken October 12, 2018.



Photo 4. Swale in northwestern portion of Delineation Area. View east. Photo taken October 12, 2018.

ATTACHMENT F

USACE ORM Aquatic Resources Table

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway	Similarity_Situated	Sim_Situated_Aggregated_SPOE	Adjcent_Waters_Sbjct_33USC1344	OHWM_Chg_In_Plant_Community	OHWM_Bed_And_Banks	OHWM_Break_In_Slope	OHWM_Chg_In_Character_Of_Soil	OHWM_Chg_In_Veg_Density_Maturity	OHWM_Chg_In_Sediment_Texture	OHWM_Line_Impressed_On_Bank	OHWM_Destr_Of_Terrestrial_Veg	OHWM_Leaf_Litter_Disturbed	OHWM_Multiple_Flow_Events	OHWM_Scour	OHWM_Sediment_Deposition	OHWM_Sediment_Sorting	OHWM_Shelving	OHWM_Litter_and_Debris_Present	OHWM_Wrack_Line_Present	OHWM_Veg_Matted_Bent_Or_Absent	OHWM_Water_Staining	OHWM_Other	OHWM_Other_Text	Func_I_Sediment_Trapping	Func_II_Nutrient_Recycling	Func_III_Pollutant_Management	Func_IV_Retntn_Attenu_Fld_Wtrs	Func_V_Runoff_Storage	Func_VI_Contribution_of_Flow	Func_VII_Export_Organic_Matter	Func_VIII_Export_Food_Rsources	Func_IX_Prov_Life_Cycle_Depdnt
OW-1	CALIFORNIA	POW		Area	1.81393515	ACRE	DELINPJD	38.57572037	-121.2011449																																	
SC-1	CALIFORNIA	R4		Area	0.09565673	ACRE	DELINPJD	38.57614458	-121.1995959																																	
SC-2	CALIFORNIA	R4		Area	0.20350649	ACRE	DELINPJD	38.57503792	-121.2022099																																	
SC-3	CALIFORNIA	R6		Area	0.00808377	ACRE	DELINPJD	38.57261952	-121.202234																																	
SWL-1	CALIFORNIA	PEM		Area	0.68594234	ACRE	DELINPJD	38.57561682	-121.199356																																	
SWL-2	CALIFORNIA	PEM		Area	0.74594614	ACRE	DELINPJD	38.57437114	-121.2007471																																	
SWL-3	CALIFORNIA	PEM		Area	0.15958671	ACRE	DELINPJD	38.57507329	-121.2022859																																	
SWL-4	CALIFORNIA	PEM		Area	0.01706369	ACRE	DELINPJD	38.57409691	-121.2022748																																	
SWL-5	CALIFORNIA	PEM		Area	0.05769086	ACRE	DELINPJD	38.57236595	-121.2017111																																	
SWL-6	CALIFORNIA	PEM		Area	0.02266507	ACRE	DELINPJD	38.5718949	-121.1993982																																	
SWL-7	CALIFORNIA	PEM		Area	0.02407002	ACRE	DELINPJD	38.57202812	-121.1985756																																	
VP-1	CALIFORNIA	PEM		Area	0.00434661	ACRE	DELINPJD	38.57601498	-121.20003																																	
VP-10	CALIFORNIA	PEM		Area	0.0580631	ACRE	DELINPJD	38.57210442	-121.1996532																																	
VP-11	CALIFORNIA	PEM		Area	0.03692233	ACRE	DELINPJD	38.57211532	-121.1994322																																	
VP-12	CALIFORNIA	PEM		Area	0.0907379	ACRE	DELINPJD	38.57233482	-121.19926																																	
VP-13	CALIFORNIA	PEM		Area	0.11069019	ACRE	DELINPJD	38.57220356	-121.198872																																	
VP-14	CALIFORNIA	PEM		Area	0.06648923	ACRE	DELINPJD	38.57228403	-121.1986023																																	
VP-15	CALIFORNIA	PEM		Area	0.051276	ACRE	DELINPJD	38.57194554	-121.1990378																																	
VP-2	CALIFORNIA	PEM		Area	0.73462272	ACRE	DELINPJD	38.57525093	-121.2006518																																	
VP-3	CALIFORNIA	PEM		Area	0.01049221	ACRE	DELINPJD	38.5747219	-121.2008208																																	
VP-4	CALIFORNIA	PEM		Area	0.00545335	ACRE	DELINPJD	38.57500032	-121.2010844																																	
VP-5	CALIFORNIA	PEM		Area	0.02653871	ACRE	DELINPJD	38.57484909	-121.2014638																																	
VP-6	CALIFORNIA	PEM		Area	0.01577674	ACRE	DELINPJD	38.57417363	-121.2018499																																	
VP-7	CALIFORNIA	PEM		Area	0.02369595	ACRE	DELINPJD	38.57422298	-121.2021317																																	
VP-8	CALIFORNIA	PEM		Area	0.01376218	ACRE	DELINPJD	38.57281178	-121.2003619																																	
VP-9	CALIFORNIA	PEM		Area	0.02380634	ACRE	DELINPJD	38.57287288	-121.2002068																																	

ATTACHMENT G

Wetland Delineation Shape File (to be included with USACE submittal only)

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

May 9, 2019

Regulatory Division (SPK-2019-00197)

Winn Communities
Attn: Mr. George Carpenter
3001 I Street, Suite 300
Sacramento, California 95816
georgemcarpenter@comcast.net

Dear Mr. Carpenter:

We are responding to your consultant's March 20, 2019, request for verification of an Aquatic Resource delineation for the Preserve Development site. The approximately 113.8-acre project site is located northwest of Raymer Way and west of Grant Line Road, Latitude 38.57489°, Longitude -121.19673°, City of Rancho Cordova, Sacramento County, California.

Based on available information, we concur with your consultant's aquatic resources delineation for the site, which consists of approximately 7.861 acres of aquatic resources (consisting of 2.646 acres of vernal pool, 1.841 acres of seasonal wetland swale, 1.015 acres of stream/creek [Morrison Creek, a perennial water, and several ephemeral drainages], and 2.360 acres of open water (pond), as depicted on the enclosed April 24, 2019, *Figure 4a-b Aquatic Resources Delineation* drawings prepared by ECORP Consulting, Inc. (Enclosure 1).

This verification letter does not constitute a determination of jurisdiction (JD). A JD is not required to process an application for a Department of the Army permit. If you do not require a JD for the site, your permit application may be processed sooner.

You may request a JD for this site at any time prior to starting work in aquatic resources, including after a permit decision is made. To request a JD for this site, complete the attached *Request for Jurisdictional Determination Form* (Enclosure 2) and return it to this office at the address listed below.

Please refer to identification number SPK-2019-00197 in any correspondence concerning this project. If you have any questions, please contact me at U.S. Army Corps of Engineers Regulatory Division, California Delta Section, 1325 J Street, Room 1350, Sacramento, CA 95814-2922, by email at *Mary.R.Pakenham-Walsh@usace.army.mil*, or telephone at (916) 557-7718. For program information or to complete our Customer Survey, visit our website at www.spk.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

Mary R. Pakenham-Walsh
Senior Project Manager
California Delta Section

Enclosures

cc: (w/o encls)
Mr. Joseph Morgan, U.S. Environmental Protection Agency, Region 9, morgan.josepth@epamail.epa.gov
Ms. Stephanie Tadlock, California Regional Water Quality Control Board, Central Valley Region, Stephanie.Tadlock@waterboards.ca.gov
Mr. Bjorn Gregersen, ECORP Consulting, BGregers@ecorpconsulting.com

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

June 27, 2019

Mr. George Carpenter
Winn Communities
3001 I Street, Suite 300
Sacramento, CA 95816

RE: Addendum to Aquatic Resources Delineation for The Preserve Development

Dear Mr. Carpenter:

An Aquatic Resources Delineation was prepared by ECORP Consulting, Inc. for The Preserve Development (Project) on November 26, 2018. The delineation was verified by the U.S. Army Corps of Engineers (USACE) on May 5, 2019 (SPK-2019-00197). This letter provides information on an additional ±8.8-acre area to be included as a potential Offsite work area for the Project, and serves as an addendum to the Aquatic Resources Delineation dated November 26, 2018.

Offsite Assessment

An assessment of potential Waters of the U.S. within the Offsite along Raymer Way was conducted on June 13, 2019 by ECORP biologist Matt Spaulding. Access to the property was not authorized; therefore, Mr. Spaulding walked along Raymer Way and assessed potential aquatic features from the publicly accessible roadway. In addition, historic aerial photos were reviewed. Several roadside ditches were mapped and classified as swales according to land cover definitions within the South Sacramento Habitat Conservation Plan.

Summary

The unverified Offsite was determined to contain 0.215 acre of swale based on the assessment-level survey. Figure 1 provides a revised delineation map for the overall Project area, and Figure 2 provides a detailed view of the unverified Offsite area. If you have any questions, please call me at (916) 782-9100 or email at temam@ecorpconsulting.com.

Sincerely,

Taraneh Emam
Senior Biologist/Project Manager

Figure 1

Aquatic Resources Delineation Overview

Figure 1.
Aquatic Resources Delineation Overview

Map Features

- Overall ARD Study Area - 122.6 acres
- Reference Coordinate (NAD83)

Three Criteria Sample Points

- Waters Point
- Upland Point

Potential Aquatic Resources (Unverified) - 0.215 acres [1] *

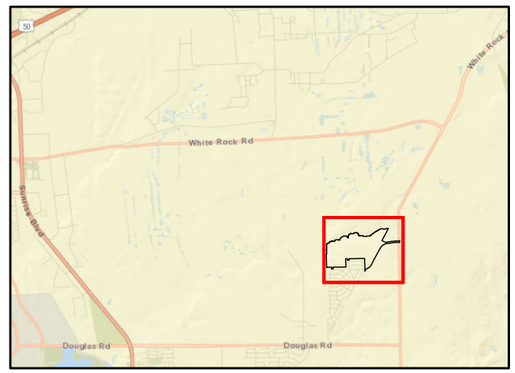
- Swale - 0.215 acres

Verified Waters of the U.S. - 7.861 acres [2] *

- Vernal Pool - 2.645 acres
- Swale - 1.841 acres
- Stream/Creek - 1.015 acres
- Open Water - 2.360 acres

[1] *Features are assessment level. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards. The project boundaries, wetland boundaries, and acreage values are approximate.*
[2] *PJD for Wong-Wagner Issued 11/20/2012, SPK-2004-00666.*
[2] *PJD for The Preserve Issued 05/09/2019, SPK -2019-00197*
** The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.*

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2018-205 The Preserve

Scale in Feet
0 400

Photo Source: ESRI, Sacramento County 2018
Boundary Source: Ruggeri-Jensen-Azar & Associates
Delineator(s): C.DeLong (ECORP), Foothill Associates
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

Map Date: 6/20/2019

ECORP: N:\2018\2018-205 THE PRESERVE\MAPS\JURISDICTIONAL_DELINEATION\USACE_DELINEATION\V1\THEPRESERVE_ARD_20190620_OVERVIEW.MXD(JDS) -JSWAGER 6/20/2019

Figure 2

Aquatic Resources Delineation Unverified Offsite Detail

Figure 2.
Aquatic Resources Delineation
Unverified Offsite Detail



Map Features

- Overall ARD Study Area - 122.6 acres
- Unverified Area
- Reference Coordinate (NAD83)
- Culvert

Potential Aquatic Resources (Unverified) - 0.215 acres [1] *

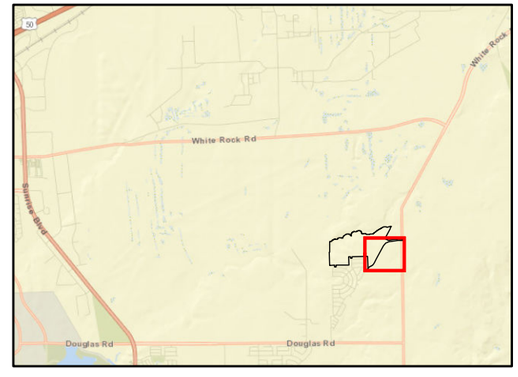
- Swale - 0.215 acres

Verified Waters of the U.S. - 7.861 acres [2]

- Vernal Pool
- Swale
- Stream/Creek

[1] *Features are assessment level. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards. The project boundaries, wetland boundaries, and acreage values are approximate.*
[2] *PJD for Wong-Wagner Issued 11/20/2012, SPK-2004-00666.*
[2] *PJD for The Preserve Issued 05/09/2019, SPK -2019-00197*
* *The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.*

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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ECORP- N:\2018\2018-205 THE PRESERVE\MAPS\JURISDICTIONAL_DELINEATION\USACE_DELINEATIONVIVITHEPRESERVE_ARD_20190620_DETAIL.MXD(JDS)-JSWAGER 6/20/2019

2018-205 The Preserve

Scale in Feet
0 200

Photo Source: ESRI, Sacramento County 2018
Boundary Source: Ruggeri-Jensen-Azar & Associates
Delineator(s): C.DeLong (ECORP), Foothill Associates
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

Map Date: 6/20/2019

ATTACHMENT G

Wildlife Observed Onsite

Wildlife Species Observed Onsite

Common Name	Scientific Name
Amphibians	
American bullfrog	*Lithobates catesbeianus*
Reptiles	
red-eared slider	*Trachemys scripta elegans*
Birds	
American crow	*Corvus brachyrhynchos*
black phoebe	*Sayornis nigricans*
European starling	*Sturnus vulgaris*
great blue heron	*Ardea herodias*
great egret	*Ardea alba*
house finch	*Haemorhous mexicanus*
killdeer	*Charadrius vociferous*
mourning dove	*Zenaida macroura*
northern flicker	*Colaptes auratus*
Say's phoebe	*Sayornis saya*
western blue bird	*Sialia mexicana*
western meadowlark	*Sturnella neglecta*
white-crowned sparro	*Zonotrichia leucophrys*
yellow-rumped warbler	*Setophaga coronata*
Mammals	
Black-tailed Jackrabbit	*Lepus californicus*

Wildlife Species Observed Onsite
(November 27, 2018)

Common Name	Scientific Name
Birds	
Canada Goose	*Branta canadensis*
Mourning Dove	*Zenaida macroura*
Anna's Hummingbird	*Calypte anna*
Ring-billed Gull	*Larus delawarensis*
California Gull	*Larus californicus*
Double-crested Cormorant	*Phalacrocorax auritus*
Great Egret	*Ardea alba*
Red-tailed Hawk	*Buteo jamaicensis*
Burrowing Owl	*Athene cunicularia*
Northern Flicker	*Colaptes auratus*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Loggerhead shrike	*Lanius ludovicianus*
California Scrub-Jay	*Aphelocoma californica*
American Crow	*Corvus brachyrhynchos*
Horned Lark	*Eremophila alpestris*
Ruby-crowned Kinglet	*Regulus calendula*
Northern Mockingbird	*Mimus polyglottos*
American Pipit	*Anthus rubescens*
House Finch	*Haemorhous mexicanus*
American Goldfinch	*Spinus tristis*
Dark-eyed Junco	*Junco hyemalis*
White-crowned Sparrow	*Zonotrichia leucophrys*
Savannah Sparrow	*Passerculus sandwichensis*
Western Meadowlark	*Sturnella neglecta*
Red-winged Blackbird	*Agelaius phoeniceus*
Tricolored Blackbird	*Agelaius tricolor*
Brewer's Blackbird	*Euphagus cyanocephalus*
Yellow-rumped Warbler	*Setophaga coronata*
Mammals	
Black-tailed Jackrabbit	*Lepus californicus*

ATTACHMENT H

Arborist Report

Arborist Survey Report

The Preserve

Rancho Cordova, California

Prepared For:

Winn Communities, Inc.

December 13, 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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2.0 SITE DESCRIPTION 2
3.0 METHODS 2
4.0 RESULTS 4
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LIST OF ATTACHMENTS

Attachment A – Tree Inventory Map for The Preserve
Attachment B – Tree Survey Data
Attachment C – Representative Site Photographs

1.0 INTRODUCTION

On behalf of Winn Communities, Inc., ECORP Consulting, Inc. (ECORP) conducted an arborist survey for The Preserve Project, a planned development within the City of Rancho Cordova, Sacramento County, California. The purpose of this survey was to identify, map, and assess the general condition of trees within according to the Rancho Cordova Ordinance for the Preservation and Protection of Private Trees (Tree Ordinance, Ranch Cordova Municipal Code - Chapter 19.12).

The following are definitions from the Tree Ordinance that guide the methodology and data collection for this survey effort:

- **Protected Tree:**

    1. Native oak – *Quercus lobata*, valley oak; *Quercus wislizenii*, interior live oak; *Quercus douglasii*, blue oak; or *Quercus* x. *morehus*, oracle oak – having a trunk diameter of at least six inches or greater; or

    2. Any tree species other than a native oak having a trunk diameter of at least 12 inches or greater on nonresidential property; or

    3. Any tree species other than a native oak having a trunk diameter of at least 24 inches or greater on residential property; or

    4. Any tree planted as a requirement tree for site development, tree permit condition, landscape plan removal replacement, or other designated condition by the public works director or planning director.

- **Diameter at Standard Height:** The City Ordinance defines the methods by which trunk diameter is determined as:

    1. "Diameter at standard height" or "dsh" means the diameter of a tree measured at four and one-half feet above natural grade, except as specified below. The diameter shall be calculated by using the following formula: diameter equals circumference/3.14.

    2. For a tree that branches at or below four and one-half feet, dsh means the diameter at the narrowest point between the grade and the branching point.

    3. For a tree with a common root system that branches at the ground, DSH means the sum of the diameter of the largest trunk and one-half the cumulative diameter of the remaining trunks at four and one-half feet above natural grade.

Trees designated with protected status under the City Ordinance may carry additional reporting and planning requirements. The City ordinances requires a report, to be prepared by a certified arborist,

detailing the preservation, removal, replacement, or relocation of any protected trees prior to the preliminary approval of any parcel map.

2.0 SITE DESCRIPTION

The arborist survey was conducted within a 112.08-acre Study Area including the 98.92-acre Project area, as well as potential Offsite areas totaling 13.16 acres. In this document the Offsite areas are referred to as the Rio del Oro Offsite (located to the west of the Project), the Raymer Way Offsite (located to the east of the Project), the Morrison Creek Offsite (located to the north of the Project around an existing crossing of Morrison Creek), and the North Douglas Offsites (road stubs located to the south of the Project).

The Study Area corresponds to a portion of an unsectioned portion of the Rio de los Americanos Land Grant within the "Buffalo Creek, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1980) (Figure 1. *Study Area Location and Vicinity*). The approximate center of the site is located at 38.574614° North and -121.196708° West within the Lower Sacramento Watershed (Hydrologic Unit Code #18020163, USGS 2016).

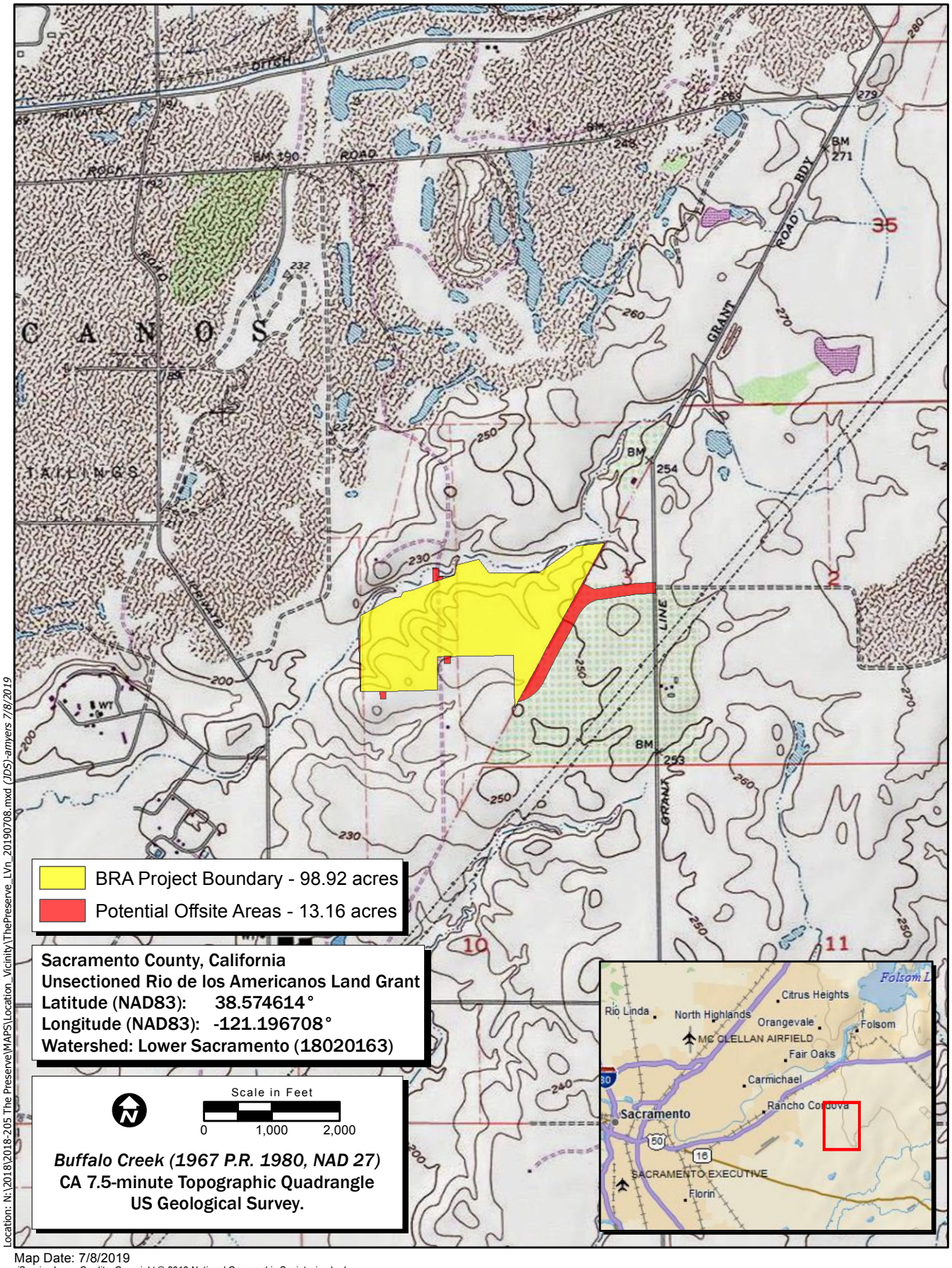
The current land use within the Study Area is rural residential and agricultural. The Study Area is situated at an elevational range of approximately 220 - 240 feet above mean sea level in the Sacramento Valley Subregion of the Great Central Valley floristic region of California (Baldwin et al. 2012). Two residences and associated outbuildings are present within the Study Area, and the remaining area is used for cattle grazing. The vegetation community present in the Study Area is grazed annual grassland and mainly consists of nonnative annual grasses and horticultural tree plantings around the residences. The land uses to the north, west, and east of the Study Area are primarily agricultural and residential, to the south of the Study Area lies the North Douglas residential development.

3.0 METHODS

ECORP arborist Ben Waitman (ISA Certification #WE-12108), assisted by ECORP biologist Daniel Wong, conducted the field survey of the Study Area on October 9, 2018, June 13, 2019, and July 15, 2019. During the field survey dates, the entire Study Area was walked or viewed across level ground, and data were recorded using an iPad paired with a Global Positioning System unit accurate to less than one meter.

The survey data collection included species, dsh, dripline radius, tree structure, and tree condition. Each surveyed tree was tagged with a permanent numbered aluminum tag at roughly breast height (~4.5 feet). The survey results are intended for general Project planning purposes only and should not be considered a detailed tree analysis (i.e., results do not include hazard assessment, tree health diagnosis, preservation/removal recommendations, or pruning advisement). The following terms define the collected data:

Diameter at standard height (dsh): Trunk diameter as defined by the Tree Ordinance.



Location: N:\2018\2018-205 The Preserve\MAPS\Location_Vicinity\ThePreserve_LVn_20190708.mxd (JDS)-amyers 7/8/2019

Map Date: 7/8/2019

iService Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed
Copyright:(c) 2018 Garmin

Figure 1. Study Area Location and Vicinity

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2018-205 The Preserve

Dripline Radius: The maximum distance from trunk to the edge of the canopy.

Condition: An estimate of the tree's overall health. This includes evaluation of foliage, evidence of wound healing, evidence of fungal infection, and the amount and condition of attached deadwood. Tree condition was rated on a five-point scale (poor, fair to poor, fair, fair to good, and good).

Structure: An estimate of the tree's structural soundness, based on obvious external evidence. This evaluates the obvious potential for structural failure of one or more major branches or trunks, the environment and condition of the root crown, symmetry of the canopy, and any noticeable effects of crowding caused by adjacent trees. Tree structure was rated on a five-point scale (poor, fair to poor, fair, fair to good, and good).

4.0 RESULTS

A total of 247 living trees greater than six inches in dsh were found during the survey, and three dead trees. A map depicting the locations of the inventoried trees is included as Attachment A. Detailed tree survey data for each tree are included as Attachment B. Representative site photographs are included as Attachment C.

Eleven different species of living trees were recorded during the survey. Of the trees present, one species (coast redwood [*Sequoia sempervirens*]) is considered native to California. However, coast redwood does not naturally occur in the Central Valley and is generally planted as horticultural plantings. Sixty-eight coast redwoods were recorded within the study area (including one dead tree).

The remaining trees are not native to California and include 108 gum trees (*Eucalyptus* spp.; including one dead tree), 19 purple leaf plum (*Prunus cerasifera*), 18 Callery pear (*Pyrus calleryana*), 17 American sweetgum (*Liquidambar styraciflua*), six Brazilian pepper-tree (*Schinus terebinthifolius*), five deodar cedar (*Cedrus deodara*), three white mulberry (*Morus alba*), two crepe myrtle (*Lagerstroemia* sp.), two Japanese Maple (*Acer palmatum*), one Chinese tallow (*Triadica sebifera*), and one dead silver birch (*Betula pendula*).

None of the above are protected native species. However, the Tree Ordinance specifically protects trees of any species present on residential property with a dsh greater than 24 inches, or with a dsh of 12 inches or greater on non-residential properties. Because the entire site is proposed for development, it may be considered a non-residential property. By this definition, 149 living trees having a dsh equal to or greater than 12 inches may be considered protected trees by the City of Rancho Cordova (see Attachment B for tree dsh data). Each of these trees was grown in landscaped rows of trees, likely planted for protection from wind or to enhance the view scape. Even though these trees are not native to the survey area, these 149 trees may require a permit from the City of Rancho Cordova if pruning or removal of these trees is necessary.

5.0 CONCLUSIONS

The Study Area contains 247 total trees greater than 6 inches dsh and three dead trees, and all trees are nonnative to the Study Area. There are 149 living trees that have a dsh equal to or greater than 12 inches and therefore meet the definition of a Protected Tree as defined in the City of Rancho Cordova's Tree Preservation Ordinance. Should removal be required, a tree removal permit should be procured from the City and mitigation may be required at the discretion of the City. In addition, the City may require an additional report that details a proposal to avoid, relocate, or replace any protected trees present within the Study Area.

6.0 REFERENCES

Baldwin, B.G; D.H. Goldman; D.J. Keil; R. Patterson; and T.J. Rosatti, editors. 2012. The Jepson Manual: Vascular Plants of California, Second Edition. University of California Press, Berkeley.

ECORP. 2019. Biological Resources Assessment for The Preserve Development. Prepared for Winn Communities. June.

USGS. 2016. Watershed Boundary Dataset for Sacramento County, California. Available at http://datagateway.nrcs.usda.gov. Accessed August 28, 2017.

_____. 1967, photorevised 1980. "Buffalo Creek, California" 7.5-minute Topographic Quadrangle. Geological Survey. Denver, Colorado.

LIST OF ATTACHMENTS

Attachment A – Tree Inventory Map for The Preserve

Attachment B – Tree Survey Data

Attachment C – Representative Site Photographs

ATTACHMENT A

Tree Inventory Map for The Preserve

Attachment A
Tree Locations
Overview

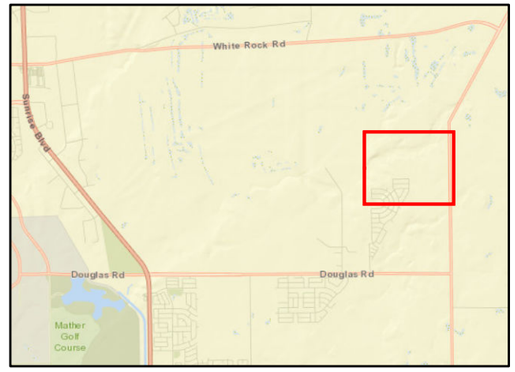
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres
- Protected Tree (dsh >=12")

Tree Species

- Brazilian Pepper-tree
- Callery Pear
- Chinese Tallow
- Coast Redwood
- Crepe Myrtle
- Deodar Cedar
- Eucalyptus spp.
- Japanese Maple
- Purple Leaf Plum
- Silver Birch
- Sweetgum
- White Mulberry

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\Arborist_Tree_Locations\ThePreserve_Trees_20181009_Overview.mxd (JDS)-amyers 7/17/2019

2018-205 The Preserve

Scale in Feet
0 400

Photo Source: 2017, ESRI, DigitalGlobe

Map Date: 7/17/2019

Attachment A.
Tree Locations
(Sheet 1 of 3)

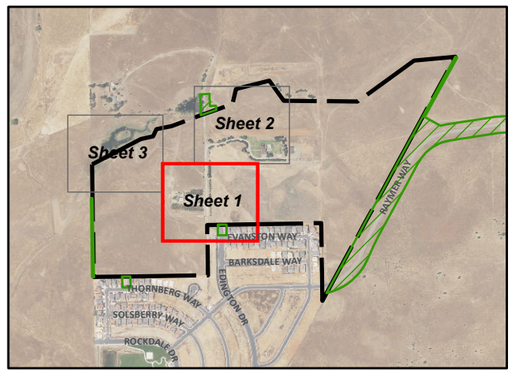
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres
- Protected Tree (dsh >=12")

Tree Species

- Brazilian Pepper-tree
- Callery Pear
- Chinese Tallow
- Coast Redwood
- Eucalyptus spp.
- Sweetgum
- White Mulberry

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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2018-205 The Preserve

Scale in Feet
0 80

Photo Source: 2017, ESRI, DigitalGlobe

Map Date: 7/17/2019

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\Arborist_Tree_Locations\ThePreserve_Trees_20181009_MapBook.mxd (JDS)-amyers 7/17/2019

Attachment A.
Tree Locations
(Sheet 2 of 3)

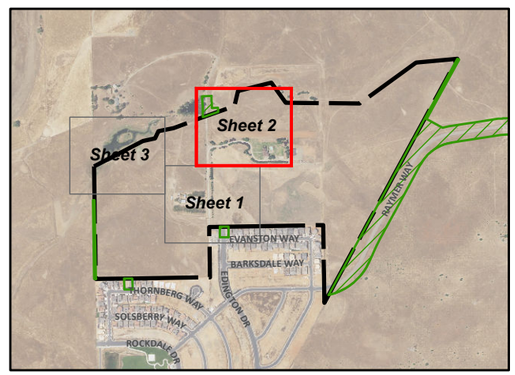
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres
- Protected Tree (dsh >=12")

Tree Species

- Brazilian Pepper-tree
- Callery Pear
- Coast Redwood
- Crepe Myrtle
- Deodar Cedar
- Eucalyptus spp.
- Japanese Maple
- Purple Leaf Plum
- Silver Birch
- Sweetgum

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\Arborist_Tree_Locations\ThePreserve_Trees_20181009_MapBook.mxd (JDS)-amyers 7/17/2019

2018-205 The Preserve

Scale in Feet
0 80

Photo Source: 2017, ESRI, DigitalGlobe

Map Date: 7/17/2019

Attachment A.
Tree Locations
(Sheet 3 of 3)



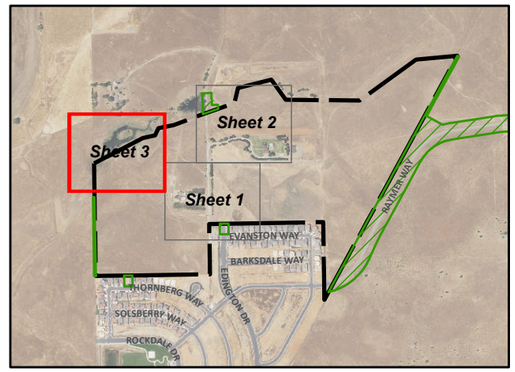
Map Features

- Project Boundary - 98.92 acres
- Potential Offsite Areas - 13.16 acres
- Protected Tree (dsh >=12")

Tree Species

- Eucalyptus spp.

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Location: N:\2018\2018-205 The Preserve\MAPS\SSS_Survey_and_Mapping\Arborist_Tree_Locations\ThePreserve_Trees_20181009_MapBook.mxd (JDS)-amyers 7/17/2019

2018-205 The Preserve

Scale in Feet
0 80

Photo Source: 2017, ESRI, DigitalGlobe

Map Date: 7/17/2019

ATTACHMENT B

Tree Survey Data (October 9, 2018 and June 13, 2019)

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health
3654	Non-Native	Brazilian Pepper-tree	*Schinus terabinthifolia*	10	10	Fair to Good	Fair to Poor
3784	Non-Native	Brazilian Pepper-tree	*Schinus terabinthifolia*	10	10	Good	Good
3785	Non-Native	Brazilian Pepper-tree	*Schinus terabinthifolia*	11	12	Good	Good
3787	Non-Native	Brazilian Pepper-tree	*Schinus terabinthifolia*	14	8	Good	Good
3788	Non-Native	Brazilian Pepper-tree	*Schinus terabinthifolia*	6	7	Good	Good
3789	Non-Native	Brazilian Pepper-tree	*Schinus terabinthifolia*	12	10	Good	Good
36	Non-Native	Callery Pear	*Pyrus calleryana*	11.5	20	Good	Good
37	Non-Native	Callery Pear	*Pyrus calleryana*	10	17	Good	Good
38	Non-Native	Callery Pear	*Pyrus calleryana*	9	15	Good	Good
39	Non-Native	Callery Pear	*Pyrus calleryana*	8	15	Good	Good
40	Non-Native	Callery Pear	*Pyrus calleryana*	6.5	10	Good	Good
41	Non-Native	Callery Pear	*Pyrus calleryana*	10	15	Good	Good
42	Non-Native	Callery Pear	*Pyrus calleryana*	10.5	15	Good	Good
3390	Non-Native	Callery Pear	*Pyrus calleryana*	10	10	Good	Good
3743	Non-Native	Callery Pear	*Pyrus calleryana*	6	12	Fair	Good
3754	Non-Native	Callery Pear	*Pyrus calleryana*	16.5	20	Good	Good
3755	Non-Native	Callery Pear	*Pyrus calleryana*	12	15	Good	Good
3756	Non-Native	Callery Pear	*Pyrus calleryana*	6.5	8	Good	Good
3757	Non-Native	Callery Pear	*Pyrus calleryana*	9	10	Good	Good
3763	Non-Native	Callery Pear	*Pyrus calleryana*	13	15	Good	Good
3764	Non-Native	Callery Pear	*Pyrus calleryana*	12	15	Good	Good
3765	Non-Native	Callery Pear	*Pyrus calleryana*	10.5	10	Good	Good
3766	Non-Native	Callery Pear	*Pyrus calleryana*	10.5	15	Good	Good
3786	Non-Native	Callery Pear	*Pyrus calleryana*	8	8	Fair	Good
3359	Non-Native	Chinese Tallow	*Triadica sebifera*	8	10	Fair to Good	Fair to Good
6	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	14.5	10	Good	Fair to Poor
7	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	19	12	Good	Fair to Good
8	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	19.5	10	Good	Good
9	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	14	10	Good	Good
10	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	16	6	Fair to Poor	Fair to Poor
17	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	25	15	Good	Good
18	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	26.5	15	Good	Good

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health
19	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	25.5	15	Good	Good
20	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	23.5	17	Good	Good
21	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	22	15	Good	Good
22	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	21	13	Good	Good
23	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	21	15	Good	Good
26	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	20.5	15	Fair	Good
27	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	12	Good	Good
28	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18	16	Good	Fair
29	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	10	10	Good	Good
30	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18	10	Good	Good
48	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18	15	Good	Good
49	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	15.5	16	Good	Good
50	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	14.5	15	Good	Good
51	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	15	Good	Good
52	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	15	Good	Good
3125	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18.5	20	Good	Good
3364	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17.5	10	Good	Good
3365	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	15.5	15	Good	Good
3366	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	19.5	16	Good	Good
3367	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	13	Good	Good
3370	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	11	9	Good	Good
3372	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	16.5	14	Good	Good
3373	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18.5	14	Good	Good
3379	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	16.5	13	Good	Good
3380	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	15.5	15	Good	Good
3381	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	12	Good	Good
3382	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18	10	Good	Good
3383	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	21	10	Good	Good
3391	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	16	12	Good	Good
3394	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	19	15	Good	Good
3395	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18	12	Good	Good
3399	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	15	Good	Good

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health
3713	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	14.5	12	Good	Good
3714	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	12	Good	Good
3715	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	15.5	13	Good	Good
3716	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	14	15	Good	Good
3717	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	16	16	Good	Good
3718	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18	16	Good	Good
3719	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18.5	15	Good	Good
3720	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18.5	14	Good	Good
3721	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	18	12	Good	Good
3722	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	12	Good	Good
3723	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	16.5	12	Good	Good
3724	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	14	Good	Good
3726	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	23.5	25	Good	Good
3727	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	23	18	Good	Good
3730	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	15	Good	Good
3732	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	19.5	16	Good	Good
3734	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	20	15	Good	Good
3735	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	22	16	Good	Good
3736	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	22.5	18	Good	Good
3740	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	15.5	12	Good	Good
3742	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	26.5	22	Good	Good
3747	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	25.5	18	Good	Good
3748	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	28	20	Good	Good
3767	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17.5	13	Good	Good
3768	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	16.5	10	Good	Good
3769	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	17	12	Good	Poor
3770	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	19	15	Good	Good
3771	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	20.5	12	Good	Good
Not Tagged	Native (Out of Natural Range)	Coast Redwood	*Sequoia sempervirens*	13	0	Good	DEAD
3752	Non-Native	Crapemyrtle	*Lagerstoemia indica*	9	8	Good	Good
3753	Non-Native	Crapemyrtle	*Lagerstoemia indica*	9.5	8	Good	Good
3728	Non-Native	Deodar Cedar	*Cedrus deodara*	16	20	Good	Good

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health
3729	Non-Native	Deodar Cedar	*Cedrus deodara*	15	15	Fair to Good	Poor
3737	Non-Native	Deodar Cedar	*Cedrus deodara*	23	20	Good	Good
3744	Non-Native	Deodar Cedar	*Cedrus deodara*	19.5	15	Fair	Fair to Good
3746	Non-Native	Deodar Cedar	*Cedrus deodara*	12.5	14	Good	Good
898	Non-Native	Gum Tree	*Eucalyptus sp.*	99	35	Fair to Good	Fair to Good
901	Non-Native	Gum Tree	*Eucalyptus sp.*	12	20	Fair to Poor	Poor
967	Non-Native	Gum Tree	*Eucalyptus sp.*	39	15	Fair	Fair
968	Non-Native	Gum Tree	*Eucalyptus sp.*	33	15	Good	Good
3103	Non-Native	Gum Tree	*Eucalyptus sp.*	10.5	20	Fair	Fair
3104	Non-Native	Gum Tree	*Eucalyptus sp.*	8.5	15	Fair	Fair
3129	Non-Native	Gum Tree	*Eucalyptus sp.*	10	12	Fair	Fair
3130	Non-Native	Gum Tree	*Eucalyptus sp.*	8	10	Fair	Fair
3132	Non-Native	Gum Tree	*Eucalyptus sp.*	8.5	12	Fair	Fair
3133	Non-Native	Gum Tree	*Eucalyptus sp.*	13	20	Fair	Fair
3135	Non-Native	Gum Tree	*Eucalyptus sp.*	8.5	15	Fair to Poor	Fair
3137	Non-Native	Gum Tree	*Eucalyptus sp.*	11.5	15	Fair	Fair
3138	Non-Native	Gum Tree	*Eucalyptus sp.*	10	10	Fair to Poor	Fair
3146	Non-Native	Gum Tree	*Eucalyptus sp.*	18.5	15	Fair	Fair
3154	Non-Native	Gum Tree	*Eucalyptus sp.*	24	25	Fair	Fair to Good
3155	Non-Native	Gum Tree	*Eucalyptus sp.*	8	10	Fair	Fair
3156	Non-Native	Gum Tree	*Eucalyptus sp.*	15	25	Fair	Fair to Good
3162	Non-Native	Gum Tree	*Eucalyptus sp.*	9	5	Poor	Fair to Poor
3169	Non-Native	Gum Tree	*Eucalyptus sp.*	13	25	Fair	Fair to Good
3170	Non-Native	Gum Tree	*Eucalyptus sp.*	13	20	Fair	Fair
3173	Non-Native	Gum Tree	*Eucalyptus sp.*	12.5	15	Fair to Poor	Fair
3176	Non-Native	Gum Tree	*Eucalyptus sp.*	6	10	Fair	Fair to Good
3180	Non-Native	Gum Tree	*Eucalyptus sp.*	20	12	Fair to Poor	Fair to Poor
3181	Non-Native	Gum Tree	*Eucalyptus sp.*	14	15	Fair	Fair
3183	Non-Native	Gum Tree	*Eucalyptus sp.*	12.5	15	Fair	Fair
3184	Non-Native	Gum Tree	*Eucalyptus sp.*	11.5	15	Fair	Good
3185	Non-Native	Gum Tree	*Eucalyptus sp.*	10.5	15	Fair	Fair to Good
3192	Non-Native	Gum Tree	*Eucalyptus sp.*	16	15	Fair	Fair

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health
3193	Non-Native	Gum Tree	*Eucalyptus sp.*	15	15	Fair	Fair
3194	Non-Native	Gum Tree	*Eucalyptus sp.*	24	10	Fair to Poor	Fair to Poor
3195	Non-Native	Gum Tree	*Eucalyptus sp.*	15	10	Fair to Poor	Fair to Poor
3196	Non-Native	Gum Tree	*Eucalyptus sp.*	14.5	20	Fair	Fair to Good
3200	Non-Native	Gum Tree	*Eucalyptus sp.*	13	15	Fair	Fair
3206	Non-Native	Gum Tree	*Eucalyptus sp.*	7	15	Fair	Fair
3208	Non-Native	Gum Tree	*Eucalyptus sp.*	11	15	Fair	Fair
3209	Non-Native	Gum Tree	*Eucalyptus sp.*	12	12	Fair	Fair
3210	Non-Native	Gum Tree	*Eucalyptus sp.*	20	10	Fair	Fair to Poor
3220	Non-Native	Gum Tree	*Eucalyptus sp.*	13	15	Good	Good
3221	Non-Native	Gum Tree	*Eucalyptus sp.*	15	15	Good	Good
3222	Non-Native	Gum Tree	*Eucalyptus sp.*	14.5	25	Fair	Good
3223	Non-Native	Gum Tree	*Eucalyptus sp.*	12.5	15	Fair	Good
3228	Non-Native	Gum Tree	*Eucalyptus sp.*	11	15	Fair	Fair to Poor
3229	Non-Native	Gum Tree	*Eucalyptus sp.*	8	8	Fair	Fair
3232	Non-Native	Gum Tree	*Eucalyptus sp.*	23	15	Fair	Fair to Good
3240	Non-Native	Gum Tree	*Eucalyptus sp.*	16	12	Fair	Fair
3242	Non-Native	Gum Tree	*Eucalyptus sp.*	15	15	Fair	Fair to Good
3244	Non-Native	Gum Tree	*Eucalyptus sp.*	11.5	14	Fair	Fair to Poor
3246	Non-Native	Gum Tree	*Eucalyptus sp.*	6	10	Fair to Poor	Fair
3248	Non-Native	Gum Tree	*Eucalyptus sp.*	23	20	Fair	Fair
3249	Non-Native	Gum Tree	*Eucalyptus sp.*	15	15	Fair	Good
3250	Non-Native	Gum Tree	*Eucalyptus sp.*	18	20	Fair	Fair to Good
3252	Non-Native	Gum Tree	*Eucalyptus sp.*	10	10	Fair	Fair to Good
3253	Non-Native	Gum Tree	*Eucalyptus sp.*	24	20	Fair	Fair
3312	Non-Native	Gum Tree	*Eucalyptus sp.*	26	20	Fair	Poor
3315	Non-Native	Gum Tree	*Eucalyptus sp.*	16.5	20	Fair	Fair
3316	Non-Native	Gum Tree	*Eucalyptus sp.*	12.5	15	Fair	Fair to Good
3322	Non-Native	Gum Tree	*Eucalyptus sp.*	18	20	Fair	Fair
3325	Non-Native	Gum Tree	*Eucalyptus sp.*	6	10	Fair	Fair
3326	Non-Native	Gum Tree	*Eucalyptus sp.*	9	5	Poor	Poor
3327	Non-Native	Gum Tree	*Eucalyptus sp.*	14	10	Fair	Fair

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health
3329	Non-Native	Gum Tree	*Eucalyptus sp.*	14	20	Fair	Fair to Good
3333	Non-Native	Gum Tree	*Eucalyptus sp.*	17	20	Fair	Fair to Good
3334	Non-Native	Gum Tree	*Eucalyptus sp.*	10	20	Fair	Fair
3337	Non-Native	Gum Tree	*Eucalyptus sp.*	7	8	Fair	Fair to Poor
3347	Non-Native	Gum Tree	*Eucalyptus sp.*	13	15	Fair	Fair
3360	Non-Native	Gum Tree	*Eucalyptus sp.*	9	10	Poor	Poor
3470	Non-Native	Gum Tree	*Eucalyptus sp.*	17	25	Fair to Good	Fair to Good
3631	Non-Native	Gum Tree	*Eucalyptus sp.*	12.5	15	Fair	Fair to Good
3632	Non-Native	Gum Tree	*Eucalyptus sp.*	7	8	Fair	Fair
3633	Non-Native	Gum Tree	*Eucalyptus sp.*	13	20	Fair	Fair to Good
3636	Non-Native	Gum Tree	*Eucalyptus sp.*	13	15	Fair	Fair
3637	Non-Native	Gum Tree	*Eucalyptus sp.*	15.5	15	Fair	Fair to Good
3640	Non-Native	Gum Tree	*Eucalyptus sp.*	21	20	Fair to Poor	Fair to Good
3641	Non-Native	Gum Tree	*Eucalyptus sp.*	16.5	25	Fair to Good	Fair to Good
3643	Non-Native	Gum Tree	*Eucalyptus sp.*	11	15	Good	Good
3647	Non-Native	Gum Tree	*Eucalyptus sp.*	14	10	Fair to Poor	Fair
3648	Non-Native	Gum Tree	*Eucalyptus sp.*	8.5	15	Fair	Fair
3650	Non-Native	Gum Tree	*Eucalyptus sp.*	8	8	Fair	Fair
3652	Non-Native	Gum Tree	*Eucalyptus sp.*	26	25	Fair to Good	Fair to Good
3653	Non-Native	Gum Tree	*Eucalyptus sp.*	20	25	Fair to Good	Fair to Good
3655	Non-Native	Gum Tree	*Eucalyptus sp.*	12.5	15	Fair	Fair
3656	Non-Native	Gum Tree	*Eucalyptus sp.*	10	7	Fair	Fair
3657	Non-Native	Gum Tree	*Eucalyptus sp.*	20.5	25	Fair to Good	Fair to Good
3659	Non-Native	Gum Tree	*Eucalyptus sp.*	13.5	15	Good	Fair to Good
3662	Non-Native	Gum Tree	*Eucalyptus sp.*	18	15	Fair	Fair to Good
3663	Non-Native	Gum Tree	*Eucalyptus sp.*	14	10	Poor	Poor
3665	Non-Native	Gum Tree	*Eucalyptus sp.*	11.5	20	Fair	Fair
3671	Non-Native	Gum Tree	*Eucalyptus sp.*	7	10	Fair to Poor	Fair
3773	Non-Native	Gum Tree	*Eucalyptus sp.*	15	20	Good	Good
3775	Non-Native	Gum Tree	*Eucalyptus sp.*	27	25	Good	Good
3776	Non-Native	Gum Tree	*Eucalyptus sp.*	6	8	Fair	Fair
3776	Non-Native	Gum Tree	*Eucalyptus sp.*	22	20	Good	Good

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health
3777	Non-Native	Gum Tree	*Eucalyptus sp.*	28	25	Fair	Good
3778	Non-Native	Gum Tree	*Eucalyptus sp.*	23	25	Good	Good
3781	Non-Native	Gum Tree	*Eucalyptus sp.*	20.5	15	Good	Good
3782	Non-Native	Gum Tree	*Eucalyptus sp.*	29	20	Fair	Good
3783	Non-Native	Gum Tree	*Eucalyptus sp.*	10.5	25	Good	Good
3790	Non-Native	Gum Tree	*Eucalyptus sp.*	24	10	Fair	Fair to Good
3791	Non-Native	Gum Tree	*Eucalyptus sp.*	7	10	Fair to Good	Fair to Good
3792	Non-Native	Gum Tree	*Eucalyptus sp.*	16	12	Fair to Good	Fair to Good
3793	Non-Native	Gum Tree	*Eucalyptus sp.*	22	20	Fair	Fair
3794	Non-Native	Gum Tree	*Eucalyptus sp.*	20	20	Fair to Good	Fair to Good
3795	Non-Native	Gum Tree	*Eucalyptus sp.*	6	5	Fair to Poor	Fair to Good
3796	Non-Native	Gum Tree	*Eucalyptus sp.*	22	10	Fair to Poor	Fair to Poor
3797	Non-Native	Gum Tree	*Eucalyptus sp.*	16.5	15	Good	Good
3798	Non-Native	Gum Tree	*Eucalyptus sp.*	9	10	Fair to Poor	Fair to Poor
3799	Non-Native	Gum Tree	*Eucalyptus sp.*	20	10	Poor	Fair
Not Tagged	Non-Native	Gum Tree	*Eucalyptus sp.*	0	0	Poor	Dead
3750	Non-Native	Japanese Maple	*Acer palmatum*	8.5	10	Good	Good
3751	Non-Native	Japanese Maple	*Acer palmatum*	8.5	10	Good	Good
31	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	8	7	Good	Good
32	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	9.5	9	Good	Good
33	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	10	15	Good	Good
34	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	6	12	Good	Good
35	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	6.5	10	Good	Good
43	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	9	10	Good	Good
44	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	9	10	Good	Good
45	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	10.5	15	Good	Good
46	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	8	10	Good	Good
47	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	9	12	Good	Fair to Poor
3733	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	9	10	Good	Good
3738	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	10	15	Good	Poor
3739	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	11	15	Good	Good
3740	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	10	15	Good	Good

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health
3758	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	8	8	Good	Good
3759	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	6	8	Good	Good
3760	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	7.5	10	Good	Good
3761	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	7.5	10	Good	Good
3762	Non-Native	Purple Leaf Plum	*Prunus cerasifera*	8.5	10	Good	Fair
Not Tagged	Non-Native	Silver Birch	*Betula pendula*	0	0	Poor	Dead
1	Non-Native	Sweetgum	*Liquidambar styraciflua*	7	8	Good	Good
2	Non-Native	Sweetgum	*Liquidambar styraciflua*	7	9	Good	Good
3	Non-Native	Sweetgum	*Liquidambar styraciflua*	7	8	Good	Good
4	Non-Native	Sweetgum	*Liquidambar styraciflua*	6.5	7	Good	Fair to Good
5	Non-Native	Sweetgum	*Liquidambar styraciflua*	6.5	7	Good	Good
11	Non-Native	Sweetgum	*Liquidambar styraciflua*	7.5	8	Good	Good
12	Non-Native	Sweetgum	*Liquidambar styraciflua*	8	10	Good	Good
13	Non-Native	Sweetgum	*Liquidambar styraciflua*	9.5	12	Good	Fair to Good
14	Non-Native	Sweetgum	*Liquidambar styraciflua*	8.5	10	Good	Fair
15	Non-Native	Sweetgum	*Liquidambar styraciflua*	9	12	Good	Good
16	Non-Native	Sweetgum	*Liquidambar styraciflua*	9	15	Good	Good
24	Non-Native	Sweetgum	*Liquidambar styraciflua*	7	8	Good	Good
25	Non-Native	Sweetgum	*Liquidambar styraciflua*	7.5	8	Good	Good
3344	Non-Native	Sweetgum	*Liquidambar styraciflua*	8	7	Fair	Poor
3731	Non-Native	Sweetgum	*Liquidambar styraciflua*	7	12	Good	Good
3745	Non-Native	Sweetgum	*Liquidambar styraciflua*	12	15	Good	Good
3749	Non-Native	Sweetgum	*Liquidambar styraciflua*	8.5	13	Good	Good
3148	Non-Native	White Mulberry	*Morus alba*	15	20	Good	Fair to Good
3335	Non-Native	White Mulberry	*Morus alba*	6.5	10	Fair to Good	Fair
3800	Non-Native	White Mulberry	*Morus alba*	10	15	Good	Good

The Preserve

Arborist Survey Data

Tree #	Native/Non-native	Common Name	Species Name	DSH (in)	Dripline (ft)	Structure	Health

SUMMARY

Tree Species	*Number ≥12" DSH*
Brazilian Pepper-Tree	2
Callery Pear	4
Chinese Tallow	0
Coast Redwood	66
Deodar Cedar	5
Eucalyptus spp.	70
Japanese Maple	0
Purple Leaf Plum	0
Sweetgum	1
White Mulberry	1
TOTAL	149

ATTACHMENT C

Representative Site Photographs



Horticultural plantings of sweetgum and coast redwood trees along a driveway.
Photo taken facing south on 10.12.18.



One of two gum tree windrows planted near a residence within the study area.
Photo taken facing north on 10.12.18

ATTACHMENT I

SSHCP Avoidance and Minimization Measures

welfare of the public. Although access to the Preserves will be allowed by the Implementing Entity and Wildlife Agencies, these emergency repairs are not covered by SSHCP permits.

The Permitting Agencies will not obstruct any emergency response decisions regarding Preserves made by the Implementing Entity. However, existing ESA consultation regulations will apply to all emergency activities (50 Code of Federal Regulations 402.05).

5.4 Conditions on Covered Activities

As required by the ESA (Section 10(a)(2)(A)(ii)) and Fish and Game Code Section 2081, this Plan includes measures to avoid and minimize take of Covered Species. This section describes the Avoidance and Minimization Measures that will be implemented as part of each SSHCP Covered Activity to avoid or minimize direct and indirect impacts to Covered Species and their habitats to the maximum extent, including species habitats that are also waters of the state and waters of the United States. AMMs are presented in this chapter as conditions on Covered Activities. Each condition contains several AMMs that are intended to eliminate or reduce direct or indirect effects to species that could result from implementation of a Covered Activity.

Third-Party Project Proponents are responsible for incorporating all SSHCP requirements (including appropriate AMMs) into their project design. The Land Use Authority Permittee with authority over a Covered Activity is responsible for reviewing and ensuring that all applicable AMMs are appropriately incorporated into project design, and is responsible for ensuring that the required AMMs are correctly applied by the Third-Party Project Proponent during implementation of the Covered Activity.

The CEQA process for individual Covered Activities may result in additional conditions for third-party projects that are not related to the ESA, CESA, or Clean Water Act. The SSHCP AMMs described in this chapter do not supersede requirements by other agencies and are not intended to provide a basis for non-compliance with other applicable design guidelines and avoidance measures required by federal, state, and local agencies. Compliance with the SSHCP does constitute full CEQA compliance with regard to mitigation of impacts to Covered Species. Ultimately, the Plan Permittees are responsible for ensuring that implementation of each SSHCP Covered Activity fully complies with the SSHCP, but it remains the Third-Party Project Proponent's responsibility to ensure project compliance with all applicable laws and regulations.

Before construction begins, the Third-Party Project Proponent must demonstrate to the Land Use Authority Permittee that all necessary AMMs will be fulfilled. This is accomplished by having pre-construction AMMs in place prior to construction and by having a plan that shows how all applicable post-construction AMMs will be addressed. During construction, it is the responsibility of the Land Use Authority Permittee to ensure that the AMMs are being

implemented. The Land Use Authority Permittee can compel a Third-Party Project Proponent to stop working if a project is not in compliance with all SSHCP AMMs.[16] Upon construction completion, the Land Use Authority Permittee will monitor and confirm that post-construction conditions are acceptable and consistent with the requirements of the SSHCP permits (e.g., revegetation, soil treatments).[17] Once the constructed project has received final clearance from the Land Use Authority, it is the responsibility of the Land Use Authority to monitor continued operation of installed AMMs (e.g., swales, retention basins) and to monitor compliance with AMMs required for future operations and maintenance of the Covered Activity. The Implementing Entity may also assist with and in some instances may assume responsibility for monitoring continued operation of installed AMMs when those AMMs are part of the Preserve System, Preserve Setbacks, or Stream Setbacks.

On occasion, a local Land Use Authority Permittee may not have authority over a Covered Activity proposed by a Third-Party Project Proponent. In that event, the SSHCP Implementing Entity may develop a Participating Special Entity agreement with the Third-Party Project Proponent (see Chapter 9). As a Participating Special Entity, the Third-Party Project Proponent will incorporate and implement all applicable design and construction AMMs. The Implementing Entity will ensure that AMMs specific to that SSHCP Covered Activity are included in the project's Participating Special Entity agreement and ensure that AMMs are being implemented during construction.

As the SSHCP will be implemented over a 50-year Permit Term, the results of construction monitoring may indicate that certain AMMs are ineffective. Should the Plan Permittees wish to modify or replace an SSHCP AMM, they will follow the modification process outlined in the Adaptive Management Program (see Chapter 8).

5.4.1 General Avoidance and Minimization Measures

General AMMs are designed to avoid or minimize effects of Covered Activities on SSHCP land cover types and Covered Species.

Condition 1. Avoid and Minimize Urban Development Impacts to Watershed Hydrology and Water Quality

National Pollution Discharge Elimination System permits are issued by the Regional Water Quality Control Board to jurisdictions in the region, including the jurisdictions that are also SSHCP Land Use Authority Permittees (i.e., County of Sacramento, and Cities of Rancho

[16] In a situation like this, the Local Land Use Authority Permittee will suspend one or more local permits (e.g., grading permit, building permit) until compliance with terms of all SSHCP requirements is demonstrated.

[17] Post-construction monitoring by the Land Use Authority Permittee could continue for several years.

Cordova and Galt). The National Pollution Discharge Elimination System permit is issued to each of the Land Use Authority Permittees every 5 years, and is referred to as the Municipal Separate Storm Sewer System (MS4) permit. MS4 permits contain specific design measures required for all projects constructed within the region. The Stormwater Quality Design Manual for the Sacramento and South Placer Regions (Stormwater Manual) outlines planning tools and requirements to reduce urban runoff from new development and redevelopment projects within the region (Sacramento Stormwater Quality Partnership 2007). The Stormwater Manual is used as a general guidance document to aid with the selection, siting, design, operation, and long-term maintenance of stormwater quality control measures. The Stormwater Manual contains control measures intended to meet the standard of "reducing pollutants in urban runoff to the maximum extent practicable" set forth in the local agencies' MS4 permits issued by the Central Valley Regional Water Quality Control Board. AMM LID-1 (see below) is designed to ensure compliance with MS4 requirements by requiring Third-Party Project Proponents to minimize increases of peak discharge of stormwater and to eliminate or reduce runoff of pollutants.

Development Covered Activities may adversely alter watershed hydrology and degrade water quality, which, in turn, could diminish or eliminate the conservation benefits provided by the SSHCP Preserve System. Condition 1 is designed to conserve and/or rehabilitate on-site natural creeks and streams. This condition will require the provision of BMPs and low-impact development (LID) drainage control measures to ensure that runoff from developed lands will closely mimic the pre-development hydrograph and retain most pre-development hydrologic functions. Condition 1 will accomplish the hydrograph and hydrologic objectives through application of the listed AMMs to all UDA Covered Activities that occur at the parcel, subdivision, or master plan scale.

LID-1 (Stormwater Quality): When the size of a Covered Activity project exceeds the thresholds established by the State Water Resources Control Board (SWRCB) (see the most recent Stormwater Quality Design Manual for the Sacramento and South Placer Regions, or future SWRCB-approved design manuals applicable to the Plan Area), incorporate stormwater management into site design to satisfy the requirements outlined in the most recent Stormwater Quality Design Manual for the Sacramento and South Placer Regions. Stormwater management may include groundwater recharge (LID-2) and natural site features (LID-3).

LID-2 (Groundwater Recharge): When siting SSHCP Preserves containing Riparian, Open Water, or Freshwater Marsh SSHCP land cover types, the Implementing Entity will prioritize locations that are suitable for groundwater recharge.

LID-3 (Natural Site Features): Incorporate preservation of a site's natural aquatic features (such as creeks and streams) into project design to retain natural hydrologic patterns and to retain habitat that might be used by Covered Species.

Condition 2. Avoid and Minimize Urban Development Direct and Indirect Impacts to Existing Preserves and SSHCP Preserves

Development Covered Activities adjacent to Preserves may adversely impact species that use the Preserve, and erode or eliminate the conservation benefits provided by the Preserve. Condition 2 seeks to avoid or minimize the following Covered Activity environmental stressors that may result in direct and indirect impacts to the SSHCP Preserve System:

- Alterations to landscape hydrology from new impervious surfaces may adversely affect natural communities in the lower watershed, the ecology of a Preserve, and/or downstream aquatic resources.
- Water runoff from development or from roadways directed into Preserves may introduce harmful substances into Preserves. Unseasonal and/or additional water entering a Preserve may eliminate vernal pools and other seasonal wetlands native to the region by converting them to low-functioning perennial wetlands.
- Development adjacent to Preserves may partially to fully remove the soil's "perched aquifer" (see Chapter 3) and reduce or eliminate the micro-watersheds that support the hydrology of vernal pools within the Preserve boundary. These changes may adversely affect the existing hydrologic regime of vernal pools by changing the timing, depth, and/or duration of vernal pool saturation and/or ponding, causing long-term changes to a suite of vernal pool functions. For example, changes to water chemistry could adversely affect species habitat. Although the vernal pools remain, the environmental conditions of the pools may no longer provide habitat for vernal pool Covered Species, or provide the benefit of other wetland functions (e.g., stormwater attenuation) compared to pre-project conditions.
- Introduction or proliferation of non-native or invasive plant and wildlife species may displace native species.
- Landscaping in the interface of a development and a Vernal Pool–Grassland Preserve often includes native or non-native trees and other plant species that are not found in California grasslands and, therefore, cannot survive on the Vernal Pool–Grassland Preserve border without intensive irrigation and cultivation. In addition to adverse effects from irrigation and landscape maintenance, adult trees may become landscape barriers that inhibit species movement and may act to isolate individual Preserves from the larger SSHCP Preserve System.
- Recreational use of Preserves near developed areas may compact soils, eliminate vegetation, impair hydrologic functions, introduce weeds or invasive plant species, and disturb plants and wildlife.

- Introduction of light, noise, or vibrations may disrupt normal nocturnal and diurnal cycles of native species.

AMMs associated with Condition 2 must be applied to all UDA Covered Activities that border an existing Preserve or planned SSHCP Preserve.

EDGE-1 (Compatible Land Uses): To the maximum extent practicable, development project Covered Activities will locate compatible land uses (e.g., designated open space such as parks and ball fields, detention basins, and other land uses with less-intensive human activity) in areas immediately adjacent to existing or planned Preserve boundaries. The compatible land use will provide additional buffering of Preserves from potential indirect effects of adjacent urban development. The soil surfaces in a compatible land use area may be re-contoured provided that the soil restrictive layer remains undamaged and most of the soil profile above the restrictive layer remains intact. The Land Use Authority will determine when it is not practicable to locate a compatible land use adjacent to existing or planned Preserve boundaries.

EDGE-2 (Single-Loaded Streets): To the maximum extent practicable, the design of Urban Development Covered Activities will locate single-loaded streets adjacent to existing or planned Preserve. The Land Use Authority will determine when single-loaded streets are not practicable.

EDGE-3 (Preserve Setbacks): Urban Development Covered Activities constructed adjacent to existing or planned Preserves must establish a minimum 50-foot-wide setback outward from the boundary of any existing Preserve or planned SSHCP Preserve. This minimum 50-foot-wide setback will function as a transition between Urban Development and the Preserve, and must be managed to maintain the natural community of vegetation present in the adjacent Preserve. As much of the setback as possible should remain in the same natural habitat as the Preserve.

However, as discussed in Section 5.2.5, Covered Activities in Preserve Setbacks in the UDA, where an existing or planned Preserve is adjacent to an existing roadway (e.g., collectors, arterials, thoroughfares), the 50-foot Preserve Setback will not be required, and any bicycle or pedestrian trail will be established in the road right-of-way. In addition, where a planned roadway crosses an existing or planned Preserve, no Preserve Setback will be required, and any bicycle or pedestrian trail will be established in the road right-of-way.

EDGE-3a (Setback Recreational Trails): Trails are best suited outside of the setback; however, certain types of recreational trails or facilities (e.g., benches, trash receptacles, shade structures, fencing) that can be constructed with minimum ground disturbance and in compliance with EDGE-7 may be allowed within a Preserve Setback, as specified in Section 5.2.5, Covered Activities in Preserve Setbacks in the UDA. Preserve Setback design must locate trails on the side nearest development, away from the Preserve boundary. Trails may be permeable or semi-permeable hiking trails or paved community trials. The maximum trail width will be 16 feet total, including 2-foot-wide shoulders. Post and cable fencing, split rail, or other open fencing will be installed adjacent to recreation trails to keep pedestrians on the trail.

EDGE-3b (Setback Firebreaks): If approved by the local authorities, the Preserve Setback trail may also be used as a firebreak. In instances where a trail cannot act as a firebreak, the firebreak will be located between the trail and the Preserve boundary (see Section 5.2.7). Firebreaks allowed inside the setbacks must be created by methods that will not disturb the soil's restrictive layer, such as mowing, minor scraping of surface vegetation, or shallow tilling, to comply with EDGE-7. Firebreak width within Preserve Setbacks is the minimum width needed to comply with applicable local codes.

EDGE-3c (Setback Shade Trees and Landscaping): To prevent potential impacts from irrigation water or from accumulation of leaf litter onto the grasslands or vernal pools of a Preserve, planting of shade trees or landscaping vegetation will be limited to the area of the Preserve Setback located between the recreation trail and the adjacent urban development (i.e., away from Preserves).

- Only drought-tolerant plant species will be planted. The planting pallet used for Preserve Setback landscaping will not include invasive plant species listed in the California Invasive Plant Council's (Cal-IPC) California Invasive Plant Inventory Database or listed in the Cal-IPC California Invasive Plant Watch List (see http://www.cal-ipc.org/paf/). Any shade trees planted along Preserve Setback trails will be native species that are found in California grasslands and that can survive in the Vernal Pool–Grassland border without long-term irrigation or fertilization (e.g., valley oak, black oak, blue oak, oracle oak). In general, no more than 30% of any 1,000-foot-long segment of a Preserve Setback trail will have canopy cover from tree plantings (to be consistent with maximum tree densities naturally found within native California grasslands and savanna).

- Drip irrigation will be allowed for a maximum of 5 years to establish shade trees or landscape vegetation between the recreation trail and adjacent urban development. The Implementing Entity has the discretion to allow irrigation to continue past 5 years if extenuating circumstances necessitate it (e.g., during a drought) and the continuance of irrigation will not affect the Preserve. Any irrigation systems located within Preserve Setbacks will be inspected quarterly to determine if such systems are affecting soils or vegetation not part of the intended plantings. Irrigation system repairs will be completed immediately if it is determined that the irrigation system is affecting vegetation or soil moisture not part of the intended tree planting.
- If, during annual monitoring of the adjacent Preserve (see Chapter 8), adverse indirect effects (e.g., leaf litter accumulation, irrigation runoff, plant encroachment) of the Preserve Setback's planted vegetation are detected, then the SSHCP Implementing Entity, the Preserve Manager, and the entity responsible for the Preserve Setback will identify appropriate adaptive management of the Preserve Setback tree or landscape plantings in accordance with the Preserve Setback Easement (see Section 5.2.5 and Chapter 9).

EDGE-4 (Locate Stormwater Control Outside Preserves): Roads, sidewalks, and other impermeable surfaces of Urban Development Covered Activities adjacent to existing or planned Preserves will slope away from Preserves and Preserve Setbacks or intercept drainage with swales or curbs and gutters to preclude drainage from entering Preserves and Preserve Setbacks. Stormwater flows must be directed away from Preserves and Preserve Setbacks and directed into stormwater control facilities inside the development (outside Preserves and Preserve Setbacks)[18] (see EDGE-6 for exception to EDGE-4 in certain SSHCP Linkage Preserves).

EDGE-5 (Stormwater Control in Preserve Setbacks): If trails are established in any Preserve Setback in compliance with EDGE-3, the trail must be sloped away from the Preserve, and rainwater leaving the trail surface must flow into an adjacent low-velocity bio-retention swale or cell to keep rainwater runoff and trail contaminants from entering the Preserve. Low-velocity bio-retention swales or cells are typically small linear features placed on one or both sides of a trail. As required by EDGE-3, trails and their adjacent bio-retention swales or cells must be located on the side of the Preserve Setback nearest development.

[18] Detention basins are allowed in some Linkage Preserves consistent with the requirements of EDGE-6. At the time of SSHCP preparation, seven Linkage Preserves with drainages are planned SSHCP Preserves: L1, L2, L4, L7, L8, L9, and L10 (see Section 5.2.7 and Section 7.5). Also see project-specific measures in Section 5.5.1.

EDGE-6 (Detention Basins in Linkage Preserves): Because planned SSHCP Linkage Preserves L1, L2, L4, L7, L8, L9, and L10 (see Section 7.5) surround natural creeks or streams that must receive stormwater from planned adjacent Urban Development Covered Activities, a limited number of stormwater detention basins will be allowed on those Linkage Preserves. Detention basins within Linkage Preserves (see Section 5.2.7) will be designed and constructed with fill material to build up the perimeter of the detention basin so as not to impact the soil restrictive layer (duripan or hardpan) and function of the soil perched aquifer. Detention basins within Linkage Preserves will capture stormwater flows and runoff, and will discharge water to the stream/creek or percolate collected water to the soil perched aquifer. Detention basin structures that collect stormwater entering the basin or convey stormwater leaving the basin must be designed to avoid and minimize effects to Covered Species habitat in the Linkage Preserve.

EDGE-7 (Hardpan/Duripan Protection): To protect the soil perched aquifer and the micro-watersheds supporting existing vernal pool hydrology, activities that have the potential to cut into, disrupt, or remove the soil's restrictive layer (hardpan or duripan) will not occur within Preserves or Preserve Setbacks. However, in certain circumstances, the Covered Activities defined in Section 5.2.6, Covered Activities in Stream Setbacks in the UDA, and Section 5.2.8, Covered Activities in the Laguna Creek Wildlife Corridor of the Preserve System, may result in punctures[19] or other minor disruptions of the soil hardpan or duripan if approved by the Implementing Entity and the Technical Advisory Committee according to the process described in Chapter 9 of the SSHCP. If a Covered Activity on a Preserve or Preserve Setback results in a puncture or other disruption to the soil hardpan or duripan, the puncture will be sealed using bentonite clay or other material that maintains the functionality of the soil's restrictive layer and associated perched aquifer.

EDGE-8 (Outdoor Lighting): All outdoor lighting in Urban Development Covered Activity projects will be designed to minimize light pollution into existing and planned Preserves, except where a Land Use Authority Permittee determines lighting is necessary for public safety or security. Minimization measures may include light fixture placement (e.g., as low to the ground as possible), lamp designs (e.g., shielding, low glare, or no lighting), directing light away from Preserves, or other means to avoid or minimize light pollution. The Third-Party Project Proponent will use the best information available at the time of project design to minimize effects of light pollution on target SSHCP Covered Species (e.g., western spadefoot (*Spea*

[19] Punctures may include small holes that penetrate the soil hardpan or duripan such as might occur when digging or drilling holes for the installation of fence posts, sign posts, or trees.

hammondii), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*)).

EDGE-9 (Livestock Access to Preserves): Urban Development Covered Activity projects that include on-site Preserves will include in their design an adequate number of access points and facilities for delivery and pick up of grazing animals (livestock), such that these activities will not significantly alter the Preserve's habitat and are consistent with the protection of livestock and protection of adjacent public property, and include adequate public safety measures.

EDGE-10 (Prevent Invasive Species Spread): Completed Covered Activities (including roads) will be maintained in a manner that avoids the spread of invasive species into Preserve and Open Space areas. Such maintenance measures will include the following:

- To prevent the transport of non-native invasive species onto Preserves, before bringing any equipment onto an SSHCP Preserve or Preserve Setback, equipment must be cleaned of mud, dirt, and plant material. Cleaning will occur in the infested area or another appropriate location as approved by a Plan Permittee.
- Mowing rotation will start in un-infested areas and move to infested areas.
- Invasive plant prevention techniques will be incorporated into maintenance plans.
- The SSHCP Implementing Entity will survey road shoulders, ditches, and rights-of-way that border SSHCP Preserves for invasive weeds or other exotic plant species. Where roadside weed infestations have reached a critical control point, the Implementing Entity or Land Use Authority Permittee will apply the appropriate manual, mechanical, or chemical treatment.

Condition 3. Implement Construction Best Management Practices

AMMs associated with Condition 3 must be applied to all UDA Covered Activities.

BMP-1 (Construction Fencing): Orange construction fencing will be installed to ensure that ground disturbance does not extend beyond the allowed construction footprint (i.e., the limit of project construction plus equipment staging areas and access roads). Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will mark the outer boundary of any Preserve Setback or Stream Setback adjacent to or within the project site with orange construction fencing prior to ground disturbance. This fencing will remain in place until project completion, as identified by the Plan Permittee.

BMP-2 (Erosion Control): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will install temporary control measures for sediment, stormwater, and pollutant runoff as required by the Plan Permittee to protect water quality and species habitat. Silt fencing or other appropriate sediment control device(s) will be installed downslope of any Covered Activity that disturbs soils.

Fiber rolls and seed mixtures used for erosion control will be certified as free of viable noxious weed seed. As discussed in Section 5.4.2, Covered Species Take Avoidance and Minimization Measures, erosion controls installed in or adjacent to Plan Area modeled habitat for giant gartersnake (*Thamnophis gigas*), western pond turtle (*Actinemys marmorata*), California tiger salamander (*California tiger salamander*), or western spadefoot (see Chapter 3) must be of appropriate design and materials that will not entrap the species (e.g., not contain mesh netting). Regular monitoring and maintenance of the project's erosion control measures will be conducted until project completion to ensure effective operation of erosion control measures.

BMP-3 (Equipment Storage and Fueling): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will ensure that equipment storage and staging will occur in the development footprint only (not sited in any existing on-site Preserve, planned on-site Preserve, Preserve Setback, Stream Setback, or aquatic land cover type). Fuel storage and equipment fueling will occur away from waterways, stream channels, stream banks, and other environmentally sensitive areas within the development footprint.

However, certain equipment storage and fueling activities can be allowed on Preserves within habitat re-establishment/establishment sites (refer to Section 5.2.7) if no location outside of the site is available. If a Covered Activity results in a spill of fuel, hydraulic fluid, lubricants, or other petroleum products, the spill will be absorbed and waste disposed of in a manner to prevent pollutants from entering a waterway, Preserve, Preserve Setback, or Stream Setback.

BMP-4 (Erodible Materials): Plan Permittees and Third-Party Project Proponents implementing Covered Activities must not deposit erodible materials into waterways. Vegetation clippings, brush, loose soils, or other debris material will not be stockpiled within stream channels or on adjacent banks. Erodible material must be disposed of such that it cannot enter a waterway, Preserve, Preserve Setback, Stream Setback, or aquatic land cover type. If water and sludge must be pumped from a subdrain or other structure, the material will be conveyed to a temporary settling basin to prevent sediment from entering a waterway.

BMP-5 (Dust Control): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will water active construction sites regularly, if warranted, to avoid or minimize impacts from construction dust on adjacent vegetation and wildlife habitats. No surface water will be used from aquatic land covers; water will be obtained from a municipal source or existing groundwater well.

BMP-6 (Construction Lighting): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will direct all temporary construction lighting (e.g., lighting used for security or nighttime equipment maintenance) away from adjacent natural habitats, and particularly Riparian and Wetland habitats and wildlife movement areas.

BMP-7 (Biological Monitor): If a Covered Activity includes ground disturbance within Covered Species modeled habitat, an approved biologist will be on site during the period of ground disturbance, and may need to be on site during other construction activities depending on the Covered Species affected. After ground-disturbing project activities are complete, the approved biologist will train an individual to act as the on-site construction monitor for the remainder of construction, with the concurrence of the Permitting Agencies. The on-site monitor will attend the training described in BMP-8. The approved biologist and the on-site monitor will have oversight over implementation of Avoidance and Minimization Measures, and will have the authority to stop activities if any of the requirements associated with those measures are not met. If the monitor requests that work be stopped, the Wildlife Agencies will be notified within one working day by email. The approved biologist and/or on-site monitor will record all observations of listed species on California Natural Diversity Database field sheets and submit them to the California Department of Fish and Wildlife. The approved biologist or on-site monitor will be the contact source for any employee or contractor who might inadvertently kill or injure a Covered Species or who finds a dead, injured or entrapped individual. The approved biologist and on-site monitor's names and telephone numbers will be provided to the Wildlife Agencies prior to the initiation of ground-disturbing activities. Refer to species-specific measures for details on requirements for biological monitors.

BMP-8 (Training of Construction Staff): A mandatory Worker Environmental Awareness Program will be conducted by an approved biologist for all construction workers, including contractors, prior to the commencement of construction activities. The training will include how to identify Covered Species that might enter the construction site, relevant life history information and habitats, SSHCP and

statutory requirements and the consequences of non-compliance, the boundaries of the construction area and permitted disturbance zones, litter control training (SPECIES-2), and appropriate protocols if a Covered Species is encountered. Supporting materials containing training information will be prepared and distributed by the approved biologist. When necessary, training and supporting materials will also be provided in Spanish. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all of the Avoidance and Minimization Measures. Written documentation of the training must be submitted to the Implementing Entity within 30 days of completion of the training, and the Implementing Entity will provide this information to the Wildlife Agencies.

BMP-9 (Soil Compaction): After construction is complete, all temporarily disturbed areas will be restored similar to pre-project conditions, including impacts relating to soil compaction, water infiltration capacity, and soil hydrologic characteristics.

BMP-10 (Revegetation): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will revegetate any cut-and-fill slopes with native or existing non-invasive, non-native plants (e.g., non-native grasses) suitable for the altered soil conditions and in compliance with EDGE-2 and EDGE-8, if applicable.

BMP-11 (Speed Limit): Project-related vehicles will observe the posted speed limits on paved roads and a 10-mile-per-hour speed limit on unpaved roads and during travel in project areas. Construction crews will be given weekly tailgate instruction to travel only on designated and marked existing, cross-country, and project-only roads.

Condition 4. Avoid and Minimize Impacts that May Result from Implementation of Covered Transportation Projects

Urban Development transportation project and Rural Transportation Project Covered Activities, including bridge projects, can affect Covered Species. AMMs included for Condition 4 seek to avoid or minimize direct and indirect impacts that may result from construction of roadways or roadway improvements. Condition 4 applies to all transportation-related Covered Activities (see Sections 5.2.1 and 5.2.3).

Plan Permittees and Third-Party Project Proponents implementing Urban Development transportation or Rural Transportation Project Covered Activities must comply with the roadway siting, design, and construction AMMs described below.

ROAD-1 (Road Project Location): Road projects will be located in the least environmentally sensitive area to avoid, to the maximum extent practicable, impacts on Covered Species, Covered Species habitat, and waters of the United States. Road project alignments will follow existing roads, road easements, and rights-of-way, or be sited in disturbed areas to minimize habitat loss and additional habitat fragmentation.

ROAD-2 (Wildlife Crossing Structures): Road projects that are Urban Development Covered Activities (see Section 5.2.1) (including the Capital Southeast Connector, see Section 5.2.1.1) or are Rural Transportation Covered Activities (see Section 5.2.3) will include an adequate number of wildlife crossing structures, as depicted in Figure 5-10. An adequate number of wildlife crossing structures within the Urban Development Area (UDA) and outside the UDA will provide for continued dispersal and movement of native wildlife throughout the SSHCP Plan Area, as required by the SSHCP Biological Goals and Objectives (see Chapter 7).

The Plan defines "wildlife crossing structure" as a physical structure specifically designed or retrofitted to facilitate undercrossing for target wildlife species. The Plan further classifies wildlife crossings as hydrologic crossings and dry crossings. Hydrologic crossings are built where there is an existing stream, creek, or intermittent drainage to maintain existing hydrologic connectivity within the Plan Area. As described below, hydrologic crossings require specialized features to be built into the crossing structure, such as elevated platforms to allow wildlife to pass under a crossing structure when it is inundated with water. Dry wildlife crossings are built where there is no hydrologic feature but where a crossing is needed to provide for overland connectivity. SSHCP wildlife crossing structures may include structures such as bridges, arches, or box and pipe culverts.

Plan Permittees expect that future wildlife movement and dispersal within the UDA will occur almost entirely within the boundaries of the future interconnected SSHCP Preserve System (see Section 7.5). Therefore, wildlife crossings are needed wherever a roadway crosses (bisects) the conceptual SSHCP Preserve System (see Figure 5-10). Wildlife crossing structures inside the UDA will be sized to accommodate movement of a highly mobile native indicator species (i.e., coyote (*Canis latrans*)). By designing UDA wildlife crossing structures to meet the movement and dispersal requirements of coyote, the Plan Permittees anticipate that the crossing structure will also accommodate most native wildlife species that currently occupy the UDA (see Chapter 3).

The Plan Permittees expect that most of the Plan Area outside of the UDA will remain as Open Space over the 50-year Permit Term (see Chapter 4). Therefore,

the Plan Permittees expect that the Rural Transportation Project Covered Activities proposed outside the UDA will have a relatively small effect on the movement and dispersal of larger or more mobile native wildlife species, including coyote. Consequently, the Plan Permittees anticipate that the design of Rural Transportation Project Covered Activities outside the UDA will need to include wildlife crossing structures primarily where the Rural Transportation Project Covered Activities occur within California tiger salamander modeled habitat (see CTS-3 and also Chapter 3, Figure 3-16).

The design and location of wildlife crossing structures both inside the UDA and outside the UDA will be determined by collaboration between the Third-Party Project Proponent, the Land Use Authority, and the Implementing Entity. Crossing design will use the best available scientific and commercial information for the target species. The design of crossing structures will be based on demonstrated effectiveness of design for the target species when such information is available, or will be designed with a high level of certainty of success based on studies of similar taxa in similar environmental settings. The proposed wildlife crossing structures designs will be reviewed and approved by the Implementing Entity prior to final design.

The Implementing Entity will develop a Wildlife Crossing Maintenance Manual to be provided to the entity responsible for maintaining the wildlife crossing. The Wildlife Crossing Maintenance Manual will identify vegetation management, clearing of obstructions, and other techniques to maintain the desired movement and hydrologic connectivity, and to avoid effects to adjacent Preserves.

All SSHCP wildlife crossing structures in the UDA will include the following design elements:

- Open-bottom bridges or arches where the roadway crosses a river or stream. Where an open-bottom bridge or arch is used, the span of the crossing will be at least 1.2 times the bankfull width of the stream and span the banks to allow for dry wildlife passage along each side of the stream and to avoid or minimize piers or footings within the stream. (Bankfull width refers to the width of a stream channel at the point where over-bank flow begins during a flood event.)
- Any wildlife crossing structure that also maintains hydrologic connectivity will be designed to maintain pre-construction water capacity, depth, and velocity. The crossing structure will not restrict or impede normal flows or flood flows, unless a primary purpose of the structure is to manage such

flow(s). Wildlife crossing structures must be designed to provide a dry passage (e.g., a platform ledge) higher than flows for a 10-year storm event to allow wildlife to pass through an inundated crossing structure.

- Wildlife crossing structures in the UDA will be designed and sized to accommodate movement of at least medium-sized mammals (e.g., coyote). The opening must be at least 3 feet high and the crossing structure must have a minimum openness ratio of at least 0.4.
- Vegetation leading up to the entrance of a crossing structure and the substrate leading into and within the crossing structure will be natural and appropriate to provide for continuity of habitat, attract the target animal species for which the crossing is designed, and facilitate use of the crossing structure.
- A wildlife crossing under six-lane roads or larger will be designed to provide ambient light and temperature in the longer crossing structures (e.g., either by providing a larger opening or a grate at the top of the structure to improve the attractiveness of the crossing to certain Covered Species and wildlife that may hesitate to cross through dark, confined structures or one with a temperature gradient (Jackson and Griffin 2000)). If a road is less than six lanes in width, these designs will be optional.
- Lighting will not be placed at or near the entrance of a wildlife crossing structure to maintain natural ambient light conditions at night and to increase chances of wildlife use. However, a Land Use Authority Permittees may allow lighting if necessary for human health or safety.

Outside the UDA, wildlife crossing structures may be required for California tiger salamander (refer to CTS-1), and could also be required for other native species.

ROAD-3 (Roadside Pesticide Use[20]): If pesticide use is necessary along roadsides, the appropriate SSHCP Permittee will ensure that the pesticide application strictly complies with the pesticide label and all other applicable federal, state, and local authorities pertaining to the use, safety, storage, disposal, and reporting of the pesticide. Where roadside weed infestations have reached a critical control point, the Implementing Entity or a Land Use Authority Permittee will apply the appropriate manual, mechanical, or chemical treatment. In addition, the Implementing Entity or appropriate Land Use Authority Permittee will post signs along road shoulders adjacent to sensitive areas that are within the SSHCP

[20] Use of pesticides (including rodenticides and herbicides) is not an SSHCP Covered Activity. However, pesticide use specified in Section 5.3 is an allowed land management tool, provided the pesticide application is otherwise legal and conforms to all conditions in Section 5.4.

Preserve System (e.g., California tiger salamander breeding ponds, endemic plant populations, vertebrates that rely on insects for part of their diet). The signs will identify pesticide use restrictions or other roadside maintenance restrictions.

Condition 5. Avoid and Minimize Impacts that Result from Public Use of Low-Impact Nature Trails in Preserves

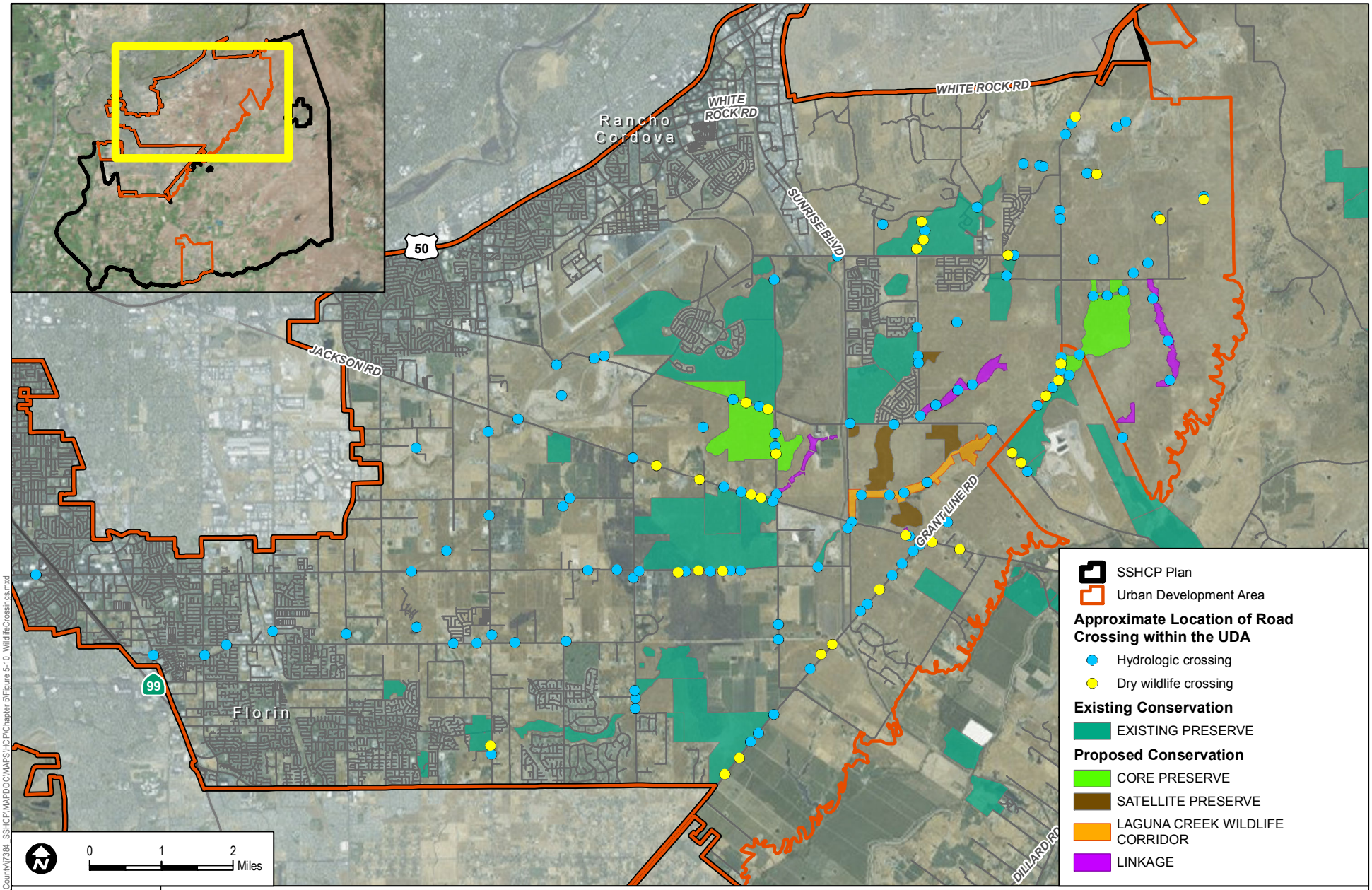
Preserves within the UDA are likely to be surrounded by urban development. As discussed in Section 5.2.7, allowing limited use of SSHCP Preserves will help to foster a sense of community ownership and will provide an opportunity to educate the community about the natural resources to be protected within the SSHCP Preserve System.

Low-impact nature trails will be designed following the AMMs outlined below.

NATURE TRAIL-1 (Nature Trail Plan): A nature trail plan must be prepared for each Preserve where a trail is allowed by the Preserve Management Plan. Nature trails will be unpaved trails that vary in width depending on terrain and existing constraints, but will never exceed 4 feet in width. Where a trail crosses a swale, wooden walkways elevated to a height no greater than 2 feet will be installed. Trail improvements may include mowing vegetation to create or maintain a trail, minor grading to remove trip hazards, and signs providing directional and educational information. Public access to land acquired for preservation will be prohibited until a trail plan can be prepared by the Implementing Entity and approved by the Permitting Agencies. A trail plan will include the following:

- Maps identifying areas that contain sensitive habitats or species occurrences.
- Maps that show the location and footprint of proposed trails.
- Methods used to control public access.
- Trail and use monitoring methods, schedules, and responsibilities.
- Trail operation and maintenance guidelines and responsibilities.
- Clear triggers for use restrictions or closure based on sensitive biological indicators (e.g., seasonal closures of some trails on the basis of activity periods of Covered Species or sensitive species).

NATURE TRAIL-2 (Nature Trail Protection of Duripan): Nature trails will be sited and constructed so as not to interfere with existing soil duripan and the perched aquifer that support the existing hydrologic regime of the Vernal Pool–Grassland, and will not interfere with existing pool hydrology. Trails within Preserves will not be paved.



Path: Z:\Projects\Sacramento_County\7384_SSHCP\MAPDOC\MAPS\HCP\Chapter 5\Figure 5-10_WildlifeCrossings.mxd

SOURCE: ESRI, County of Sacramento 2014, USFWS 2015

FIGURE 5-10

Wildlife Crossings

SOUTH SACRAMENTO HABITAT CONSERVATION PLAN

INTENTIONALLY LEFT BLANK

NATURE TRAIL-3 (Nature Trail Location): Nature trails will be located away from sensitive natural resources (e.g., vernal pools, riparian habitat, woodland habitat, Covered Species occurrences, raptor nesting sites, tricolored blackbird (*Agelaius tricolor*) colony sites). The Wildlife Agencies will determine the distance necessary to avoid impacts to sensitive natural resources.

NATURE TRAIL-4 (Biological Studies Prior to Nature Trail Design): Biological studies will be conducted within the area being considered for nature trail construction prior to project design. The studies will include land cover type mapping and focused species surveys and/or wetland delineations. The biological studies will include assessments of potential effects of trail construction on Preserve System resources, and recommendations for avoidance and minimization that may be incorporated into project siting, design, construction, and operation.

NATURE TRAIL-5 (Monitoring of Nature Trail Impacts): Impacts that could result from use of a nature trail within a Preserve will be monitored according to the Preserve Management Plan (Chapter 8) to ensure that uses do not conflict with the individual Preserve Management Plan. If use of a trail is found to conflict with the individual Preserve Management Plan, use of that trail will be discontinued until adjustments in the use can be made to reduce or eliminate conflicts. The Implementing Entity will make decisions about discontinuing or modifying use of a trail in consultation with the Preserve Manager or other applicable Preserve management agency or organization.

Condition 6. Avoid and Minimize Impacts When Re-Establishing or Establishing Wetlands

As discussed in Chapter 7, the Plan Permittees anticipate that 389 acres of Vernal Pool habitat will be re-established or established[21] within the Plan Area as part of the SSHCP Conservation Strategy. Although re-establishment or establishment of vernal pools is a Measurable Objective under this Plan, if not done correctly, the action could have an adverse impact on existing vernal pools.

RE-ESTABLISHMENT/ESTABLISHMENT-1 (Vernal Pool): Re-establish or establish Vernal Pool Wetland according to the following guidelines:

- Re-establishment will always take priority over establishment of vernal pools. Establishment will be permitted only after it has been determined that sites with the potential to re-establish vernal pools no longer exist in the Plan Area or cannot be acquired through a willing seller/buyer agreement.

[21] In the context of this Plan, "establish" is synonymous with "create."

- When possible, re-established or established sites will be located adjacent to an existing Preserve(s) to maximize connectivity and Preserve area.
- Re-establishment or establishment will not result in direct or indirect adverse impacts to the hydrologic regime of existing vernal pools. Vernal pool re-establishment or establishment actions will not remove more than 10% of any existing vernal pool watershed, as defined by the SSHCP LIDAR analysis (see Section 3.3 and Conservation Action VPI1.2 in Table 7.1).
- Vernal pool re-establishment will attempt to restore the historical density and range of vernal pool sizes to the maximum extent feasible using historical aerial photography of the site, if available. Where aerial photography of the site's historical conditions is not available, vernal pool re-establishment will include a range of pool sizes (area and depth) to accommodate the different habitat needs and life history characteristics of the vernal pool invertebrate Covered Species.
- Established vernal pools must be located on sites with vernal pool soils, defined as any Plan Area soil type where vernal pools currently exist.
- Established vernal pool sites will include a range of pool sizes to accommodate the different habitat needs and life history characteristics of the three vernal pool invertebrate Covered Species.
- The total density of vernal pools will not exceed 10% of the suitable soil areas in any vernal pool re-establishment and/or establishment site, unless it can be shown that the suitable areas of that site historically supported greater densities.
- Re-establishment or establishment may include inoculation when it is likely that no seed or cyst bank of vernal pool species remains at a site. Vernal Pool inocula will come from nearby vernal pools that are on the same geologic formation and soil type.

RE-ESTABLISHMENT/ESTABLISHMENT-2 (Vernal Pool Inocula Bank): Vernal pool re-establishment or establishment may include "soil inoculation" when it is likely that no seed or cyst bank of vernal pool species remains at a re-establishment or establishment site.

- During conversion of Urban Development Area vernal pools to a developed land cover type, project proponents will excavate and retain soil from vernal pools following protocols developed by the SSHCP Technical Advisory Committee (Chapter 9).

- Inocula applied in re-established or established vernal pools must be harvested from a vernal pool that is on the same geologic formation and soil type shown on the County General Soil Map as the re-establishment/establishment site. Geologic formations and soil types will follow U.S. Department of Agriculture Soil Conservation Service's 1993 Soil Survey of Sacramento County, California. Proposed off-site inocula sources must be approved by the Wildlife Agencies.

RE-ESTABLISHMENT/ESTABLISHMENT-3 (Re-Establishment/Establishment of Freshwater Marsh or Open Water Near Airports): During review of proposed re-establishment/establishment projects for freshwater marsh or open water on SSHCP Preserves, the Implementing Entity shall consider the potential for the location of the re-establishment/establishment projects to increase the risk of wildlife strikes or generation of ground fog at airports. If a re-establishment/ establishment project would result in (1) a net increase in open water or freshwater marsh acreage over baseline conditions[22] within 5 miles of Mather Field, Sacramento Executive Airport, or Franklin Field; or (2) replacement of open water/freshwater marsh habitat that is located 2 or more miles from Mather Field or Sacramento Executive Airport with open water/freshwater marsh habitat that is located less than 2 miles from those airports, a qualified biologist shall prepare a concise letter report. The letter report shall summarize the biologist's findings regarding (1) the species likely to use the re-established/established habitat, (2) a rough order of magnitude estimate on the peak number of birds that might use the re-established/established habitat, and (3) potential movement patterns for birds using the re-established/established habitat and whether they might cross through the airport safety zones (e.g., to reach foraging habitat or another wildlife attractant). The letter report will also provide recommendations to the Implementing Entity on how they could reduce any of the identified wildlife hazards if there are any feasible means to do so that would not conflict with the biological goals and measurable objectives of the Conservation Plan.

Condition 7. Avoid and Minimize Impacts to Streams and Creeks

AMMs associated with Condition 7 must be applied to all Covered Activities where a stream or creek is located within a project footprint.

[22] For purposes of establishing baseline conditions, Freshwater Marsh and Open Water acreages will be calculated using that version of the SSHCP Land Cover Type Map in existence as of the date that the SSHCP permit was issued to the Plan Permittees by the USFWS.

STREAM-1 (Laguna Creek Wildlife Corridor): A 150-foot setback measured from the top of the bank on both sides of the stream will be applied to Laguna Creek within the Urban Development Area (minimum 300-foot corridor width). If trails are located within the Laguna Creek Wildlife Corridor, the nearest edge of the trail will be located at least 80 feet from the top of the bank.

STREAM-2 (UDA Stream Setbacks): A 100-foot setback measured from the top of the bank on both sides of the stream channel will be applied to all streams listed in Table 5-1 (see also Figure 2-4). If a stream reach supports woody riparian vegetation, the setback will be equal to the riparian edge plus 25 feet or will be the setback defined above, whichever is greater. If trails are located within the Stream Setback, the nearest edge of the trail will be located at least 50 feet from the top of the bank.

Table 5-1
Stream Setback Minimum Requirements in the Urban Development Area

Stream	Minimum Setback (from the Top of Bank Measured in Aerial Perspective) on Both Sides of the Stream
Elder Creek	100 feet
Frye Creek	100 feet or as depicted as part of the NewBridge development project hardline Preserve (see Appendix K)
Gerber Creek	100 feet
Morrison Creek	100 feet
Central Paseo	100 feet or as depicted as part of the Cordova Hills development project hardline Preserve (Appendix K)
Sun Creek	100 feet or as depicted as part of the Sun Creek development project hardline Preserve (see Appendix K)

STREAM-3 (Minor Tributaries to UDA Streams): A 25-foot setback measured from the top of the bank on both sides of the stream channel will be applied to all avoided first and second order tributaries to the streams listed in Table 5-1 and Laguna Creek. Refer to Objective W6 in Chapter 7 (Table 7-1) regarding avoided first and second order tributaries. Trails are not permitted within headwater ephemeral Stream Setbacks.

STREAM-4 (Minimize Effects from Temporary Channel Re-Routing): When an Urban Development Covered Activity temporarily re-routes a stream, creek, or drainage, the re-routing will be completed in a manner that minimizes impacts to beneficial uses and habitat. The following measures will be employed to minimize disturbances that will adversely impact water quality:

- No equipment will be operated in areas of flowing or standing water.
- Construction materials and heavy equipment must be stored outside of the active flow of any waters.

- When work within waters is necessary, the entire stream flow will be diverted around the work area.
- In the event of rain, the disturbed in-water work area will be temporarily stabilized before water body flow exceeds the capacity of the diversion structure. The disturbed water body will be stabilized so that the disturbed areas will not come in contact with the flow.
- Once construction is complete, all project-introduced material (e.g., pipes, gravel, cofferdam, sandbags) must be removed, leaving the water as it was before construction. Excess materials will be disposed of at an appropriate disposal site.
- All work areas will be effectively isolated from stream flows using suitable control measures before commencement of any in-water work. The diverted stream flow will not be contaminated by construction activities. Structures for isolating the in-water work area and/or diverting the stream flow (e.g., cofferdam, geo-textile silt curtain) will not be removed until all disturbed areas are cleaned and stabilized.
- Any flow diversion used during construction will be designed in a manner to prevent pollution and minimize siltation, and will provide flows to downstream reaches. Flows will be maintained to support existing aquatic life, riparian wetlands, and habitat that may be located upstream and downstream from any temporary diversion.
- All surface waters, including ponded waters, will be diverted away from areas undergoing grading, construction, excavation, vegetation removal, and/or any other activity that may result in a discharge to waters.
- All temporary dewatering methods will be designed to have the minimum necessary impacts to waters to isolate the immediate work area. All dewatering methods will be installed such that natural flow is maintained upstream and downstream of the diversion area. Any temporary dams and diversions will be installed such that the diversion does not cause sedimentation, siltation, or erosion upstream or downstream of the diversion area. All dewatering methods will be removed immediately upon completion of diversion activities.
- A method of containment must be used below any bridge, boardwalk, and/or temporary crossing to prevent debris from falling into the waters through the entire duration of a project.

- If temporary surface water diversions and/or dewatering are anticipated, the Third-Party Project Proponent will develop and maintain on site a surface water diversion and/or dewatering plan. The plan(s) must be developed prior to initiation of any water diversions and will include the proposed method and duration of diversion activities. The plan(s) must be made available to Central Valley Water Board staff upon request.
- When work in a flowing stream is unavoidable and any dam or other artificial obstruction is being constructed, maintained, or placed in operation, sufficient water will be allowed at all times to pass downstream to maintain beneficial uses of waters below the dam. Construction, dewatering, and removal of temporary cofferdams will not violate the turbidity, settle-able matter, pH, temperature, or dissolved oxygen requirements of any Water Quality Control Plan.
- Any temporary dam or other artificial obstruction will only be built from clean materials such as sandbags, gravel bags, water dams, or clean/washed gravel that will cause little or no siltation. Stream flow will be temporarily diverted using gravity flow through temporary culverts or pipes, or pumped around the work site with the use of hoses.

STREAM-5 (Design for Stream Channel Re-Routing, Widening, or Deepening): When an Urban Development Covered Activity alters a stream, creek, or drainage by re-routing, widening, or deepening a channel, the project design will include the following:

- The main channel of a re-routed channel will be free to migrate laterally over its active and terrace floodplain.
- Channel geometry (plan, profile, and cross-section) of the site will be appropriate for the watershed location and physical/hydrologic condition.
- Local, native materials will be used as fill material to the extent practicable.
- Bioengineering techniques will be used for construction and maintenance of bank stabilization. Bioengineered bank stabilization structures will use vegetation in combination with bank reshaping; biodegradeable geotextile materials; and, in some cases, a minimal amount of rock or wood to the extent practicable to dissipate erosive energy. Third-Party Project Proponents will consult a professional engineer when considering using bioengineering techniques.
- All re-routed, widened, or deepened streams are required to establish Stream Setbacks with minimum widths required under STREAM-1, STREAM-2, or STREAM-3. All re-routed, widened, or deepened streams must re-establish/

establish and maintain native Woody Riparian land cover and/or native Grassland Riparian land cover in the entire Stream Setback.

Condition 8. Avoid and Minimize Impacts to Covered Species from Utility and Utility Maintenance Covered Activities

AMMs associated with Condition 8 must be applied to all Covered Activities associated with construction and maintenance of infrastructure projects.

UTILITY-1 (Avian Collision Avoidance): Installation of new, or relocation of existing, utility poles, lines, and cell towers located within the Preserve System or within 1,000 feet of a Preserve boundary will be coordinated with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. The applicant or relevant utility/service provider will install utility poles, lines, and cell towers in conformance with Avian Powerline Interaction Committee (APLIC) standards for collision-reducing techniques, as outlined in Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012), or any superseding document issued by the APLIC.

UTILITY-2 (Utility Maintenance on Preserves): Utility maintenance inside SSHCP Preserves and SSHCP Preserve Setbacks containing vernal pools will occur only when vernal pools have been dry for 30 days, except in emergency situations related to human health and safety.

UTILITY-3 (Trenchless Construction Methods): Where a pipeline or conduit crosses an existing or planned Preserve or will be located between adjacent Preserves (e.g., under a roadway that has a Preserve on both sides), trenchless construction methods will be used to minimize impacts to the existing soil profile (including impacts to a hardpan or duripan) to maintain the perched aquifer in Vernal Pool Grassland land cover type.

UTILITY-4 (Siting of Entry and Exit Location): The entry and exit locations for the trenchless construction method (see Utility-3) will be sited to avoid impacts to vernal pools and Riparian Woodland, and to avoid direct take of SSHCP Covered Species.

Condition 9. Avoid and Minimize Impacts That Might Result From Removing or Breaching Levees to Establish or Re-establish Riparian Habitat

LEVEE-1 (Preparation of Hydrologic Analysis): Prior to approving a draft Preserve Management Plan that includes (1) modifying or breaching an existing levee, or (2) would place a potential impedance to high-water event flood-flows on the water side of an existing levee (including new riparian vegetation plantings or

other new Preserve facilities), a hydrologic analysis will be conducted. The Preserve activity will only be implemented if the hydrologic analysis concludes that the activity will not result in a substantial increase in flood stage elevations or flood risk on lands outside the Preserve.

Condition 10. Avoid and Minimize Impacts That Might Result From Potential Residual Contamination of Preserves and Related Exposure of People to Such Hazardous Materials

HAZARDOUS MATERIALS-1 (Preparation of Phase I Environmental Site Assessment): Prior to the acquisition of a preserve site or implementation of a stream or riparian restoration project, a Phase I Environmental Site Assessment shall be conducted in general accordance with the American Society for Testing and Materials Standard Practice E1527-05. The purpose of this Environmental Site Assessment is to identify, to the extent feasible pursuant to the American Society for Testing and Materials Standard, recognized environmental conditions in connection with the potential site. The term "recognized environmental condition" means the presence or likely presence of hazardous substances or petroleum products on the property under conditions that may indicate an existing release, a past release, or a material threat of release of these substances to the property. If the Phase 1 Environmental Site Assessment indicates the presence of a recognized environmental condition, the Implementing Entity shall consider the following options.

- Determine that the acquisition/project can proceed on the basis that the Habitat Plan goals and objectives can be met on the site even with the presence of a recognized environmental condition.
- Conduct a Phase II Environmental Site Assessment, including soil and groundwater testing, to further study the potential for contamination to limit the Implementing Entity's management activities.
- If the results of the Phase I (or Phase II) Environmental Site Assessment indicate that the Habitat Plan goals and objectives cannot be met on the site, the Implementing Entity should not acquire the site.

HAZARDOUS MATERIALS-2 (Contingency Plan): As part of each Preserve Management Plan or site restoration plan, a Contingency Plan shall be prepared to address the actions that would be taken during construction in the event that unexpected contaminated soil or groundwater is discovered. The Contingency Plan shall include health and safety considerations, handling and disposal of wastes, reporting requirements, and emergency procedures. The Contingency Plan shall include a requirement that if evidence of contaminated materials is encountered

during construction, construction would cease immediately and applicable requirements of the Comprehensive Environmental Release Compensation and Liability Act and the California Code of Regulations Title 22 regarding the disposal of waste would be implemented.

5.4.2 Covered Species Take Avoidance and Minimization Measures

The following section describes measures to avoid or minimize effects of Covered Activities on specific SSHCP Covered Species. Species-specific AMMs include species surveys, pre-construction surveys, and construction monitoring. Most species-specific AMMs require that species surveys be conducted if Covered Species modeled habitat is within the proposed Covered Activity footprint or within a specified distance of the proposed Covered Activity. Section 3.4 provides maps and descriptions of modeled habitat for each Covered Species. The AMMs described below apply to Covered Activities when Covered Species modeled habitat or a Covered Species occurrence are at a project site. The Implementing Entity and Wildlife Agencies may update specific SSHCP AMMs over the Permit Term to provide the best and most appropriate protective measures for a Covered Species.

General Covered Species Take Avoidance and Minimization Measures

The following AMMs will apply to all Covered Activities that are required to implement Covered Species take AMMs.

SPECIES-1 (Litter Removal Program): A litter control program will be instituted for the entire project site. All workers will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash are deposited in covered or closed trash containers. All garbage will be removed from the project site at the end of each work day, and construction personnel will not feed or otherwise attract wildlife to the area where construction activities are taking place.

SPECIES-2 (No Pets in Construction Areas): To avoid harm and harassment of native species, workers and visitors will not bring pets onto a project site.

SPECIES-3 (Take Report): If accidental injury or death of any Covered Species occurs, workers will immediately inform the approved biologist or on-site monitor and site supervisor. The approved biologist or on-site monitor will phone the appropriate contact person at the Implementing Entity. The Implementing Entity will immediately contact the Wildlife Agencies by telephone. A memorandum will be provided to the Implementing Entity and Wildlife Agencies within 1 working day of the incident. The report will provide the date and location of the incident, number of individuals taken,

the circumstances resulting in the take, and any corrective measures taken to prevent additional take.

SPECIES-4 (Post-Construction Compliance Report): A post-construction compliance report will be submitted to the SSHCP Implementing Entity within 30 calendar days of completion of construction activities or within 30 calendar days of any break in construction activity that lasts more than 30 days. The report will detail the construction start and completion dates, any information about meeting or failing to meet species take Avoidance and Minimization Measures (AMM), effectiveness of each AMM that was applied at the project site, and any known project effects to Covered Species.

Rare Plants

PLANT-1 (Rare Plant Surveys): If a Covered Activity project site contains modeled habitat for Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii)*, Bogg's Lake hedge-hyssop (*Gratiola heterosepala)*, dwarf downingia (*Downingia pusilla)*, Legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii)*, or Sanford's arrowhead (*Sagittaria sanfordii*), the Covered Activity project site will be surveyed for the rare plant by an approved biologist and following the California Department of Fish and Wildlife (CDFW) rare plant survey protocols (CDFG 2009) or the most recent CDFW rare plant survey protocols. An approved biologist will conduct the field surveys and will identify and map plant species occurrences according to the protocols. See Chapter 10 for the process to submit survey information to the Plan Permittee and the Permitting Agencies.

PLANT-2 (Rare Plant Protection): If a rare plant listed in AMM PLANT-1 is detected within an area proposed to be disturbed by a Covered Activity or is detected within 250 feet of the area proposed to be disturbed by a Covered Activity, the Implementing Entity will assure one unprotected occurrence of the species is protected within a SSHCP Preserve before any ground disturbance occurs a the project site.

Sacramento and Slender Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is a federally and state endangered species and is ranked by the California Native Plant Society as a California Rare Plant Rank 1B.1 species. Slender Orcutt grass (*Orcuttia tenuis*) is a federally threatened and state endangered species and is ranked by the California Native Plant Society as a California Rare Plant Rank 1B.1 species. Both Orcutt grasses are very rare, and the likelihood of finding new occurrences within the Plan Area is low. Due to their rarity, take of either of these species is not permitted under the SSHCP, with the exception of take related to Preserve management and monitoring (see Section 5.2.7, SSHCP Preserve System Covered Activities).

ORCUTT-1 (Orcutt Grass Surveys): If a Covered Activity project site is located within 1 mile of the Mather Core Recovery Area and contains the Vernal Pool land cover type, the project site will be surveyed for Sacramento and slender Orcutt grass by an approved biologist following California Department of Fish and Wildlife (CDFW) rare plant survey protocols (CDFG 2009) or most recent CDFW guidelines to determine if Sacramento and/or slender Orcutt grass is present. An approved biologist will conduct the field investigation to identify and map occurrences. See Chapter 10 for the process to conduct and submit survey information.

ORCUTT-2 (Orcutt Grass Protection): Where known or new Sacramento or slender Orcutt grass occurrences are found, they will be protected within an SSHCP Preserve that is at least 50 acres. The occurrence will be located interior to the Preserve at a distance of no less than 300 feet from the edge of the Preserve boundary. If a Third-Party Project Proponent encounters a previously undiscovered occurrence of Sacramento or slender Orcutt grass on a Covered Activity project site, the Third-Party Project Proponent will contact the Implementing Entity or Land Use Authority Permittee with authority over the project, who will coordinate with the Wildlife Agencies for written concurrence of avoidance to ensure that the project does not cause take of the species.

California Tiger Salamander

To avoid direct and indirect effects of Covered Activities on California tiger salamander (*Ambystoma californiense*), the following AMMs will be implemented.

CTS-1 (California Tiger Salamander Daily Construction Schedule): Ground-disturbing Covered Activities within California tiger salamander modeled habitat (Figure 3-16) will occur outside the breeding and dispersal season (occur after July 31 and before October 15), to the maximum extent practicable. If Covered Activities must be implemented in modeled habitat (Figure 3-16) during the breeding and dispersal season (after October 15 and before July 31), construction activities will not start until 30 minutes after sunrise and must be complete 30 minutes prior to sunset.

CTS-2 (California Tiger Salamander Exclusion Fencing): If a Covered Activity must be implemented in modeled habitat (Figure 3-16) during the breeding and dispersal season (after October 15 and before July 31), exclusion fencing will be installed around the project footprint before October 15. Temporary high-visibility construction fencing will be installed along the edge of work areas, and exclusion fencing will be installed immediately outside of the temporary high-visibility construction fencing to exclude California tiger salamanders from entering the construction area or becoming entangled in the construction fencing. Exclusion fencing will be at least 1 foot tall and be buried

at least 6 inches below the ground to prevent salamanders from going under the fencing. Fencing will remain in place until all construction activities within the construction area are complete. No project activities will occur outside the delineated project footprint. An approved biologist must inspect the exclusion fencing and project site every morning before 7:00 a.m. for integrity and for any entrapped California tiger salamanders. If a California tiger salamander is encountered, refer to CTS-5, below. (However, the Implementing Entity may, with approval of the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), determine that it is appropriate for a Covered Activity project to not implement CTS-2 for certain long and linear roadway Covered Activity projects if it appears that the exclusion fencing will likely trap individuals or cause more take of California tiger salamander than it would prevent.)

CTS-3 (California Tiger Salamander Monitoring): If Covered Activities must be implemented in modeled habitat (Figure 3-16), an approved biologist experienced with California tiger salamander identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place, and will inspect the project site for California tiger salamander every morning before 7:00 a.m., or prior to construction activities. As required by BMP-8 (Training of Construction Staff), the approved biologist will also train construction personnel on the required California tiger salamander avoidance procedures, exclusion fencing, and correct protocols in the event that a California tiger salamander enters an active construction zone. If a California tiger salamander is encountered, refer to CTS-5, below.

CTS-4 (Avoid California Tiger Salamander Entrapment): If Covered Activities must be implemented in modeled habitat, all excavated steep-walled holes or trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes or trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within California tiger salamander modeled habitat will be inspected for California tiger salamanders by the approved biologist prior to being moved. If a California tiger salamander is encountered, refer to CTS-5, below.

CTS-5 (California Tiger Salamander Encounter Protocol): If a California tiger salamander is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately (California Department of Fish and Wildlife (CDFW)

and U.S. Fish and Wildlife Service (USFWS)). Construction activities will be suspended in a 100-foot radius of the animal until the animal is relocated by an approved biologist with appropriate handling permits from the Wildlife Agencies. Prior to relocation, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the salamander, within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to USFWS and CDFW immediately. Any worker who inadvertently injures or kills a California tiger salamander or who finds dead, injured, or entrapped California tiger salamander(s) must immediately report the incident to the approved biologist.

CTS-6 (Erosion Control Materials in California Tiger Salamander Habitat): If erosion control (BMP-2) is implemented within California tiger salamander modeled habitat (Figure 3-16), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that salamanders are not trapped (no monofilament). Coconut coir matting and fiber rolls with burlap are examples of acceptable erosion control materials. This limitation will be communicated to the contractor through use of special provisions included in the bid solicitation package.

CTS-7 (Rodent Control): CTS-7 only applies to projects that are within California tiger salamander modeled habitat (Figure 3-16) and on Covered Activities. Rodent control will be allowed only in developed portions of a Covered Activity project site. Where rodent control is allowed, the method of rodent control will comply with the methods of rodent control discussed in the 4(d) Rule published in the U.S. Fish and Wildlife Service's (2004) final listing rule for tiger salamander.

Western Spadefoot

To avoid direct and indirect effects of Covered Activities on western spadefoot (*Spea hammondii*), the following AMMs will be implemented.

WS-1 (Western Spadefoot Work Window): Ground-disturbing Covered Activities within western spadefoot modeled habitat (Figure 3-17) will occur outside the breeding and dispersal season (after May 15 and before October 15), to the maximum extent practicable.

WS-2 (Western Spadefoot Exclusion Fencing): If Covered Activities must be implemented in modeled habitat (Figure 3-17) after October 15 and before May 15, exclusion fencing

will be installed around the project footprint before October 15, and the project site must be monitored by an approved biologist following rain events. Temporary high-visibility construction fencing will be installed along the edge of work areas, and silt fencing will be installed immediately behind the temporary high-visibility construction fencing to exclude western spadefoot from entering the construction area. Fencing will remain in place until all construction activities within the construction area are completed. No project activities will occur outside the delineated project footprint. If a western spadefoot is encountered, refer to WS-6, below.

WS-3 (Western Spadefoot Monitoring): If Covered Activities must be implemented in modeled habitat (Figure 3-17) in the breeding and dispersal season (after October 15 and before May 15), an approved biologist experienced with western spadefoot identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place, and will inspect the project site daily for western spadefoot prior to construction activities. The approved biologist will also train construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western spadefoot enters an active construction zone (i.e., outside the buffer zone). If a western spadefoot is encountered, refer to WS-6, below.

WS-4 (Avoid Western Spadefoot Entrapment): If a Covered Activity occurs in western spadefoot modeled habitat (Figure 3-17), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western spadefoot modeled habitat will be inspected for western spadefoot by the approved biologist prior to being moved. If a western spadefoot is encountered, refer to WS-6, below.

WS-5 (Erosion Control Materials in Western Spadefoot Habitat): If erosion control (BMP-2) is implemented within western spadefoot modeled habitat (Figure 3-17), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that western spadefoots are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

WS-6 (Western Spadefoot Encounter Protocol): If Covered Activities must be implemented in modeled habitat (Figure 3-17) during the breeding and dispersal season (after October 15 and before May 15), and a western spadefoot is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the western spadefoot within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife immediately. Any worker who inadvertently injures or kills a western spadefoot or who finds dead, injured, or entrapped western spadefoot(s) must immediately report the incident to the approved biologist.

Giant Gartersnake

To avoid direct and indirect effects of Covered Activities on giant gartersnake (*Thamnophis gigas*), the following AMMs will be implemented.

GGS-1 (Giant Gartersnake Surveys): If the SSHCP giant gartersnake modeled habitat maps (Figure 3-18) show that modeled habitat for giant gartersnake is present within a Covered Activity's project footprint or within 300 feet of a project footprint, then an approved biologist will conduct a field investigation to delineate giant gartersnake aquatic habitat within the project footprint and adjacent areas within 300 feet of the project footprint. In addition to the SSHCP land cover types shown in Figure 3-18, giant gartersnake aquatic habitat includes, but is not limited to, low-gradient streams and creeks, open water, freshwater marsh, agricultural ditches, and rice fields. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential sites and provide these maps to the Local Land Use Permittees and the Implementing Entity. Locations of delineated giant gartersnake habitat must also be noted on plans that are submitted to a Local Land Use Permittee. The applicant will use this information to finalize project design. Covered Activities may occur throughout the year as long as giant gartersnake habitat is identified and fully avoided. Otherwise, Covered Activities must comply with GGS-2 through GGS-8, below. See Chapter 10 for the process to conduct and submit survey information.

GGS-2 (Giant Gartersnake Work Window): Covered Activities that do not fully avoid giant gartersnake modeled habitat (Figure 3-18) will be conducted during the snake's active

season. Construction and ground-disturbing activities will be initiated after May 1 and will end prior to September 15. If it appears that construction activities may go beyond September 15, the Third-Party Project Proponent or Plan Permittee will contact the Local Land Use Permittee and the Implementing Entity as soon as possible, but not later than September 1. The Local Land Use Permittee and the Implementing Entity will discuss with the Wildlife Agencies additional measures necessary to minimize take.

GGS-3 (Giant Gartersnake Monitoring): If a Covered Activity is occurring in giant gartersnake modeled habitat (Figure 3-18), an approved biologist experienced with giant gartersnake identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place in aquatic habitat or within 300 feet of aquatic habitat, and will inspect the project site daily for giant gartersnake prior to construction activities. If a giant gartersnake is encountered, refer to GGS-7. The approved biologist will also train construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a giant gartersnake enters an active construction zone (i.e., outside the buffer zone).

GGS-4 (Giant Gartersnake Habitat Dewatering and Exclusion): If construction activities will occur in giant gartersnake aquatic habitat, aquatic habitat will be dewatered and then remain dry and absent of aquatic prey (e.g., fish and tadpoles) for 15 days prior to initiation of construction activities. If complete dewatering is not possible, the Implementing Entity will be contacted to determine what additional measures may be necessary to minimize effects to giant gartersnake. After aquatic habitat has been dewatered 15 days prior to construction activities, exclusion fencing will be installed extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent snakes from attempting to move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify the construction limits and to protect adjacent habitat from encroachment of personnel and equipment. Giant gartersnake habitat outside construction fencing will be avoided by all construction personnel. The fencing and the work area will be inspected by the approved biologist to ensure that the fencing is intact and that no snakes have entered the work area before the start of each work day. The fencing will be maintained by the contractor until completion of the project. If giant gartersnake is encountered, refer to GGS-7, below.

GGS-5 (Avoid Giant Gartersnake Entrapment): If a Covered Activity occurs in giant gartersnake modeled habitat (Figure 3-18), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or

provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within giant gartersnake modeled habitat will be inspected for giant gartersnake by the approved biologist prior to being moved. If a giant gartersnake is encountered, refer to GGS-7.

GGS-6 (Erosion Control Materials in Giant Gartersnake Habitat): If erosion control (BMP-2) is implemented within giant gartersnake modeled habitat (Figure 3-18), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure snakes are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

GGS-7 (Giant Gartersnake Encounter Protocol): If a giant gartersnake is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the giant gartersnake within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service immediately. Any worker who inadvertently injures or kills a giant gartersnake or who finds one dead, injured, or entrapped must immediately report the incident to the approved biologist.

GGS-8 (Giant Gartersnake Post-Construction Restoration): After completion of ground-disturbing Covered Activities, the applicant will remove any temporary fill and construction debris and will restore temporarily disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Implementing Entity. Restoration work may include replanting emergent aquatic vegetation. Refer to the U.S. Fish and Wildlife Service's (USFWS) Guidelines for the Restoration and/or Replacement of Giant Gartersnake Habitat (USFWS 1997), or the most current USFWS guidelines at the time of the

activity. A photo documentation report showing pre- and post-project conditions will be submitted to the Implementing Entity 1 month after implementation of the restoration.

Western Pond Turtle

To avoid direct and indirect effects of Covered Activities on western pond turtle (*Actinemys marmorata*), the following AMMs will be implemented.

WPT-1 (Western Pond Turtle Surveys): If the SSHCP western pond turtle modeled habitat maps (Figure 3-19) show that modeled habitat for western pond turtle is present within a Covered Activity's project footprint or within 300 feet of a project footprint, then an approved biologist will conduct a field investigation to delineate western pond turtle aquatic habitat within the project footprint and within 300 feet of the project footprint. In addition to the SSHCP land cover types shown in Figure 3-19, western pond turtle aquatic habitat includes, but is not limited to, low-gradient streams and creeks, open water, freshwater marsh, and rice fields. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential sites and provide those maps to the Local Land Use Permittees and the Implementing Entity. Locations of delineated western pond turtle habitat must also be noted on plans that are submitted to a Local Land Use Permittee. The applicant will use this information to finalize project design. Covered Activities may occur throughout the year as long as western pond turtle habitat is identified and fully avoided. Otherwise, Covered Activities must comply with WPT-2 through WPT-9. See Chapter 10 for the process to conduct and submit survey information.

WPT-2 (Western Pond Turtle Work Window): Maintenance and improvements to existing structures may occur throughout the year as long as western pond turtle habitat is identified and avoided, and movement of equipment is confined to existing roads. Otherwise, construction and ground-disturbing Covered Activities must be conducted outside of western pond turtle's active season. Construction and ground-disturbing activities will be initiated after May 1 and will commence prior to September 15. If it appears that construction activities may go beyond September 15, the appropriate Plan Permittee will contact the Local Land Use Permittee and the Implementing Entity as soon as possible, but not later than September 1, to determine if additional measures are necessary to minimize take.

WPT-3 (Western Pond Turtle Monitoring): If a Covered Activity is occurring in western pond turtle modeled habitat (Figure 3-19), an approved biologist experienced with western pond turtle identification and behavior will monitor the project site, including the

integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place in aquatic habitat or within 300 feet of aquatic habitat, and will inspect the project site daily for western pond turtle prior to construction activities. The approved biologist will also training construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western pond turtle enters an active construction zone (i.e., outside the buffer zone).

WPT-4 (Western Pond Turtle Habitat Dewatering and Exclusion): If construction activities will occur in western pond turtle aquatic habitat, aquatic habitat for the turtle will be dewatered and then remain dry and absent of aquatic prey (e.g., crustaceans and other aquatic invertebrates) for 15 days prior to the initiation of construction activities. If complete dewatering is not possible, the Implementing Entity will be contacted to determine what additional measures may be necessary to minimize effects to western pond turtle. After aquatic habitat has been dewatered 15 days prior to construction activities, exclusion fencing will be installed extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent turtles from attempting to burrow or move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify construction limits and to protect adjacent habitat from encroachment of personnel and equipment. Western pond turtle habitat outside construction fencing will be avoided by all construction personnel. The fencing and work area will be inspected by the approved biologist to ensure that the fencing is intact and that no turtles have entered the work area before the start of each work day. Fencing will be maintained by the contractor until completion of the project. If, after exclusion fencing and dewatering, western pond turtles are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will discuss the next best steps with the Implementing Entity and Wildlife Agencies.

WPT-5 (Avoid Western Pond Turtle Entrapment): If a Covered Activity occurs within western pond turtle modeled habitat (Figure 3-19), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western pond turtle modeled habitat will be inspected for western pond turtle by the approved biologist prior to being moved.

WPT-6 (Erosion Control Materials in Western Pond Turtle Habitat): If erosion control (BMP-2) is implemented within western pond turtle modeled habitat (Figure 3-19), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that turtles are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

WPT-7 (Western Pond Turtle Modeled Habitat Speed Limit): Covered Activity construction and maintenance vehicles will observe a 20-mile-per-hour speed limit within western pond turtle modeled upland habitat (Figure 3-19).

WPT-8 (Western Pond Turtle Encounter Protocol): If a western pond turtle is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the turtle, within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service immediately. Any worker who inadvertently injures or kills a western pond turtle or who finds one dead, injured, or entrapped must immediately report the incident to the approved biologist.

WPT-9 (Western Pond Turtle Post-Construction Restoration): After completion of ground-disturbing Covered Activities, the applicant will remove any temporary fill and construction debris and will restore temporarily disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Implementing Entity. Restoration work may include replanting emergent aquatic vegetation and placing appropriate artificial or natural basking areas in waterways and wetlands. A photo documentation report showing pre- and post-project conditions will be submitted to the Implementing Entity 1 month after implementation of the restoration.

Tricolored Blackbird

To avoid direct and indirect effects of Covered Activities on tricolored blackbird (*Agelaius tricolor*), the following AMMs will be implemented.

TCB-1 (Tricolored Blackbird Surveys): If modeled habitat for tricolored blackbird is present within a Covered Activity's project footprint or within 500 feet of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential nesting or foraging sites are present within the project footprint and adjacent areas within 500 feet of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Within the Plan Area, potential tricolor blackbird nest sites are often associated with freshwater marsh and seasonal wetlands, or in thickets of willow, blackberry, wild rose, thistle, and other thorny vegetation. Tricolored blackbirds are also known to nest in crops associated with dairy farms. Foraging habitat is associated with annual grasslands, wet and dry vernal pools and other seasonal wetlands, agricultural fields (such as large tracts of alfalfa and pastures with continuous haying schedules and recently tilled fields), cattle feedlots, and dairies. The Third-Party Project Proponent will map all existing or potential nesting or foraging sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

TCB-2 (Tricolored Blackbird Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 500 feet of a project footprint if existing or potential nest sites were found during design surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and within 3 days of ground-disturbing activities, and within the proposed project footprint and 500 feet of the proposed project footprint to determine the presence of nesting tricolored blackbird. Pre-construction surveys will be conducted during the breeding season (March 1 through August 31). Surveys conducted in February (to meet pre-construction survey requirements for work starting in March) must be conducted within 14 days and 3 days in advance of ground-disturbing activities. If a nest is present, then TCB-3 and TCB-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and the Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

TCB-3 (Tricolored Blackbird Nest Buffer): If active nests are found within the project footprint or within 500 feet of any project-related Covered Activity, the Third-Party Project Proponent will establish a 500-foot temporary buffer around the active nest until the young have fledged.

TCB-4 (Tricolored Blackbird Nest Buffer Monitoring): If nesting tricolored blackbirds are present within the project footprint or within 500 feet of any project-related Covered

Activity, then an approved biologist experienced with tricolored blackbird behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place near the disturbance buffer. Work within the nest disturbance buffer will not be permitted. If the approved biologist determines that tricolored blackbirds are exhibiting agitated behavior, construction will cease until the buffer size is increased to a distance necessary to result in no harm or harassment to the nesting tricolored blackbirds. If the biologist determines that the colonies are at risk, a meeting with the Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will be held to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a tricolored blackbird flies into an active construction zone (i.e., outside the buffer zone).

TCB-5 (Timing of Pesticide Use and Harvest Timing on Agricultural Preserves): On SSHCP Agricultural Preserves, pesticides (including herbicides) will not be applied from January 1 through July 15.

Swainson's Hawk

To avoid direct and indirect effects of Covered Activities on Swainson's hawk (*Buteo swainsoni*), the following AMMs will be implemented.

SWHA-1 (Swainson's Hawk Surveys): If modeled habitat for Swainson's hawk (Figure 3-25) is present within a Covered Activity's project footprint or within 0.25 mile of a project footprint, then an approved biologist will conduct a survey to determine if existing or potential nesting sites are present within the project footprint and adjacent areas within 0.25 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Nest sites are often associated with Riparian land cover, but also include lone trees in fields, trees along roadways, and trees around structures. Nest trees may include, but are not limited to, Fremont's cottonwood (*Populus fremontii*), oaks (*Quercus* spp.), willows (*Salix* spp.), walnuts (*Juglans* spp.), eucalyptus (*Eucalyptus* spp.), pines (*Pinus* spp.), and Deodar cedar (*Cedrus deodara*). The Third-Party Project Proponent will map all existing and potential nesting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

SWHA-2 (Swainson's Hawk Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites were found during initial surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities to determine presence of nesting Swainson's hawk. Pre-construction surveys will be conducted during the breeding season (March 1 through September 15). If a nest is present, then SWHA-3 and SWHA-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

SWHA-3 (Swainson's Hawk Nest Buffer): If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.25 mile disturbance buffer around the active nest until the young have fledged, with concurrence from the Wildlife Agencies.

SWHA-4 (Swainson's Hawk Nest Buffer Monitoring): If nesting Swainson's hawks are present within the project footprint or within 0.25 mile of any project-related Covered Activity, then an approved biologist experienced with Swainson's hawk behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting Swainson's hawks begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a Swainson's hawk flies into an active construction zone (i.e., outside the buffer zone).

Greater Sandhill Crane

To avoid direct and indirect effects of Covered Activities on greater sandhill crane (*Grus canadensis*), the following AMMs will be implemented.

GSC-1 (Greater Sandhill Crane Surveys): If modeled habitat for greater sandhill crane (Figure 3-22) is present within a Covered Activity's project footprint or within 0.5 mile of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential roosting sites are present within the project footprint and adjacent areas within 0.5 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Roosting sites within the Plan Area are often associated with flooded fields, seasonal wetlands, and freshwater marsh. The Third-Party Project Proponent will map all existing or potential roosting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Roosting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

GSC-2 (Greater Sandhill Crane Pre-Construction Surveys): Pre-construction surveys will be required to determine if active roosting sites are present within a project footprint or within 0.5 mile of a project footprint if existing or potential roosting sites were found during initial surveys and construction activities will occur when wintering flocks are present within the Plan Area (September 1 through March 15). An approved biologist will conduct pre-construction surveys within 15 days of ground-disturbing activities, and within 0.5 mile of a project footprint, to determine presence of roosting greater sandhill cranes. Pre-construction surveys will be conducted September 1 through March 15, when wintering flocks are present within the Plan Area. If birds are present, then GSC-3, GSC-4, and GSC-5 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

GSC-3 (Greater Sandhill Crane Roosting Buffer): If active roosting sites are found within the project footprint or within 0.5 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.5 mile temporary roosting disturbance buffer around the roosting site until the cranes have left.

GSC-4 (Greater Sandhill Crane Visual Barrier): Greater sandhill cranes have low tolerance for human disturbance, and such disturbance has caused cranes to abandon foraging and roosting sites. Repeat disturbance affects their ability to feed and store energy needed for survival. If project-related activities occur within 0.5 mile of a known roosting site as identified by surveys conducted during implementation of GSC-1 or GSC-2, a visual barrier will be constructed.

GSC-5 (Greater Sandhill Crane Roosting Buffer Monitoring): If roosting sites are found within the project footprint or within 0.50 mile of any project-related Covered Activity, an

approved biologist experienced with greater sandhill crane behavior will be retained by the Third-Party Project Proponent to monitor the roosting site throughout the roosting season and to determine when the birds have left. The approved biologist will be on site daily while construction-related activities are taking place within the disturbance buffer. Work within the temporary disturbance buffer can only occur with the written permission of the Implementing Entity and Wildlife Agencies. If greater sandhill cranes are abandoning their roosting and/or forage sites, the approved biologist will have the authority to shut down construction activities. If roost abandonment occurs, the approved biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid harm and harassment of individuals. The approved biologist will also train construction personnel on the avoidance procedures, buffer zones, and protocols in the event that greater sandhill cranes move into an active construction zone (i.e., outside the buffer zone).

Western Burrowing Owl

To avoid direct and indirect effects of Covered Activities on western burrowing owl (*Athene cunicularia*), the following AMMs will be implemented.

WBO-1 (Western Burrowing Owl Surveys): Surveys within modeled habitat are required for both the breeding and non-breeding season. If the project site falls within modeled habitat, an approved biologist will survey the project site and map all burrows, noting any burrows that may be occupied. Occupied burrows are often (but not always) indicated by tracks, feathers, egg shell fragments, pellets, prey remains, and/or excrement. Surveying and mapping will be conducted by the approved biologist while walking transects throughout the entire project site plus all accessible areas within a 250-foot radius from the project site. The centerline of these transects will be no more than 50 feet apart and will vary in width to account for changes in terrain and vegetation that can preclude complete visual coverage of the area. For example, in hilly terrain with patches of tall grass, transects will be closer together, and in open areas with little vegetation, they can be 50 feet apart. This methodology is consistent with current survey protocols for this species (California Burrowing Owl Consortium 1993). Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. If suitable habitat is identified during the initial survey, and if the project does not fully avoid the habitat, pre-construction surveys will be required. Burrowing owl habitat is fully avoided if project-related activities do not impinge on a 250-foot buffer established by the approved biologist around suitable burrows. See Chapter 10 for the process to conduct and submit survey information.

WBO-2 (Western Burrowing Owl Pre-Construction Surveys): Prior to any Covered Activity ground disturbance, an approved biologist will conduct pre-construction surveys in all areas that were identified as suitable habitat during the initial surveys. The purpose of the pre-construction surveys is to document the presence or absence of burrowing owls on the project site, particularly in areas within 250 feet of construction activities. To maximize the likelihood of detecting owls, the pre-construction survey will last a minimum of 3 hours. The survey will begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total), or begin 2 hours before sunset and continue until 1 hour after sunset. Additional time may be required for large project sites. A minimum of two pre-construction surveys will be conducted (if owls are detected on the first survey, a second survey is not needed). All owls observed will be counted and their location will be mapped. Surveys will conclude no more than 2 calendar days prior to construction. Therefore, the Third-Party Project Proponent must begin surveys no more than 4 days prior to construction (2 days of surveying plus up to 2 days between surveys and construction). To avoid last-minute changes in schedule or contracting that may occur if burrowing owls are found, the Third-Party Project Proponent may also conduct a preliminary survey up to 15 days before construction. This preliminary survey may count as the first of the two required surveys as long as the second survey concludes no more than 2 calendar days in advance of construction.

WBO-3 (Burrowing Owl Avoidance): If western burrowing owl or evidence of western burrowing owl is observed on the project site or within 250 feet of the project site during pre-construction surveys, then the following will occur:

During Breeding Season: If the approved biologist finds evidence of western burrowing owls within a project site during the breeding season (February 1 through August 31), all project-related activities will avoid nest sites during the remainder of the breeding season or while the nest remains occupied by adults or young (nest occupation includes individuals or family groups foraging on or near the site following fledging). Avoidance is establishment of a minimum 250-foot buffer zone around nests. Construction and other project-related activities may occur outside of the 250-foot buffer zone. Construction and other project-related activities may be allowed inside of the 250-foot non-disturbance buffer during the breeding season if the nest is not disturbed, and the Third-Party Project Proponent develops an avoidance, minimization, and monitoring plan that is approved by the Implementing Entity and Wildlife Agencies prior to project construction based on the following criteria:

- The Implementing Entity and Wildlife Agencies approve of the avoidance and minimization plan provided by the project applicant.

- An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline nesting and foraging behavior (i.e., behavior without construction).
- The same approved biologist monitors the owls during construction and finds no change in owl nesting and foraging behavior in response to construction activities.

If there is any change in owl nesting and foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer. Construction cannot resume within the 250-foot buffer until any owls present are no longer affected by nearby construction activities, and with written concurrence from the Wildlife Agencies.

If monitoring by the approved biologist indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use, the non-disturbance buffer zone may be removed if approved by the Wildlife Agencies. The approved biologist will excavate the burrow in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl to prevent reoccupation after receiving approval from the Wildlife Agencies.

The Implementing Entity and Wildlife Agencies will respond to a request from the Third-Party Project Proponent to review the proposed construction monitoring plan within 21 days.

During Non-Breeding Season: During the non-breeding season (September 1 through January 31), the approved biologist will establish a minimum 250-foot non-disturbance buffer around occupied burrows. Construction activities outside of this 250-foot buffer will be allowed. Construction activities within the non-disturbance buffer will be allowed if the following criteria are met to prevent owls from abandoning over-wintering sites:

- An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline foraging behavior (i.e., behavior without construction).
- The same approved biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities.
- If there is any change in owl foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer.
- If the owls are gone for at least 1 week, the Third-Party Project Proponent may request approval from the Implementing Entity and Wildlife Agencies that an approved biologist excavate usable burrows and install one-way exclusionary

devices to prevent owls from re-occupying the site. After all usable burrows are excavated, the buffer zone will be removed and construction may continue.

Monitoring must continue as described above for the non-breeding season as long as the burrow remains active.

WBO-4 (Burrowing Owl Construction Monitoring): During construction of Covered Activities, 250-foot construction buffer zones will be established and maintained around any occupied burrow. An approved biologist will monitor the site to ensure that buffers are enforced and owls are not disturbed. The approved biologist will also train construction personnel on avoidance procedures, buffer zones, and protocols in the event that a burrowing owl flies into an active construction zone.

WBO-5 (Burrowing Owl Passive Relocation): Passive relocation is not allowed without the express written approval of the Wildlife Agencies. Passive owl relocation may be allowed on a case-by-case basis on project sites during the non-breeding season (September 1 through January 31) with the written approval of the Wildlife Agencies if the other measures described in this condition preclude work from continuing. Passive relocation must be done in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl. Passive relocation will only be proposed if the burrow needing to be removed or with the potential to collapse from construction activities is the result of a Covered Activity. If passive relocation is approved by the Wildlife Agencies, an approved biologist can passively exclude birds from their burrows during the non-breeding season by installing one-way doors in burrow entrances. These doors will be in place for 48 hours to ensure that owls have left the burrow, and then the biologist will excavate the burrow to prevent reoccupation. Burrows will be excavated using hand tools only. During excavation, an escape route will be maintained at all times. This may include inserting an artificial structure into the burrow to avoid having materials collapse into the burrow and trap owls inside. Other methods of passive relocation, based on best available science, may be approved by the Wildlife Agencies over the 50-year Permit Term.

WBO-6 (Burrowing Owl Timing of Maintenance Activities): All activities adjacent to existing or planned Preserves, Preserve Setbacks, or Stream Setback areas will be seasonally timed, when safety permits, to avoid or minimize adverse effects on occupied burrows.

WBO-7 (Rodent Control): Rodent control will be allowed only in developed portions of a Covered Activity project site within western burrowing owl modeled habitat. Where rodent control is allowed, the method of rodent control will comply with the methods of

rodent control discussed in the 4(d) Rule published in the U.S. Fish and Wildlife Service's (2004) final listing rule for tiger salamander.

Covered Raptor Species

To avoid direct and indirect effects of Covered Activities on covered raptor species, the following AMMs will be implemented. This measure applies to Cooper's hawk (*Accipiter cooperii*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), and white-tailed kite (*Elanus leucurus*). The following AMMs do not apply to ferruginous hawk (*Buteo regalis*), as they do not nest in the Plan Area. The following AMMs also do not apply to Swainson's hawk or burrowing owl, as specific AMMs have been developed for these covered raptor species.

RAPTOR-1 (Raptor Surveys): If modeled habitat for a covered raptor species (Figures 3-20, 3-23, 3-24, or 3-28) is present within a Covered Activity's project footprint or within 0.25 mile of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential nesting sites are present within the project footprint and adjacent areas within 0.25 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential nesting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

RAPTOR-2 (Raptor Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present with a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites are found during initial surveys and construction activities will occur during the raptor breeding season. An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities within the proposed project footprint and within 0.25 mile of the proposed project footprint to determine presence of nesting covered raptor species. Pre-construction surveys will be conducted during the raptor breeding season. If a nest is present, then RAPTOR-3 and RAPTOR-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

RAPTOR-3 (Raptor Nest/Roost Buffer): If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project

Proponent will establish a 0.25 mile temporary nest disturbance buffer around the active nest until the young have fledged.

RAPTOR-4 (Raptor Nest/Roost Buffer Monitoring): If project-related Covered Activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then an approved biologist experienced with raptor behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the disturbance buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting raptors begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist/monitor will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a covered raptor species flies into an active construction zone (i.e., outside the buffer zone).

Western Red Bat

To avoid direct and indirect effects of Covered Activities on western red bat (*Lasiurus blossevillii*), the following AMMs will be implemented.

BAT-1 (Winter Hibernaculum Surveys): If modeled habitat (Figure 3-30) for western red bat is present within 300 feet of a Covered Activity's project footprint, then an approved biologist will conduct a field investigation of the project footprint and adjacent areas within 300 feet of a project footprint to determine if a potential winter hibernaculum is present, and to identify and map potential hibernaculum sites. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. If potential hibernaculum sites are found, the Third-Party Project Proponent will note their locations on project designs and will design the project to avoid all areas within a 300-foot buffer around the potential hibernaculum sites. Winter hibernaculum habitat is fully avoided if project-related activities do not impinge on a 300-foot buffer established by the approved biologist around an existing or potential winter hibernaculum site. See Chapter 10 for the process to conduct and submit survey information.

BAT-2 (Winter Hibernaculum Pre-Construction Surveys): If the Third-Party Project Proponent elects not to avoid potential winter hibernaculum sites within the project footprint plus a 300-foot buffer, additional surveys are required. Prior to any ground disturbance related to Covered Activities, an approved biologist will conduct a pre-construction survey within 3 days of ground-disturbing activities within the project footprint and 300 feet of the project footprint to determine the presence of winter hibernaculum sites. Pre-construction surveys will be conducted during the winter hibernaculum season (November 1 through March 31). If a winter hibernaculum is present, then BAT-3 and BAT-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

BAT-3 (Winter Hibernaculum Buffer): If active winter hibernaculum sites are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will establish a 300-foot temporary disturbance buffer around the active winter hibernaculum site until bats have vacated the hibernaculum and the Implementing Entity and Wildlife Agencies concur.

BAT-4 (Bat Eviction Methods): An approved biologist will determine if non-maternity and non-hibernaculum day and night roosts are present on the project site. If necessary, an approved biologist will use safe eviction methods to remove bats if direct impacts to non-maternity and non-hibernaculum day and night roosts cannot be avoided. If a winter hibernaculum site is present, Covered Activities will not occur until the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to the Wildlife Agencies.

5.5 How Conditions on Covered Activities are Applied to Various Urban Development Permit Types Approved by the Land Use Authority Permittees

Covered Activities can be approved by Land Use Authority Permittees at different scales. For example, master plans (including specific plans, comprehensive plans, and special planning areas) generally include large areas of land, and other permit types (conditional use permits, grading permits, and building permits) can apply over a range of project footprints. The process that Land Use Authority Permittees will use to approve Covered Activities in these planning documents is described in Chapter 10. See Table 5-2 for a list of projects and activities that are considered Covered Activities.

Appendix E

CONFIDENTIAL

Cultural Resources Inventory Report

The Preserve Project

Rancho Cordova, Sacramento County, California

Prepared For:

George M. Carpenter
Winn Communities, Inc.
3001 I Street, Suite 300
Sacramento, California 95816

Prepared By:

Megan Webb and Roger Mason
ECORP Consulting, Inc.
2525 Warren Drive
Rocklin, California 95677

Under the direction of Principal Investigator:

Theadora Fuerstenberg, RPA

February 5, 2019

30 YEARS
ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

The information included in this report is confidential. Please send all requests to view the full Cultural Resources Inventory Report to the following address:

Darcy Goulart, Principal Planner
City of Rancho Cordova
Community Development Department
2729 Prospect Park Drive
Rancho Cordova, CA 95670
(916) 851-8784
fax (916) 851-8762
dgoulart@cityofranchocordova.org

Appendix F

Geology and Soils
For
The Preserve

Grant Line Road and Raymer Way
Rancho Cordova, California

Project No. E17440.001
June 2019



YOUNGDAHL
CONSULTING GROUP, INC.

Building Innovative Solutions

YOUNGDAHL CONSULTING GROUP, INC.
Building Innovative Solutions
1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net
35 YEARS

Project E17440.001
26 June 2019

Winn Communities
3001 I Street, Suite 300
Sacramento, CA 95816

Attention: Mr. George Carpenter

Subject: **THE PRESERVE, GRANT LINE ROAD AND RAYMER WAY**
Rancho Cordova, California
Geology and Soils for Environmental Impact Report

References: (at end of document)

Dear Mr. Carpenter:

With your authorization of 25 April 2019, Youngdahl Consulting Group, Inc. has completed an evaluation of potential impacts detailed on the Geology and Soils section of the California Environmental Quality Act Appendix G Environmental Checklist Form. Section VI of this forms starts with the statement "Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving" and then lists categories ranging from fault rupture to soils inadequate for septic systems. This document addresses each item on this list pertaining to geology and soils as well as mineral resources. This report does not address paleontological resources.

If you have any questions regarding this information, please contact us.

Very truly yours,
Youngdahl Consulting Group, Inc.



David C. Sederquist, C.E.G., C.HG., QSD/QSP
Senior Engineering Geologist/Hydrogeologist

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Geology and Soils
For
The Preserve
Grant Line Road and Raymer Way
Rancho Cordova, California

1.0 Geology and Soils

This report identifies existing soil and geologic conditions and analyzes the potential for the proposed project to affect these resources. Information presented in the discussion and subsequent analysis was primarily drawn from the following sources:

- Geotechnical Engineering Report, Grantline Properties, (Wallace-Kuhl & Associates, Inc. 2004).
- Regional geologic maps and fault maps prepared by the California Department of Conservation's California Geological Survey (formerly the Division of Mines and Geology), the United States Geological Survey, and the California Department of Water Resources.
- Soil maps and information provided by the United States Department of Agriculture, Natural Resources Conservation Service.

Specific reference information is provided in Section 3 of this report.

1.1 Regional Geologic Framework

The Preserve is located within the northern portion of the Sacramento Valley, which, together with the San Joaquin Valley, comprises the Great Valley geomorphic province (California Geological Survey, 2002). The Great Valley is a forearc basin composed of thousands of feet of sedimentary deposits that has undergone periods of subsidence and uplift over millions of years (USGS, 1990). The Great Valley basin began to form during the Jurassic period as the Pacific oceanic plate was subducted underneath the adjacent North American continental plate (Howard, 1979). The subduction zone and associated trench shifted 80 miles seaward to the present location of the Coast Ranges, and a new trench formed offshore; buckling at the edge of the new continent creating a forearc basin. In the western portion of the Great Valley, Upper Jurassic to Upper Cretaceous rock sequences rest on Upper Jurassic oceanic crust sequences (USGS, 1990). In contrast, the eastern portion of the Great Valley is composed of shallow Pleistocene nonmarine deposits. These deposits overly Cenozoic deposits that cover a layer of Cretaceous marine/deltaic deposits, which in turn rests on the metamorphic and igneous rocks of the Sierra Nevada—the western edge of the continental margin (California Geological Survey, 1987).

During the Jurassic and Cretaceous periods of the Mesozoic era, the area of the Great Valley existed as a marine depositional environment. By the end of the Mesozoic, the northern portion of the Great Valley began to fill with considerable granitic debris as tectonic forces caused uplift of the basin (Howard, 1979).

The following formations were deposited in the Cenozoic Era:

The Ione Formation was deposited in the Eocene Age at the edge of an inland sea. In the Micoene, depositions of the Mehrten Formation (mostly dark andesitic sands, occasional conglomerate lenses, and reworked ash beds) occurred in the Sacramento Valley. Deposition of the Mehrten Formation continued into the early Pliocene era (Howard, 1979).

The Laguna Formation was deposited in the Sacramento Valley starting in the Pliocene era, continuing into the early Pleistocene era (Howard, 1979). The Laguna is composed of tan to brown, volcanic rich sediments, with grain sizes ranging from clay to silt and sand; with minor granitic and metamorphic input. The Fair Oaks Formation is composed of light brown granitic sands rich in quartz and biotite with some silt and clay present north of the American River, deposited from Pliocene into the early Pleistocene eras, on top of the Laguna Formation.

The Arroyo Seco Gravels are rounded gravels with a red matrix derived from granite, and with clasts that are mainly metamorphic and andesitic pebbles and cobbles; this unit was deposited in the Pleistocene era and forms a caprock in the Sacramento area (Department of Water Resources, 1974). The California Geological Survey classifies these materials as Turlock Lake Formation. The Victor Formation, unconsolidated gravel, sand, silt and clay from a granitic source was deposited (DWR, 1974). The Modesto Formation, consisting of unconsolidated gravels, sand, silt, and clay from a granitic source was deposited largely near stream channels in the late Pleistocene Era (Association of Engineering Geologists, 2001).

In the Holocene era, after the last glaciation, stream flows dropped and streams became undersized compared to the valleys, with alluvium consisting of unconsolidated gravel, sand, silt, and clay, deposited along stream channels (Shlemon, et al, 2000).

Most of the surface of the Great Valley is covered with Holocene and Pleistocene-age alluvium. This alluvium is composed of sediments from the Sierra Nevada to the east and the Coast Range to the west, which were carried by water and deposited on the valley floor. Siltstone, claystone, and sandstone are the primary types of sedimentary deposits.

1.2 Geologic Setting

The California Geological Survey has the Preserve area mapped as being underlain by the Pliocene Age Laguna Formation and some Quaternary Age Alluvium (California Geological Survey, 2011).

1.3 Project Area Topography

The topography of the Preserve is generally flat with elevations ranging from approximately 220 feet above mean sea level, where Morrison Creek leaves the property, to approximately 255 feet at the high point along the north boundary.

1.4 Project Area Geology

The Preserve is underlain by the aforementioned Cretaceous Period marine/deltaic deposits, the Ione Formation, the Mehrten Formation, and the Laguna Formation, with some alluvium. The Department of Water Resources (DWR, 1974) provides a geologic cross section just south of the Preserve presenting the aforementioned formations and water bearing zones, with Arroyo Seco Gravels indicated in the topmost 20 to 50 feet. The Arroyo Seco Gravels are not shown on the California Geological Survey Map of 2011.

1.5 Soils

1.5.1 Surface Soils

The soils in the area have been mapped by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) and are described in their online web-based database (websoilsurvey.sc.egov.usda.gov) accessed on 7 June 2019. Soils in the Preserve are shown on the soil map in Appendix A, which contains the Custom Soil Resource Report. These soil characteristics are summarized on Table 1.

According to the Soil Resource Report, there are four individual soil map units within the Preserve area. These include the Hicksville gravely loam, 0-2 percent slopes comprising approximately 21.4 percent of the project area; the Red Bluff loam, 2 to 5 percent slopes and comprises approximately 7.2 percent of the project area; the Red Bluff-Redding complex, 0 to 5 percent slopes and comprises about 38.3 percent of the project area,; and the Redding gravely loam, 0 to 8 percent slopes and comprises approximately 33.1 percent of the project area.

The Hicksville gravelly loam, 0 to 2 percent slopes, extends to a depth of approximately 65 inches and is moderately well drained. Its parent material is alluvium. Typically, the surface layer is gravely loam about 13 inches thick. The subsoil is gravely clay loam from 13 to 43 inches, and stratified very gravely sandy loam to clay loam, from 43 to 65 inches.

The Red Bluff loam, 2 to 5 percent slopes, extends to a depth of approximately 68 inches and is well drained. Its parent material is alluvium. Typically, the surface layer is loam about 8 inches thick. The subsoil is clay loam from 8 to 43 inches and gravely clay loam from about 43 to 68 inches.

The Red Bluff-Redding complex, 0 to 5 percent slopes, extends to a depth of approximately 68 inches and is well drained. Typically, the surface layer is loam about 8 inches thick. The subsoil is clay loam from approximately 8 to 43 inches, and is gravelly clay loam from about 43 to 68 inches.

The Redding gravelly loam, 0 to 8 percent slopes, extends to a depth of approximately 35 inches and is moderately well drained. The surface layer is typically gravelly loam about 8 inches in thickness. The subsoil is gravelly loam from about 8 to 19 inches, clay from approximately 19 to 22 inches, and cemented gravelly material from around 22 to 35 inches.

Table 1 – Soil Characteristics

Soil Map Unit	Map Unit Symbol	Shrink-Swell Potential[1]	Permeability[2]	Water Erosion Hazard (Factor K)[3]	Wind Erosion Hazard[4]	Runoff Rating[5]	Concrete Corrosivity	Steel Corrosivity	Limitations for buildings and Roads
Hicksville gravely loam, 0 – 2 percent slopes	159	0.31	Moderately High	0.17	7	C/D	Low	High	Very limited, flooding, shrink-swell
Red Bluff Loam, 2 to 5 percent slopes	192	0.50	Moderately High	0.37	6	C	Moderate	High	Somewhat limited, shrink-swell
Red Bluff-Redding complex, 0 to 5 percent slopes	193	0.50	Moderately High	0.37	6	C	Moderate	High	Somewhat limited, shrink-swell
Redding gravelly loam, 0 to 8 percent slopes	198	0.99	Moderately High	0.28	6	D	Moderate	High	Somewhat limited, depth to saturated zone

[1] The NRCS online soil database uses 0 – 1 values to describe factors such as shrink-swell potential with 0 being very low and 1.0 being very high.
[2] NRCS Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water based on NRCS class limits.
[3] Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.
[4]A wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.
[5] Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms. The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows: Group A soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission. Group B soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission. Group C soils have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission. Group D soils have a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high-water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission. If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

1.5.2 Subsurface Conditions

Based on a subsurface exploration program conducted by Wallace-Kuhl & Associates (2004), subsurface soil conditions in the Preserve area consisted of a heterogenous mixture of materials. Soils were observed to consist of clayey silty sands, clayey sands, clayey sandy silts, and silty sandy clays (as categorized using the Unified Soil Classification versus the United States Department of Agriculture Classification used by the NRCS) containing varying amounts of gravel from the surface to a depth of about two to four feet below the existing ground surface. In some areas, these soils extended to depths of as much as 10 feet. Underlying these relatively fine-grained soils were clayey and silty, gravel and cobbles to maximum 11-foot depth of exploration.

According to the California Department of Water Resources Water Data Library Web Site, the ground elevation in Well 385707N1211868W001 located approximately ½-mile southeast of the Preserve area was at an elevation of approximately 76 feet above mean sea level, about 185 below the ground surface, in April of 2019.

1.5.3 Soil Corrosion Potential

Wallace-Kuhl & Associates (2004) submitted two soil samples for corrosivity analyses that included determination of the soil pH, minimum resistivity, and chloride and sulfate concentrations. Their findings were that the native soils are not unusually corrosive to steel reinforcement properly embedded within Portland cement concrete but may be potential corrosive to buried metal pipe. They concluded that, based upon the chloride and sulfate concentrations, ordinary Type I/II Portland cement is considered to be suitable for use on this project, assuming minimum concrete cover is maintained over steel reinforcement.

1.5.4 Naturally Occurring Asbestos

The California Code of Regulations, Section 93105, regulates construction and mining in materials containing naturally occurring asbestos. The Sacramento Metropolitan Air Quality Management District has designated parcels in Eastern Sacramento County to be in a zone subject to this regulation based upon geologic mapping by the California Geological Survey. The Preserve area is **not** within one of these mapped zones and is therefore not subject to regulations regarding naturally occurring asbestos.

1.6 Seismicity and Faults

Primary Seismic Hazards

Surface Rupture and Faulting

The purpose of the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) is to regulate development near active faults to mitigate the hazard of surface rupture. Faults in an Alquist-Priolo Zone are typically active faults. The Alquist-Act defines an active fault as one that has exhibited surface displacement within the Holocene epoch (the last 11,000 years; a late Quaternary fault as one that has had surface displacement within the past 700,000 years, a Quaternary fault (age undifferentiated) is a fault that has shown surface displacement at some point during quaternary time (the past 1.6 million years); and pre-Quaternary fault is one that has had surface displacement before the Quaternary period (California Geological Survey, 2018).

According to the California Geological Survey (2010), there are no mapped faults within or near the Preserve area. Wallace-Kuhl & Associates, Inc. (2004) did not address the seismicity of the Preserve area.

The nearest mapped potentially active and active faults pertinent to the site are summarized in the following table.

Table 2: Local Active and Potentially Active Faults within a 100-Kilometer Radius of the Preserve Area

Status	Fault Name	Distance, Direction	
Active	Dunnigan Hills	62 km	NW
Active	Green Valley Fault	95 km	W
Active	Cordelia Fault	92 km	W
Late Quaternary	Bear Mountains Fault Zone - West	15 km	E
Late Quaternary	Bear Mountains Fault Zone - East	23 km	E
Quaternary (age undifferentiated)	Maidu Fault	28 km	NE
Late Quaternary	Melones - West	28 km	E
Late Quaternary	Melones - East	31 km	E

km = kilometer, W = west, E = east, NE = northeast

A total of eight faults and/or fault zones were identified as potential seismic sources within a 100-kilometer (km) radius of the Preserve area. The ones expected to have the greatest impact due to their proximity to the Preserve area are faults associated with the Foothills fault system. The foothills Fault System is located along the western flank of the Sierra Nevada. The most recent event on the Foothills fault system was the 1975 Oroville earthquake (magnitude 5.6 on the moment magnitude scale).

1.6.1 Ground Shaking Hazard

The intensity of ground shaking resulting from an earthquake is a function of the size (energy release) of the earthquake, the duration of the energy release, the distance from the subject location, and the ability of the geologic materials to transmit the energy. In general, the greater the energy release and the closer the center of release (epicenter) to the site, the greater the intensity of the ground shaking. Different soils will respond differently ground shaking; with strong enough ground shaking, buildings can be damaged, slopes can fail, and when saturated sands are present, liquefaction can occur.

Earthquake magnitude is generally expressed as Richter Magnitude for earthquakes less than 4.0 magnitude and Moment Magnitude for earthquakes greater than 4.0 magnitude. Earthquake size, as measured by the Richter Scale is a well-known, but not well understood, concept (USGS website, accessed 11 June 2019). The idea of a logarithmic earthquake magnitude scale was first developed by Charles Richter in the 1930's for measuring the size of earthquakes occurring in southern California using relatively high-frequency data from nearby seismograph stations. This magnitude scale was referred to as ML, with the L standing for local. This is what was to eventually become known as the Richter magnitude.

As more seismograph stations were installed around the world, it became apparent that the method developed by Richter was strictly valid only for certain frequency and distance ranges. In order to take advantage of the growing number of globally distributed seismograph stations, new magnitude scales that are an extension of Richter's original idea were developed. These include body wave magnitude (Mb) and surface wave magnitude (Ms). Each is valid for a particular frequency range and type of seismic signal. In its range of validity, each is equivalent to the Richter magnitude.

Because of the limitations of all three magnitude scales (ML, Mb, and Ms), a new, more uniformly applicable extension of the magnitude scale, known as moment magnitude, or Mw, was developed. In particular, for very large earthquakes, moment magnitude gives the most reliable estimate of earthquake size.

Moment is a physical quantity proportional to the slip on the fault multiplied by the area of the fault surface that slips; it is related to the total energy released in the earthquake. The moment can be estimated from seismograms (and also from geodetic measurements). The moment is then converted into a number similar to other earthquake magnitudes by a standard formula. The result is called the moment magnitude. The moment magnitude provides an estimate of earthquake size that is valid over the complete range of magnitudes, a characteristic that was lacking in other magnitude scales.

Ground shaking is described using two methods: ground acceleration as a fraction of the acceleration of gravity, expressed in units of "g", and the Modified Mercalli scale, which is a descriptive method using 12 levels of intensity denoted by Roman Numerals. Modified Mercalli intensities range from I (shaking that is not felt), to XII (total damage).

The Preserve area is in a region of California characterized by low historical seismic activity and a low ground-shaking hazard. The 2017 amended County of Sacramento General Plan Safety element shows the project to be in an area of nearly the lowest ground shaking potential. The California Office of Statewide Planning and Health Development (OSHPD) online calculator accesses Unite States Geological Survey data to estimate ground motions and provided an estimated maximum credible earthquake (MCE) ground acceleration of 0.161 g for the Preserve area assuming a site class of D for stiff soils (Appendix B).

Secondary Seismic Hazards

Liquefaction and Associated Hazards

Liquefaction is the sudden loss of soil shear strength and sudden increase in porewater pressure caused by shear strains, as could result from an earthquake. Research has shown that saturated, loose to medium-dense sands with a silt content less than about 25 percent and located within the top 40 feet are most susceptible to liquefaction and surface rupture/lateral spreading.

The Preserve area is not in a mapped liquefaction zone. The 2017 Amended County of Sacramento General Plan Safety Element (County of Sacramento, 2017) shows the Preserve to be in an area with a medium to high potential for subsidence, but this includes impacts from groundwater extraction as well as from shaking.

Due to the absence of permanently elevated groundwater table and the relatively low seismicity of the area, the potential for seismically induced damage due to liquefaction, surface ruptures, and settlement is considered minimal.

Seismically induced and Static Slope Failures
The topography of the Preserve Area is gently rolling to flat. The project is not in a mapped landslide zone. There are no significant slopes that could fail.

Other Hazards
Other geologic hazards (volcanic activity, tsunami, seiche, and mudflow) that could be experienced in the larger region are not likely to affect the Preserve.

1.7 Minerals

Under the Surface Mining and Reclamation Act (SMARA), the State Mining and Geology Board may designate certain mineral deposits as being regionally significant to satisfy future needs. The Board's decision to designate an area is based on a classification report prepared by CGS and on input from agencies and the public. The Preserve lies within the designated Sacramento-Fairfield Production-Consumption Region for Portland cement concrete aggregate, which includes all designated lands within the marketing area of the active aggregate operations supplying the Sacramento-Fairfield urban center.

In compliance with SMARA, the California Division of Mines and Geology (CDMG, 1988, 1999) has established the classification system shown in Table 3 to denote both the location and significance of key extractive resources.

Table 3 - California Division of Mines and Geology
Mineral Land Classification System

Classification	Description
MRZ-1	Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
MRZ-2	Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists.
MRZ-3	Areas containing mineral deposits, the significance of which cannot be evaluated from existing data
MRZ-4	Areas where available data are inadequate for placement in any other mineral resource zone
Note: MRZ = Mineral Resource Zone Source: Dupras 1988	

The Preserve area is classified as MRZ-3 for Portland Cement-grade aggregate—an area where the significance of mineral deposits cannot be evaluated from existing data. The California Division of Mines and Geology (1984, 1988, 1999) indicates that the Preserve is classified as either MRZ-3 or MRZ-4 for Placer gold, copper, zinc, and industrial minerals (i.e., carbonate rock, clay, sand, lignite, talc, asbestos). The Preserve is zoned MRZ-1 (no known deposits) for chromite. According to the City of Rancho Cordova General Plan (2006) the Preserve area is not listed as a locally-important mineral resource recovery site.

2.0 Environmental Impacts

Methods of Analysis - Geology, Soils, and Seismicity
Impacts related to geology, soils, and seismicity were evaluated based available data (maps, soil surveys, reports), and professional judgement. This analysis focuses on the proposed project's potential to result in the risk of personal injury, loss of life, and damage to property as a result of existing geologic and geotechnical conditions within the project area.

This analysis of impacts assumes that the project applicant would conform to the latest stormwater pollution prevention requirements, County and other plan policies, standards, and ordinances. This analysis also assumes that geotechnical investigations would be performed to evaluate the potential for the presence of soft and/or loose soils, unstable slopes, surface fault rupture, ground shaking, liquefaction hazard, slope stability, and expansive soils. Additional site-specific analysis would occur prior to final design.

Methods of Analysis - Minerals
The proposed projects potential to affect mineral resources was evaluated by examining the project footprint in comparison to resource locations mapped by the California Geological Survey.

2.1 Thresholds of Significance

In accordance with Appendix G of the State of California's CEQA Guidelines, the proposed project would be considered to have a significant effect if it would result in any of the following conditions:

1) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: (1) 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.
2) Result in substantial soil erosion or the loss of topsoil?
3) 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?
4) Be located on expansive soil, as defined in Chapter 18 of the California Building Code (2016), creating substantial risks to life and property?
5) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?
6) Result in the loss of availability of a known mineral resource that would be of value to regions and the residents of the state?
7) 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?

2.2 Impacts and Mitigation Measures

Impact GEO-1: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: (1) 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; (2) Strong seismic ground shaking; (3) seismic-related ground failure, including liquefaction; and (4) Landslides (less than significant).

The project area is not identified as being within an Alquist-Priolo Zone. There is no evidence of recent (i.e., Holocene) faulting with the project area and no active faults are mapped at or near the project area (California Geological Survey 2010). This impact would be less than significant.

The project area is an area of low ground shaking hazard. However, a large earthquake on a nearby fault could cause minor ground shaking in the vicinity of the project, potentially resulting in an increased risk of structural loss, injury, or death. Liquefaction and related hazards such as lateral spreading and differential settlement have the potential to compromise the structural integrity of proposed new facilities and cause injury. The construction of the project will fall under the requirements of the California Building Code and any additional requirements of the City of Rancho Cordova. A preliminary geotechnical engineering evaluation has been completed (Wallace-Kuhl & Associates, Inc., 2004) but does not meet the requirements of Chapter 18 of the California Building Code for geotechnical investigations. Detailed geotechnical investigations meeting the requirements of the California Building Code will be required. The investigations will provide foundation design recommendations that will mitigate these impacts. Additionally, the design of structures must consider projected ground accelerations due to earthquakes and must follow California Building Code requirements. Therefore, the impact for ground shaking hazard to result in loss, injury, or death due to liquefaction, dynamic compaction, seismically induced settlement, or lateral spreading is considered to be less than significant.

There are no significant natural slopes in the project area. Slopes may be constructed (i.e. stormwater basins). Slopes will be designed according to California Building Code requirements so the potential for seismically induced slope instability is considered to be negligible. This impact would be less than significant.

To summarize, due to the relatively low seismicity of the area, the requirement to design foundations, structures, and embankments according to California Building Code requirements, which takes into account the projected seismicity, and the lack of significant natural slopes, the potential for seismically induced damage is considered negligible.

Impact GEO-2: Result in substantial soil erosion or the loss of topsoil (less than significant).

Grading, excavation, removal of vegetation cover and loading activities associated with construction could temporarily increase erosion, runoff, and sedimentation. Construction activities could also result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas.

However, requirements under Section 402 of the Federal Clean Water Act, the Construction Activities Storm Water Construction General Permit (Order No. 2009-009-DWQ as amended by 2010-0014-DWQ and 2012-006-DWQ), a Stormwater Pollution Prevention Plan (SWPPP) would be developed by qualified stormwater developers and

practitioners and implemented during construction. The SWPPP would be kept onsite during construction activity and made available upon request to representatives of the City or Rancho Cordova, the County of Sacramento, and the Central Valley Regional Water Quality Control Board. The SWPPP would identify pollutant sources that may affect the quality of stormwater associated with construction activity, and identify stormwater pollution prevention measures to be implemented to reduce pollutants in stormwater discharges during and after construction. Therefore, the SWPPP would also include a description of potential pollutants and hazardous materials present on site during construction (including vehicle and equipment fuels). The SWPPP would include details of how the sediment and erosion control practices (best management practices or BMPs) would be implemented. Implementation of the SWPPP would comply with county, state, and federal water quality requirements.

In addition to the SWPPP, adherence to the Sacramento Stormwater Quality Partnership Municipal Stormwater Permit (MS4) would minimize any effects from erosion, runoff, and sedimentation. Accordingly, this impact would be less than significant.

Impact GEO-3: 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 an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse (less than significant).

The topography of the project area is gentle, with no significant slopes. The potential for lateral spreading, subsidence, liquefaction, or collapse will be evaluated by geotechnical studies; these studies will make recommendations for engineering design to mitigate these potential conditions. This impact would be less than significant.

Impact GEO-4: Be located on expansive soil, as defined in Chapter 18 of the California Building Code, creating substantial risks to life or property (less than significant).

The preliminary geotechnical evaluation (Wallace-Kuhl & Associates, Inc., 2004), reported the presence of clay with a moderately high expansion potential and recommend that the proper handling of clay soils will be an important aspect of site development. The NRCS reports soil shrink-swell potentials for the project area to range from 0.31 to 0.99 using a scale of 0 to 1.0 where 1.0 represents a high potential. Expansive soils have the potential to compromise the structural integrity of project features, which could be a significant impact. However, in order to meet California Building Code Chapter 18 requirements, the project applicant's geotechnical engineer will be responsible for conducting final geotechnical evaluations of the on-site soils to further determine the extent of soils with adverse-shrink swell properties prior to grading and construction activities. Based on subsurface conditions, the project applicant's geotechnical engineers will make recommendations for project elements designs to accommodate for the effects of expansive soils. Corrective actions may include excavation of potentially problematic soils during construction and replacement with engineered backfill, ground treatment processes, and direction of surface water away from foundation soils. The projected applicants will select one or more of these measures in consultation with qualified engineers before grading activities begin, ensuring that this impact would be less than significant.

Impact GEO-5: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater (no impact).

The project would be connected to sewer lines of the local wastewater systems, not septic systems. Therefore, there would be no impact. No mitigation is required.

Impact GEO-6: 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 (less than significant).

The Preserve area is classified as MRZ-3 for Portland Cement-grade aggregate—an area where the significance of mineral deposits cannot be evaluated from existing data. The California Division of Mines and Geology (1984, 1988, 1999) indicates that the Preserve is classified as either MRZ-3 or MRZ-4 for Placer gold, copper, zinc, and industrial minerals (i.e., carbonate rock, clay, sand, lignite, talc, asbestos). The Preserve is zoned MRZ-1 (no known deposits) of chromite. According to the City of Rancho Cordova General Plan (2006) the Preserve area is not listed as a locally-important mineral resource recovery site. There are no existing or potential mineral resources identified that would be of value to the region or the residents of the state, and the impact would be less than significant.

Impact GEO-7: Result in the loss of availability of a locally important mineral resource site delineated on a local general plan, specific plan, or other land use plan (no impact).

The City of Rancho Cordova General Plan does not identify any locally important mineral resources within the Preserve area. Also, the project area does not contain any mineral resources that have not been considered in the City of Rancho Cordova General Plan. Since there are no locally important mineral resources or recovery sites identified in this plan there would be no impact.

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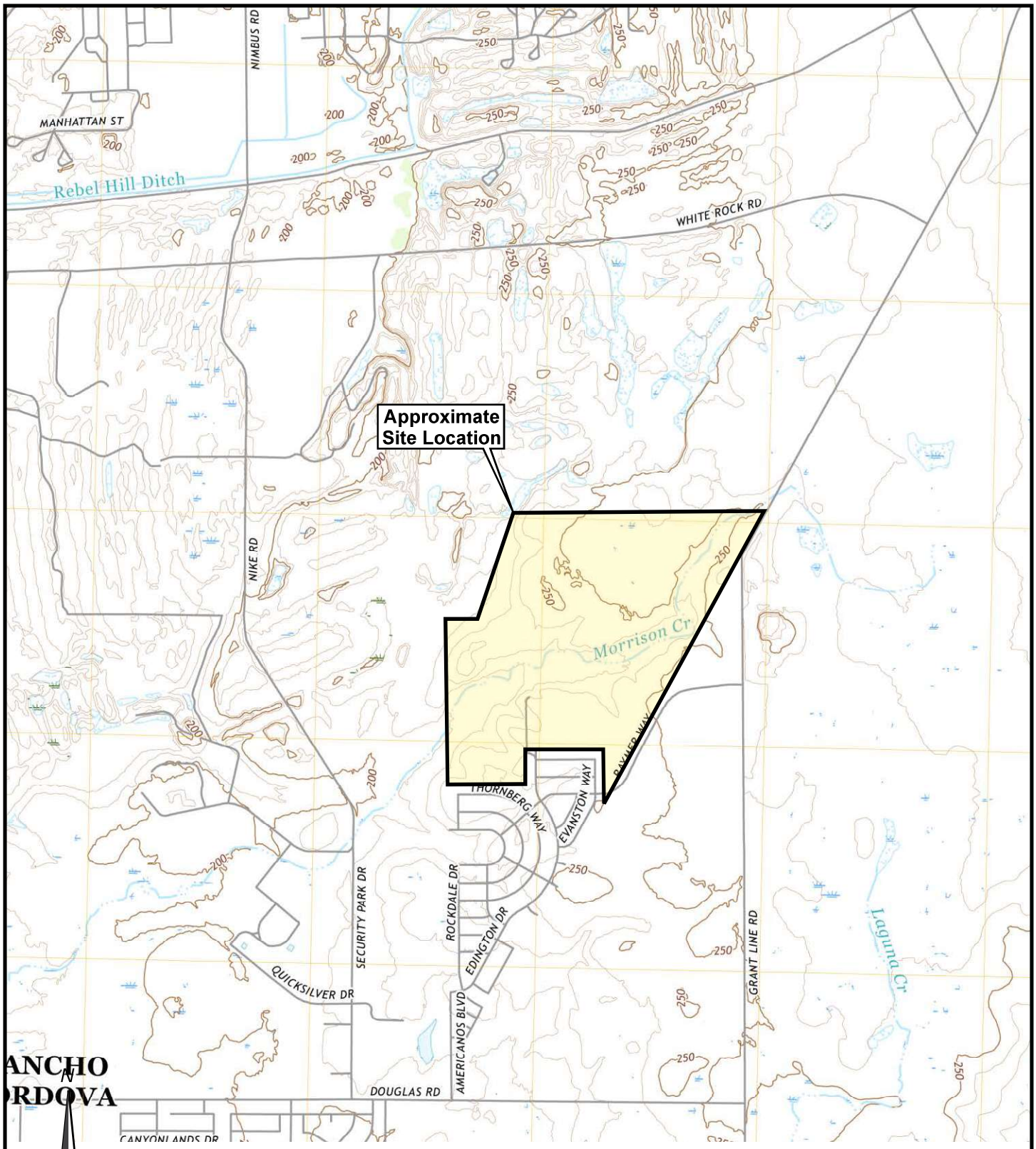
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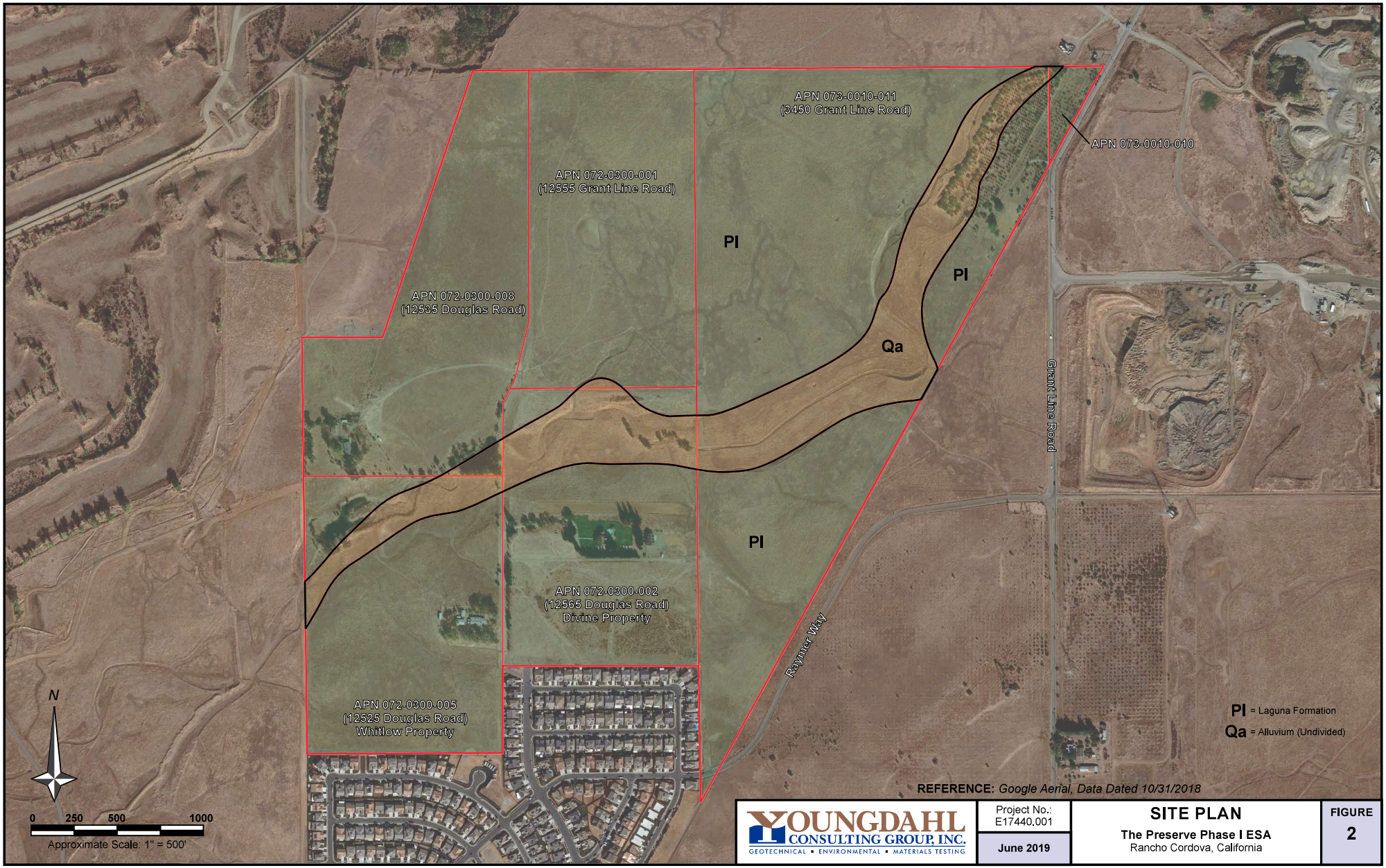
Figures



Scale: 1:24,000

BASE MAP REFERENCE: *U.S.G.S. 7.5 Minute Topographic Series, Buffalo Circle Quadrangle, Dated 2018*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E17440.001 **June 2019**	**VICINITY MAP** **The Preserve Phase I ESA** Rancho Cordova, California	**FIGURE** **1**



REFERENCE: *Google Aerial, Data Dated 10/31/2018*

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GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING

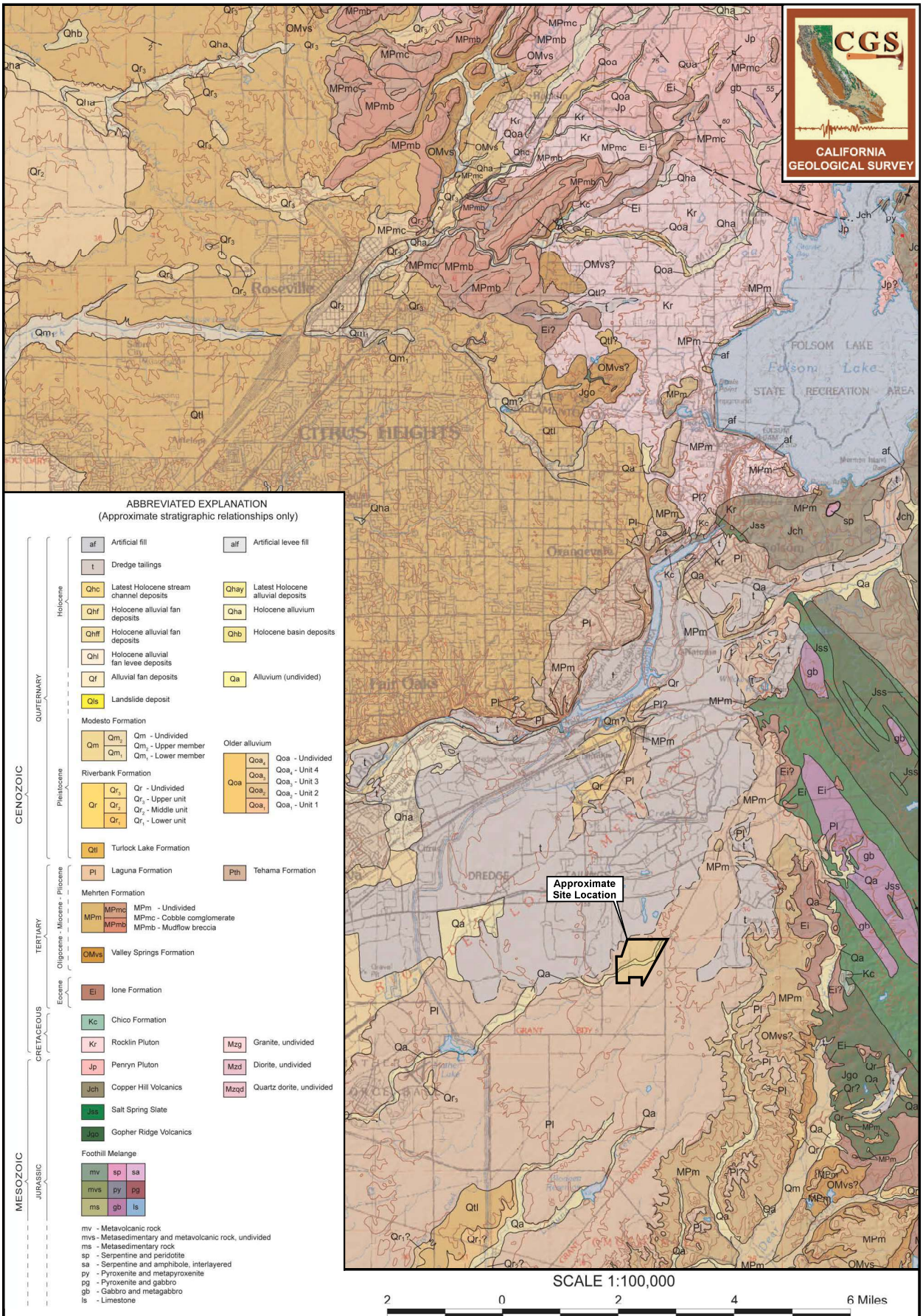
Project No.: E17440.001

June 2019

SITE PLAN

The Preserve Phase I ESA
Rancho Cordova, California

FIGURE 2



REFERENCE: *Preliminary Geological Map of the Sacramento Quadrangle, California, California Department of Conservation, Carlos I. Gutierrez, Dated 2011*

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Project No.: E17440.001

June 2019

REGIONAL GEOLOGY MAP

The Preserve Phase I ESA
Rancho Cordova, California

FIGURE 3

Appendix A
Custom Soil Resources Report for Sacramento County, California

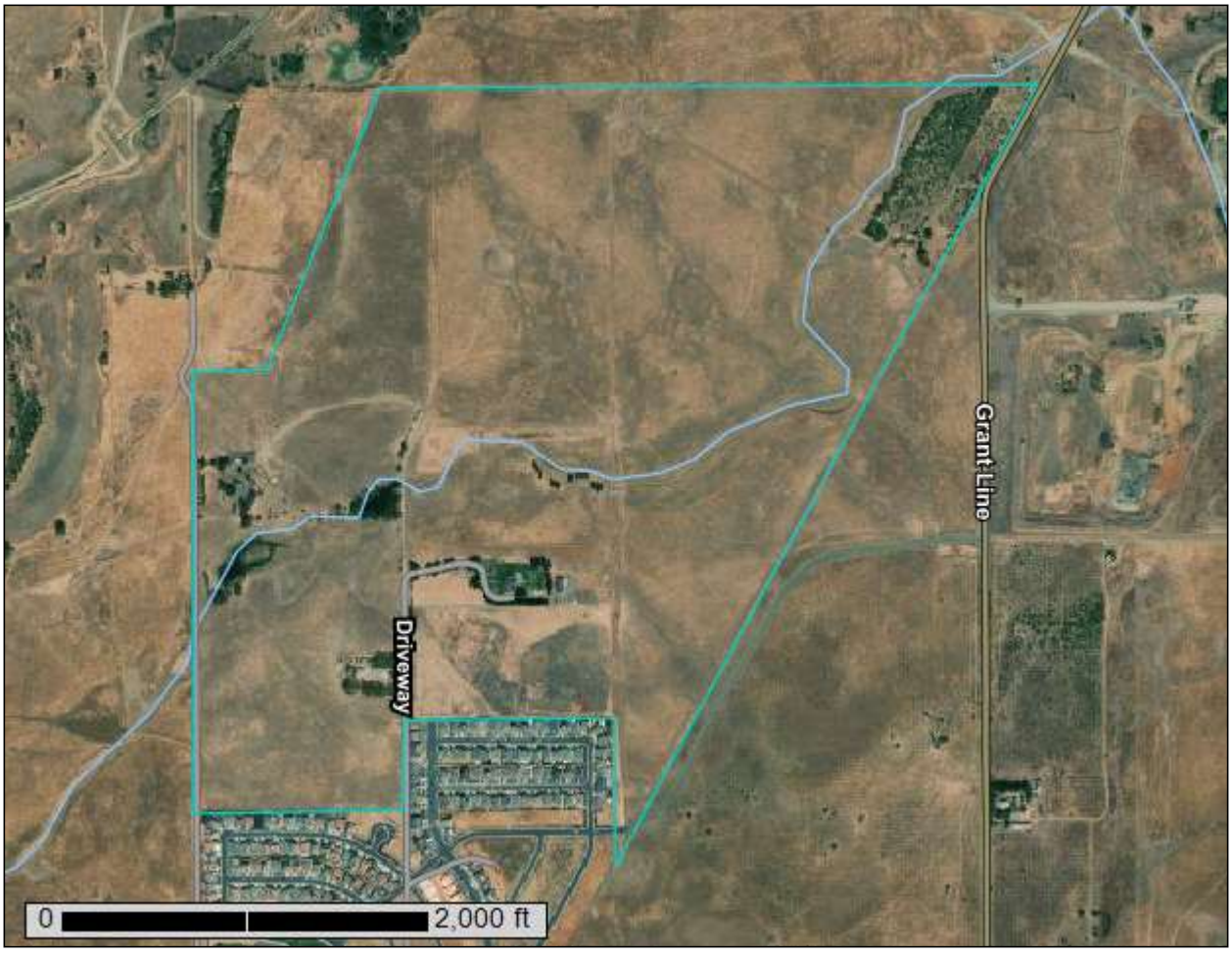
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Sacramento County, California



June 7, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:11,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sacramento County, California
Survey Area Data: Version 17, Sep 14, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Aug 8, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
159	Hicksville gravelly loam, 0 to 2 percent slopes, occasionally fl ooded	60.4	21.4%
192	Red Bluff loam, 2 to 5 percent slopes	20.4	7.2%
193	Red Bluff-Redding complex, 0 to 5 percent slopes	108.0	38.3%
198	Redding gravelly loam, 0 to 8 percent slopes, MLRA 17	93.4	33.1%
Totals for Area of Interest		**282.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Sacramento County, California

159—Hicksville gravelly loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: hhn3
Elevation: 80 to 230 feet
Mean annual precipitation: 17 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hicksville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hicksville

Setting

Landform: Terraces, terraces, hills
Landform position (two-dimensional): Toeslope, summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 13 inches: gravelly loam
H2 - 13 to 43 inches: gravelly clay loam
H3 - 43 to 65 inches: stratified very gravelly sandy loam to clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: LOAM STREAM TERRACE (R017XD081CA)
Hydric soil rating: No

Minor Components

Corning

Percent of map unit: 3 percent

Hydric soil rating: No

Creviscreek
Percent of map unit: 3 percent
Hydric soil rating: No

Columbia
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Cosumnes
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Pentz
Percent of map unit: 2 percent
Hydric soil rating: No

Redding
Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, hardpan deeper depths
Percent of map unit: 1 percent
Hydric soil rating: No

192—Red Bluff loam, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: hhp5
Elevation: 200 to 800 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Red bluff and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Red Bluff

Setting
Landform: Terraces
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 25 inches: clay loam
H3 - 25 to 43 inches: clay loam
H4 - 43 to 68 inches: gravelly clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY (R017XD045CA)
Hydric soil rating: No

Minor Components

Redding

Percent of map unit: 7 percent
Hydric soil rating: No

Xerorthents

Percent of map unit: 7 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, hardpan soil

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, steeper slopes

Percent of map unit: 2 percent
Hydric soil rating: No

193—Red Bluff-Redding complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: hhp6
Elevation: 100 to 1,500 feet
Mean annual precipitation: 14 to 30 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Red bluff and similar soils: 45 percent
Redding and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Red Bluff

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 25 inches: clay loam
H3 - 25 to 43 inches: clay loam
H4 - 43 to 68 inches: gravelly clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY (R017XD045CA)
Hydric soil rating: No

Description of Redding

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 7 inches: gravelly loam
H2 - 7 to 20 inches: gravelly loam
H3 - 20 to 28 inches: gravelly clay loam
H4 - 28 to 66 inches: indurated

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: About 20 inches to abrupt textural change; 28 to 66 inches to duripan
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: GRAVELLY LOAMY (R017XD090CA)
Hydric soil rating: No

Minor Components

Corning

Percent of map unit: 5 percent
Hydric soil rating: No

Hicksville

Percent of map unit: 4 percent
Hydric soil rating: No

Xerorthents

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, hardpan below 40 inches

Percent of map unit: 1 percent
Hydric soil rating: No

198—Redding gravelly loam, 0 to 8 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2w8bl
Elevation: 20 to 420 feet
Mean annual precipitation: 19 to 28 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Redding and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Redding

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium derived from igneous, metamorphic and sedimentary rock over clayey alluvium derived from igneous, metamorphic and sedimentary rock over cemented alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A1 - 0 to 8 inches: gravelly loam
A2 - 8 to 15 inches: gravelly loam
A3 - 15 to 19 inches: gravelly loam
Bt - 19 to 22 inches: clay
2Bqm1 - 22 to 24 inches: cemented gravelly material
2Bqm2 - 24 to 35 inches: cemented gravelly material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: About 19 inches to abrupt textural change; 20 to 39 inches to duripan
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: About 15 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.2 to 0.5 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0

Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: GRAVELLY LOAM (R015XD090CA)
Hydric soil rating: No

Minor Components

Keyes

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: No

Corning

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 2 percent
Landform: Fan remnants
Microfeatures of landform position: Vernal pools
Hydric soil rating: Yes

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Appendix B
Seismic Ground Motion for the Preserve
From USGS Seismic Design Maps accessed 11 June 2019

The Preserve

Latitude, Longitude: 38.579129, -121.194832

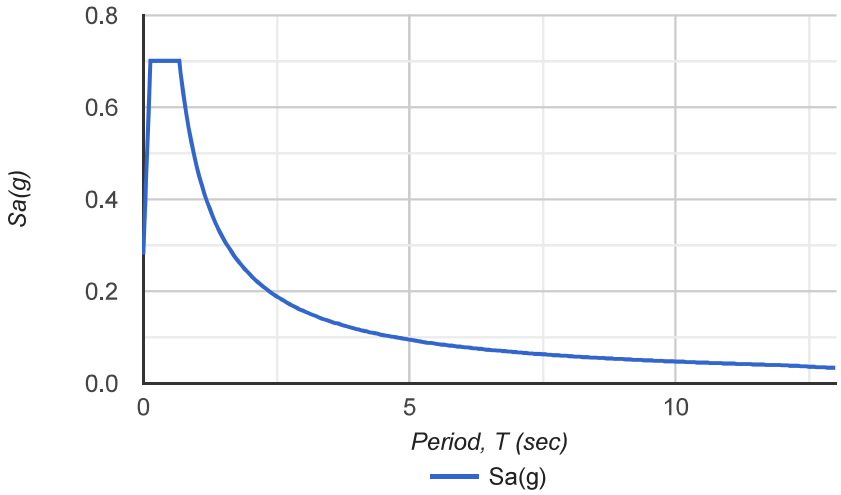


Date	6/11/2019, 1:59:19 PM
Design Code Reference Document	ASCE7-10
Risk Category	II
Site Class	D - Stiff Soil

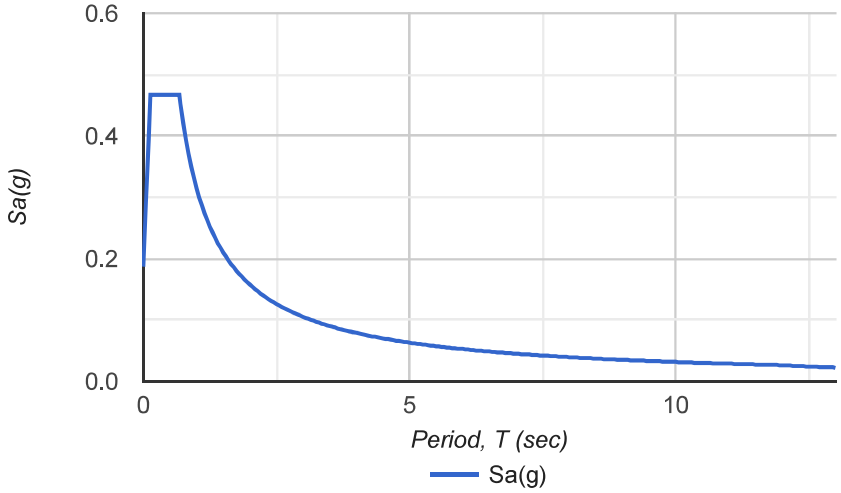
Type	Value	Description
S_S	0.501	MCE_R ground motion. (for 0.2 second period)
S_1	0.249	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.701	Site-modified spectral acceleration value
S_{M1}	0.473	Site-modified spectral acceleration value
S_{DS}	0.467	Numeric seismic design value at 0.2 second SA
S_{D1}	0.315	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1.399	Site amplification factor at 0.2 second
F_v	1.903	Site amplification factor at 1.0 second
PGA	0.161	MCE_G peak ground acceleration
F_{PGA}	1.479	Site amplification factor at PGA
PGA_M	0.238	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	0.501	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.426	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.249	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.217	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	1.175	Mapped value of the risk coefficient at short periods
C_{R1}	1.146	Mapped value of the risk coefficient at a period of 1 s

MCER Response Spectrum



Design Response Spectrum



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Project No. E9150-04-01
March 24, 2020

Raney Planning & Management, Inc.
1501 Sports Drive, Suite A
Sacramento, California 95834

Attention: Mr. Rod Stinson

Subject: THE PRESERVE
GRANT LINE ROAD AND RAYMER WAY
RANCHO CORDOVA, CALIFORNIA
GEOTECHNICAL PEER REVIEW

References: *Geology and Soils for The Preserve, Grant Line Road and Raymer Way, Rancho Cordova, California,* prepared by Youngdahl Consulting Group, Inc., dated June 2019 (YCG Project No. E17440.001).

Dear Mr. Stinson:

In accordance with your authorization of our proposal dated April 8, 2019, we have prepared this correspondence to present the results of our geotechnical peer review for the subject residential development in Rancho Cordova.

Our peer review was performed to provide a professional opinion on the appropriateness and adequacy of the referenced geotechnical report with respect to project conditions, regulatory requirements, and industry standards of practice. Our scope of geotechnical services consisted of:

- Performing a site visit to observe current site conditions.
- Reviewing the referenced geotechnical report and published documents, geologic maps and other geological and geotechnical literature pertaining to the site to aid in evaluating soil and geologic conditions.
- Preparing the correspondence.

SITE AND PROJECT DESCRIPTION

The site is comprised of six adjacent parcels (Sacramento County APN 072-0300-001, -002, -005, -008, -010 and -011) totaling approximately 285 acres on the western side of Raymer Way and Grant Line Road. The irregularly shaped site abuts the north and northeastern sides of the Somerset Ranch residential development. WGS 84 (Google Earth) site coordinates are N 38.5766°, W -121.1956°. Site topography generally consists of rolling hills and seasonal drainages. Morrison Creek enters near the northeast corner of the site and flows offsite near the middle of the western boundary. Three residences with associated ancillary structures are present in the southwest portion of the site – two on the southern side of Morrison Creek and one on the northern side.

Geologic mapping by the California Geological Survey (CGS) and United States Geological Survey (USGS) indicates the site is underlain by Tertiary age Laguna formation, an older consolidated alluvial deposit, and is located outside of the mapped area of dredge tailings that covers much of Rancho Cordova. The Morrison Creek drainage is mapped as Quaternary age alluvium. Artificial fills related to development of the existing residential properties, roadways and small stock ponds are also present.

We understand the project will rezone the property from agricultural and industrial land use to residential. The planned development will include 434 single-family lots, parks, 180 acres of nature preserve, and all related infrastructure including a municipal sanitary sewer system. The nature preserve will ultimately be transferred to a third-party conservation entity.

DISCUSSION

The referenced report was prepared to evaluate potential soils and geologic impacts from the planned project, as outlined in the Environmental Checklist Form in California Environmental Quality Act (CEQA) Appendix G for initial studies. The report also evaluates the potential loss of mineral resources based on mapping by the California Division of Mines and Geology (now CGS) and the City of Rancho Cordova General Plan.

We have reviewed the referenced report and conducted a site reconnaissance. Our observations at the site generally supported the above-described geologic conditions and those outlined in the referenced report. Based on our observations at the site and our subsequent review, it is our opinion that the report adequately addresses the soils, geologic and mineral resources items in the Environmental Checklist Form.

LIMITATIONS AND CLOSURE

Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices used in the site area at this time. No warranty is provided, express or implied.

Should you have any questions regarding this correspondence, or if we may be of further service, please contact the undersigned at your convenience.

Sincerely,

GEOCON CONSULTANTS, INC.

DRAFT

Shane Rodacker, GE
Senior Engineer

(1/e-mail) Addressee

Appendix G

PHASE I ENVIRONMENTAL SITE ASSESSMENT
THE PRESERVE
SACRAMENTO COUNTY APNS 072-0300-001, -002, -005, -008, -010 and 073-0010-011
RANCHO CORDOVA, CALIFORNIA

Prepared For

Winn Communities
1130 Iron Point Road, Suite 150
Folsom, California 95630

Prepared By

Youngdahl Consulting Group, Inc.
1234 Glenhaven Court
El Dorado Hills, California 95762

Project No. E17440.002
June 2019

YOUNGDAHL
CONSULTING GROUP, INC.

Building Innovative Solutions

YOUNGDAHL CONSULTING GROUP, INC.
Building Innovative Solutions
1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net
35 YEARS

Winn Communities
1130 Iron Point Road, Suite 150
Folsom, CA 95630

Project No. E17440.002
5 June 2019

Attn: Mr. Daron Anderson

Subject: **THE PRESERVE**
Grant Line Road & Raymer Way, Rancho Cordova, California
Phase I Environmental Site Assessment

As requested, Youngdahl Consulting Group, Inc. (Youngdahl) has performed a Phase I Environmental Site Assessment (ESA) for the Preserve project, located west of Grant Line Road and north of Raymer Way in Rancho Cordova, California (Subject Property). Youngdahl identified recognized environmental conditions in connection with the subject property.

The trichloroethylene contamination plume from the Aerojet General Corporation Superfund site located north of the subject property encroaches onto some of the northern parcels of the subject property at a groundwater concentration above maximum contaminant levels creating a potential soil vapor intrusion scenario, which is considered a REC. Two steel pipes were observed protruding out of the ground within parcel 073-0010-011 (3450 Grant Line Road) and have a potential to be connected to an underground storage tank (UST), which is considered a REC. The residence and outbuildings within APN 072-0300-008 (12535 Douglas Road) were built sometime between 1975 and 1980, and the structures and soils adjacent to these structures have potential for containing lead-based paint; this has been identified to be a REC. Also, within APN 072-0300-008, an unknown underground system is present north-adjacent to an old shed which is considered a REC. All residences and major outbuildings of wood construction on the subject property besides within APN 072-0300-002 (12565 Douglas Road, Divine Property) have the potential for termiticides present in adjacent soils and are considered RECs. Furthermore, no historic RECs (HRECs) or controlled RECs (CRECs) were identified in connection with the property.

This Phase I Environmental Site Assessment has been completed in accordance to the ASTM Practice E 1527-13. Youngdahl Consulting Group, Inc. declares that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Very truly yours,
Youngdahl Consulting Group, Inc.

Dennis S. Eck
Staff Geologist

Reviewed by:

David C. Sederquist, C.E.G, C.H.G.
Senior Engineering Geologist/Hydrogeologist

CERTIFIED ENGINEERING GEOLOGIST
DAVID C. SEDERQUIST
NO. 2133
EXPIRATION DATE
9-30-20
STATE OF CALIFORNIA

Distribution: 1 PDF: Client

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Privileged & Confidential

THE PRESERVE
SACRAMENTO COUNTY APNS
072-0300-001, -002, -005, -008, -010 and 073-0010-011
RANCHO CORDOVA, CALIFORNIA 95742

EXECUTIVE SUMMARY

The property description referred to herein is based on a Sacramento Assessor's Parcel Map and on a site reconnaissance performed by representatives of Youngdahl Consulting Group, Inc. (Youngdahl). These were also the basis for the "Vicinity Map" - Figure 1. The subject site is irregular in shape, consists of 283.5 acres of land, and is assigned the following Sacramento County Assessor's Parcel Numbers (APNs):

- 072-0300-001 (12555 Grant Line Road)
- 072-0300-002 (12565 Douglas Road, Divine Property)
- 072-0300-005 (12525 Douglas Road, Whitlow Property)
- 072-0300-008 (12535 Douglas Road)
- 072-0300-010 (No Address)
- 073-0010-011 (3450 Grant Line Road)

The subject property is primarily used for grazing land and residential homes with associated outbuildings within parcels 072-0300-002, -005, -008 and 073-0010-011. An orchard was observed in the northeastern corner of the subject site. The site is also located near known contamination areas associated with the Aerojet General Corporation National Priorities List Superfund Site (Aerojet General Corp.), and a monitoring well associated with the Superfund site was observed within subject property boundaries.

Adjacent Properties
North: Vacant land currently being mined for aggregate.
East: Grant Line Road and Teichert Aggregate Plant.
South: Residential Subdivision.
West: Vacant land.

Site Assessor
A site reconnaissance visit was conducted on 9 May 2019 by Mr. Dennis S. Eck, Youngdahl Consulting Group, Inc., (916) 933-0633, dse@youngdahl.net.

EP Certification
An environmental professional (EP) is defined as a person meeting the education, training, and experience requirements set forth in 40 CFR § 312.10(b). We declare that, to the best of our professional knowledge and opinion, we meet the definition of EP as defined in 40 CFR § 312.10 and we have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property.

AAI Certification
This Phase I Environmental Site Assessment (ESA) was conducted according to the American Society for Testing and Materials (ASTM) Designation E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Phase I Standards). The ASTM E1527-13 standard is consistent with the requirement of the All Appropriate Inquiry (AAI) rule in Title 40 of the Code of Federal Regulations (40 C.F.R. § 312.10).

Data Gaps

According to § 3.3.20 of ASTM Standard E 1527-13 a data gap is a lack of or inability to obtain information required by the ASTM Standard despite good faith efforts to gather same. Data gaps may result from incompleteness in any of the activities required by the ASTM Standard. It is our opinion that no significant data gaps were identified.

Summary and Opinion

Recognized environmental conditions (RECs) are defined in the ASTM Phase I Standards to mean "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 post a material threat of a future release to the environment."

A contaminant plume of trichloroethylene (TCE) was discovered to encroach within some of the northern parcels. The 5 parts per billion (ppb) contour of TCE (the maximum contaminant level) extends to onsite and adjacent monitoring wells, but does not extend to any domestic wells identified on the subject property. **Although existing domestic wells aren't necessarily impacted, the presence of TCE within subject property boundaries has potential to create a soil vapor intrusion scenario and is considered a REC.**

Two steel pipes were observed protruding out of the ground within parcel 073-0010-011 (3450 Grant Line Road). An inactive well was also observed, and we understand that is currently permitted as inactive. **It is our opinion that the two protruding pipes have potential to be connected to an underground storage tank (UST), which is considered a REC**. The orchard that occupies a portion of this parcel and parcel 073-0010-010 was planted sometime between 1980 and 1984, as indicated by the historical aerial photography and topographic maps, which means that lead arsenate and organochlorine pesticides were not likely used.

The residence and outbuildings within APN 072-0300-008 (12535 Douglas Road) were built sometime between 1975 and 1980, and **the structures and soils adjacent to these structures have potential for containing lead-based paint; this has been identified to be a REC. Within APN 072-0300-008 is an unknown underground system found adjacent to the shed located north of the residence and a 55-gallon drum northeast from the residence with an unknown liquid inside; these are considered RECs if these vessels were used for fuel storage.**

All residences and major outbuildings of wood construction on the subject property besides within APN 072-0300-002 (12565 Douglas Road, Divine Property) have the potential for termiticides present in adjacent soils and are considered RECs.

Historic recognized environmental conditions (HRECs) is a term used to state that the property only includes a resolved or closed out REC that has been completely resolved ("clean closure") with no restrictions. **No HRECs were identified.** The term controlled REC (CREC) describes closed RECs that are managed under an activity and use limitation (AUL). **No CRECs were identified.**

Recommendations

It is the opinion of the Youngdahl Consulting Group Inc. that the following recommended actions be conducted for the identified RECs:

APN & Address	Identified REC	Recommendation
072-0300-001 (12555 Grant Line Road)	TCE groundwater plume identified by on-site monitoring well.	We recommend that a soil vapor investigation consisting of soil vapor sampling be conducted on the subject property.
072-0300-002 (12565 Douglas Road, Divine Property)	No RECs identified.	No recommendations.
072-0300-005 (12525 Douglas Road, Whitlow Property)	Potential termiticides within soils adjacent to the residence.	We recommend soil sampling near the footprint of the home at a depth of approximately 1 foot to be analyzed for termite pesticides.
072-0300-008 (12535 Douglas Road)	Lead based paint and termiticides in soils adjacent to all buildings. ACBM within all buildings. 55-gallon drum with unknown liquid. Potential underground tank/sump adjacent to shed north of residence. Potential vapor intrusion scenario from the TCE groundwater plume.	We recommend investigation of the potential underground system. Soils adjacent to the buildings should be sampled for total lead in surface soils and termite pesticides at a depth of approximately 1 foot. ACBM should be investigated at the main residence and shed northwest of the residence by a licensed asbestos contractor. Soil vapor sampling as part of a soil vapor intrusion investigation should be conducted.
072-0300-010 (No Address)	No RECs identified.	No recommendations.
073-0010-011 (3450 Grant Line Road)	Two pipes observed protruding from the ground south of the orchard and west from the former residence. Potential vapor intrusion scenario from the TCE groundwater plume.	The pipes are potentially connected to a UST and should be investigated. Soil vapor sampling as part of a soil vapor intrusion investigation should be conducted.

Additionally, all inactive wells that are not planned for future use should be destroyed per Sacramento County requirements. Domestic wells were observed to be within parcels 073-0010-011 (permitted inactive), 072-0300-002, 072-0300-005, and 072-0300-008.

1.0 INTRODUCTION

1.1 Purpose

This Phase I ESA was conducted according to the American Society for Testing and Materials (ASTM) Designation E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Phase I Standards). The ASTM E1527-13 standards are consistent with the requirement of the All Appropriate Inquiry (AAI) rule in Title 40 of the Code of Federal Regulations (40 C.F.R. § 312.10).

The significant changes included in ASTM 1527-13 (approved December 2013) are as follows:

a) The definition of a recognized environmental condition (REC) has been narrowed to exclude a release inside a building from a source inside a building;
b) The term historic recognized environmental condition (HREC) has been clarified to state that it only includes a resolved or closed out REC that has been completely resolved ("clean closure") with no restrictions;
c) The term controlled REC (CREC) for closed RECs that are managed under an activity and use limitation (AUL) has been added;
d) If the target property or any of the adjoining properties is identified on one or more of the standard environmental record sources, pertinent regulatory files and/or records associated with the listing should be reviewed. Language has been added to Section 8.2.2 Regulatory File Reviews with the intent of having the environmental professional explain in greater detail their rational for when a regulatory file review is not warranted rather than simply stating that it is not a concern. "…the environmental professional must explain within the report the justification for not conducting a regulatory file review."
e) Language has been added to include soil vapor as one of the pathways of contamination to the subject property, along with ground water and soil. The soil vapor contaminant pathway needs to be considered in evaluation of RECs or other environmental concerns.

The ASTM practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability. The purpose of this Phase I ESA was to identify recognized environmental conditions which may affect the property. Recognized environmental conditions are defined in the ASTM Phase I Standards to mean "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 post a material threat of a future release to the environment". The term "recognized environmental condition" is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. De minimis conditions are not recognized environmental conditions.

Controlled substances (i.e. illegal drugs) are not included within the scope of this standard. Petroleum products are included within the scope of this practice because they are of concern with respect to many parcels of commercial real estate and current custom and usage is to include an inquiry into the presence of petroleum products when doing an ESA of commercial real estate. This practice does not address requirements of any state or local laws or of any federal laws other than the appropriate inquiry provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)'s landowner liability protection. Users are cautioned that federal, state, and local laws may impose environmental assessment obligations that are beyond the scope of this practice. Users should also be aware that there are likely to be other legal obligations with regard to hazardous substances or petroleum products discovered on the property that are not addressed in this practice and that may pose risks of civil and/or criminal sanctions for non-compliance. The scope of this practice includes research and reporting requirements that support the user's ability to qualify for landowner liability protection. As such, sufficient documentation of all sources, records, and resources utilized in conducting the inquiry required by this practice must be provided in the written report.

1.2 Detailed Scope of Services

This scope of services is site specific in that it relates to assessment of environmental conditions on a specific parcel of commercial real estate. The Phase I ESA will be performed by

an environmental professional. An environmental professional (EP) is defined as a person meeting the education, training, and experience requirements set forth in 40 CFR § 312.10(b). The scope of services for this Phase I ESA is as follows:

Government Records Review: Standard environmental record sources, including Federal, Tribal, and State lists as well as local sources of environmental records were reviewed. We authorized Environmental Data Resources (EDR) to conduct a search of specified government databases and produce a map-based radius search report which would identify sites within the approximate minimum distances pursuant to the ASTM E1527-13 Standard.

Review of Historical Sources: Historical records that may have been reviewed include, but are not limited to, aerial photographs, fire insurance (Sanborn®) maps, building department records, chain-of-title documents, city directory abstracts, land use records, and USGS Topographic Maps. The AAI rule requires that historical documents be reviewed as far back in time as the property contained structures or the property was used for agricultural, residential, commercial, industrial, or governmental purposes. Under the AAI rule, historical sources of information must be reviewed as far back as 1940. The AAI rule does not specify a research interval for reviewing historical records.

Site Reconnaissance: A site reconnaissance visit was conducted on 9 May 2019 by Mr. Dennis S. Eck, dse@youngdahl.net.

Interviews: Prior to the site visit, the Client was asked to identify a person with good knowledge of the property (the key site manager). A Phase I ESA Questionnaire completed by the Owner's representative to facilitate the collection of information is provided in Appendix A. The AAI rule requires interviews be conducted with the current owner(s) and occupant(s) of the subject property. The AAI rule also requires that additional interviews be conducted with current and past facility managers, past owners, operators or occupants of the property, and past employees, as necessary to meet the objectives of the AAI rule. The AAI rule allows the environmental professional to determine whether such interviews are necessary.

Identify Data Gaps: If a data failure is encountered, the report shall document the failure and, if any of the standard historical sources were excluded, the environmental professional will give the reasons for their exclusion. If data failure represents a significant data gap, the report shall comment on the impact of the data gap on the ability of the environmental professional to identify recognized environmental conditions. If the data gaps are found, the environmental professional can and does not warrant nor guarantee that no significant events, releases, or conditions arose during the periods of such data gaps.

Evaluation and Report Preparation: The findings, opinions, and conclusions in the Phase I ESA report are supported by documentation. The report: (1) describes all services performed; (2) has a findings section which summarizes known or suspect environmental conditions associated with the property, and which may include recognized environmental conditions, historical recognized environmental conditions, and de minimis conditions; (3) includes Youngdahl Consulting Group Inc.'s opinion(s) of the impact on the property of the known or suspect environmental conditions identified in the findings section as well as the logic and reasoning used in evaluating information collected during the course of the investigation; and (4) includes a conclusions and recommendations section that summarizes the recognized environmental conditions connected with the property and presents recommendations to address those conditions. The report will include an analysis of the relationship of the purchase price of the subject property to the fair market value of the property, if it were not contaminated.

Report Shelf Life: Under the AAI rule, a prospective property owner may use a Phase I ESA Report without having to update any information collected as part of the inquiry: (1) if the all appropriate inquiries investigation was completed less than 180 days prior to the date of acquisition of the property or (2) if the Phase I ESA report was prepared as part of a previous all appropriate inquiries investigation and was completed less than 180 days prior to the date of acquisition of the property. A prospective property owner may use a previously conducted Phase I ESA Report: (1) if the Phase I ESA report was prepared as part of a previous all appropriate inquiries investigation for the same property; and (2) if the information was collected or updated within one year prior to the date of acquisition of the property; and (3) certain aspects of the previously conducted report are conducted or updated within 180 days prior to the date of acquisition of the property. These aspects include the interviews, on-site visual inspection, the historical records review, the search for environmental liens, and the declaration by the environmental professional responsible for the assessment or update.

1.3 Significant Assumptions, Limitations, and Exceptions

This report and review of the subject property is limited in scope. All appropriate inquiry does not mean an exhaustive assessment of a clean property. There is a point at which the cost of information obtained or the time required to gather it outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. One of the purposes of the ASTM 1527-13 practice is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing an ESA and the reduction of uncertainty about unknown conditions resulting from additional information. The appropriate level of inquiry will be guided by the type of property subject to assessment, the expertise and risk tolerance of the user, and the information developed in the course of the inquiry. This type of investigation is undertaken with the risk that the presence, full nature, and extent of contamination would not be revealed by visual observation and review of available data alone. The findings presented in this report were based on field observations and review of available data. Therefore, the data obtained is clear and accurate only to the degree implied by the sources and methods used. The information presented herewith was based on professional interpretation and on the data obtained. A review of regional radon values was performed as part of this study. A general discussion of the potential for asbestos-containing building material or lead-based paint to be present on the subject property is also included as part of this study.

1.4 Special Terms and Conditions and/or Additional Services

A Phase I ESA meeting or exceeding the ASTM 1527-13 practice and completed less than 180 days prior to the date of acquisition (the date on which a person acquires title to the subject property) or the date of the intended transaction is presumed to be valid. If within this period the assessment will be used by a different user than the user for whom the assessment was originally prepared, the subsequent user must also satisfy the User's Responsibilities set forth in Section 1.5. Users and environmental professionals may use information in prior environmental site assessments provided such information was generated as a result of procedures that meet or exceed the requirements of ASTM 1527-13.

1.5 User Responsibilities

The user should provide reasonably ascertainable land title records and judicial records for review for the existence of environmental liens or activity and use limitations (AUL), if any, that are currently recorded against the property. AULs are an explicit recognition by a federal, tribal, state, or local regulatory agency that residual levels of hazardous substances or petroleum products may be present on a property, and that unrestricted use of the property may not be acceptable. If the user is aware of any specialized knowledge or experience that is material to recognized environmental conditions in connection with the property, it is the user's

responsibility to communicate any information based on such specialized knowledge or experience to the environmental professional, and before the site reconnaissance is conducted.

In a transaction involving the purchase of a parcel of commercial real estate, the user shall consider the relationship of the purchase price of the property to the fair market value of the property if the property was not affected by hazardous substances or petroleum products. The user should try to identify an explanation for a lower price which does not reasonably reflect fair market value if the property were not contaminated, and make a written record of such explanation. If the user is aware of any commonly known or reasonable ascertainable information within the local community about the property that is material to recognized environmental conditions in connection with the property, it is the user's responsibility to communicate such information to the environmental professional before the site reconnaissance is conducted.

1.6 Reliance

This Phase I ESA has been prepared for and is intended for the use of Winn Communities and their consultants. This report is valid as of the date stated on the document; the report should not be relied upon for information concerning changes in the condition of the property after the report was prepared.

2.0 SITE INFORMATION

2.1 Site Description

The property description referred to herein is based on a Sacramento Assessor's Parcel Map and on a site reconnaissance performed by representatives of Youngdahl Consulting Group, Inc. (Youngdahl). These were also the basis for the "Vicinity Map" - Figure 1. The subject site is irregular in shape, consists of 283.5 acres of land, and is assigned the following Sacramento County Assessor's Parcel Numbers (APNs):

- 072-0300-001 (12555 Grant Line Road)
- 072-0300-002 (12565 Douglas Road, Divine Property)
- 072-0300-005 (12525 Douglas Road, Whitlow Property)
- 072-0300-008 (12535 Douglas Road)
- 072-0300-010 (No Address)
- 073-0010-011 (3450 Grant Line Road)

The subject property is primarily used for grazing land and residential homes with associated outbuildings are within parcels 072-0300-002, -005, -008 and 073-0010-011. An orchard was observed in the northeastern corner of the subject site. The site is also located near known contamination areas associated with the Aerojet General Corporation National Priorities List Superfund Site (Aerojet General Corp.), and a monitoring well associated with the Superfund site was observed within subject property boundaries.

2.2 Legal Description

This report presents the results of the Phase I Environmental Site Assessment (ESA) performed on Sacramento County APNs 072-0300-001, -002, -005, -008, -010 and 073-0010-011.

2.3 Environmental Liens or Activity and Use Limitations

A review of the title reports for each parcel and the completed environmental questionnaires (Appendix A) showed no indication of environmental liens or activity and use limitations for the properties (Appendix A).

2.4 Specialized Knowledge and Commonly Known or Reasonably Ascertainable Information

Mr. Whitlow and Mr. Divine indicated specialized knowledge of their respective properties on the completed questionnaires (Appendix A); Mr. Carpenter did not indicate specialized knowledge of the remaining parcels on his completed questionnaire (Appendix A).

2.5 Valuation Reduction for Environmental Issues

Mr. Divine marked "Unknown" for his parcel to the question regarding valuation reduction on the completed questionnaire (Appendix A). Mr. Whitlow and Mr. Carpenter marked "No" for the remaining parcels on the completed questionnaires (Appendix A).

2.6 Reasons for Performing the Phase I ESA

The user, Winn Communities, requested the completion of the Phase I ESA per ASTM E1527-13.

3.0 INTERVIEWS

3.1 Interviews with Past and Present Owners, Key Site Manager, and/or Occupant

072-0300-005 (12525 Douglas Road, Whitlow Property)
Mr. David Whitlow, property owner, was contacted by phone regarding this parcel. He informed us that they are currently in Missouri and are not full-time residents. A rancher who uses the property for grazing is the only individual currently taking care of the property. He also informed us that no other changes have occurred since the last site reconnaissance by Youngdahl in 2018.

072-0300-002 (12565 Douglas Road, Divine Property)
Mr. David Divine, property owner, was contacted by phone regarding this parcel. Mr. Divine is the current property owner and had mentioned that no changes have occurred since the last site visit by Youngdahl. When asked about the stained soils near the east garage, Mr. Divine mentioned that any staining may be from washing the lawnmower, which occurs near the east garage. Mr. Divine also informed us that the property at 072-0300-008 (12535 Douglas Road) was owned by a Mr. Tony Fagundes until approximately 2009. Mr. Divine mentioned that he helped Mr. Fagundes with some of the buildings on his property and that any 55-gallon drums may have been used for diesel fuel for a tractor. A number for Mr. Fagundes was provided to us.

072-0300-008 (12535 Douglas Road)
Mr. Tony Fagundes, past owner, was contacted by phone regarding this parcel. Mr. Fagundes informed us that he had lived at the property for 27 years prior to moving to the Auburn, CA area. He primarily used the property for raising farm animals and minor agriculture as dry crop wheat near the existing home. The west building was a workshop and garage. He also mentioned having a chicken coop and a stable building, located north of the residence. He had no information about the potential holding tank adjacent to the stable building. The domestic well located east of the home was fitted with a pressure system and filter which was also sampled monthly while Mr. Fagundes resided at the property. This was due to the potential encroachment of the Aerojet property contamination plume. Mr. Fagundes also mentioned that any 55-gallon drums he had on-site would have been used for mineral oil which is used in animal feed.

Mr. George Carpenter, Vice President, Winn Communities
Mr. Carpenter was contacted by phone regarding the remaining parcels. He mentioned that the inactive water well on 3450 Grant Line Road is planned to be destroyed as part of pre-

construction activities once the project is approved; also, the building was demolished due to a problem with vagrants trespassing and dumping at the property. He also was unaware of any activity and use limitations (AULs) for any of the properties regarding the contamination plume from Aerojet General Corp.

4.0 PHYSICAL AND GEOLOGICAL DESCRIPTION

4.1 Physical Setting Source(s)

Geologic maps and a current United States Geologic Society (USGS) 7.5 Minute Topographic Series Map of the Buffalo Creek Quadrangle, as well as observations made during our site reconnaissance were used to make interpretations regarding the physical setting of the subject property and the surrounding area. The elevation at the subject property ranges from approximately 210 to 260 feet above mean sea level and is located in Township 8 North, Range 7 East, Section 3, Mount Diablo Base & Meridian.

4.2 Regional Geology and Soil Description

The site is located in Rancho Cordova, California, which is found within the Great Valley geomorphic province. This province is an alluvial plain that drains via the Sacramento and San Joaquin Rivers into the San Francisco Bay area. According to the Preliminary Geologic Map of the Sacramento 30' x 60' Quadrangle, California (Gutierrez, 2011), the subject property and vicinity are underlain by the Laguna Formation and a thin strip of Quaternary Alluvium along the central drainage. The Laguna Formation consists of Tertiary age fluvial granitic sands and silts (Schlemon, 2000).

According to the Spring 2017 Department of Water Resources (DWR) well records, one irrigation well is located approximately ½ mile to the southeast. The most recent data obtained from the well on 11 October 2018 shows a groundwater depth of 183 feet below the ground surface (bgs). The sitewide groundwater elevation contour maps produced in 2018 by Geosyntec Consultants show each groundwater layer flowing towards the southwest in the vicinity of the subject property.

The United States Department of Agriculture Natural Resources Conservation Service's Web Soil Survey was accessed on 25 April 2019. Soils present on the site include:

- **7.5 Red Bluff Loam, 2 to 5 percent slopes (Map Unit Symbol 192)**
  Parent Material is alluvium, the unit is well drained, has a medium runoff class, and is prime farmland if irrigated.
- **37.8% Red Bluff-Redding Complex, 0 to 5 percent slopes (Map Unit Symbol 193)** Parent material is alluvium, the unit is well drained, has a medium runoff class, and is not prime farmland.
- **21.5% Hicksville Gravelly Loam, 0 to 2 percent slopes, Occasionally Flooded (Map Unit Symbol 159)** Parent material is alluvium, the unit is moderately well drained, has a medium runoff class, and is considered prime farmland if irrigated.
- **33.2% Redding Gravelly Loam, 0 to 8 percent slopes, MLRA 17 (Map Unit Symbol 198)**
  Parent material is Loamy alluvium over clayey alluvium over cemented alluvium all derived from igneous, metamorphic, and sedimentary rock; the unit is moderately well drained; has a very high runoff class; and is not considered prime farmland.

The Department of Conservation Division of Oil, Gas, and Geothermal Resources' Well Finder was accessed and identified no wells within the vicinity of the subject property.

4.3 Regional Radon Values

Elevated radon gas levels in indoor air are a result of radon moving into buildings from the soil, either by diffusion or flow due to air pressure differences. The ultimate source of radon gas in buildings is the uranium naturally present in rock, water, and soil. Some rock types are known to contain more uranium than others. In California, most uranium deposits are relatively small in aerial extent and are located in rural areas. Consequently, the chance of severe radon levels (>200 pCi/L) occurring in buildings in California should be very low. The following rock units in California contain uranium in concentrations above the crustal average: the Monterey Formation, asphaltic rocks, marine phosphatic rocks, granitic rocks, felsic volcanic rocks, and certain metamorphic rocks. According to EPA publication 402-R-93-025, entitled EPA's Map of Radon Zones, California, dated September 1993, Sacramento County is shown to be in Zone 3. Zone 3 has a predicted average radon screening level of less than 2 Pico Curies per Liter, this is considered to be a low value of geologic radon potential.

The California Department of Health Services, California Indoor Radon Levels Sorted by Zip Code was last updated February 2016. The number of tests does not necessarily represent the number of houses tested. A single house may have had several tests conducted. The table contains both long-term and short-term indoor radon measurements. The California Department of Health Services recommends that you take action to reduce radon levels in your house if they are 4pCi/L or greater. Of the 10 tests conducted for Zip Code 95742, 2 were equal to or greater than 4pCi/L.

4.4 Asbestos Containing Building Materials

Asbestos is a set of six naturally occurring silicate minerals used commercially for their desirable physical properties. They all have in common their eponymous, asbestiform habit: long, thin fibrous crystals. The prolonged inhalation of asbestos fibers can cause serious illnesses including malignant lung cancer, mesothelioma, and asbestosis. Asbestos became increasingly popular among manufacturers and builders in the late 19th century because of its sound absorption, average tensile strength, its resistance to fire, heat, electrical and chemical damage, and affordability. It was used in such applications as electrical insulation for hotplate wiring and in building insulation. When asbestos is used for its resistance to fire or heat, the fibers are often mixed with cement (resulting in fiber cement) or woven into fabric or mats.

Most products manufactured today do not contain asbestos. In the industrialized world, asbestos was phased out of building products mostly in the 1970s with most of the remainder phased out by the 1980s. Asbestos containing building materials in residences includes a variety of products, such as: stipple used in textured walls and ceilings; drywall joint filler compound; asbestos contaminated vermiculite, vinyl floor tile; vinyl sheet flooring; window putty; mastic; cement board; furnace tape; and stucco. Asbestos was used a lot in roofing materials, mainly corrugated asbestos cement roof sheets and asbestos shingles. Other sources of asbestos containing materials include fireproofing and acoustic materials. On July 12, 1989, EPA issued a final rule banning most asbestos-containing products. In 1991, this regulation was overturned by the Fifth Circuit Court of Appeals in New Orleans. As a result of the Court's decision, the following specific asbestos-containing products remain banned: flooring felt, roll board, and corrugated commercial, or specialty paper. In addition, the regulation continues to ban the use of asbestos in products that have not historically contained asbestos, otherwise referred to as "new uses" of asbestos. For buildings constructed prior to 1980 (Code of Federal Regulations 29 CFR 1926.11) all thermal system insulation and surface materials must be designated as presumed asbestos-containing building materials (ACBM) unless proved otherwise through sampling. The residences and associated outbuildings within APN 072-0300-008 (12535 Douglas Road) were built sometime between 1975 and 1980; therefore, there is risk that ACBM is present at these structures. All other structures on the subject property were found to have been built after 1980 and are unlikely to contain ACBM.

4.6 Lead-based Paint

Lead is considered to be a harmful environmental pollutant. In late 1991, the Secretary of the Department of Health and Human Services called lead the "number one environmental threat to the health of children in the United States." Humans are exposed to lead through the air, drinking water, food, contaminated soil, deteriorating paint, and dust. Airborne lead enters the body by breathing or swallowing lead particles or dust once it has settled. Old lead-based paint is the most significant source of lead exposure in the U.S. Lead-based paint in the United States resulted in a court case against the Lead Industries Association. Due in great part to studies carried out by Philip J. Landrigan, paint containing more than 0.06% (by weight of dried product) lead was banned for residential use in the United States in 1978 by the U.S. Consumer Product Safety Commission (16 Code of Federal Regulations CFR 1303). Most homes and other buildings built before 1960 contain heavily leaded paint. Some homes built as recently as 1978 may also contain lead paint. The residence and outbuildings within APN 072-0300-008 (12535 Douglas Road) were built sometime between 1975 and 1980 and potentially contain lead-based paint. The Whitlow property (APN 072-0300-005, 12525 Douglas Road) has a residence and associated outbuildings built sometime between 1980 and 1984; and the Divine property (APN 072-0300-002, 12565 Douglas Road) has a residence that was built in 1994; therefore, there is a low potential risk for lead-based paint.

4.7 Termiticides

Termiticides - organochlorine termiticides (OC termiticides) are a group of persistent pesticides that were formerly used for termite control in and around wooden structures from the mid-1940s to the late 1980s. These OC termiticides used in the past include chlordane, aldrin, dieldrin, heptachlor, and DDT. Chlordane and other organochlorine pesticides (OCPs) were commonly used as termiticides around structures until 1988. Above-ground use of chlordane was phased out between 1978 and 1983 by the United States Environmental Protection Agency (USEPA); although chlordane was used as a termiticide for wooden structures until it was prohibited in 1988. In 2004, the California Department of Toxic Substances Control (DTSC) evaluated OCPs in soil for proposed school sites on residential properties; finding chlordane in 98 percent of the samples, DDT in 95 percent, dieldrin in 71 percent, and heptachlor in 17 percent. DTSC implemented an “Interim Guidance Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers” in 2006. Due to the dates of construction, all wooden structures within the subject property except for the Divine Property (APN 072-0300-002, 12565 Douglas Road) are at risk of having termiticides present.

4.8 Pesticides

Prior to 1950, the use of arsenical pesticides and herbicides as lead arsenate (LA) was the most extensively used of the arsenal insecticides. The search for substitutes for LA began when it was discovered in 1919 that contemporary practices for washing produce were failing to adequately remove As residues (Shepard, 1939). Unfortunately, all of the tested alternative materials were found to provide less effective insect control or were more toxic to plants and animals. No adequate substitutes were found until 1947, when the synthetic organic insecticide dichlorodiphenyltrichloroethane (DDT) was introduced. Lead arsenate use in Washington State, USA, effectively terminated in 1948, when DDT became widely available to the public (Benson et al., 1968). Veneman et al. (1983) stated that LA use ceased in Massachusetts, USA, in the early 1950s. All insecticidal uses of LA in the USA were officially banned on 1 August 1988 (USEPA, 1988), with a comment that all registrations for insecticidal use had lapsed before that date.

Organochlorine pesticides (OCPs) were commonly used in the United States between the 1940s and 1970s for public health vector control, agricultural crop production, and pest control around structures. Although most OCPs were banned or withdrawn from use in the 1970s (including DDT), the compounds remain in the environment where surface soils associated with historical agricultural and termite control pesticides are present (DTSC, 2010).

An orchard is visible starting in the 1984 historical aerial photo at the northeast corner of the subject site within APNs 073-0010-011 (3450 Grant Line Road) and 073-0010-010. The orchard is not shown in the 1980 topographic map. Due to the date in which this orchard was created, it is unlikely that lead arsenate pesticides or OCPs are present.

5.0 HISTORICAL SOURCES REVIEW

All obvious uses of the property shall be identified from the present, back to the property's first developed use, or back to 1940, whichever is earlier. The term "developed use" includes agricultural uses and placement of fill dirt. Standard historical sources shall be reviewed at approximately five-year intervals. In an effort to fulfill due diligence requirements, Youngdahl Consulting Group, Inc. employed the services of Environmental Data Resources, Inc. (EDR) to provide the following standard historical sources: aerial photographs, USGS topographic maps, local city directories, and fire insurance maps (Sanborn Maps). Standard historical sources may also include: property tax files, recorded land title records, building department records, and zoning/land use records.

5.1 Aerial Photographic Review

Aerial photographs for the years 1937, 1952, 1957, 1964, 1966, 1972, 1984, 1993, 1998, 2006, 2009, 2012, and 2016 were provided in the EDR Aerial Photo Decade Package (Appendix B). Interpretations were made in an effort to evaluate former uses of the subject property and adjacent areas, and to determine if any significant topographic or cultural changes have occurred. All photographs were provided at a scale of 1" = 500'. A summary of the photographs reviewed is provided below.

Date	Source	Comments
1937	USDA	The entire subject property consists of vacant land with natural vegetation growth, a creek/drainage (Morrison Creek) is observed to be flowing through the center of the site trending generally northeast-southwest. Grant Line Road is adjacent the northeast corner and continues to the south. The north adjacent property appears to have not been cleared or disced and has more vegetation. The south, west, and east adjacent properties are observed to be vacant.
1952	USGS	Portions of land within the property boundary that are not within major drainages and ephemeral ponds are observed to have been disced. Dredge tailings are visible to the northwest of the subject property.
1957	USDA	No significant changes to the subject property are visible. The southeast adjacent property is observed to be transitioning to be used as an orchard.
1964	USDA	No significant changes to the subject property are visible apart from additional discing. The southeast adjacent property is now a large orchard.
1966	USGS	No changes apart from additional discing of the general area is apparent.
1972	USDA	No changes apart from additional discing of the general area is apparent.

Date	Source	Comments	
1984	USDA	072-0300-002 12565 Douglas Rd (Divine Property)	This parcel is vacant with a section of the south observed to be disced. A residence is observed in the south adjacent parcel.
		072-0300-005 12525 Douglas Rd (Whitlow Property)	A residence, at least two outbuildings, and unknown objects are observed in the east-center of this parcel. Standing water is also visible in the northwest corner. An access road trending north-south is visible to the east of the parcel and continues to the north adjacent parcel.
		072-0300-008 12535 Douglas Rd	A residence is observed in the southwest corner of this parcel. A pond with standing water is observed in the north adjacent property of this parcel.
		073-0010-011 3450 Grant Line Rd	A residence with an outbuilding to its west and other smaller objects are observed in the northeast corner of this parcel. An orchard occupies the area north of the residence, east of Morrison Creek.
		072-0300-010 No Address	The orchard within the west adjacent parcel continues into this parcel.
		072-0300-001 12555 Grant Line Rd	This parcel is vacant with an ephemeral pool in the approximate center.
1993	USDA	072-0300-002 12565 Douglas Rd (Divine Property)	No significant changes observed.
		072-0300-005 12525 Douglas Rd (Whitlow Property)	No significant changes observed.
		072-0300-008 12535 Douglas Rd	One residence and an outbuilding to its north are visible. Several smaller structures, possibly sheds, are visible to the northeast of the residence. Two areas to the southeast and southwest of the residence are observed to have a few rows of unknown crop. The southeast corner of the parcel has standing water within the section of drainage.
		073-0010-011 3450 Grant Line Rd	No significant changes observed.
		072-0300-010 No Address	No significant changes observed. A small structure/object is visible in the north adjacent property.
		072-0300-001 12555 Grant Line Rd	No significant changes observed.
1998	USGS/DOQQ	072-0300-002 12565 Douglas Rd (Divine Property)	A single home surrounded by landscaping is now visible in the center of the parcel. Unimproved access roads and trails are visible running throughout the parcel.

Date	Source	Comments	
		072-0300-005 12525 Douglas Rd (Whitlow Property)	No significant changes observed.
		072-0300-008 12535 Douglas Rd	A building is now visible just northwest from the main residence.
		073-0010-011 3450 Grant Line Rd	No significant changes observed.
		072-0300-010 No Address	No significant changes observed. Two structures are now visible in the north adjacent property.
		072-0300-001 12555 Grant Line Rd	No significant changes observed.
2006	USDA/NAIP	072-0300-002 12565 Douglas Rd (Divine Property)	A fire break has been cleared just north of the residence. An additional structure is visible to the east of the residence. The south adjacent parcel is now partially graded.
		072-0300-005 12525 Douglas Rd (Whitlow Property)	No significant changes observed. The south adjacent parcel is now partially graded.
		072-0300-008 12535 Douglas Rd	No significant changes observed.
		073-0010-011 3450 Grant Line Rd	No significant changes observed.
		072-0300-010 No Address	No significant changes observed.
		072-0300-001 12555 Grant Line Rd	No significant changes observed.
2009	USDA/NAIP	072-0300-002 12565 Douglas Rd (Divine Property)	The terrain is observed to be discolored south of the residence within this parcel. The adjacent southern property has been graded into building pads with paved access roads for a future subdivision.
		072-0300-005 12525 Douglas Rd (Whitlow Property)	No significant changes observed. The adjacent southern property has been graded into building pads with paved access roads for a future subdivision.
		072-0300-008 12535 Douglas Rd	No significant changes observed.
		073-0010-011 3450 Grant Line Rd	No significant changes observed.
		072-0300-010 No Address	No significant changes observed.
		072-0300-001 12555 Grant Line Rd	No significant changes observed.
2012	USDA/NAIP	No significant changes to the parcels within the subject property are observed.	
2016	USDA/NAIP	No significant changes to the parcels within the subject property are observed. The south adjacent property now has residential homes within the partially complete subdivision.	

5.2 Review of Historical and Current USGS Topographic Maps

A topographic map is a color-coded line-and-symbol representation of natural and selected artificial features plotted to a scale. Topographic maps show the shape, elevation, and development of the terrain in precise detail by using contour lines and color-coded symbols. The EDR Historical Topographic Map Report (Appendix B) provided maps dated 1891 to 2012. Interpretations were made in an effort to evaluate former uses of the subject property and adjacent areas, and determine if any significant topographic or cultural changes have occurred.

Date	Map Name	Series	Comments
1891	Sacramento, CA	30 Minute	No features are shown within the subject property boundary. Roads and some drainage features are shown in the north and south portions of the map.
1892-1893	Sacramento, CA	30 Minute	No significant changes to the subject and adjacent properties are shown.
1908	Buffalo Creek, CA	7.5 Minute	Topographic information only extends to the area just west of the subject property and does not include the site. A highway in the south is shown trending east-west.
1916	Buffalo Creek, CA	15 Minute	Another topographic map appears to be stitched to the east and does not appear to match this region. The subject site sill lies within areas with no topographic data.
1941	Folsom, CA	15 Minute	Morrison Creek is shown in the central portion of the subject site trending roughly northeast-southwest. Unimproved and light duty roads are shown throughout the area. A boundary or tract depicting a land grant, mining claim, or donation land claim is shown along the east property boundary, trending northeast-southwest. Mine tailings are shown to the west, north, and east from the subject site. A cluster of buildings is shown in the north portion of the map.
1944	Folsom, CA	15 Minute	No significant changes to the subject and adjacent properties are shown.
1954	Buffalo Creek, CA	7.5 Minute	No significant changes to the subject property are shown. Tailings to the north and west appear more extensive.
1967	Buffalo Creek, CA	7.5 Minute	No significant changes to the subject property are shown. Grant Line Road is shown at the northeast property boundary. Douglas Road is shown south of the subject property. A cluster of large buildings is shown at the intersection of Nimbus Road (shown as private) and Douglas Road, southwest from the subject property.
1975	Buffalo Creek, CA	7.5 Minute	No significant changes to the subject and adjacent properties are shown.
1980	Buffalo Creek, CA	7.5 Minute	An unimproved road and single building are shown in the west side of the subject property within 12535 Douglas Road (072-0300-008). Another building is shown near the northeast corner of the subject property (073-0010-011).

Date	Map Name	Series	Comments
2012	Buffalo Creek, CA	7.5 Minute	Only major roadways, topography, and water features are depicted in this map. Roadways within a small subdivision are shown south of the subject site. An additional subdivision is shown in the southwest corner of the map.

5.3 Historical City Directory Abstract Review

EDR provided the EDR-City Directory Image Report for review and a copy is provided in Appendix B. Building directories including city, cross reference and telephone directories were reviewed, if available, at approximately five-year intervals for the years spanning 1970 through 2013.

Date	Address	Directory Listing
2014	12535 Douglas Road (Subject Property)	Antonio V Fagundes
2014	12565 Douglas Road (Subject Property)	Occupant Unknown
2014	3417 Grant Line Road	Teichert & Son Inc.
2014	3450 Grant Line Road (Subject Property)	Tamra Harper
2010	12525 Douglas Road (Subject Property)	Marcie A. Whitlow
2010	12535 Douglas Road (Subject Property)	Kelly Hogge
2010	12565 Douglas Rd (Subject Property)	3213 Fitzgerald LLC, Scott S. McMullen, Rockford Family Properties LLC.
2010	3417 Grant Line Road (Subject Property)	Teichert & Son Inc.
2010	3450 Grant Line Road (Subject Property)	Tamra Harper
2005	12525 Douglas Road (Subject Property)	Occupant Unknown
2005	12353 Douglas Road (Subject Property)	Lynne M Fagundes
2005	12565 Douglas Road (Subject Property)	David R Divine
2005	3417 Grant Line Road	Teichert Aggregates Corp
2005	3450 Grant Line Road (Subject Property)	Occupant Unknown
2000	12525 Douglas Road (Subject Property)	Daniel L Lehman
2000	12535 Douglas Road (Subject Property)	B Weisker
2000	12565 Douglas Road (Subject Property)	Occupant Unknown
2000	3417 Grant Line Road	American River Aggregates
2000	3450 Grant Line Road (Subject Property)	Jackie L Hussman
1994	12525 Douglas Road (Subject Property)	Danl L Lehman

Date	Address	Directory Listing
1994	3417 Grant Line Road	American River Aggregates, American River Asphalt
1989	11505 Douglas Road	Aerojet Invstmt LTD, Eaton Drilling Co, Primary Electr Cnst, Sac Heat Treat
1989	12525 Douglas Road (Subject Property)	Danl L Lehman
1989	3450 Grant Line Road (Subject Property)	Orville Clark
1985	11505 Douglas Road	Amer Rvr MGF, Cal Mod Inc., Primary Elect Cnst, Sac Heat Treat
1985	12525 Douglas Road (Subject Property)	Danl L Lehman
1985	3450 Grant Line Road (Subject Property)	John Lash
1980	11505 Douglas Road	Building: Acrylic Products, Amer Waste Containr, Amer Waste LQD, American Waste Cont, B&E Iron & Steel, Cal Mod Inc, Cal Rel Able Elec, Carlson Almnm Prdct, Classic Coachworks, Drawers Are Us, EKA Wreckers USA, Engineering Resrch, Extensa Systems, Formula Products, Genrl Elec Med Sts, Haulaway Containers, Instru Spec, Interstate Contrs, J&W Scientific Inc, Keystone Contr Co, Magnum Towers Inc., McDonnell Douglas, Newbel Industries, Peerless Instrument, Reliable Elec Wrks, Security Park, Sloan & Assoc, Trophy Wood Product
1980	12525 Douglas Road (Subject Property)	Danl L Lehman
1980	12535 Douglas Road (Subject Property)	Larry McKenna

5.4 Certified Sanborn Map Report

No Sanborn Map coverage was identified for the subject property.

5.5 Previously Completed Environmental Assessments

Phase I Environmental Site Assessment of 12565 Douglas Road, prepared by EMG Corp., September 2015

This report included the barn structure and green waste disposal areas in the north and south, but did not include the single-family residence. The report identifies the adjacent Aerojet contamination plume, but notes that the project site would not be investigated as a source of the contamination. They concluded that contamination does not pose immediate health risk to future occupants due to the project building not being serviced by potable water. Additionally, it is mentioned that the plume does not extend to the private well located near the residence adjacent to the west. No further action or investigation was recommended regarding the off-site regulatory review.

Phase I Environmental Site Assessment for Divine Property, prepared by Youngdahl Consulting Group Inc., December 2017

This environmental site assessment was conducted on the Divine property at 12565 Douglas Road (APN 072-0300-002) located at the south-center portion of the subject property of this 2019 report. The conclusions of this report were as follows:

"Buried green waste can generate methane gas that can subsequently become a soil gas intrusion hazard when explosive amounts can accumulate. The observed green waste is not buried and is able to vent methane directly to the atmosphere.

Also, a contaminant plume of trichloroethylene (TCE) was discovered near the subject site. The United States Environmental Protection Agency's (USEPA) maximum contaminant level (MCL) for TCE in drinking water is 5 ppb. Although the 5 ppb contour of TCE is present near the northwest corner of the project site, it does not extend to the private well located west of the existing property; therefore, it is our opinion that it does not pose a human health risk. ***No RECs were identified in connection with the subject property.****"*

Unfinalized Phase I Environmental Site Assessment for Douglas 98, prepared by Youngdahl Consulting Group, Inc., May 2018
This assessment was conducted on the Whitlow property located at 12525 Douglas Road (APN 072-0300-005) which is the southwest corner parcel of the subject property of this 2019 report. The RECs discovered for this assessment included the potential presence of lead-based paint and termiticides to be present near the residence, well house, cattle shed, and shed/shop building. Also, there was potential for ACBM within the residence, shop/shed building, and well house which were also considered RECs. Chromated Copper Arsenate within soils adjacent to wood poles observed on this site were considered to be de minimis. The RECs were concluded based off the historic aerial photography and topographic map data provided during preparation of the 2018 report. RECs identified for this current report differ from the conclusions of the former report due to additional data provided by EDR.

6.0 REGULATORY RECORDS REVIEW

The records review consisted of a review of reasonably ascertainable environmental record sources, physical setting sources, and historical use information that will help identify recognized environmental conditions in connection with the property. Reasonably ascertainable record information must be publicly available, obtainable from its source within reasonable time and cost constraints, and be practically reviewable.

6.1 Commercial Database Search Review

In an effort to fulfill due diligence requirements, Youngdahl Consulting Group, Inc. employed the services of Environmental Data Resources, Inc. (EDR) to identify sites listed on regulatory agency databases within approximate minimum search distances from the subject property with potential of existing environmental problems. The term "approximate minimum search distances" means the distances within the area which government records must be reviewed pursuant to ASTM Phase I Standards. The term "minimum search distance" is used in lieu of radius as to include irregularly shaped properties. A current EDR Radius Map with GeoCheck® (EDR Report) was provided by EDR on 1 May 2019 (Appendix C). Included in the report are the dates the original government sources were updated and the dates the sources were last updated by EDR, as well as a list of acronyms used by EDR.

The EDR Radius Map with GeoCheck® (EDR Report) identified seven (7) sites within minimum search distances listed in multiple databases:

- **Aerojet General Corporation**; Highway 50 and Aerojet Road; within subject property. The Aerojet Site is listed in the following databases:

- NPL
- SEMS
- CORRACTS
- RCRA-TSDF
- RCRA-LQG
- US ENG CONTROLS
- USINST CONTROL
- ENVIROSTOR
- SWEEPS UST
- HIST UST
- CA FID UST
- US FIN ASSUR
- ROD
- PRP
- PADS
- CONSENT

- **North Douglas**; NE of Douglas Road; subject property. Listed in the CIWQS database (stormwater plan permits for construction).
- **American River Asphalt**; 3417 Grant Line Road; 333 feet ENE. Listed in the following databases:
  - AST
  - CERZ HAZ WASTE
  - CERS TANKS
  - EMI
  - ENF
  - Sacramento Co. ML
  - NPDES
  - WDS
  - CIWQS
  - CERS
- **Grantline Plant**; 3417 Grant Line Road; 333 feet ENE. Listed in the AST database.
- **Inactive Rancho Cordova Test Site (IRCT);** Nimbus Road; 2246 feet W. This site is listed in the CSP-SLIC database.
- **Automotive Importing MFG Inc.**; 3920 Security Park Drive; 4256 feet SSW. Listed in the following databases:
  - SEMS-ARCHIVE
  - CORRACTS
  - RCRA-TSDF
  - RCRA-SQG
  - HAZNET
  - FINDS
  - ECHO
- **General Electric Medical Systems**; 3920 Security Park Drive; 4256 feet SSW. Listed in the ENVIROSTOR, HWP, and CERS databases.

According to the EDR Report, the subject property contains several small areas that are designated as a wetland, per the National Wetlands Inventory (1994).

Due to poor or inadequate information, EDR is unable to map certain sites. These sites are referred to by EDR as Orphans. No Orphan sites were identified in the EDR Report.
The Aerojet Corporation site boundary encroaches into the subject property in the north-center area and is visible in the EDR Radius Map as a National Priority List Site.

6.2 Review of State and/or Local Government Records

The Sacramento County NextRequest system was used to request any records pertaining to hazardous materials or well records at each individual parcel within the subject property. Records pertaining to the septic system and private well on the subject site were provided for 12525 Douglas Road (Whitlow property), 12535 Douglas Road, and 12565 Douglas Road (Divine property). Records showing a domestic well at 3450 Grant Line Road (073-0010-011) were provided. The well was permitted to be inactive in February 2015. Past sampling of the well for the Aerojet contamination plume showed that the well had trace level hits of N-Nitrosodimethylamine (NDMA) and no volatile organic compounds or perchlorate. The well was sealed in October 2014 and destruction of the well was mentioned in an email correspondent with a deadline of 26 December 2014; the well has yet to be destroyed.

Records were also provided for the Teichert Aggregates plant located at 3417 Grantline Road. Records show that a number of above-ground storage tank (ASTs) are present at the facility and hold a number of different fuels, oils, and lubricants. Past inspection reports were reviewed and no significant violations were discovered; any spills or violations were found to have been corrected to the satisfaction of Sacramento County.

The State of California Water Resources Control Board's GeoTracker database was researched to identify if sites with groundwater contamination exist within the minimum search distances to the subject property (www.geotracker.swrcb.ca.gov). Also, the Department of Toxic Substance Control's (DTSC) Envirostor database was researched for sites of environmental concern near or at the subject property (https://www.envirostor.dtsc.ca.gov/public/). The subject property was not identified on the GeoTracker or Envirostor web sites.

The Fall 2018 iso-Concentration maps by Geosyntec Consultants depicting the extent of contamination of the Aerojet area for trichloroethylene, perchlorate, and N-Nitroso-dimethylamine (NDMA) were reviewed. The NDMA contours do not intersect the subject property. The maps show that the 5 ppb (parts per billion) contour for TCE in groundwater Layers C and D reach monitoring wells OS-10C1/OS-10C2 located in the southwest of parcel 072-0300-001 (12555 Grant Line Road), partially encroaches into parcel 072-0010-011, and continues west through parcel 072-0300-008 to the west adjacent parcel where extraction well 4757 is located. The 50 ppb contour for Layer C encroaches near the northern part of parcel 072-0300-001, near a monitoring well just outside the north property boundary (well OS-5C). The 4 ppb contour for perchlorate in Layer C intersects the subject property at the northeast corner of the site within parcels 072-0010-010 and -011. The maximum contaminant level (MCL) for groundwater and drinking water established by the Environmental Protection Agency (EPA) is 5 ppb for TCE and 6 ppb for perchlorate. Perchlorate is found to be below the MCL at the subject property. Perchlorate and perchlorate anions do not volatilize from water or soil surfaces to air according to the Agency for Toxic Substances and Disease Registry (ATSDR) "Toxicological Profile for Perchlorates," 2008, and was not found to have values for soil vapor or ambient air in screening level criteria tables produced by the EPA and DTSC; perchlorate does not pose a soil vapor intrusion risk. The 5 ppb TCE contour does not intersect any domestic wells within the subject property, but has potential to create a soil vapor intrusion scenario for future development.

According to the Geotracker Website, two Inactive Rancho Cordova Test Sites associated with the past Aerojet Rocketdyne and Boeing activities are located west of the subject property: The Sigma Debris Area and the Antenna Station. Both sites are currently in remediation stages. The Antenna Station Site, located to the northwest, has been designated that No Further Action is necessary as of February 2005, although monitoring and in situ bioremediation continues. The Sigma Debris Area was designated as a No Further Action site in a Remedial Action Plan

and was investigated for soil vapor and contaminated groundwater between 1992 and 2002. Investigation data shows that the site is not a threat to human health and the environment. Monitoring continues as part of the IRCTS as a whole.

The 3920 Security Park Drive site was listed on the Envirostor database. The former General Electric Company Facility was once known as the Administration Area within the Inactive Rancho Cordova Test Site. GE Medical Systems were given authorization to operate a wastewater treatment system and discharge treated wastewater to the facility's septic system and leach field. The treatment system was moved to the neighboring address adjacent to a hazardous waste storage area. An approval of the Closure Certification for the GE facility was issued on June 28, 1991. A Termination of Corrective Action was also issued in July 2009 which was relied almost entirely upon data in a report titled "Remedial Action Plan for the Unsaturated Zone Administration Area IRCTS" dated August 2000 by ENSR.

6.3 Vapor Encroachment Screening

Vapor intrusion is the term used to describe the migration of volatile organic compounds (VOCs) via soil vapor from the sub-surface soil and/or groundwater upward into buildings, potentially causing unacceptable chemical exposure for building occupants. The vapor intrusion pathway is evaluated using the Conceptual Site Model (CSM) and vapor intrusion pathway screening. Volatilization of petroleum products in the subsurface occurs via the volatilization of constituents that are in the dissolved phase (in pore water or groundwater), volatilization from light nonaqueous phase liquid (LNAPL) (either mobile or residual) directly, and volatilization from impacted soil. Once the individual constituents are in the vapor phase, they can continue to migrate in the vadose zone (soil zone between first groundwater and ground surface). Transport will occur through diffusion caused by concentration gradients. The greatest movement will take place in the most permeable materials. If the soil-moisture content in the vadose zone is high, then relatively soluble compounds such as ethanol and MTBE will tend not to stay in the vapor phase, but rather will stay in the soil moisture.

Soil vapor is one of the pathways of contamination to the subject property, along with ground water and soil. ASTM E1527-13 requires that vapor migration be treated no differently than contaminated groundwater. The soil vapor contaminant pathway needs to be considered in evaluation of RECs or other environmental concerns. The ASTM Standard Guide for Vapor Encroachment Screening (VES) on Property Involved in Real Estate Transactions (ASTM E2600-10) is the industry-accepted guidance for using Phase I ESA information to determine if a vapor encroachment condition (VEC) exists at the subject property. EDR's Vapor Encroachment Worksheet was designed to assist parties seeking to meet the search requirements of the ASTM E 2600-10. **The Aerojet Rocketdyne, Inc. site was identified during our VES on the property to have a potential to create a soil vapor intrusion scenario.** A copy of the EDR VES is provided in Appendix D.

7.0 SITE RECONNAISSANCE

7.1 Purpose

A reconnaissance of the subject property and a windshield survey of the surrounding area were conducted by Youngdahl Consulting Group, Inc. on 9 May 2019. Views of the subject property at the time of the reconnaissance visit are presented as Figures 3 - 28.

7.2 Subject Property

Some features discussed in this section are shown on the Site Plan – Figure 2.

APNs 073-0010-011 & -010 (3450 Grant Line Road)
These parcels are adjoining with 073-0010-010 being a small parcel northeast from 073-0010-011. Collectively, they comprise the east portion of the subject site and together are triangular in shape (Figure 2). The majority of 073-0010-011 is vacant grazing land (Fig. 3), but an orchard of olive trees was observed in the northeastern corner of the parcel (Fig. 4, Photo 3). The orchard also occupies the entirety of APN 073-0010-010. Just south of the orchard is an area once occupied by a residence and was observed to have miscellaneous building debris (Fig. 4, Photo 4); no remnant of the building foundation was observed. Wood poles were also observed near the former residence (Fig. 5, Photo 5). More debris and a dilapidated shed were observed west of the location of the former residence (Fig. 5, Photo 6). A standing wood pole was observed just north of the dilapidated shed (Fig. 6, Photo 7). Near the southwest corner of the orchard, a shallow, rectangular pit (Fig 6, Photo 8) and stockpiled material (Fig. 7, Photo 9) was observed near Morrison Creek. More miscellaneous debris was observed within the orchard (Fig. 7, Photos 10 & 11). An inactive domestic well was observed southwest of the former residence location (Fig. 9, Photo 12). Two steel pipes were seen protruding from the ground to the northwest from the dilapidated shed (Fig. 8, Photo 13).

APN 072-0300-002 (12565 Douglas Road, Divine Property)
This parcel occupies the south-center portion of the subject property (Figure 2) and consists of an existing single-family home, a separate garage structure located east of the home (Fig. 9, Photo 14), a small shed just south of the garage outbuilding (Fig. 9, Photo 15), and vacant grazing land to the north and south of the home (Figure 10). Morrison Creek runs through the northern portion of the property, trends generally east-west, and was observed to be dry at the time of our reconnaissance. A fire break was observed north of the home. Oil staining was observed on the graveled area in the vicinity of the east garage building and near stored farm equipment (Figure 11). No large quantities of chemicals and/or fuel were observed in or around the east garage outbuilding. A drastic vegetation change was observed in the southern grazing land, potentially from the previously identified (Youngdahl, 2017) areas where organics were being dumped (Fig. 12, Photo 21). The existing residence is supplied by a well located west of the home; a propane tank was also observed in this area (Fig. 12, Photo 22).

APN 072-0300-005 (12525 Douglas Road, Whitlow Property)
This property comprises the southwest section of the subject property and is primarily grazing land (Fig. 13, Photo 23) with a residence along the east-center property line (Fig. 13, Photo 24). Near the residence is an associated well house to the west and a shop/shed building to the south of the well house. A corrugated metal cattle shed is just west of the residence and associated outbuildings (Fig. 14, Photo 25). The well house is northwest from the home (Fig. 15, Photo 26) and the interior is used as storage and to contain the water well (Fig. 15, Photo 27). A wood pole, concrete pad with concrete-filled steel drums, and remnant concrete foundation for a pole were observed north of the residence in the grazing field (Fig. 15, Photos 28 & 29). Additional wood poles are located in the north-center portion of the subject site at Morrison Creek (Fig. 16, Photo 30). The portion of Morrison Creek was observed to be artificially leveed and dammed (Fig. 16, Photo 31).

APN 072-0300-001 (12555 Grant Line Road)
This parcel is at the north-center portion of the subject site and consists of vacant grazing land (Figure 17). Standing water in a vernal pool was observed in the approximate center of the parcel. A monitoring well was observed near the southwest corner of the parcel (Figure 18).

APN 072-0300-008 (12535 Douglas Road)
This parcel is primarily vacant grazing land in the north (Fig. 19) with a residence and associated outbuildings in the southwest corner and a pond in the southeast corner.

Miscellaneous debris was found to be dumped inside, around, and to the north of the outbuildings. 55-gallon drums observed among the waste to the north of the buildings were found to be primarily used for trash or empty (Fig. 20, Photo 36) except for one drum which was sealed and contained an unknown liquid (Fig. 20, Photo 37). All automotive tanks and parts were observed to be empty (Fig. 21, Photo 38). A small stockpile with discarded tires was also found in the field (Fig. 21, Photo 39). The interior and exterior of the shed located near the debris in the field was filled with more trash and other solid waste; any fuel or chemical containers were empty (Fig. 22). Several sheds and a chicken coop were observed near the residential home which all contained miscellaneous debris and were in late stages of deterioration (Figs. 23, 24, & 25). The western shed had a storage room with miscellaneous items inside (Fig. 25, Photo 47). Underground utilities were observed around the outside walls of the northmost outbuilding including a storage tank of unknown use (Fig. 26). The residence was observed to be vacant and the windows and doors have been boarded up (Fig. 27, Photo 50). A domestic water well was observed just east of the home; a pressure system and filter were in place as a precaution for the contamination plume from the Aerojet General Corp. site (Fig. 27, Photo 51). A pond is created from a section of Morrison Creek being dammed at the southeast corner of the parcel (Fig. 28).

Reconnaissance Item	Observed	Reconnaissance Observations (9 May 2019)
Structures	Yes	**072-0300-001 (12555 Grant Line Road)** None observed. **072-0300-002 (12565 Douglas Road, Divine Property)** Residential home, garage building, & shed. **072-0300-005 (12525 Douglas Road, Whitlow Property)** Residential home, shop/shed, well house, & cattle shed. **072-0300-008 (12535 Douglas Road)** Residential building and multiple outbuildings. **072-0300-010 (No Address)** None observed. **073-0010-011 (3450 Grant Line Road)** Dilapidated shed.
Liquid Storage Systems (UST/AST)	Yes	**072-0300-001 (12555 Grant Line Road)** None observed. **072-0300-002 (12565 Douglas Road, Divine Property)** Tank associated with domestic well. **072-0300-005 (12525 Douglas Road, Whitlow Property)** Tank associated with domestic well **072-0300-008 (12535 Douglas Road)** Underground tank adjacent to shed north of the residence. **072-0300-010 (No Address)** None observed. **073-0010-011 (3450 Grant Line Road)** Pipes coming out of the ground near dilapidated shed are potentially connected to a UST.

Reconnaissance Item	Observed	Reconnaissance Observations (9 May 2019)
Drums	No	**072-0300-001 (12555 Grant Line Road)** None observed. **072-0300-002 (12565 Douglas Road, Divine Property)** None observed. **072-0300-005 (12525 Douglas Road, Whitlow Property)** Concrete filled drums. **072-0300-008 (12535 Douglas Road)** Drums filled with trash and one 55-gallon drum filled with unknown liquid. **072-0300-010 (No Address)** None observed. **073-0010-011 (3450 Grant Line Road)** None observed.
Other Containers	Yes	Miscellaneous containers throughout subject property observed to be of no concern.
PCBs	No.	All existing pole-mounted transformers observed throughout the property were in good shape with no signs of leaks.
Pits/Ponds/Ditches/Caves/Streams/ Lagoons	Yes	Ephemeral ponds throughout the subject property. Morrison Creek is dammed in 072-0300-008 (12535 Douglas Road) and 072-0300-005 (12525 Douglas Road, Whitlow Property), creating ponds.
Stained Soil/Pavement	No	**072-0300-002 (12565 Douglas Road, Divine Property)** Stained soils (de minimis) near east garage building.
Stressed Vegetation	No	None observed.
Solid Waste (Mounds or depressions)	Yes	**072-0300-001 (12555 Grant Line Road)** None observed. **072-0300-002 (12565 Douglas Road, Divine Property)** None observed. **072-0300-005 (12525 Douglas Road, Whitlow Property)** None observed. **072-0300-008 (12535 Douglas Road)** Stockpile of soil with tires in the field northeast from residence. **072-0300-010 (No Address)** None observed. **073-0010-011 (3450 Grant Line Road)** Stockpiles of soil near southwest corner of the orchard.
Waste Water (Discharge into drain/ditch/injection system/stream/adjacent property)	No	None Observed.

Reconnaissance Item	Observed	Reconnaissance Observations (9 May 2019)
Wells (Dry/irrigation/injection/abandoned)	Yes	**072-0300-001 (12555 Grant Line Road)** A monitoring well associated with Aerojet General Corporation. **072-0300-002 (12565 Douglas Road, Divine Property)** Domestic well west of the residence. **072-0300-005 (12525 Douglas Road, Whitlow Property)** Domestic well in well house northwest from the residence. **072-0300-008 (12535 Douglas Road)** Domestic well east of the residence. **072-0300-010 (No Address)** None observed. **073-0010-011 (3450 Grant Line Road)** Domestic well south of the former residence.
Other underground systems	No	**072-0300-001 (12555 Grant Line Road)** None observed. **072-0300-002 (12565 Douglas Road, Divine Property)** None observed. **072-0300-005 (12525 Douglas Road, Whitlow Property)** None observed. **072-0300-008 (12535 Douglas Road)** PVC lines adjacent to the sheds. **072-0300-010 (No Address)** None observed. **073-0010-011 (3450 Grant Line Road)** Two steel pipes protruding from the ground located west of the dilapidated shed.
Septic Systems	Yes	**072-0300-001 (12555 Grant Line Road)** None observed. **072-0300-002 (12565 Douglas Road, Divine Property)** Septic system in lawn north of the residence. **072-0300-005 (12525 Douglas Road, Whitlow Property)** None observed. **072-0300-008 (12535 Douglas Road)** Possible septic tank adjacent to north shed. **072-0300-010 (No Address)** None observed. **073-0010-011 (3450 Grant Line Road)** None observed.

7.3 Adjacent Properties

North: Vacant land currently being mined for aggregate.
East: Grant Line Road and Teichert Aggregate Plant.
South: Residential Subdivision.
West: Vacant land.

8.0 CONCLUSIONS, OPINION, AND RECOMMENDATIONS

This Phase I Environmental Site Assessment (ESA) was performed for the Preserve, which comprises the following Sacramento County Assessor's Parcel Numbers (APNs):

- 072-0300-001 (12555 Grant Line Road)
- 072-0300-002 (12565 Douglas Road, Divine Property)
- 072-0300-005 (12525 Douglas Road, Whitlow Property)
- 072-0300-008 (12535 Douglas Road)
- 072-0300-010 (No Address)
- 073-0010-011 (3450 Grant Line Road)

This Phase I ESA was conducted for the Winn Communities. Our study consisted of a review of environmental record sources, physical setting sources, review of site related documents, historical use information, and a site reconnaissance. We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitation of ASTM Standard Practice E 1527-13. Any exceptions to, or deletions from, this practice are described in Section 1.0 of this report.

8.1 Summary of Historical Subject Property Use Information

Date	Source	Subject Property Observations
1891-2016	Topographic Maps and Aerial Photos	The property had been primarily vacant grazing land with several residences that were constructed starting sometime between 1980 and 1984 with the last residence being built sometime between 1993 and 1998.

8.2 Recognized Environmental Conditions (RECs)

Recognized environmental conditions (RECs) are defined in the ASTM Phase I Standards to mean "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 post a material threat of a future release to the environment."

A contaminant plume of trichloroethylene (TCE) was discovered to encroach within some of the northern parcels. The 5 parts per billion (ppb) contour of TCE (the maximum contaminant level) extends to onsite and adjacent monitoring wells, but does not extend to any domestic wells identified on the subject property. **Although existing domestic wells aren't necessarily impacted, the presence of TCE within subject property boundaries has potential to create a soil vapor intrusion scenario and is considered a REC.**

Two steel pipes were observed protruding out of the ground within parcel 073-0010-011 (3450 Grant Line Road). An inactive well was also observed, and we understand that is currently permitted as inactive. **It is our opinion that the two protruding pipes have potential to be connected to an underground storage tank (UST), which is considered a REC**. The orchard that occupies a portion of this parcel and parcel 073-0010-010 was planted sometime between 1980 and 1984, as indicated by the historical aerial photography and topographic maps, which means that lead arsenate and organochlorine pesticides were not likely used.

The residence and outbuildings within APN 072-0300-008 (12535 Douglas Road) were built sometime between 1975 and 1980, and **the structures and soils adjacent to these structures have potential for containing lead-based paint; this has been identified to be a REC. Within APN 072-0300-008 is an unknown underground system found adjacent to the shed located north of the residence and a 55-gallon drum northeast from the residence with an unknown liquid inside; these are considered RECs if these vessels were used for fuel storage.**

All residences and major outbuildings of wood construction on the subject property besides within APN 072-0300-002 (12565 Douglas Road, Divine Property) have the potential for termiticides present in adjacent soils and are considered RECs.

8.3 Historic Recognized Environmental Conditions (HRECs)

Historic recognized environmental conditions (HRECs) is a term used to state that the property only includes a resolved or closed out REC that has been completely resolved ("clean closure") with no restrictions. **This assessment did not identify any HRECs in connection with the subject property.**

8.4 Controlled Recognized Environmental Conditions (CRECs)

The new term controlled REC (CREC) describes closed RECs that are managed under an activity and use limitation (AUL). **This assessment did not identify any CRECs in connection with the subject property.**

8.5 Recommendations

It is the opinion of the Youngdahl Consulting Group Inc. that the following recommended actions be conducted for the identified RECs:

APN & Address	Identified REC	Recommendation
072-0300-001 (12555 Grant Line Road)	TCE groundwater plume identified by on-site monitoring well.	We recommend that a soil vapor investigation consisting of soil vapor sampling be conducted on the subject property.
072-0300-002 (12565 Douglas Road, Divine Property)	No RECs identified.	No recommendations.
072-0300-005 (12525 Douglas Road, Whitlow Property)	Potential termiticides within soils adjacent to the residence.	We recommend soil sampling near the footprint of the home at a depth of approximately 1 foot to be analyzed for termite pesticides.
072-0300-008 (12535 Douglas Road)	Lead based paint and termiticides in soils adjacent to all buildings. ACBM within all buildings. 55-gallon drum with unknown liquid. Potential underground tank/sump adjacent to shed north of residence. Potential vapor intrusion scenario from the TCE groundwater plume.	We recommend investigation of the potential underground system. Soils adjacent to the buildings should be sampled for total lead in surface soils and termite pesticides at a depth of approximately 1 foot. ACBM should be investigated at the main residence and shed northwest of the residence by a licensed asbestos contractor. Soil vapor sampling as part of a soil vapor intrusion investigation should be conducted.
072-0300-010 (No Address)	No RECs identified.	No recommendations.

073-0010-011 (3450 Grant Line Road)	Two pipes observed protruding from the ground south of the orchard and west from the former residence. Potential vapor intrusion scenario from the TCE groundwater plume	The pipes are potentially connected to a UST and should be investigated. Soil vapor sampling as part of a soil vapor intrusion investigation should be conducted.

Additionally, all inactive wells that are not planned for future use should be destroyed per Sacramento County requirements. Domestic wells were observed to be within parcels 073-0010-011 (permitted inactive), 072-0300-002, 072-0300-005, and 072-0300-008.

8.6 Data Gaps

According to § 3.3.20 of ASTM Standard E 1527-13 a data gap is a lack of or inability to obtain information required by the ASTM Standard despite good faith efforts to gather same. Data gaps may result from incompleteness in any of the activities required by the ASTM Standard. It is our opinion that no significant data gaps were identified.

9.0 SELECTED REFERENCES

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3. California Department of Water Resources (DWR) – Water Data Library, Groundwater Level Data (1953-2017).

4. Churchill, Ronald, Geologic Controls on the Distribution of Radon in California for the Department of Health Services, 25 January 1991, revised December 2003.

5. Custom Soil Resource Report for 12565 Douglas Road, Sacramento County, California, National Resource Conservation Service Web Soil Survey.

6. Gutierrez, C.I., Preliminary Geologic Map of the Sacramento 30’ x 60’ Quadrangle, CA., California Geologic Survey, 2011.

7. Shepard, H. (1939). The chemistry and toxicology of insecticides. The Chemistry and Toxicology of Insecticides.

8. Shlemon, R.J., Horner, T.C., and Florsheim, J., 2000, Quaternary Geology of the Sacramento Area: Association of Engineering Geologists, Sacramento Section Field Trip Guidebook, March 25, 2000, 38 p. with references as attachments.

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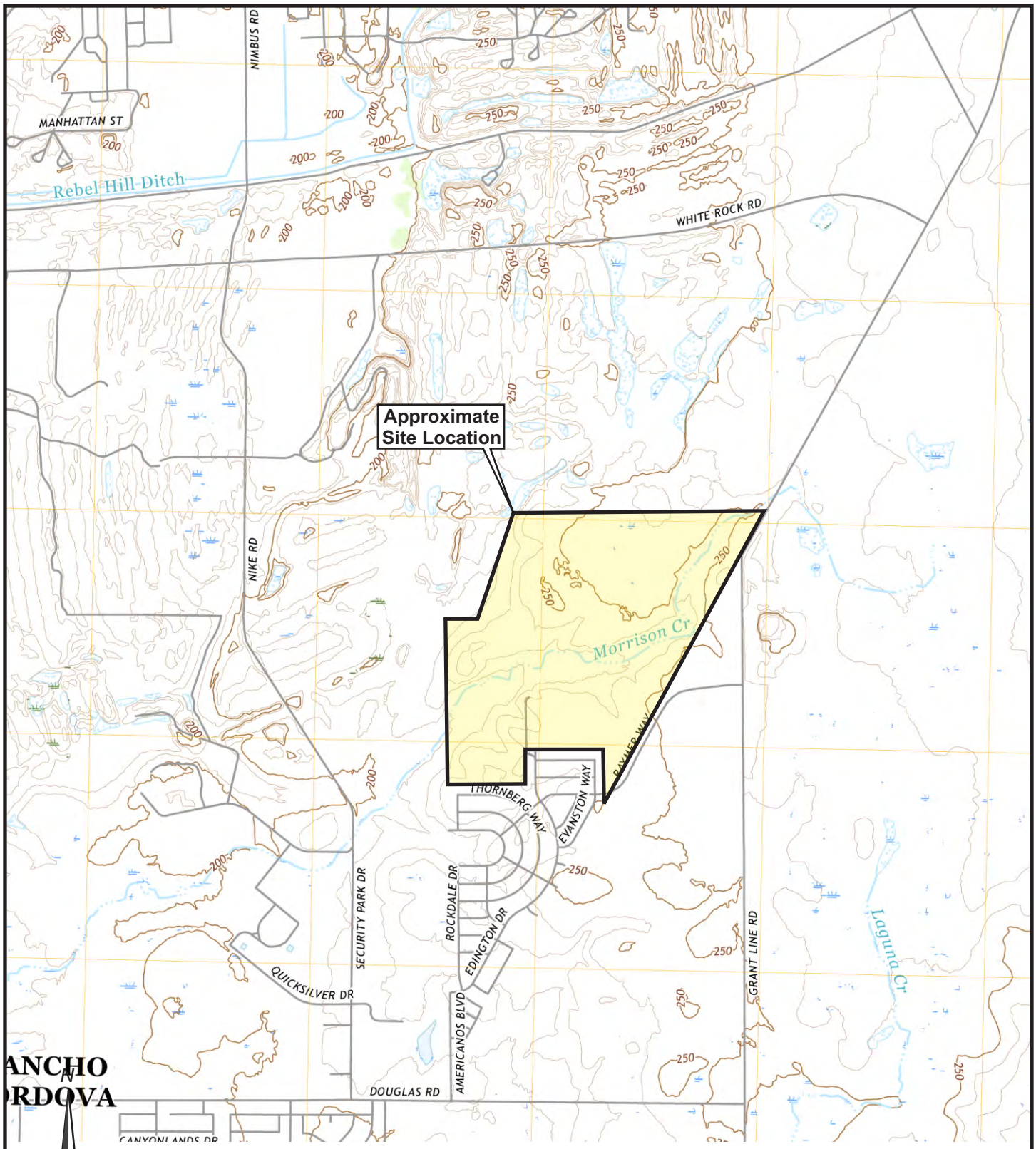
10. Veneman, P.L.M., J.R. Murray, and J.H. Baker. 1983. J. Environ. Qual. 12:101-104 Printing Office, Washington, D.C., USA.

10.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

David C. Sederquist, C.E.G., C. HG.
Professional Geologist - California No. 4715; Certified Engineering Geologist, California No. 2133; Certified Hydrogeologist; California No. 619
Bachelor of Arts in Geology; California State University, Sacramento, 1980

Mr. Sederquist has performed Phase I and Phase II Environmental Site Assessments for commercial, residential, public utility and school projects since 1990. He has assessed, monitored, and closed soil and groundwater contamination sites. He is experienced in working closely with both regulatory officials and property owners/purchasers.

FIGURES



Scale: 1:24,000

BASE MAP REFERENCE: *U.S.G.S. 7.5 Minute Topographic Series, Buffalo Circle Quadrangle, Dated 2018*

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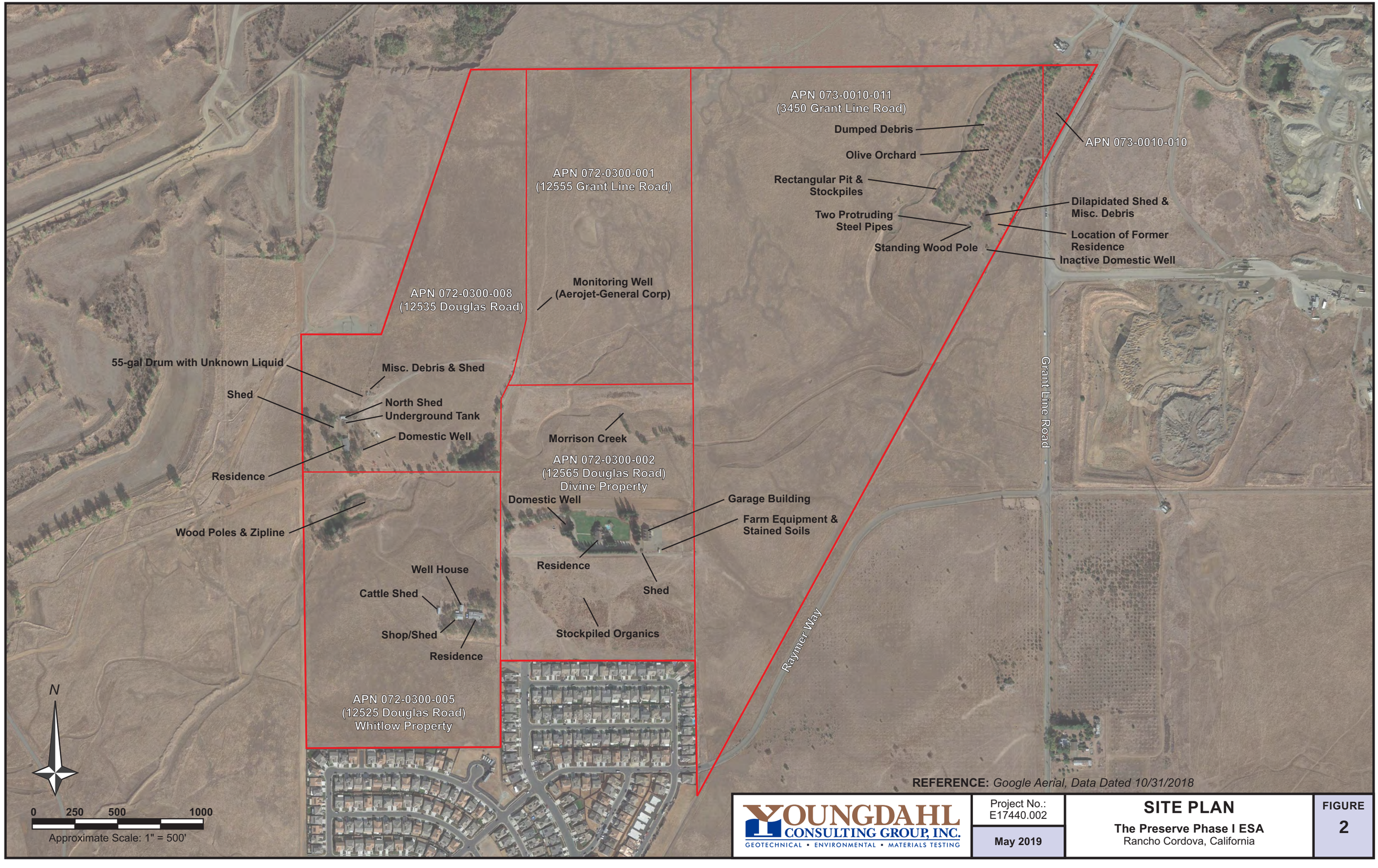
Project No.: E17440.002

May 2019

VICINITY MAP

The Preserve Phase I ESA
Rancho Cordova, California

FIGURE 1



REFERENCE: *Google Aerial, Data Dated 10/31/2018*

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SITE PLAN

The Preserve Phase I ESA
Rancho Cordova, California

FIGURE
2

APN: 073-0010-011 & -010 (3450 Grant Line Road)



Photo 1: *Photo of the south portion of parcel 073-0010-011 from Raymer Way.*



Photo 2: *Photo of the south west area of parcel 073-0010-011 from the Divine property viewing east.*

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Photo 3: *Photo from the northeast corner of parcel 073-0010-011. The olive orchard is visible to the left. A Siemens pump station and substation in the north adjacent property are visible to the left.*



Photo 4: *Debris was observed in the area where a residence once stood.*

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Photo 5: *Wood poles dumped near the former residence.*



Photo 6: *A dilapidated shed and more miscellaneous debris found west of location of the former residence. Remnant irrigation line and piping was present in the subsurface and on the ground.*

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Photo 7: *A standing pole was observed just north of the dilapidated shed.*



Photo 8: *A shallow, rectangular pit found at the southwest corner of the olive orchard.*

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Project No.: E17440.002

May 2019

SITE PHOTOGRAPHS

The Preserve Phase I ESA
Rancho Cordova, California

FIGURE
6



Photo 9: *Stockpiled material was observed near the rectangular pit.*





Photo 10 & 11: *Residential debris was observed within the orchard.*

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Photo 12: *Inactive domestic well observed to be just Southwest from the former residence location.*



Photo 13: *Two steel pipes protruding from the ground NW from the dilapidated shed.*

APN: 072-0300-002 (12565 Douglas Road, Divine Property)



Photo 14: *Garage outbuilding located east of the existing residence.*



Photo 15: *Small shed just southwest of the garage outbuilding.*



Photo 16: *Vacant grazing land located north of the existing residence. A fire line is visible in the foreground.*



Photo 17: *Vacant grazing land located in the south portion of the parcel.*

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Photo 18, 19, & 20: *Oil staining on the gravel parking area around the garage outbuilding where stored farm equipment was observed.*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E17440.002	**SITE PHOTOGRAPHS**	**FIGURE**
	May 2019	**The Preserve Phase I ESA** Rancho Cordova, California	**11**



Photo 21: *A drastic vegetation change within the southern field.*



Photo 22: *A water well and propane tank found west of the residence.*

APN: 072-0300-005 (12525 Douglas Road, Whitlow Property)



Photo 23: *View of this parcel from near the southwest corner.*



Photo 24: *Vacant residence within a fenced area at the east-center portion of the parcel.*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E17440.002 May 2019	**SITE PHOTOGRAPHS** **The Preserve Phase I ESA** Rancho Cordova, California	FIGURE 13



Photo 25: *Corrugated metal cattle shed west of the existing residence.*





Photo 26 & 27: *The well house northwest from the existing home and a view of the inside.*





Photo 28 & 29: *A standing pole, former pole foundation, concrete pad, and concrete-filled drums found in the grazing area north of the residence.*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E17440.002	**SITE PHOTOGRAPHS**	FIGURE
	May 2019	**The Preserve Phase I ESA** Rancho Cordova, California	**15**



Photo 30: *Poles near Morrison Creek. Two have a makeshift zipline attached.*



Photo 31: *View from atop the levee on the south bank of Morrison Creek.*

APN: 072-0300-001 (12555 Grant Line Road)



Photo 32: *View of the parcel from the northwest corner.*



Photo 33: *View of the parcel from the southwest corner.*

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Photo 34: *A monitoring well for the Aerojet-General Corporation site was observed in the southwest portion of this parcel.*

APN: 072-0300-008 (12535 Douglas Road)



Photo 35: *View of the parcel from the northeast corner. The north portion of the parcel is vacant grazing land.*





Photo 36 & 37: *A row of drums was observed in the field northeast from the existing residence. One drum was filled with an unknown liquid and sealed.*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E17440.002	**SITE PHOTOGRAPHS**	FIGURE
	May 2019	**The Preserve Phase I ESA** Rancho Cordova, California	**20**



Photo 38: *Empty automotive gas tanks (empty) and other parts among the debris in the field.*



Photo 39: *A small stockpile of soil and tires among the debris in the field.*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E17440.002	**SITE PHOTOGRAPHS**	FIGURE
	May 2019	**The Preserve Phase I ESA** Rancho Cordova, California	**21**





Photo 40 & 41: *Dumped debris on the interior and exterior of the small shed in the field.*



Photo 42: *A shed located north of the existing residence.*



Photo 43: *A collapsed shed west of the north shed.*



Photo 44: *Old chicken coop west of the north shed.*



Photo 45: *A collapsed shed with glass windows.*



Photo 46: *A western shed with an area for animals and storage room.*



Photo 47: *Inside the storage area of the western shed.*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E17440.002 **May 2019**	**SITE PHOTOGRAPHS** **The Preserve Phase I ESA** Rancho Cordova, California	**FIGURE** **25**





Photo 48 & 49: *Utilities outside the north shed and an underground tank of unknown use.*



Photo 50: *The existing residence on the parcel has been boarded up and is vacant.*



Photo 51: *A domestic water well is located east of the residence.*

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E17440.002	**SITE PHOTOGRAPHS**	**FIGURE**
	May 2019	**The Preserve Phase I ESA** Rancho Cordova, California	**27**



Photo 52: *A dammed section of Morrison Creek creates a pond in the southeast corner of the parcel.*

APPENDICES

APPENDIX A
Phase I ESA Questionnaires

YOUNGDAHL CONSULTING GROUP, INC.
Building Innovative Solutions
1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net
35 YEARS

Project: **Site Name:** **The Preserve Phase I ESA**
Location: **12555 Grant Line Road, Rancho Cordova, CA**
Sacramento County APN 072-0300-001

The ASTM Standards require that you, or your representative who is knowledgeable regarding the use and condition of the property, answer the questions found on the following site assessment questionnaire.

Please answer these questions in good faith and to the extent of your actual knowledge. Circle the appropriate answer. For yes answers please provide additional explanation. We would appreciate it if you would FAX the completed questionnaire as soon as possible to Youngdahl Consulting Group, Inc. FAX: 916-933-6482 or email it to David Sederquist at dcs@youngdahl.net

1.	Currently is, or in the past has, the *property* or any *adjoining* property been used for an industrial use?	(Yes)	No	Unknown
2.	Currently is, or in the past has, the *property* or any *adjoining* property 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?	Yes	No	(Unknown)
3.	Are there currently, or have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (208 L) in the aggregate, stored on or used at the *property*?	Yes	No	(Unknown)
4.	Are there currently, or have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property?	Yes	No	(Unknown)
5.	Has *fill dirt* been brought on to the property that originated from a contaminated site or that is of an unknown origin?	Yes	No	(Unknown)

6.	Are there currently, or have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	**No**	Unknown
7.	Is there currently, or has there been previously, any stained soil on the *property*?	Yes	No	**Unknown**
8.	Are there currently, or have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*?	Yes	No	**Unknown**
9.	Are there currently, or have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property*?	Yes	No	**Unknown**
10.	Are there currently, or have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting unusual odors?	Yes	No	**Unknown**
11.	If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	No	**Unknown**
12.	Are you aware of any floor drains or sumps on the property?	Yes	No	**Unknown**
13.	Have any *hazardous substances* or *petroleum products,* unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	No	**Unknown**
14.	Are there any transformers, capacitors, or hydraulic equipment on the property which may contain PCBs?	Yes	No	**Unknown**
15.	Do you have any knowledge of *environmental liens* with respect to the *property*?	Yes	**No**	Unknown

16.	Have you been informed of the past or current existence of environmental violations with respect to the *property*?	Yes	(No)	Unknown
17.	Do you have any knowledge of any *environmental site assessments* of the *property*?	(Yes)	No	Unknown
18.	Do you know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property*?	Yes	(No)	Unknown
19.	Is the purchase price or appraised value of the property significantly less than comparable properties in the vicinity?	Yes	(No)	Unknown

To the best of the undersigned knowledge, the above statements and facts are true and correct and to the best of the undersigned's actual knowledge no material facts have been suppressed or misstated.

This questionnaire was completed by:

NAME (PRINT): George Carpenter	**(SIGNATURE):**
TITLE: Vice President	**ADDRESS:** 3001 I Street, Suite 300, Sacramento, CA 95816
FIRM: Winn Communities	**DATE:** 5/9/19
PHONE NUMBER: 916-930-0925	**FAX NUMBER:** 916-930-0927
RELATIONSHIP TO SITE: Owner X	**or Owner's Representative** ____

YOUNGDAHL CONSULTING GROUP, INC.
Building Innovative Solutions
1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net

35 YEARS

Project: **Site Name:** **The Preserve Phase I ESA**
Location: **12565 Douglas Road, Rancho Cordova, CA**
Sacramento County APN 072-0300-002

4-26-2019

The ASTM Standards require that you, or your representative who is knowledgeable regarding the use and condition of the property, answer the questions found on the following site assessment questionnaire.

Please answer these questions in good faith and to the extent of your actual knowledge. Circle the appropriate answer. For yes answers please provide additional explanation. We would appreciate it if you would FAX the completed questionnaire as soon as possible to Youngdahl Consulting Group, Inc. FAX: 916-933-6482 or email it to David Sederquist at dcs@youngdahl.net

1.	Currently is, or in the past has, the *property* or any *adjoining* property been used for an industrial use?	Yes	(No)	Unknown
2.	Currently is, or in the past has, the *property* or any *adjoining* property 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?	Yes	(No)	Unknown
3.	Are there currently, or have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (208 L) in the aggregate, stored on or used at the *property*?	Yes	(No)	Unknown
4.	Are there currently, or have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property?	Yes	(No)	Unknown
5.	Has *fill dirt* been brought on to the property that originated from a contaminated site or that is of an unknown origin?	Yes	(No)	Unknown

6.	Are there currently, or have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	**No**	Unknown
7.	Is there currently, or has there been previously, any stained soil on the *property*? Currently NO!, Previously a Soil stain where the Tractor was water washed off after use.	**Yes**	No	Unknown
8.	Are there currently, or have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*? Currently NO!, 11 years ago above ground deisel Tank Removal in 2008.	**Yes**	No	Unknown
9.	Are there currently, or have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property*?	Yes	**No**	Unknown
10.	Are there currently, or have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting unusual odors?	Yes	**No**	Unknown
11.	If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	**No**	Unknown
12.	Are you aware of any floor drains or sumps on the property?	Yes	**No**	Unknown
13.	Have any *hazardous substances* or *petroleum products*, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	**No**	Unknown
14.	Are there any transformers, capacitors, or hydraulic equipment on the property which may contain PCBs?	Yes	**No**	Unknown
15.	Do you have any knowledge of *environmental liens* with respect to the *property*?	Yes	**No**	Unknown

16. Have you been informed of the past or current existence of environmental violations with respect to the *property*? Yes (No) Unknown

17. Do you have any knowledge of any *environmental site assessments* of the *property*? (Yes) No Unknown
EMG Corp 2015, ECorp 2017, Phase I Reports. Winn has Copies

18. Do you know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property*? Yes (No) Unknown

19. Is the purchase price or appraised value of the property significantly less than comparable properties in the vicinity? Yes (No) Unknown

To the best of the undersigned knowledge, the above statements and facts are true and correct and to the best of the undersigned's actual knowledge no material facts have been suppressed or misstated.

This questionnaire was completed by:

NAME (PRINT):	Dave Divine	**(SIGNATURE):**	Dave Divine
TITLE:	Land Owner	**ADDRESS:**	
FIRM:		**DATE:**	4-26-2019
PHONE NUMBER:	(916) 812-3368	**FAX NUMBER:**	
RELATIONSHIP TO SITE: Owner	_____	**or Owner's Representative**	_____

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4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net
35 YEARS

Project: **Site Name:** **The Preserve Phase I ESA**
Location: **12525 Douglas Road, Rancho Cordova, CA**
Sacramento County APN 072-0300-005

The ASTM Standards require that you, or your representative who is knowledgeable regarding the use and condition of the property, answer the questions found on the following site assessment questionnaire.

Please answer these questions in good faith and to the extent of your actual knowledge. Circle the appropriate answer. For yes answers please provide additional explanation. We would appreciate it if you would FAX the completed questionnaire as soon as possible to Youngdahl Consulting Group, Inc. FAX: 916-933-6482 or email it to David Sederquist at dcs@youngdahl.net

1.	Currently is, or in the past has, the *property* or any *adjoining* property been used for an industrial use?	Yes	(No)	Unknown
2.	Currently is, or in the past has, the *property* or any *adjoining* property 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?	Yes	(No)	Unknown
3.	Are there currently, or have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (208 L) in the aggregate, stored on or used at the *property*?	Yes	(No)	Unknown
4.	Are there currently, or have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property?	Yes	(No)	Unknown
5.	Has *fill dirt* been brought on to the property that originated from a contaminated site or that is of an unknown origin?	Yes	(No)	Unknown

6.	Are there currently, or have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	No	Unknown
7.	Is there currently, or has there been previously, any stained soil on the *property*?	Yes	No	Unknown
8.	Are there currently, or have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*?	Yes	No	Unknown
9.	Are there currently, or have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property*?	Yes	No	Unknown
10.	Are there currently, or have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting unusual odors?	Yes	No	Unknown
11.	If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	No	Unknown
12.	Are you aware of any floor drains or sumps on the property?	Yes	No	Unknown
13.	Have any *hazardous substances* or *petroleum products,* unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	No	Unknown
14.	Are there any transformers, capacitors, or hydraulic equipment on the property which may contain PCBs?	Yes	No	Unknown
15.	Do you have any knowledge of *environmental liens* with respect to the *property*?	Yes	No	Unknown

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16.	Have you been informed of the past or current existence of environmental violations with respect to the *property*?	Yes	No	Unknown
17.	Do you have any knowledge of any *environmental site assessments* of the *property*?	Yes	No	Unknown
18.	Do you know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property*?	Yes	No	Unknown
19.	Is the purchase price or appraised value of the property significantly less than comparable properties in the vicinity?	Yes	No	Unknown

To the best of the undersigned knowledge, the above statements and facts are true and correct and to the best of the undersigned's actual knowledge no material facts have been suppressed or misstated.

This questionnaire was completed by:

NAME (PRINT): David Whitlow	**(SIGNATURE):** DocuSigned by: Dave Whitlow 0A481BD8028047B...
TITLE: Partner	**ADDRESS:** PO Box 186 Rancho Cordova CA
FIRM: N/A	**DATE:** Apr-28-2019
PHONE NUMBER: 916-743-0408	**FAX NUMBER:**
RELATIONSHIP TO SITE: Owner _____	**or Owner's Representative** _____

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1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net
35 YEARS

Project: **Site Name:** **The Preserve Phase I ESA**
Location: **12535 Douglas Road, Rancho Cordova, CA**
Sacramento County APN 072-0300-008

The ASTM Standards require that you, or your representative who is knowledgeable regarding the use and condition of the property, answer the questions found on the following site assessment questionnaire.

Please answer these questions in good faith and to the extent of your actual knowledge. Circle the appropriate answer. For yes answers please provide additional explanation. We would appreciate it if you would FAX the completed questionnaire as soon as possible to Youngdahl Consulting Group, Inc. FAX: 916-933-6482 or email it to David Sederquist at dcs@youngdahl.net

1.	Currently is, or in the past has, the *property* or any *adjoining* property been used for an industrial use?	(Yes)	No	Unknown
2.	Currently is, or in the past has, the *property* or any *adjoining* property 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?	Yes	No	(Unknown)
3.	Are there currently, or have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (208 L) in the aggregate, stored on or used at the *property*?	Yes	No	(Unknown)
4.	Are there currently, or have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property?	Yes	No	(Unknown)
5.	Has *fill dirt* been brought on to the property that originated from a contaminated site or that is of an unknown origin?	Yes	No	(Unknown)

6.	Are there currently, or have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	**No**	Unknown
7.	Is there currently, or has there been previously, any stained soil on the *property*?	Yes	No	**Unknown**
8.	Are there currently, or have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*?	Yes	No	**Unknown**
9.	Are there currently, or have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property*?	Yes	No	**Unknown**
10.	Are there currently, or have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting unusual odors?	Yes	No	**Unknown**
11.	If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	No	**Unknown**
12.	Are you aware of any floor drains or sumps on the property?	Yes	No	**Unknown**
13.	Have any *hazardous substances* or *petroleum products*, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	No	**Unknown**
14.	Are there any transformers, capacitors, or hydraulic equipment on the property which may contain PCBs?	Yes	No	**Unknown**
15.	Do you have any knowledge of *environmental liens* with respect to the *property*?	Yes	**No**	Unknown

16.	Have you been informed of the past or current existence of environmental violations with respect to the *property*?	Yes	(No)	Unknown
17.	Do you have any knowledge of any *environmental site assessments* of the *property*?	(Yes)	No	Unknown
18.	Do you know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property*?	Yes	(No)	Unknown
19.	Is the purchase price or appraised value of the property significantly less than comparable properties in the vicinity?	Yes	(No)	Unknown

To the best of the undersigned knowledge, the above statements and facts are true and correct and to the best of the undersigned's actual knowledge no material facts have been suppressed or misstated.

This questionnaire was completed by:

NAME (PRINT): George Carpenter	**(SIGNATURE):**
TITLE: Vice President	**ADDRESS:** 3001 I Street, Suite 300, Sacramento, CA 95816
FIRM: Winn Communities	**DATE:** 5/9/19
PHONE NUMBER: 916-930-0925	**FAX NUMBER:** 916-930-0927
RELATIONSHIP TO SITE: Owner X	**or Owner's Representative** _____

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Building Innovative Solutions
1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net

Project: **Site Name:** **The Preserve Phase I ESA**
Location: **Grant Line Road, Rancho Cordova, CA**
Sacramento County APN 072-0300-010

The ASTM Standards require that you, or your representative who is knowledgeable regarding the use and condition of the property, answer the questions found on the following site assessment questionnaire.

Please answer these questions in good faith and to the extent of your actual knowledge. Circle the appropriate answer. For yes answers please provide additional explanation. We would appreciate it if you would FAX the completed questionnaire as soon as possible to Youngdahl Consulting Group, Inc. FAX: 916-933-6482 or email it to David Sederquist at dcs@youngdahl.net

1.	Currently is, or in the past has, the *property* or any *adjoining* property been used for an industrial use?	(Yes)	No	Unknown
2.	Currently is, or in the past has, the *property* or any *adjoining* property 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?	Yes	No	(Unknown)
3.	Are there currently, or have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (208 L) in the aggregate, stored on or used at the *property*?	Yes	No	(Unknown)
4.	Are there currently, or have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property?	Yes	No	(Unknown)
5.	Has *fill dirt* been brought on to the property that originated from a contaminated site or that is of an unknown origin?	Yes	No	(Unknown)

6.	Are there currently, or have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	**No**	Unknown
7.	Is there currently, or has there been previously, any stained soil on the *property*?	Yes	No	**Unknown**
8.	Are there currently, or have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*?	Yes	No	**Unknown**
9.	Are there currently, or have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property*?	Yes	No	**Unknown**
10.	Are there currently, or have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting unusual odors?	Yes	No	**Unknown**
11.	If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	No	**Unknown**
12.	Are you aware of any floor drains or sumps on the property?	Yes	No	**Unknown**
13.	Have any *hazardous substances* or *petroleum products,* unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	No	**Unknown**
14.	Are there any transformers, capacitors, or hydraulic equipment on the property which may contain PCBs?	Yes	No	**Unknown**
15.	Do you have any knowledge of *environmental liens* with respect to the *property*?	Yes	**No**	Unknown

16.	Have you been informed of the past or current existence of environmental violations with respect to the *property*?	Yes	(No)	Unknown
17.	Do you have any knowledge of any *environmental site assessments* of the *property*?	(Yes)	No	Unknown
18.	Do you know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property*?	Yes	(No)	Unknown
19.	Is the purchase price or appraised value of the property significantly less than comparable properties in the vicinity?	Yes	(No)	Unknown

To the best of the undersigned knowledge, the above statements and facts are true and correct and to the best of the undersigned's actual knowledge no material facts have been suppressed or misstated.

This questionnaire was completed by:

NAME (PRINT): George Carpenter	**(SIGNATURE):**
TITLE: Vice President	**ADDRESS:** 3001 I Street, Suite 300, Sacramento, CA 95816
FIRM: Winn Communities	**DATE:** 5/9/19
PHONE NUMBER: 916-930-0925	**FAX NUMBER:** 916-930-0927
RELATIONSHIP TO SITE: Owner X	**or Owner's Representative** _____

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Building Innovative Solutions
1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net
35 YEARS

Project: **Site Name:** **The Preserve Phase I ESA**
Location: **3450 Grant Line Road, Rancho Cordova, CA**
Sacramento County APN 072-0300-011

The ASTM Standards require that you, or your representative who is knowledgeable regarding the use and condition of the property, answer the questions found on the following site assessment questionnaire.

Please answer these questions in good faith and to the extent of your actual knowledge. Circle the appropriate answer. For yes answers please provide additional explanation. We would appreciate it if you would FAX the completed questionnaire as soon as possible to Youngdahl Consulting Group, Inc. FAX: 916-933-6482 or email it to David Sederquist at dcs@youngdahl.net

1.	Currently is, or in the past has, the *property* or any *adjoining* property been used for an industrial use?	(Yes)	No	Unknown
2.	Currently is, or in the past has, the *property* or any *adjoining* property 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?	Yes	No	(Unknown)
3.	Are there currently, or have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (208 L) in the aggregate, stored on or used at the *property*?	Yes	No	(Unknown)
4.	Are there currently, or have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the property?	Yes	No	(Unknown)
5.	Has *fill dirt* been brought on to the property that originated from a contaminated site or that is of an unknown origin?	Yes	No	(Unknown)

6.	Are there currently, or have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	**No**	Unknown
7.	Is there currently, or has there been previously, any stained soil on the *property*?	Yes	No	**Unknown**
8.	Are there currently, or have there been previously, any registered or unregistered storage tanks (above or underground) located on the *property*?	Yes	No	**Unknown**
9.	Are there currently, or have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *property*?	Yes	No	**Unknown**
10.	Are there currently, or have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting unusual odors?	Yes	No	**Unknown**
11.	If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	No	**Unknown**
12.	Are you aware of any floor drains or sumps on the property?	Yes	No	**Unknown**
13.	Have any *hazardous substances* or *petroleum products,* unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	No	**Unknown**
14.	Are there any transformers, capacitors, or hydraulic equipment on the property which may contain PCBs?	Yes	No	**Unknown**
15.	Do you have any knowledge of *environmental liens* with respect to the *property*?	Yes	**No**	Unknown

16.	Have you been informed of the past or current existence of environmental violations with respect to the *property*?	Yes	(No)	Unknown
17.	Do you have any knowledge of any *environmental site assessments* of the *property*?	(Yes)	No	Unknown
18.	Do you know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property*?	Yes	(No)	Unknown
19.	Is the purchase price or appraised value of the property significantly less than comparable properties in the vicinity?	Yes	(No)	Unknown

To the best of the undersigned knowledge, the above statements and facts are true and correct and to the best of the undersigned's actual knowledge no material facts have been suppressed or misstated.

This questionnaire was completed by:

NAME (PRINT): George Carpenter	**(SIGNATURE):**
TITLE: Vice President	**ADDRESS:** 3001 I Street, Suite 300, Sacramento, CA 95816
FIRM: Winn Communities	**DATE:** 5/9/19
PHONE NUMBER: 916-930-0925	**FAX NUMBER:** 916-930-0927
RELATIONSHIP TO SITE: Owner X	**or Owner's Representative** _____

APPENDIX B
EDR Aerial Photo Decade Package
EDR Historical Topographic Map Report
EDR–City Directory Abstract
Certified Sanborn® Map Report (No Coverage)

The Preserve Phase I ESA

12525 Douglas Road

Rancho Cordova, CA 95742

Inquiry Number: 5633265.8

April 26, 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

04/26/19

Site Name:

The Preserve Phase I ESA
12525 Douglas Road
Rancho Cordova, CA 95742
EDR Inquiry # 5633265.8

Client Name:

Youngdahl Consulting Group
1234 Glenhaven Court
El Dorado Hills, CA 95762
Contact: Dennis Eck

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"=750'	Flight Year: 2016	USDA/NAIP
2012	1"=750'	Flight Year: 2012	USDA/NAIP
2009	1"=750'	Flight Year: 2009	USDA/NAIP
2006	1"=750'	Flight Year: 2006	USDA/NAIP
1998	1"=750'	Acquisition Date: August 16, 1998	USGS/DOQQ
1993	1"=750'	Flight Date: May 22, 1993	USDA
1984	1"=750'	Flight Date: June 08, 1984	USDA
1972	1"=750'	Flight Date: June 28, 1972	USDA
1966	1"=750'	Flight Date: August 05, 1966	USGS
1964	1"=750'	Flight Date: May 29, 1964	USDA
1957	1"=750'	Flight Date: August 24, 1957	USDA
1952	1"=750'	Flight Date: July 22, 1952	USGS
1937	1"=750'	Flight Date: August 16, 1937	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

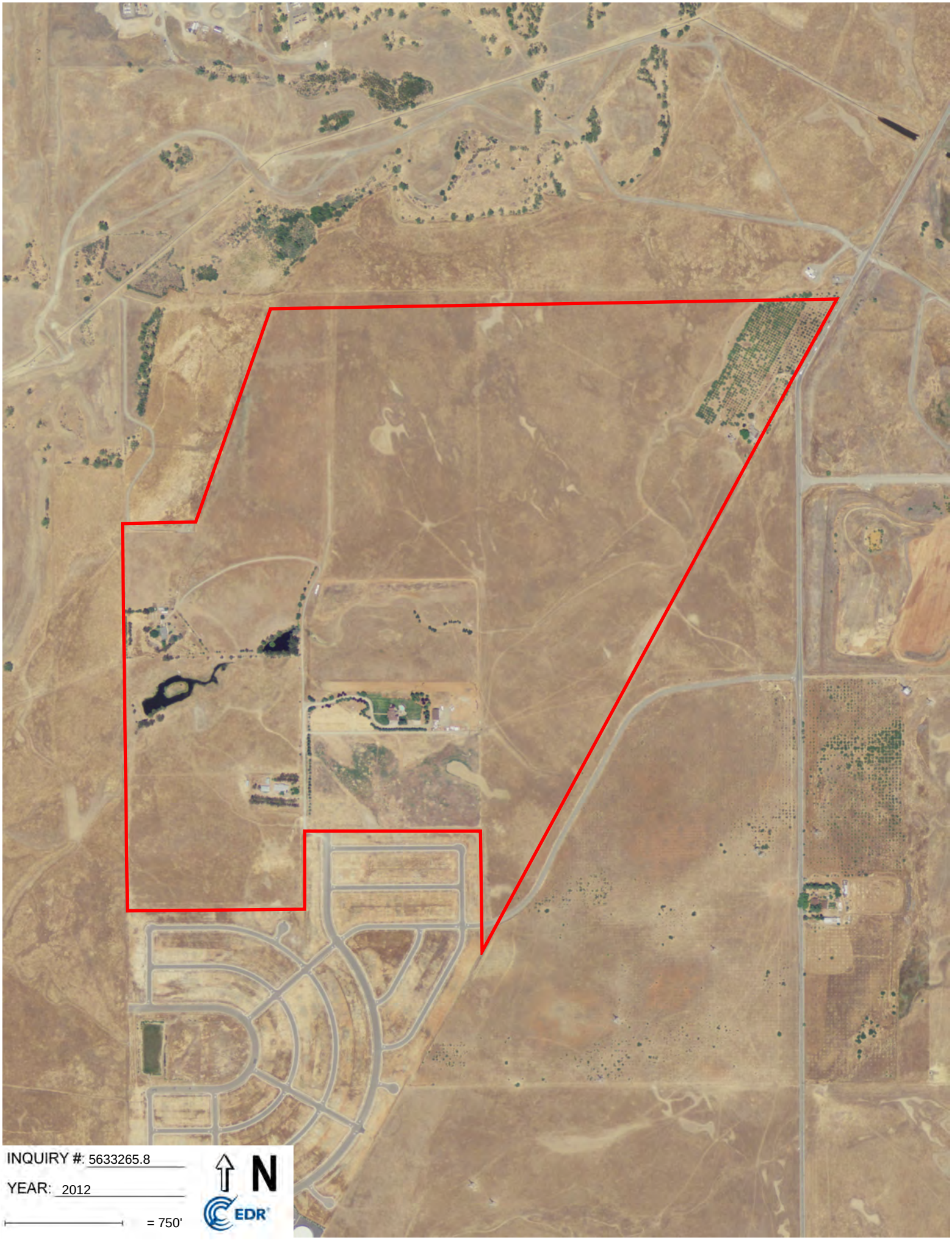
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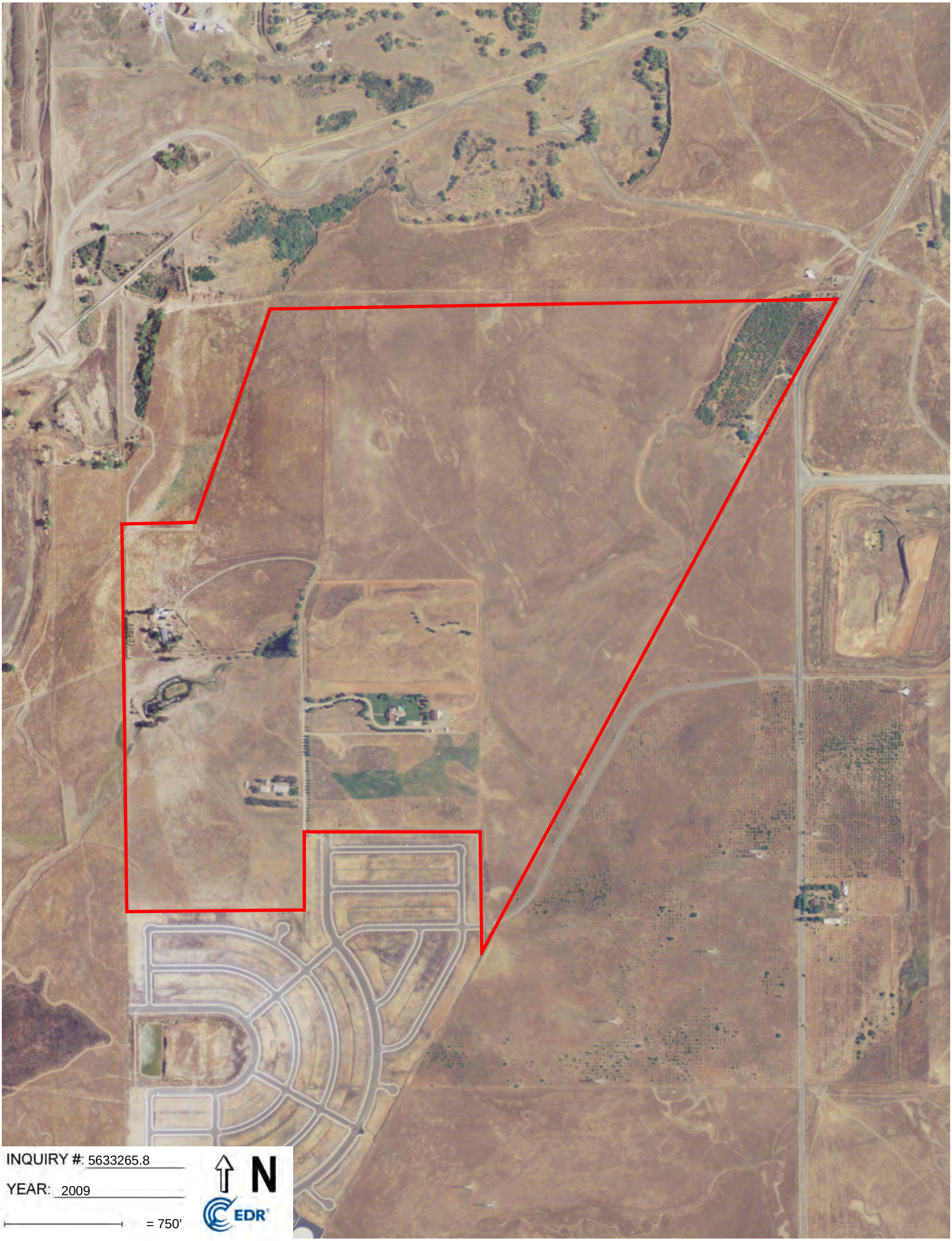
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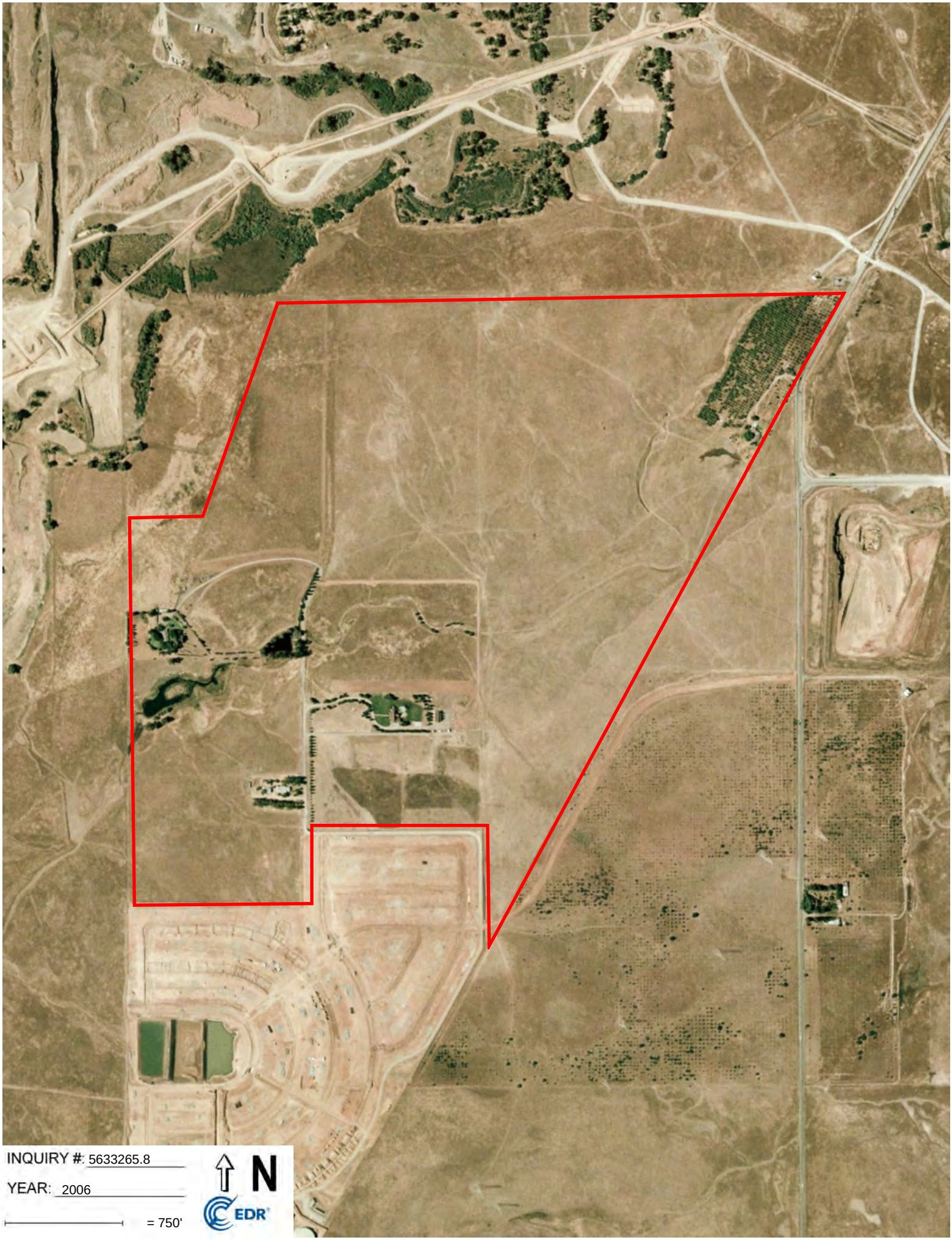
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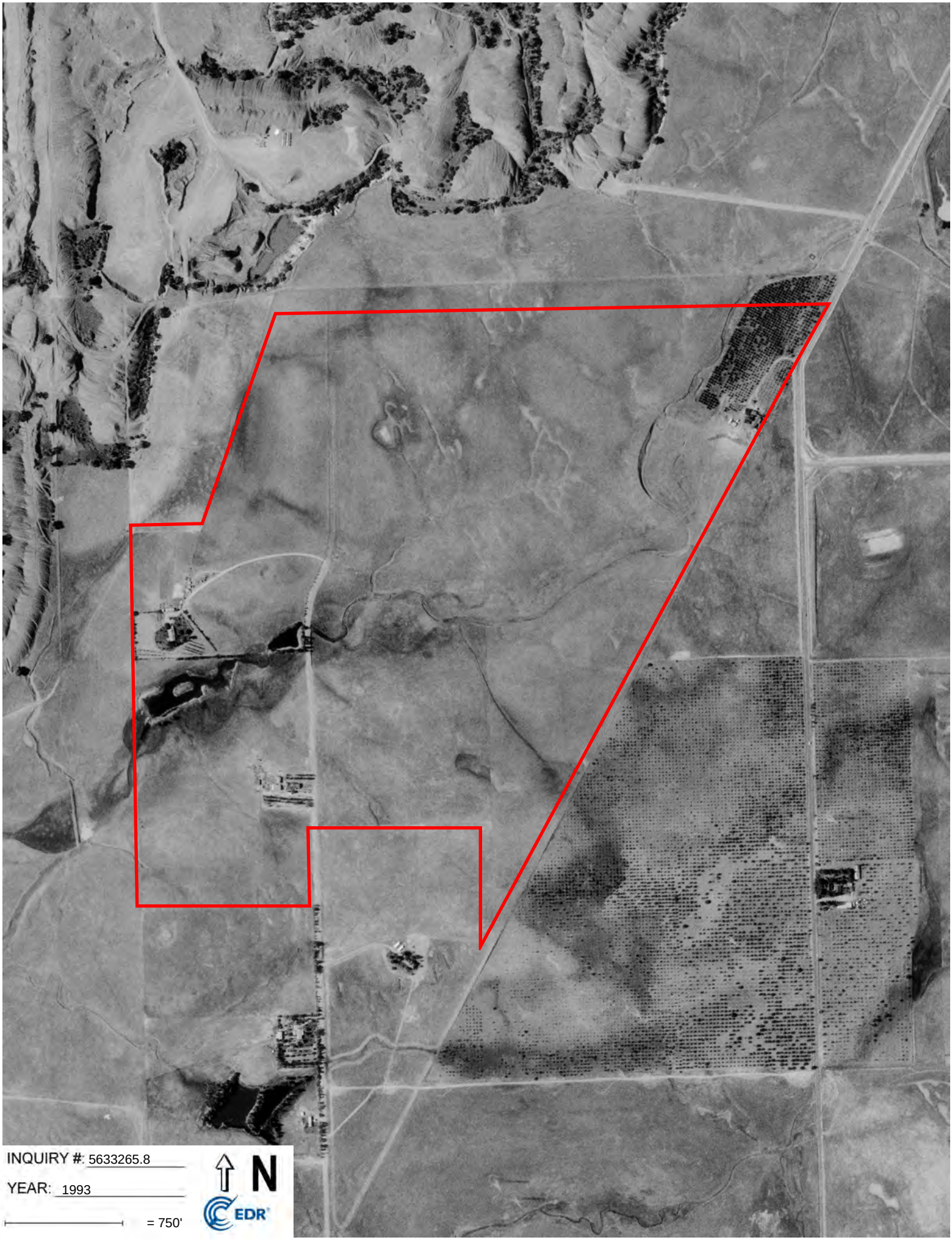

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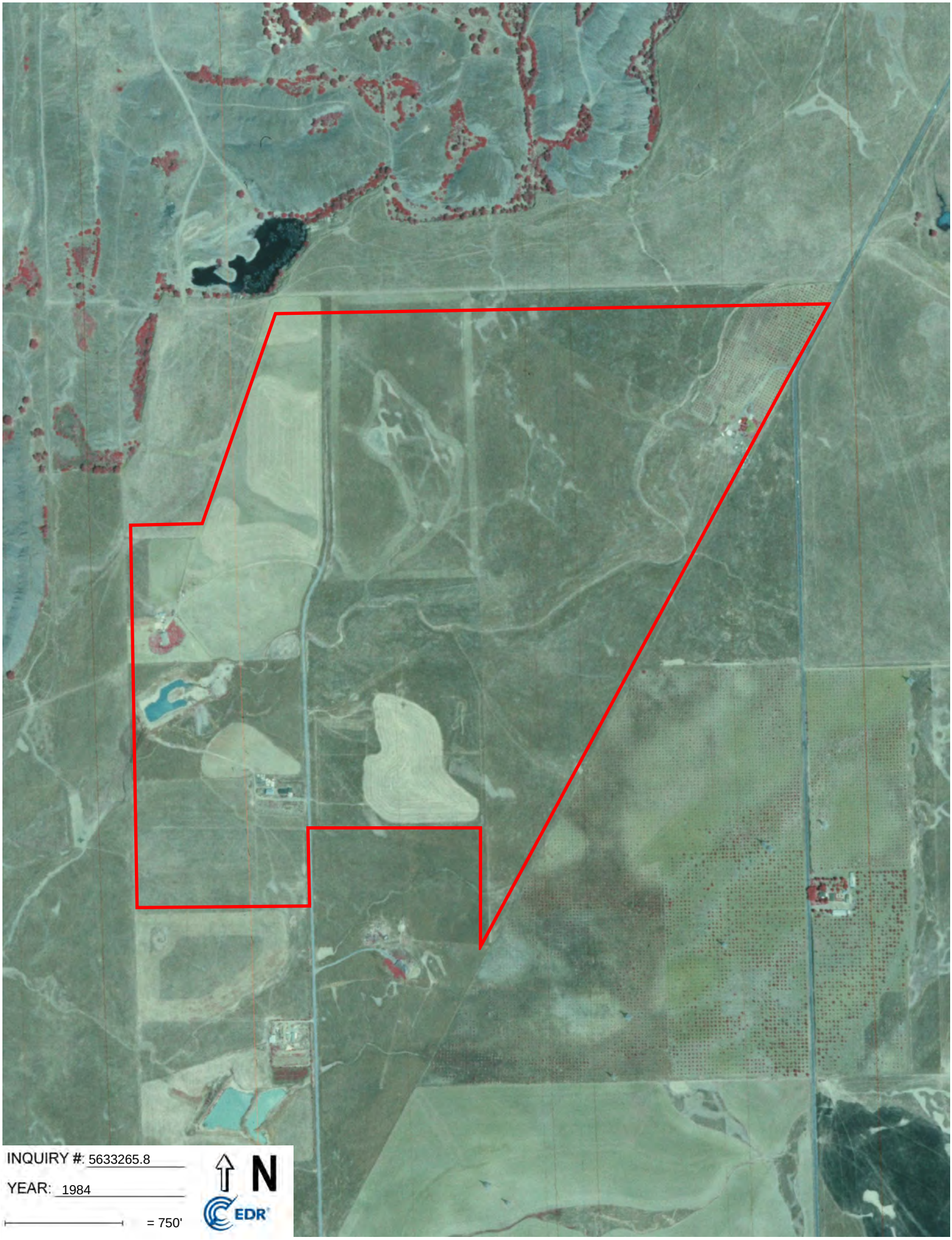

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EDR


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EDR



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YEAR: 1972

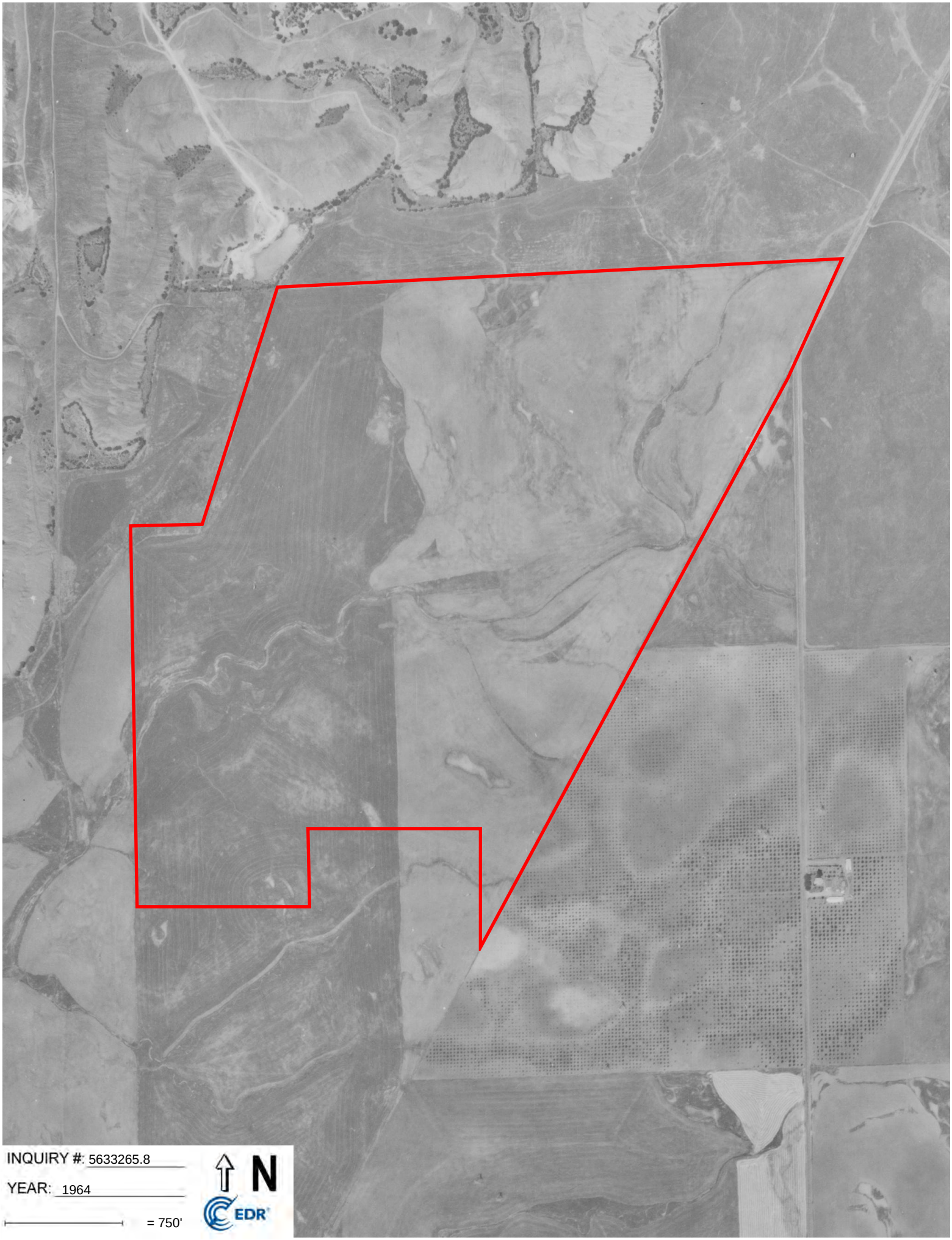
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EDR

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EDR



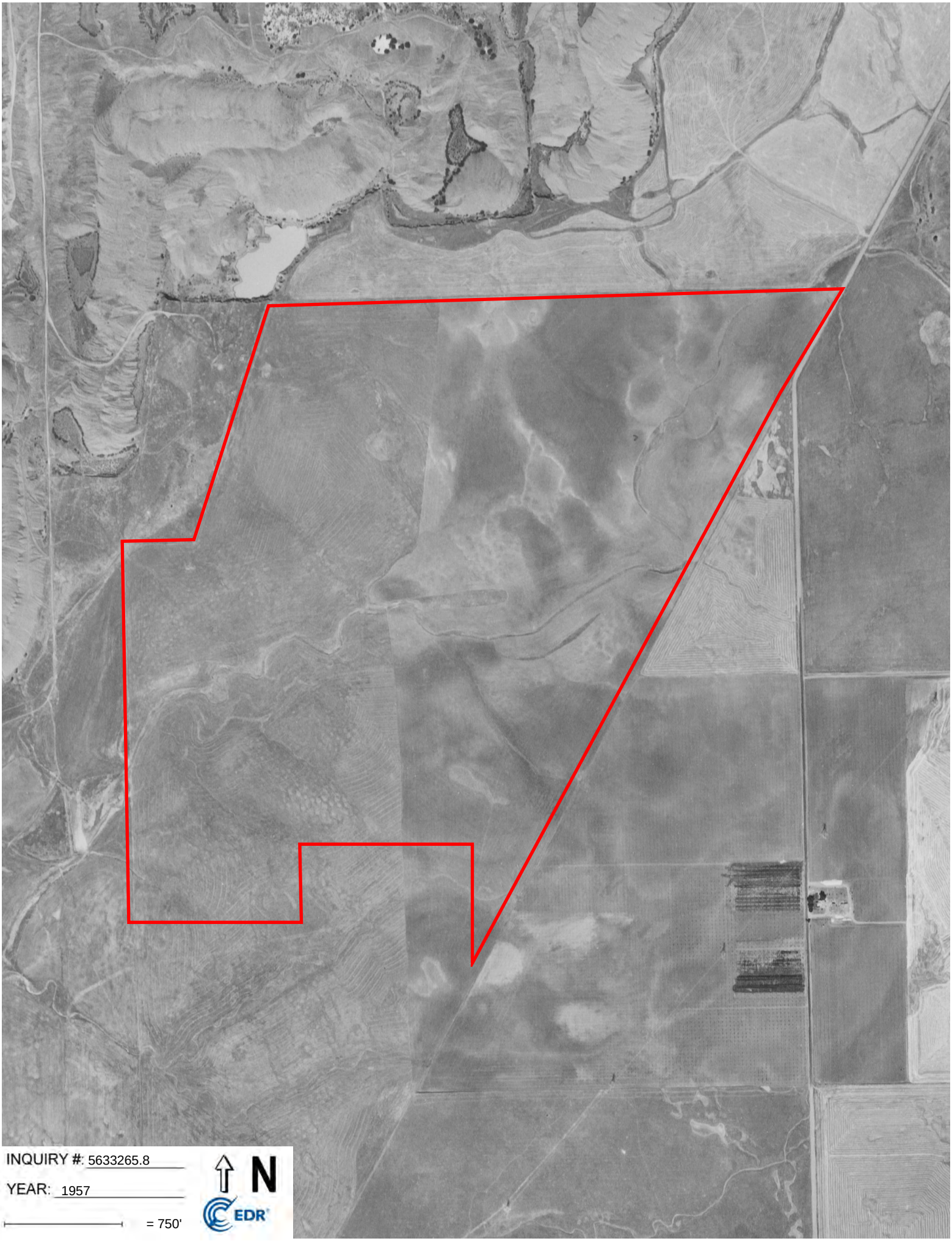
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YEAR: 1964

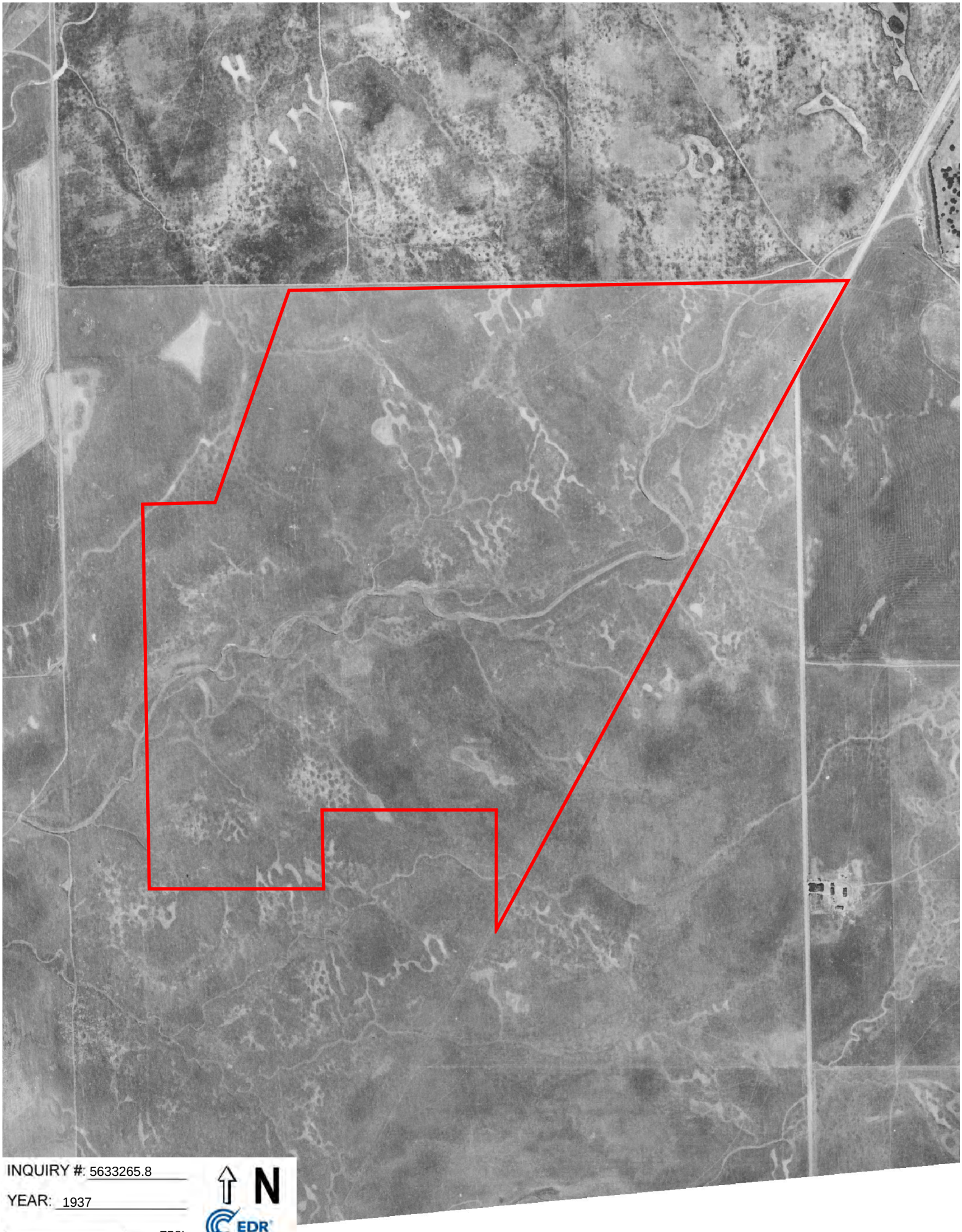
= 750'

N

EDR


INQUIRY #: 5633265.8
YEAR: 1957
= 750'
N
EDR


INQUIRY #: 5633265.8
YEAR: 1952
= 750'
N
EDR



INQUIRY #: 5633265.8

YEAR: 1937

= 750'

N

EDR

The Preserve Phase I ESA
12525 Douglas Road
Rancho Cordova, CA 95742

Inquiry Number: 5633265.4
April 26, 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

04/26/19

Site Name:

The Preserve Phase I ESA
12525 Douglas Road
Rancho Cordova, CA 95742
EDR Inquiry # 5633265.4

Client Name:

Youngdahl Consulting Group
1234 Glenhaven Court
El Dorado Hills, CA 95762
Contact: Dennis Eck

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Youngdahl Consulting Group 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:

P.O.# PE19-200

Project: The Preserve Phase I ESA

Coordinates:

Latitude:	38.575586 38° 34' 32" North
Longitude:	-121.196464 -121° 11' 47" West
UTM Zone:	Zone 10 North
UTM X Meters:	657105.85
UTM Y Meters:	4271222.73
Elevation:	243.33' above sea level

Maps Provided:

2012	1908
1980	1893
1975	1892
1967	1891
1954	
1944	
1941	
1916	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets



Buffalo Creek
2012
7.5-minute, 24000

1980 Source Sheets



Buffalo Creek
1980
7.5-minute, 24000
Aerial Photo Revised 1978

1975 Source Sheets



Buffalo Creek
1975
7.5-minute, 24000
Aerial Photo Revised 1975

1967 Source Sheets

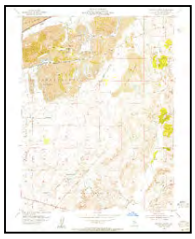


Buffalo Creek
1967
7.5-minute, 24000
Aerial Photo Revised 1966

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1954 Source Sheets



Buffalo Creek
1954
7.5-minute, 24000
Aerial Photo Revised 1952

1944 Source Sheets



Folsom
1944
15-minute, 62500

1941 Source Sheets



Folsom
1941
15-minute, 62500

1916 Source Sheets



Buffalo Creek
1916
7.5-minute, 31680

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1908 Source Sheets



Buffalo Creek
1908
7.5-minute, 31680

1893 Source Sheets



Sacramento
1893
30-minute, 125000

1892 Source Sheets



Sacramento
1892
30-minute, 125000

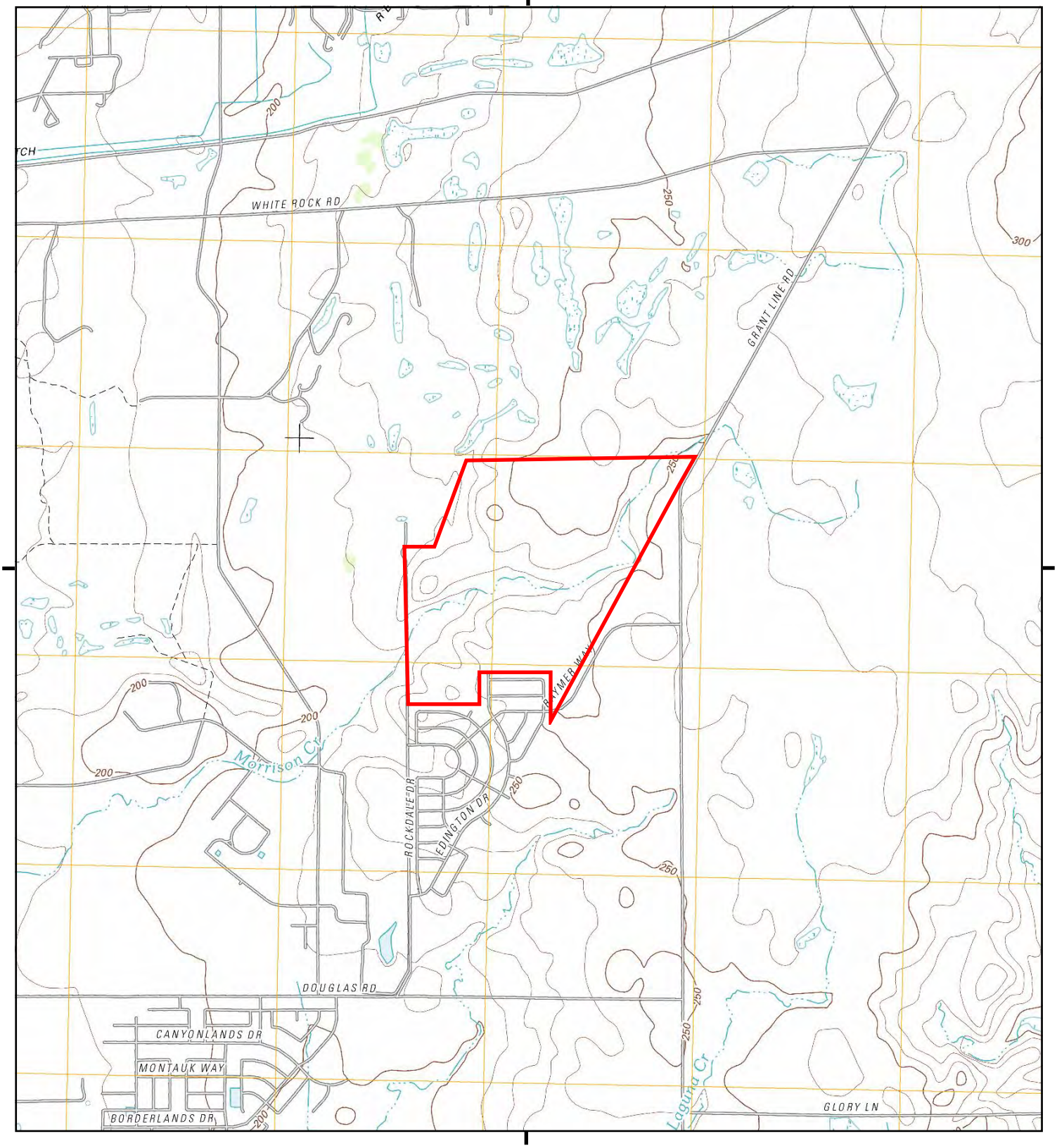
1891 Source Sheets



Sacramento
1891
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

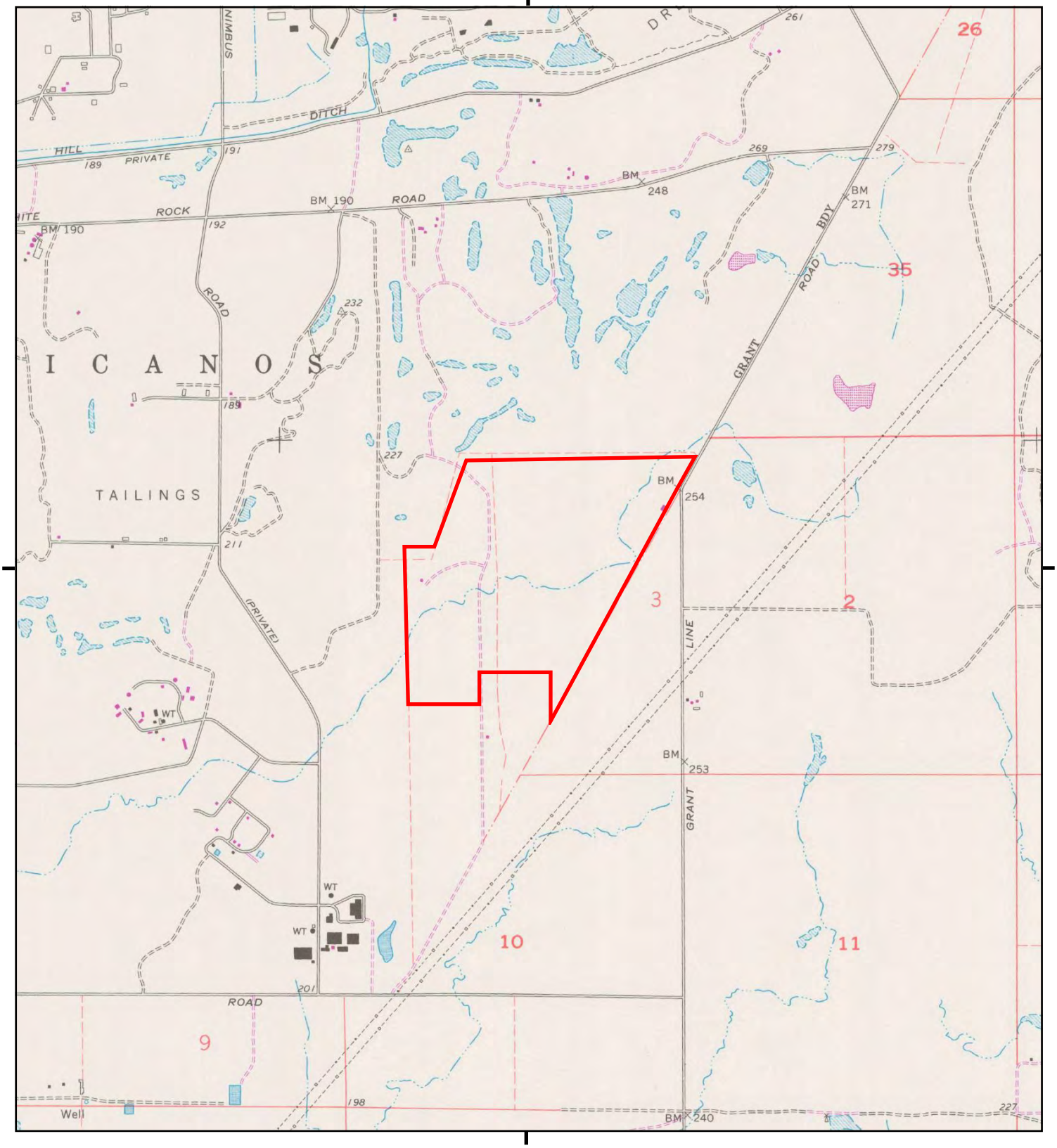
TP, Buffalo Creek, 2012, 7.5-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N

Historical Topo Map

1980



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

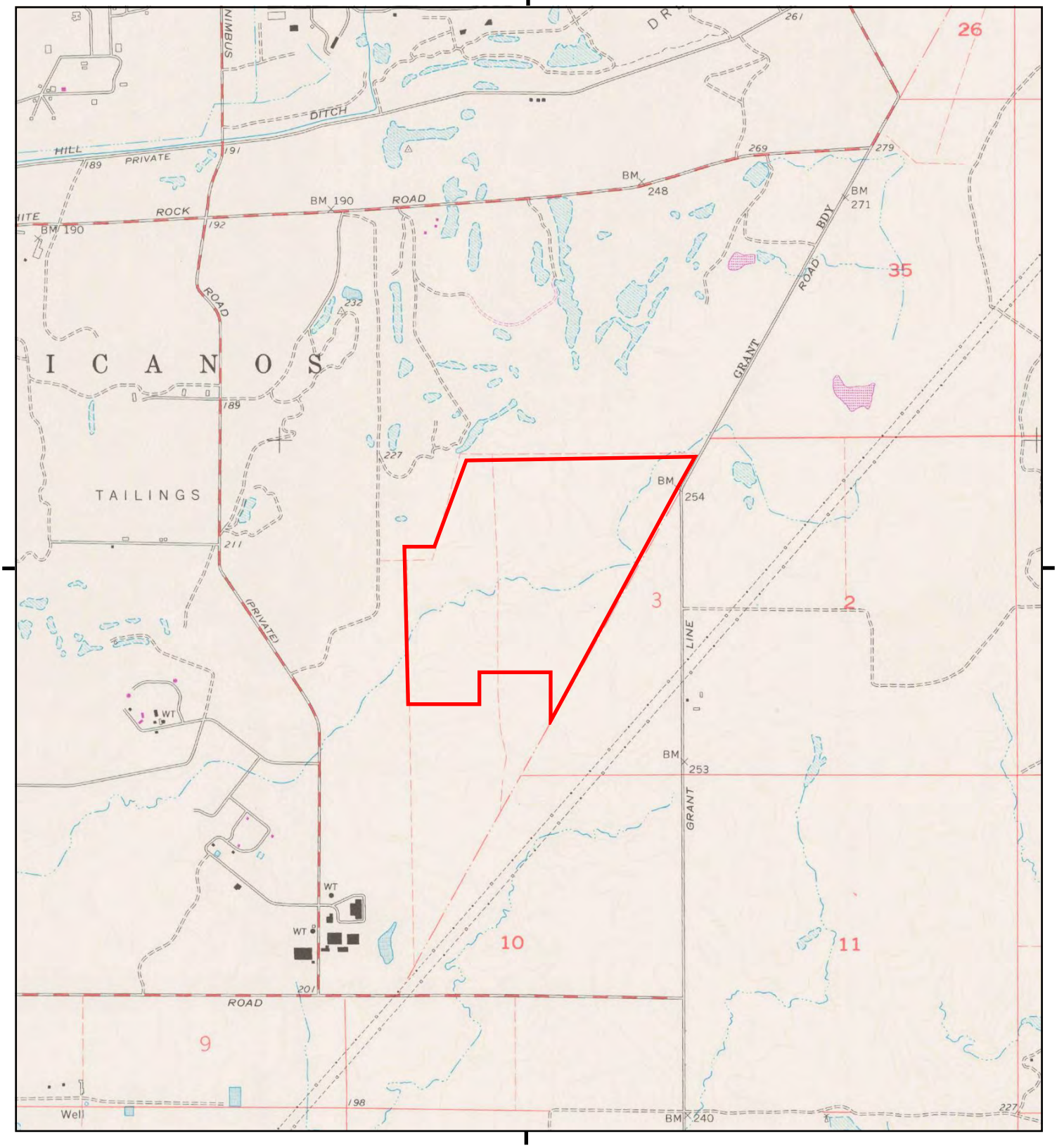
TP, Buffalo Creek, 1980, 7.5-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N

Historical Topo Map

1975



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

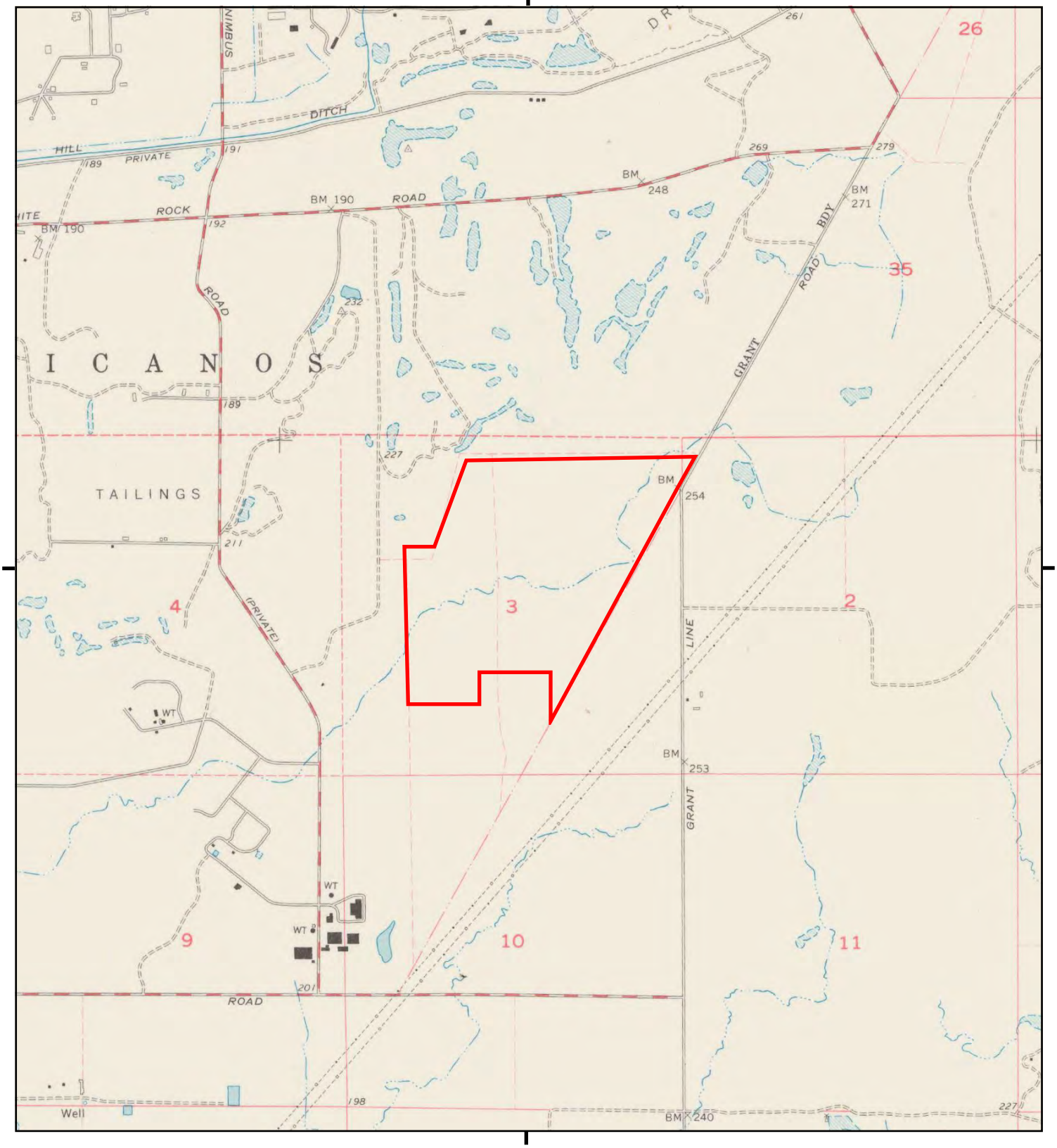
TP, Buffalo Creek, 1975, 7.5-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N

Historical Topo Map

1967



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

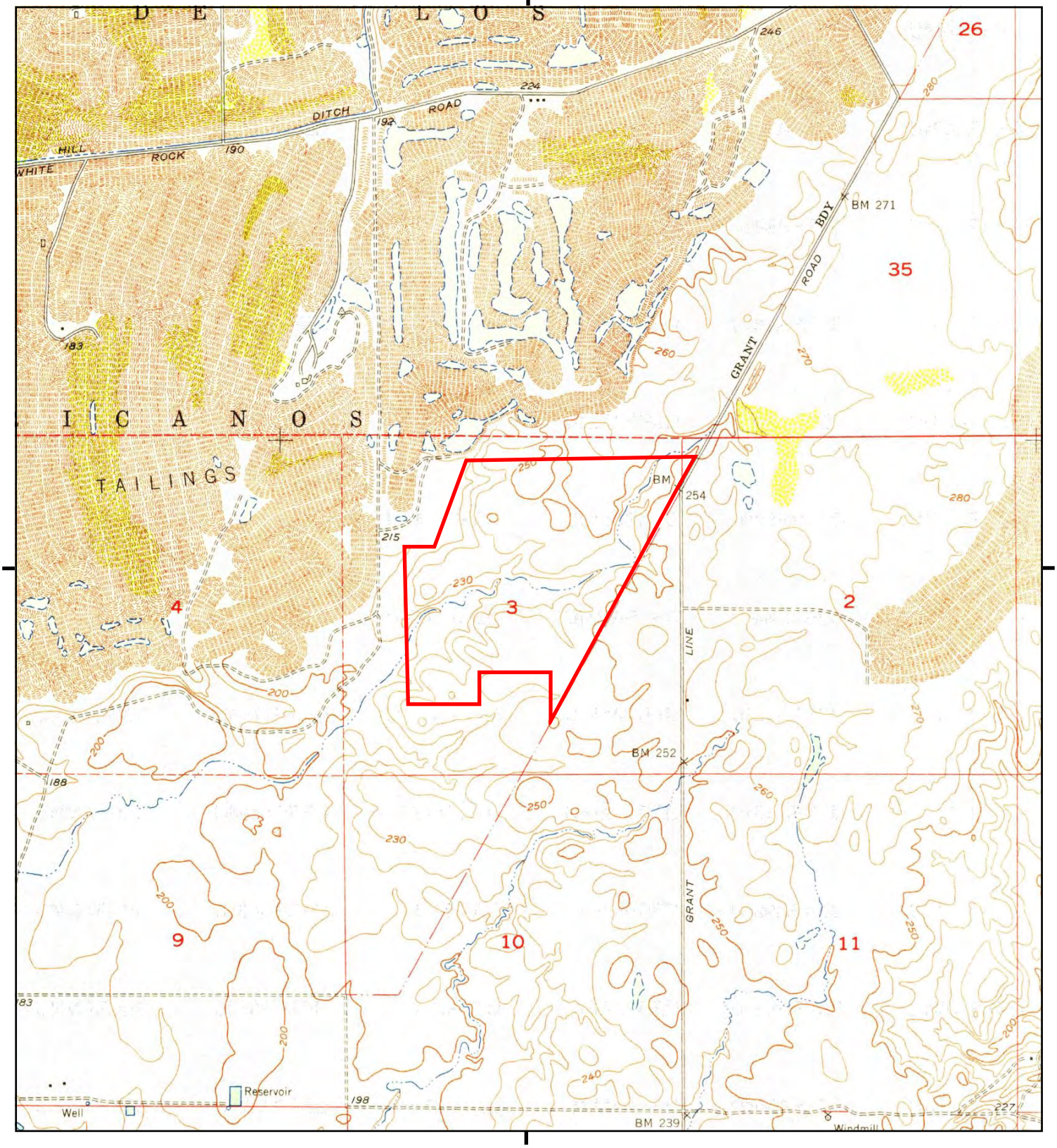
TP, Buffalo Creek, 1967, 7.5-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N

Historical Topo Map

1954



This report includes information from the following map sheet(s).

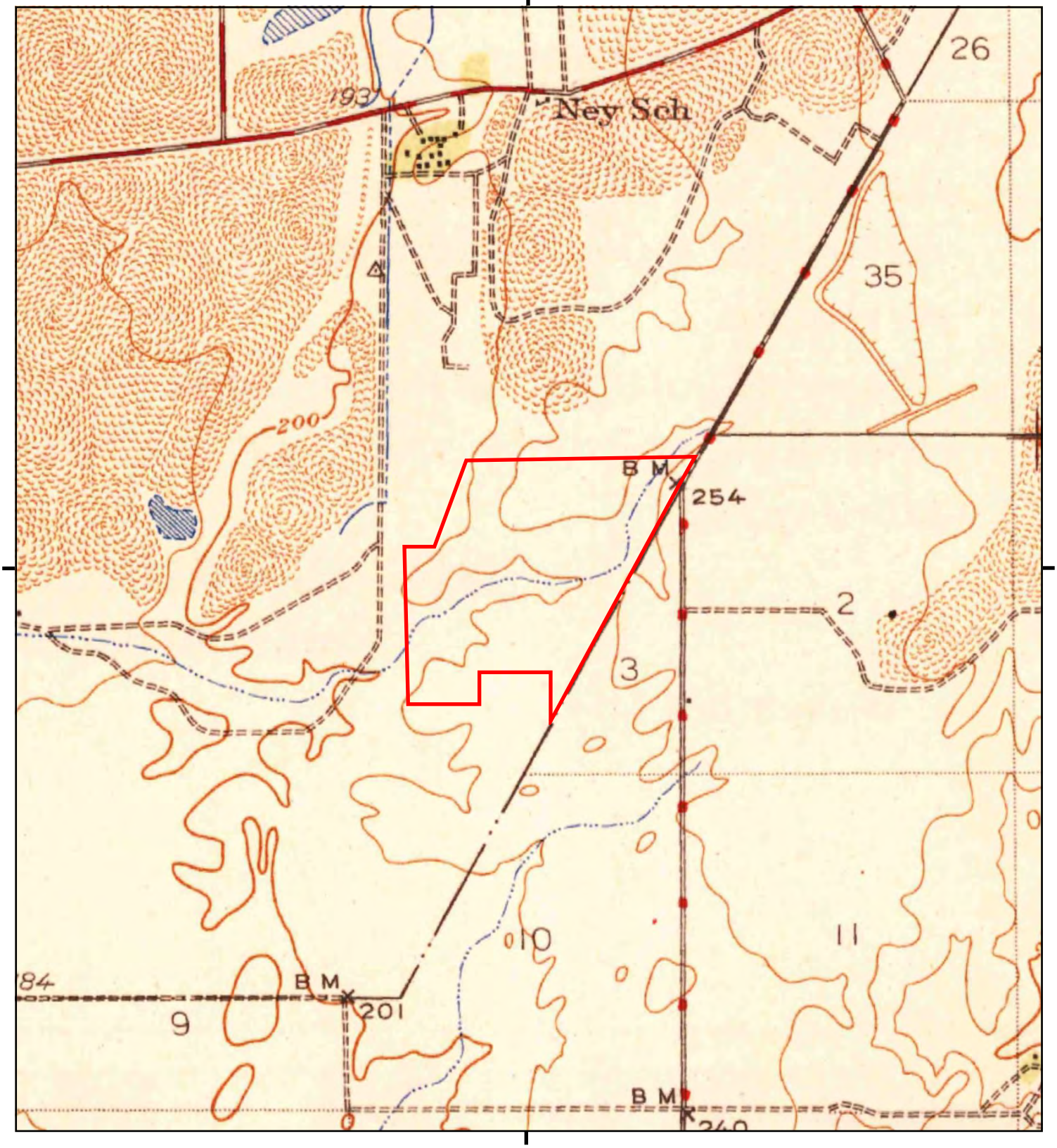
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Buffalo Creek, 1954, 7.5-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N



This report includes information from the following map sheet(s).

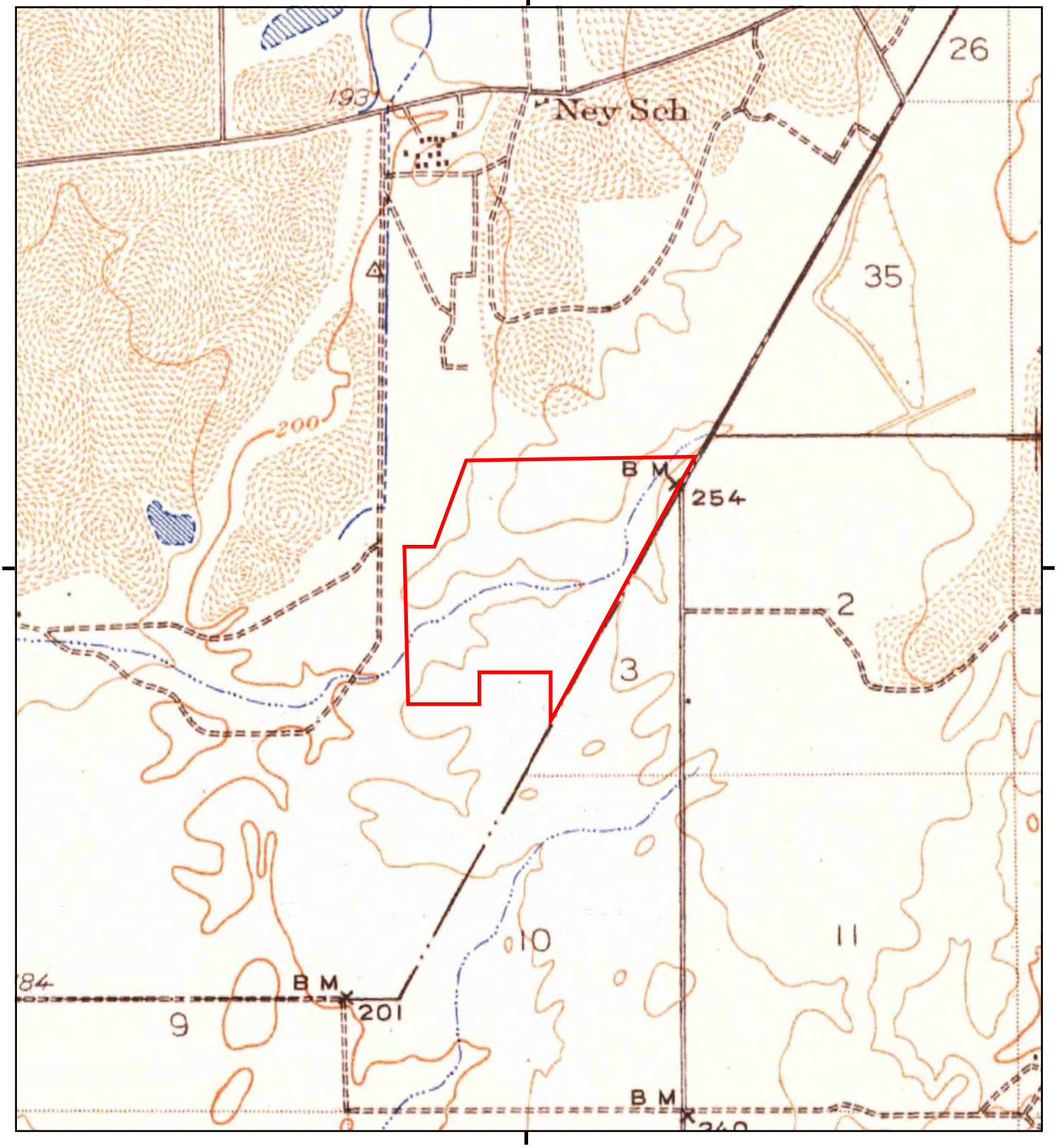
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Folsom, 1944, 15-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

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

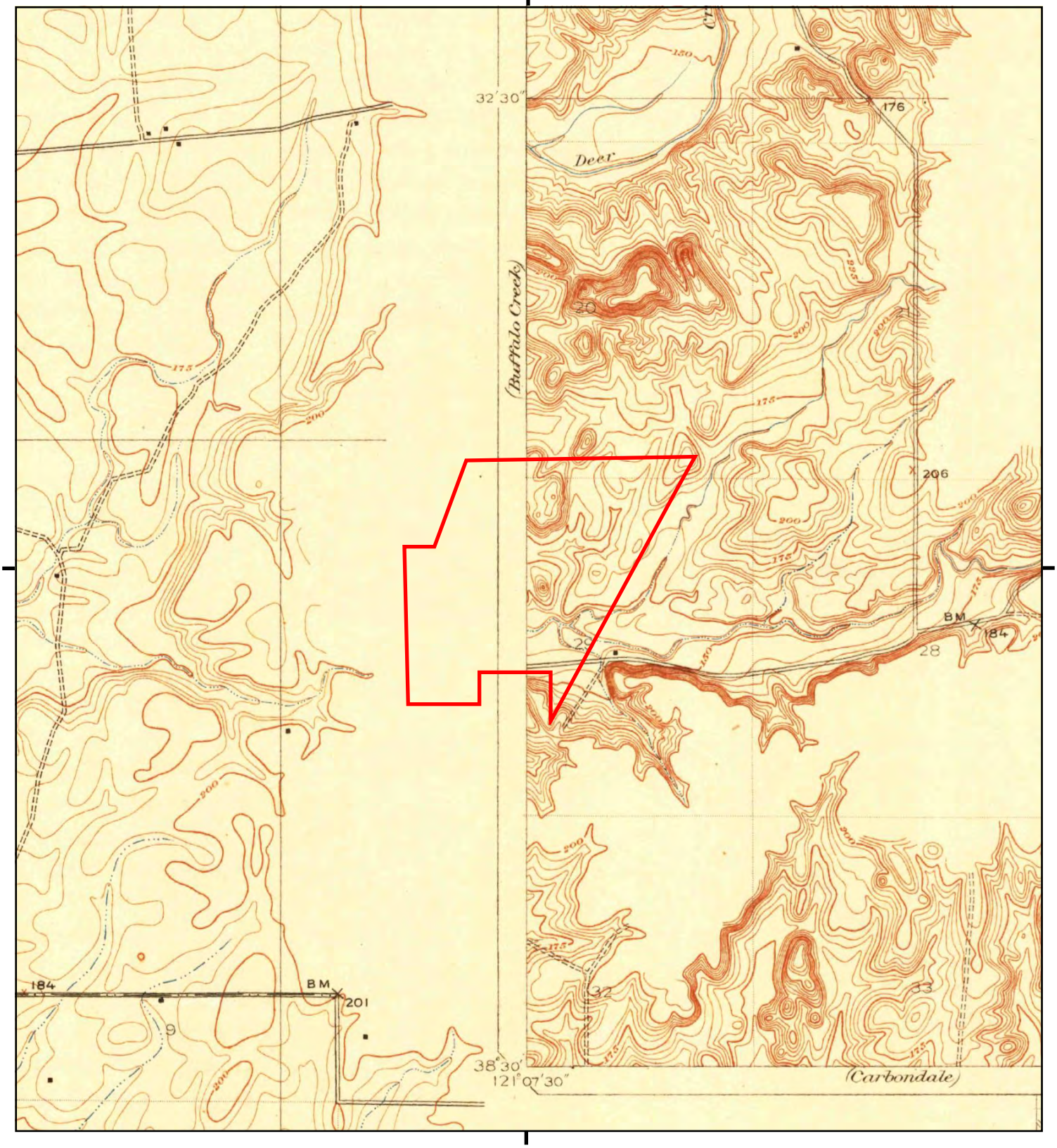
TP, Folsom, 1941, 15-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N

Historical Topo Map

1916



This report includes information from the following map sheet(s).

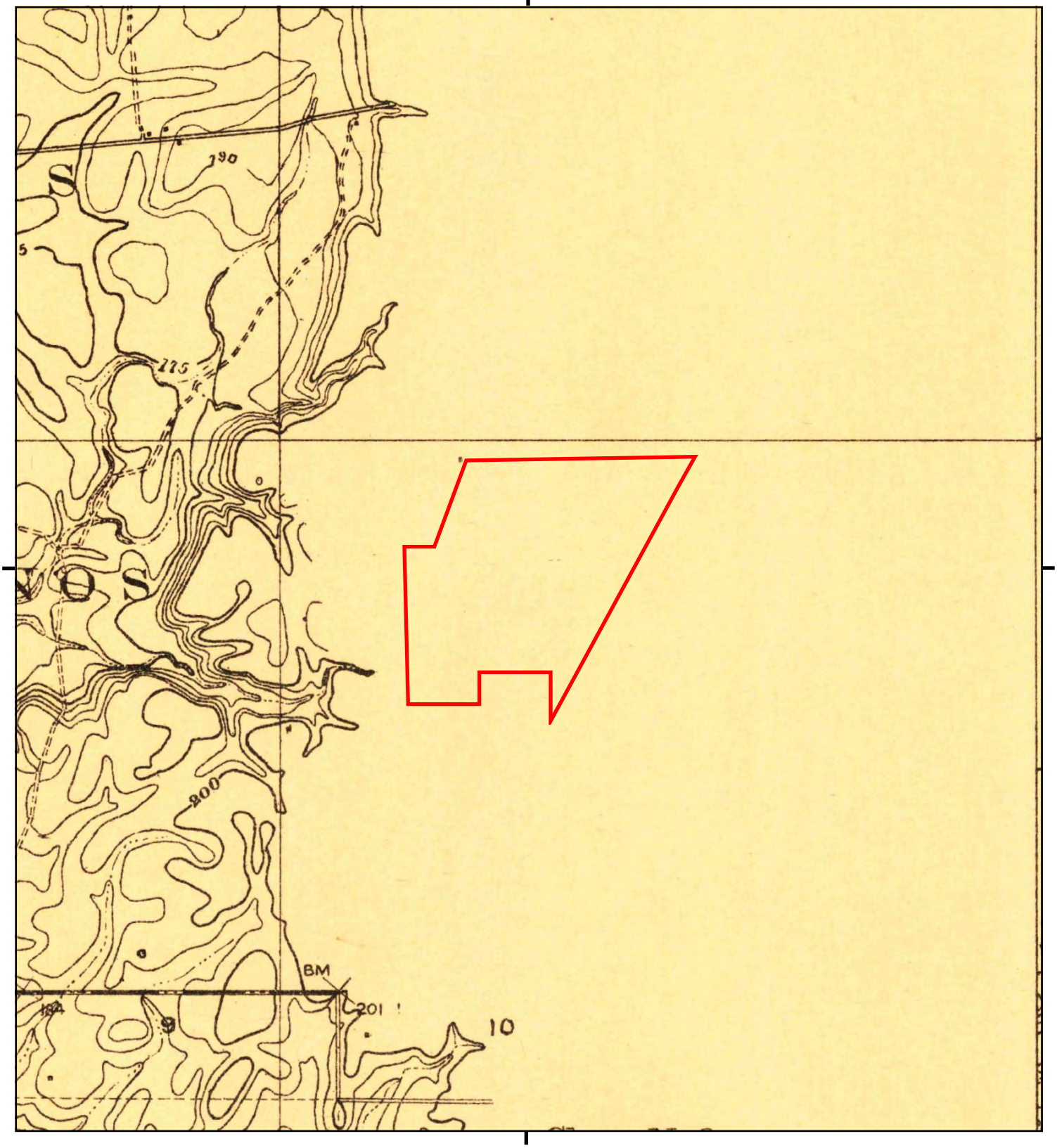
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Buffalo Creek, 1916, 7.5-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N



This report includes information from the following map sheet(s).

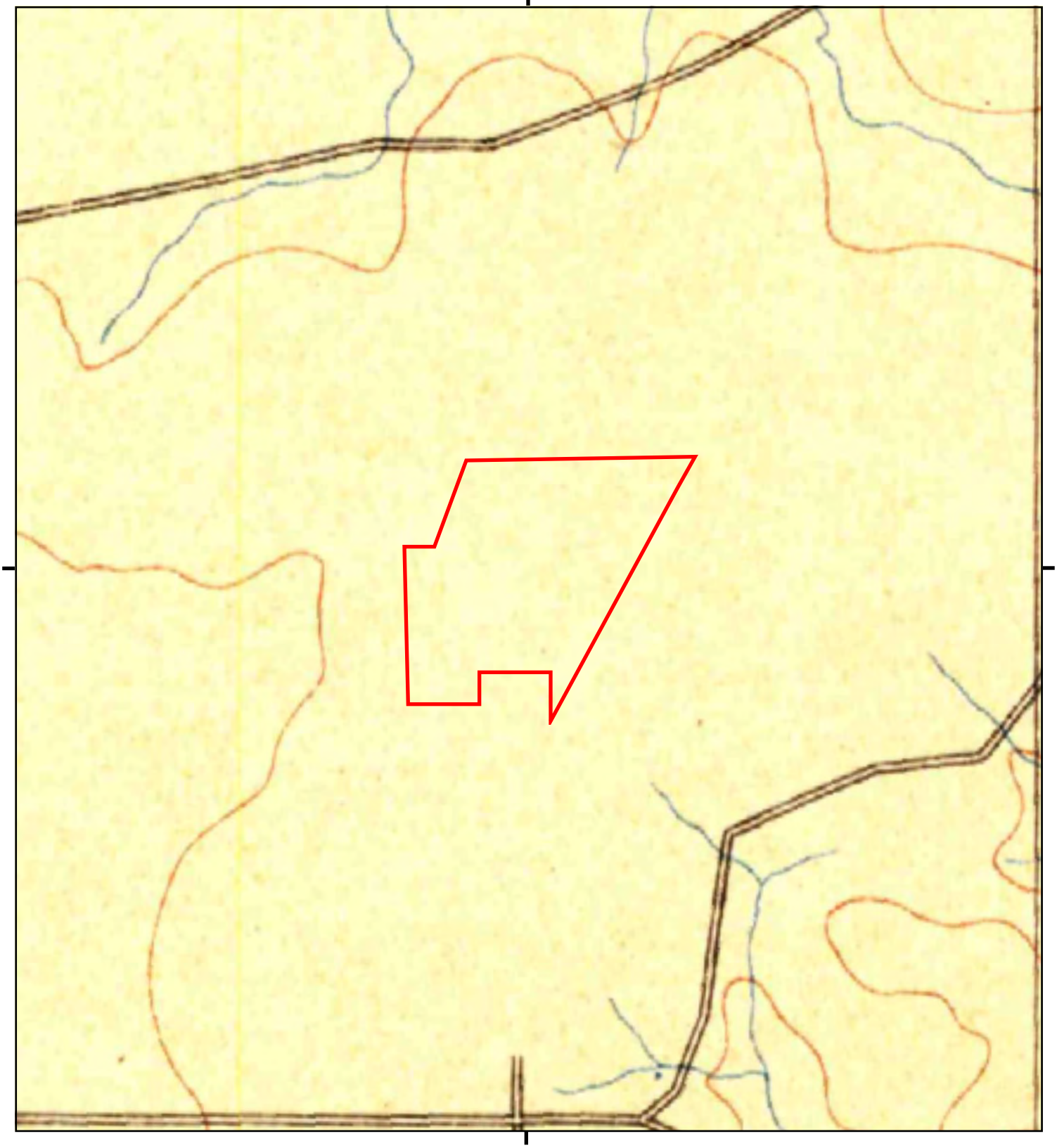
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Buffalo Creek, 1908, 7.5-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N



This report includes information from the following map sheet(s).

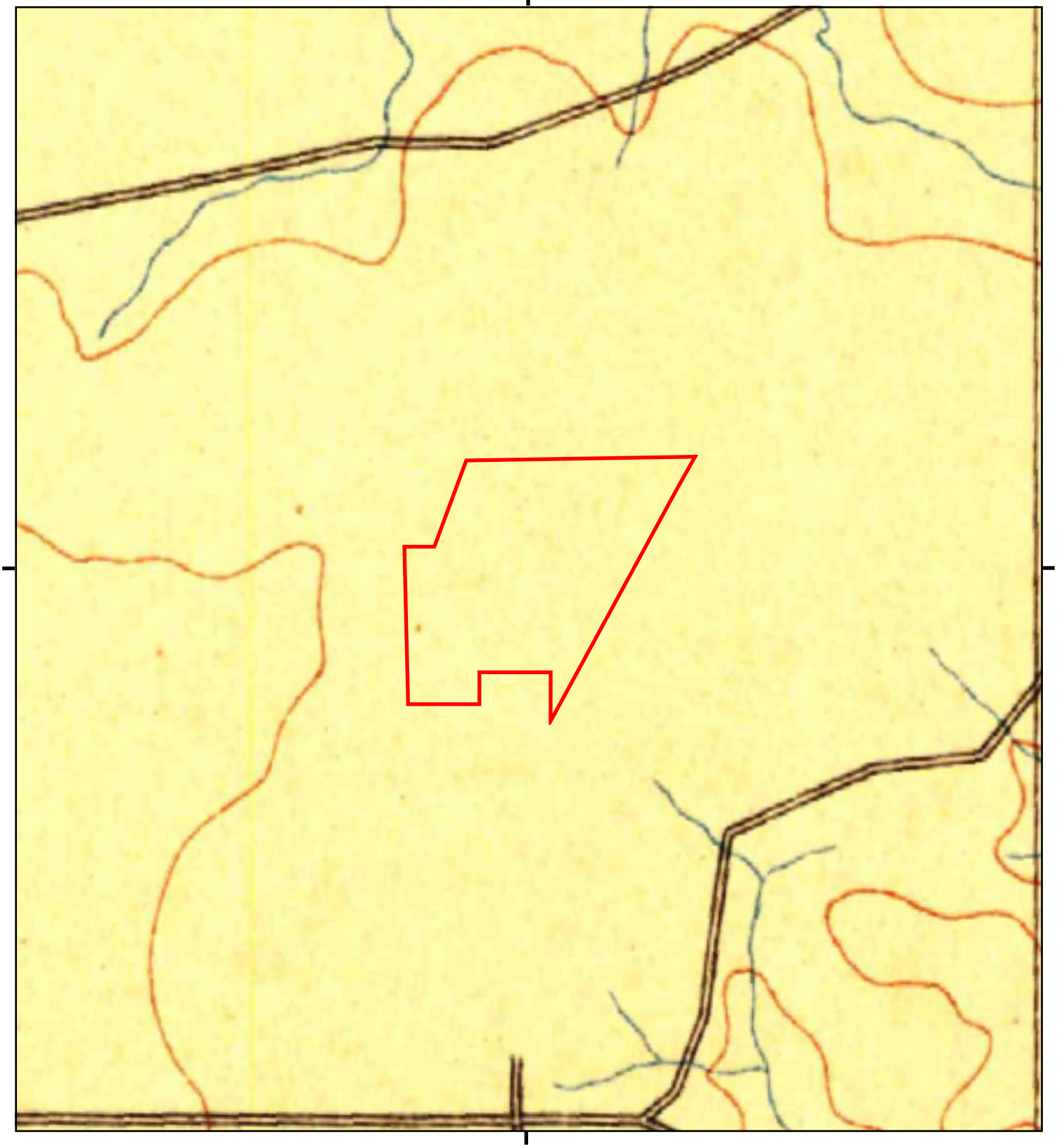
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Sacramento, 1893, 30-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N



This report includes information from the following map sheet(s).

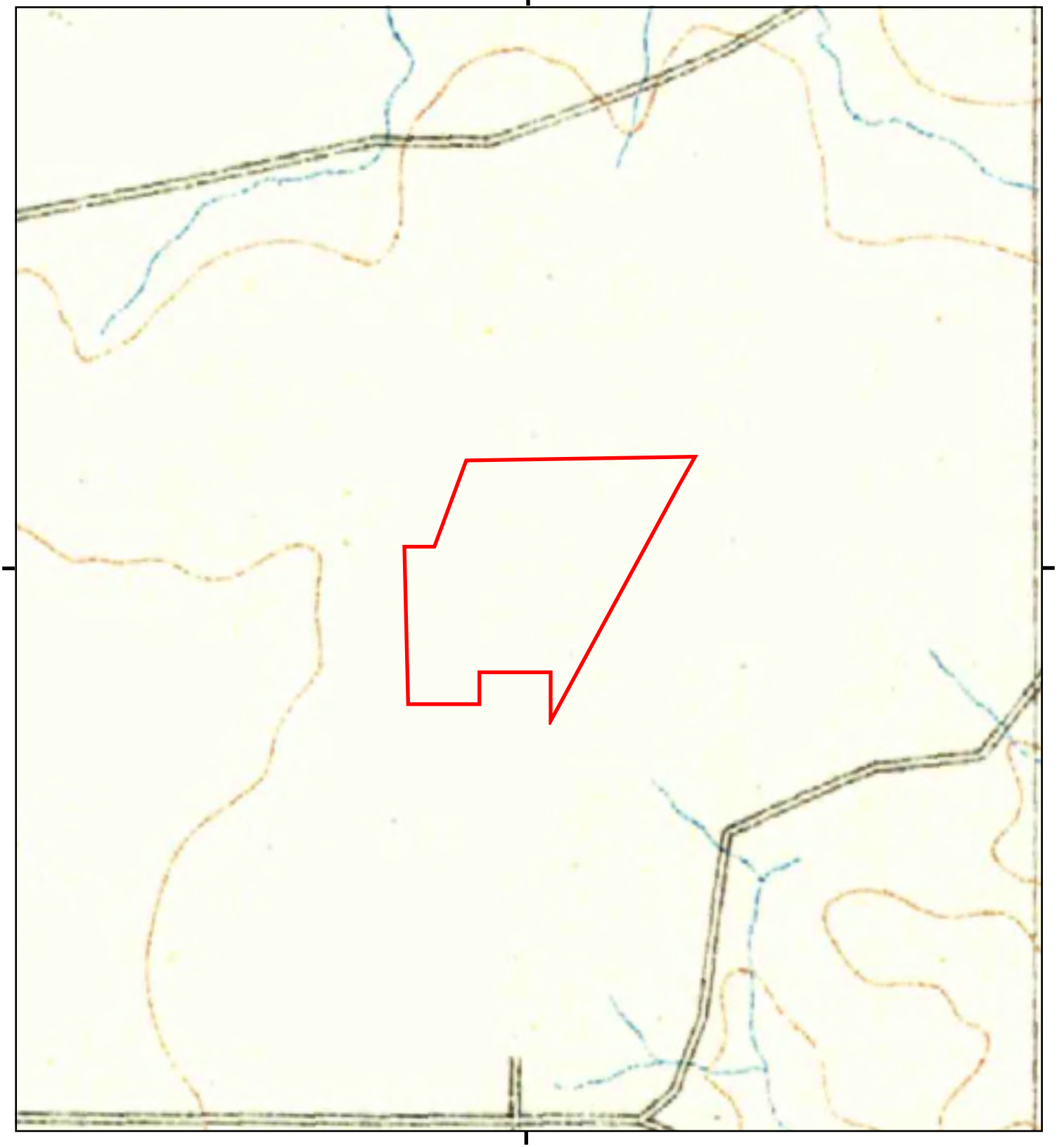
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Sacramento, 1892, 30-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

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, Sacramento, 1891, 30-minute

SITE NAME: The Preserve Phase I ESA
ADDRESS: 12525 Douglas Road
Rancho Cordova, CA 95742
CLIENT: Youngdahl Consulting Group

N

The Preserve Phase I ESA
12525 Douglas Road
Rancho Cordova, CA 95742

Inquiry Number: 5633265.5
April 29, 2019

The EDR-City Directory Image Report

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

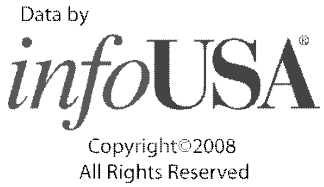
DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report 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 Report includes a search of available city directory data at 5 year intervals.

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. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2014	☑	☑	EDR Digital Archive
2010	☑	☑	EDR Digital Archive
2005	☑	☑	EDR Digital Archive
2000	☑	☑	EDR Digital Archive
1994	☑	☑	Haines Criss-Cross Directory
1989	☑	☑	Haines Criss-Cross Directory
1985	☑	☑	Haines Criss-Cross Directory
1980	☑	☑	Haines Criss-Cross Directory
1977	☐	☐	HAINES AND COMPANY
1971	☐	☐	HAINES AND COMPANY

FINDINGS

TARGET PROPERTY STREET

12525 Douglas Road
Rancho Cordova, CA 95742

Year	*CD Image*	*Source*	
DOUGLAS RD			
2014	pg A1	EDR Digital Archive	
2010	pg A3	EDR Digital Archive	
2005	pg A5	EDR Digital Archive	
2000	pg A7	EDR Digital Archive	
1994	pg A9	Haines Criss-Cross Directory	
1989	pg A11	Haines Criss-Cross Directory	
1985	pg A13	Haines Criss-Cross Directory	
1980	pg A15	Haines Criss-Cross Directory	
1977	-	HAINES AND COMPANY	Target and Adjoining not listed in Source
1971	-	HAINES AND COMPANY	Target and Adjoining not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
GRANT LINE RD			
2014	pg. A2	EDR Digital Archive	
2010	pg. A4	EDR Digital Archive	
2005	pg. A6	EDR Digital Archive	
2000	pg. A8	EDR Digital Archive	
1994	pg. A10	Haines Criss-Cross Directory	
1989	pg. A12	Haines Criss-Cross Directory	
1985	pg. A14	Haines Criss-Cross Directory	
1980	pg. A16	Haines Criss-Cross Directory	
GRANTLINE RD			
1977	-	HAINES AND COMPANY	Street not listed in Source
1971	-	HAINES AND COMPANY	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DOUGLAS RD 2014

11499	INSURANCE AUTO AUCTIONS INC
	WEST COAST AUTO AUCTIONS INC
11551	ADVANCED SECURITY INSTITUTE
	MARKSMANSHIP CONSULTANTS INC
12535	FAGUNDES, ANTONIO V
12565	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

GRANT LINE RD 2014

3417	A TEICHERT & SON INC
3450	TAMRA HARPER
3601	RANCH, TRACY
4232	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DOUGLAS RD 2010

11430	SUNRISE VALLEY RANCH
11499	INSURANCE AUTO AUCTIONS INC
	K & S AUTO TRUCK & TRACTOR
11551	ADVANCED SECURITY INSTITUTE
	MARKSMANSHIP CONSULTANTS INC
12525	WHITLOW, MARCIE A
12535	HOGGE, KELLY
12565	3213 FITZGERALD LLC
	MCMULLEN, SCOTT S
	ROCKFORD FAMILY PROPERTIES LLC

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

GRANT LINE RD 2010

3417 A TEICHERT & SON INC
3450 TAMRA HARPER
3601 TRACY, JOHN J
4232 OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DOUGLAS RD 2005

11430	JONES, BRENT G
	SUNRISE VALLEY RANCH
11485	HEALEY BRIAN R ENTERPRISES
11499	GILBERT ROSSMAN SECURITY
	INSURANCE AUTO AUCTIONS INC
11505	SACRAMENTO HEAT TREATING
11551	MARKSMANSHIP CONSULTANTS INC
12515	CUPP, ARCHEL C
12525	OCCUPANT UNKNOWN,
12535	FAGUNDES, LYNNE M
12565	DIVINE, DAVID R
12575	GRIFFIN CAPITAL ASHWOOD SOUTHF
	WEIDINGER, JIM D

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

GRANT LINE RD 2005

3417 TEICHERT AGGREGATES CORP
3450 OCCUPANT UNKNOWN,
3601 TRACY, JOHN J
4232 OCCUPANT UNKNOWN,
PAUPERS PALACE ANTIQUES
VALHALLA VALLEY VINEYARDS INC
4234 WARD, CHRIS

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DOUGLAS RD 2000

11430	RUSSELL, SHAWNA
	SUNRISE VALLEY RANCH
11485	HEALEY BRIAN R ENTERPRISES
11499	HEALEY AUTOMOTIVE INC
	INSURANCE AUTO AUCTIONS INC
	STATEWIDE AUTO TRANSPORT
	UNITED ROAD SERVICES INC
11505	SACRAMENTO HEAT TREATING
11535	ALLSTATE INSURANCE COMPANY
11551	MARKSMANSHIP CONSULTANTS INC
12525	LEHMAN, DANIEL L
12535	WEISKER, B
12565	OCCUPANT UNKNOWN,
12575	JAMES, D W
	WEIDINGER, JIM
	WESTERN CMPT & COMM SYSTEMS

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

GRANT LINE RD 2000

3417	AMERICAN RIVER AGGREGATES
3450	HUSSMAN, JACKIE L
3601	TRACY, JOHN J
4232	WARD, CHRIS

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

DOUGLAS RD 1994



DOUGLAS RD 95742
RANCHO CORDOVA

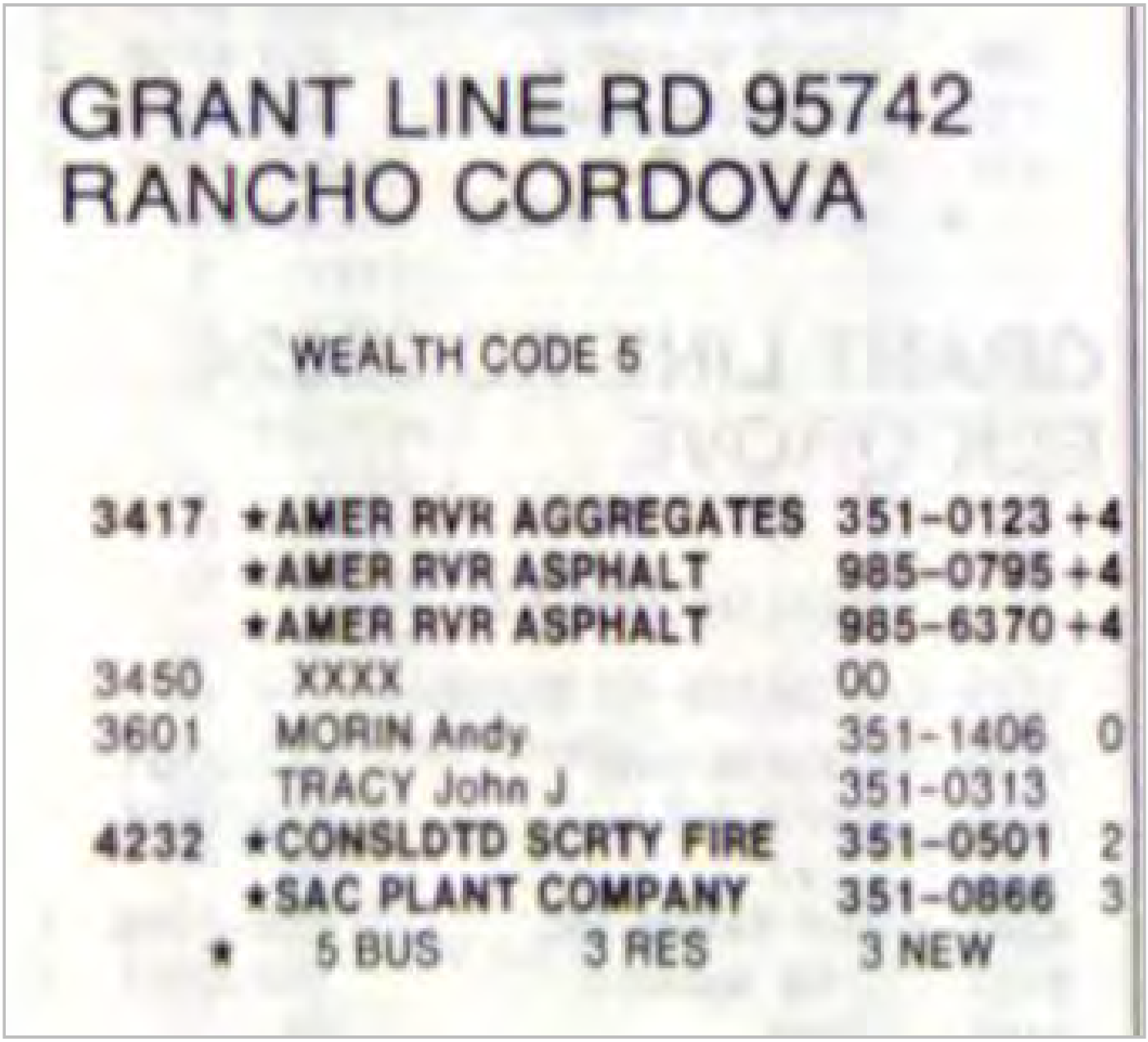
WEALTH CODE 5

11430	*GROESBECK TRAINING	351-0855 +4
11499	*CHEVRONWEST	635-1756 1
	*SAC SALVAGE POOL	635-4271
	*SALVAGE POOL	635-4271
11505	XXXX	00
11551	*CORDOVA SHOOTING	351-0205
12515	XXXX	00
12525	LEHMAN Danl L	985-4185
12535	XXXX	00
12575	XXXX	00

* 5 BUS 5 RES 1 NEW

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

GRANT LINE RD 1994



GRANT LINE RD 95742
RANCHO CORDOVA

WEALTH CODE 5

3417	*AMER RVR AGGREGATES	351-0123	+4
	*AMER RVR ASPHALT	985-0795	+4
	*AMER RVR ASPHALT	985-6370	+4
3450	XXXX	00	
3601	MORIN Andy	351-1406	0
	TRACY John J	351-0313	
4232	*CONSLDTD SCRTY FIRE	351-0501	2
	*SAC PLANT COMPANY	351-0866	3

* 5 BUS 3 RES 3 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

DOUGLAS RD 1989



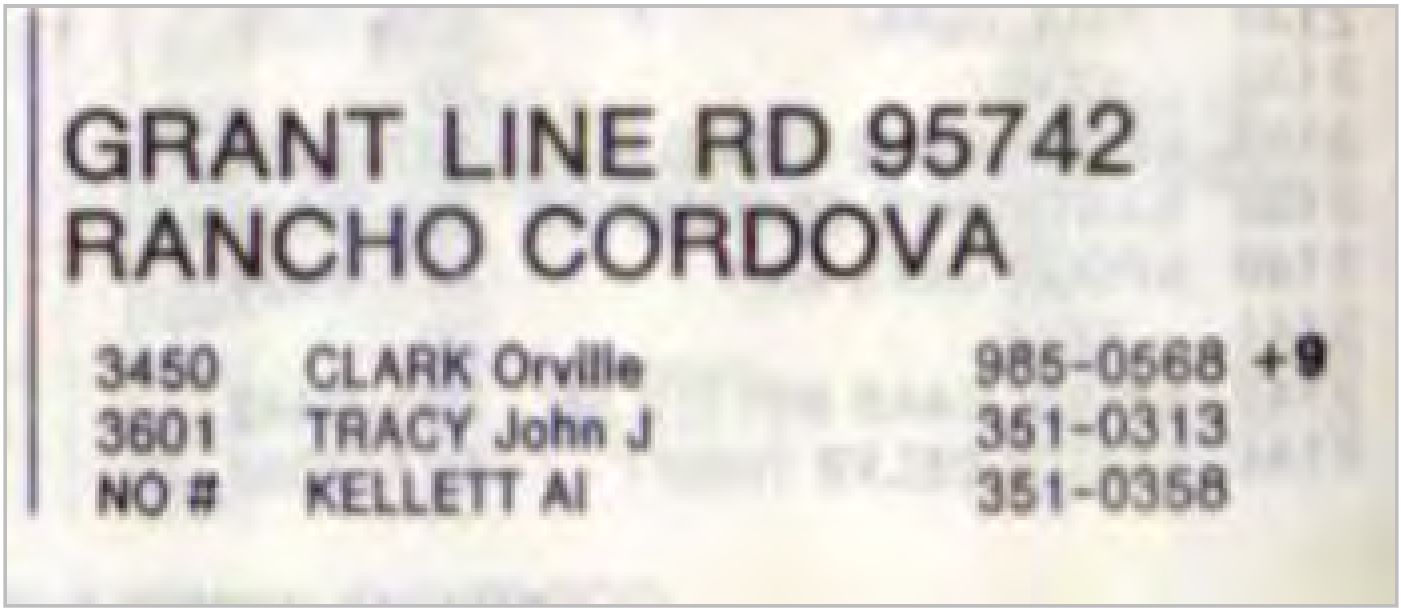
DOUGLAS RD 95742
RANCHO CORDOVA

11430	HAMPTON Dave	985-2094	+9
	KLEEMANN Bernhardt	351-9919	
	KLEEMANN Bernhardt	351-0422	
11499	XXXX	00	
11505	*AEROJET INVSTMT LTD	355-1000	7
	*EATON DRILLING CO	351-1408	6
	*PRIMARY ELECTR CNST	985-7244	5
	*SAC HEAT TREAT	351-0534	1
11551	*CORDOVA SHOOTING	351-0205	
	RUSSELL Craig	351-1665	+9
12525	LEHMAN Danl L	985-4185	0
12535	XXXX	00	
12575	XXXX	00	

* 5 BUS 8 RES 2 NEW

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

GRANT LINE RD 1989

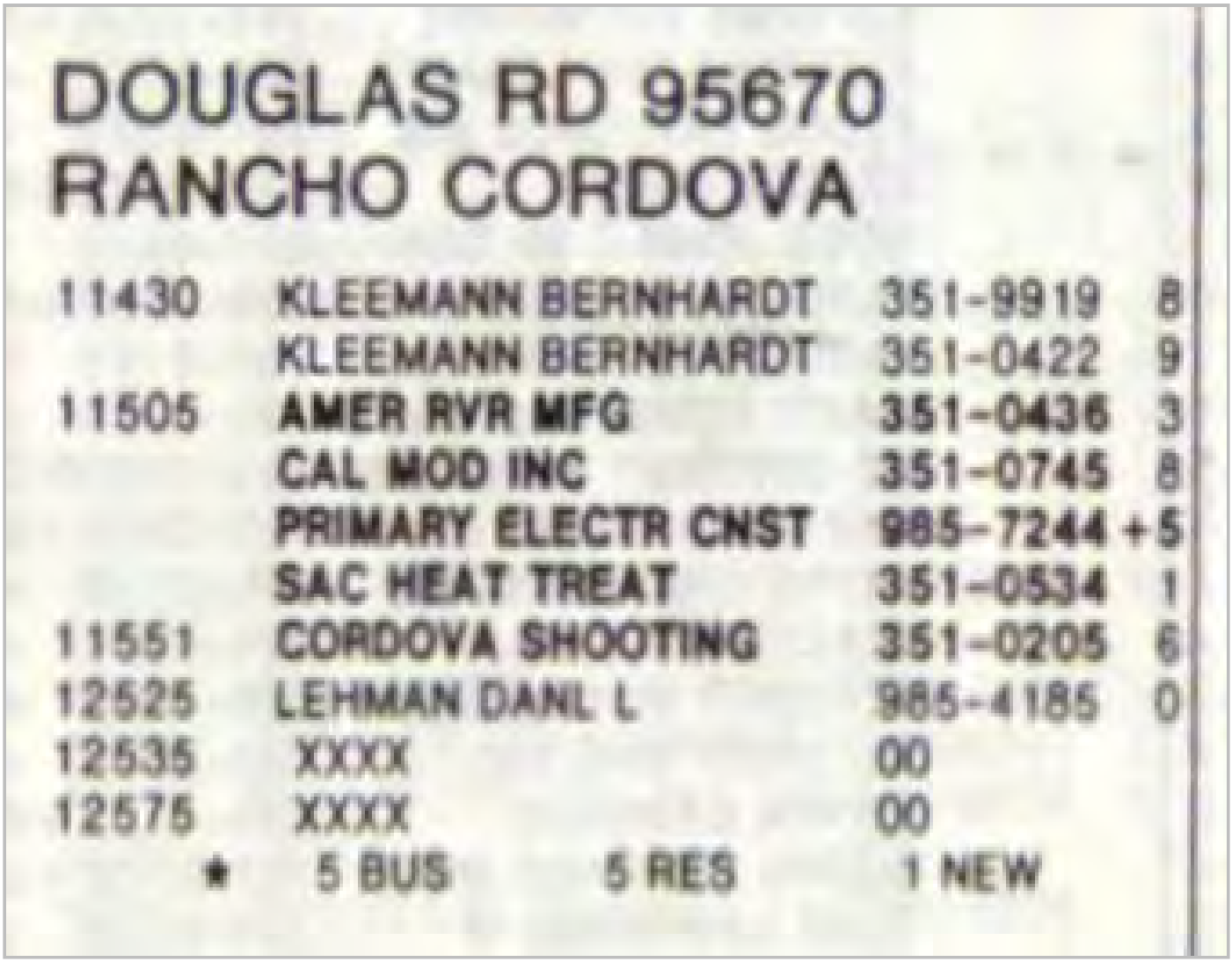


GRANT LINE RD 95742
RANCHO CORDOVA

3450	CLARK Orville	985-0568 +9
3601	TRACY John J	351-0313
NO #	KELLETT Al	351-0358

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

DOUGLAS RD 1985



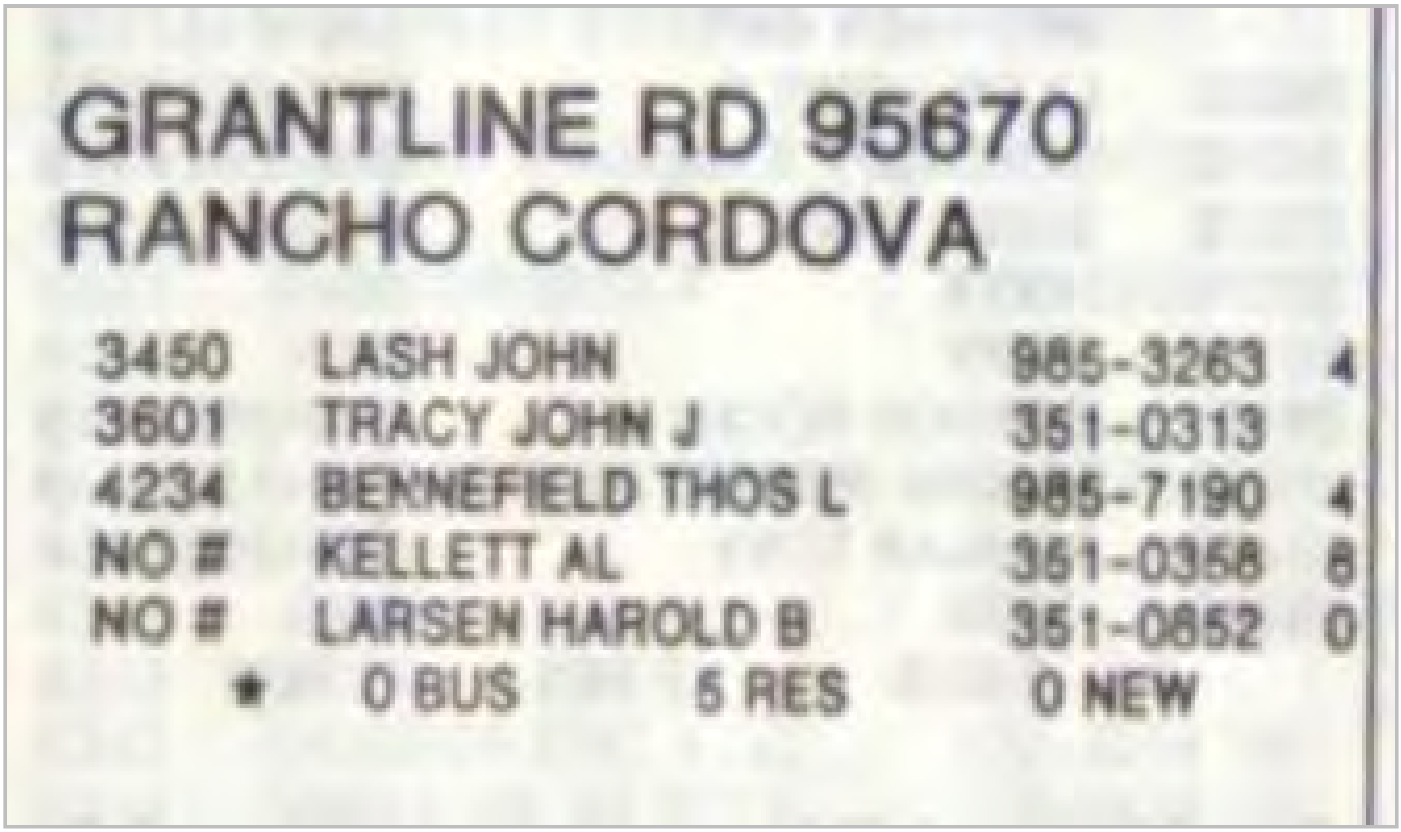
DOUGLAS RD 95670
RANCHO CORDOVA

11430	KLEEMANN BERNHARDT	351-9919	8
	KLEEMANN BERNHARDT	351-0422	9
11505	AMER RVR MFG	351-0436	3
	CAL MOD INC	351-0745	8
	PRIMARY ELECTR CNST	985-7244	+5
	SAC HEAT TREAT	351-0534	1
11551	CORDOVA SHOOTING	351-0205	6
12525	LEHMAN DANL L	985-4185	0
12535	XXXX	00	
12575	XXXX	00	

★ 5 BUS 5 RES 1 NEW

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

GRANT LINE RD 1985



GRANTLINE RD 95670
RANCHO CORDOVA

3450	LASH JOHN	985-3263	4
3601	TRACY JOHN J	351-0313	
4234	BENNEFIELD THOS L	985-7190	4
NO #	KELLETT AL	351-0358	8
NO #	LARSEN HAROLD B	351-0852	0

* 0 BUS 5 RES 0 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

DOUGLAS RD 1980

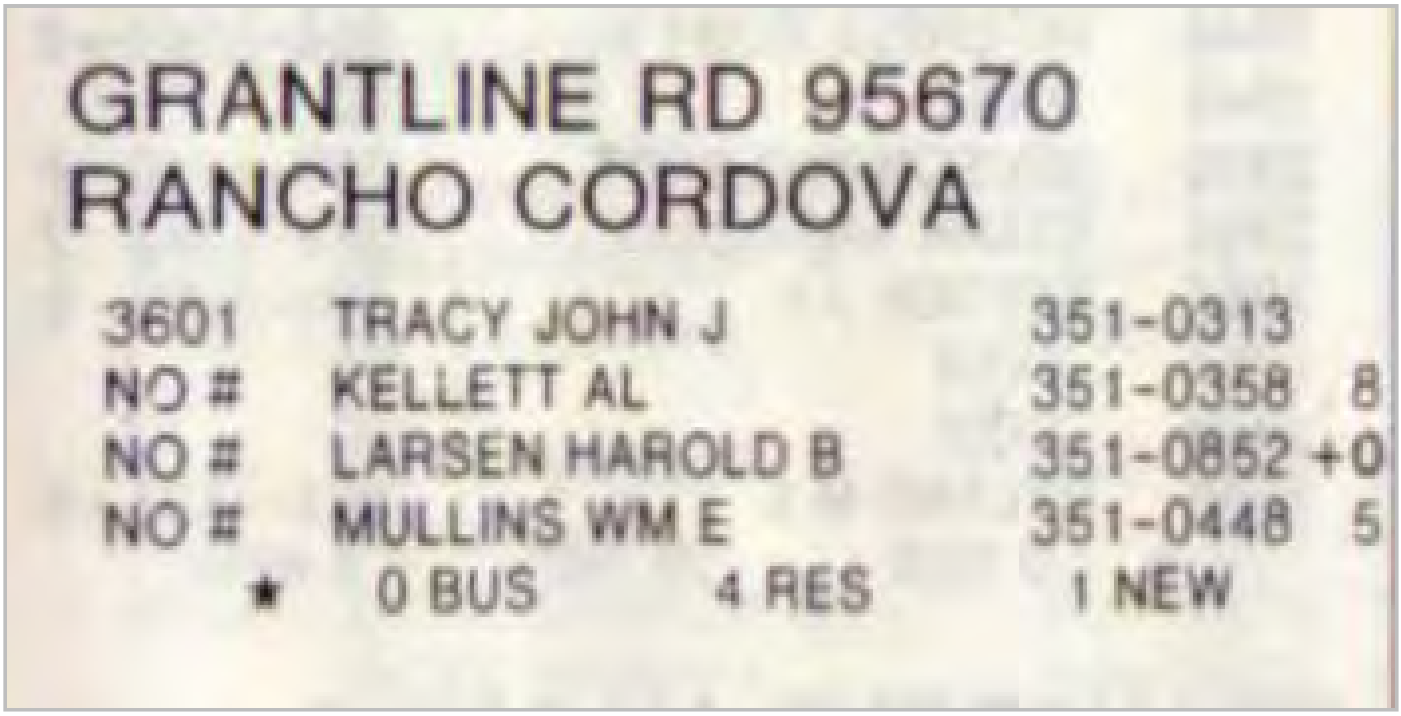
DOUGLAS RD 95670
RANCHO CORDOVA

11430	KLEEMANN BERNHARDT	351-0422	9
	KLEEMANN BERNHARDT	351-9919	8
11505	BUILDING		
	ACRYLIC PRODUCTS	351-0721	9
	AMER WASTE CONTAINR	635-8000	8
	AMER WASTE LOD	635-8000	+0
	AMERICAN WASTE CONT	635-8000	9
	B&E IRON&STEEL	985-7925	7
	CAL MOD INC	351-0745	8
	CAL REL ABLE ELEC	985-7600	+0
	CARLSON ALMNM PRDCT	351-0655	7
	CLASSIC COACHWORKS	985-2137	9
	DRAWERS ARE US	985-3598	+0
	EKA WRECKERS USA	351-0561	+0
	ENGINEERNG RESRCH	351-0247	9
	EXTENSA SYSTEMS	351-0331	8
	FORMULA PRODUCTS	351-0534	8
	GENRL ELEC MED STS	361-4200	+0
	HAULAWAY CONTAINERS	351-0679	8
	INSTRU SPEC	351-0231	6
	INTERSTATE CONTRS	351-0622	7
	J&W SCIENTIFIC INC	351-0387	7
	KEYSTONE CONSTR CO	351-0474	9
	MAGNUM TOWERS INC	985-7727	7
	MCDONNELL DOUGLAS	351-0550	
	NEWBEL INDUSTRIES	985-3461	+0
	PEERLESS INSTRUMENT	351-0464	6
	RELIABLE ELEC WRKS	985-7600	+0
	SECURITY PARK	351-0550	8
	SLOAN & ASSOC	351-0180	+0
	TROPHY WOOD PRODUCT	351-0410	7
11505			
11551	CORDOVA REC RANGE	351-0205	5
	CORDOVA SHOOTING	351-0205	6
12525	LEHMAN DANL L	985-4185	+0
12535	MCKENNA LARRY	985-4215	+0
	MCKENNA LARRY	985-7990	+0
12575	DELTA TILE	985-7959	+0
	MURPHY VICTOR	985-4267	+0

★ 31 BUS 6 RES 13 NEW

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

GRANT LINE RD 1980



GRANTLINE RD 95670
RANCHO CORDOVA

3601	TRACY JOHN J	351-0313
NO #	KELLETT AL	351-0358 8
NO #	LARSEN HAROLD B	351-0852 +0
NO #	MULLINS WM E	351-0448 5

* 0 BUS 4 RES 1 NEW

The Preserve Phase I ESA
12525 Douglas Road
Rancho Cordova, CA 95742

Inquiry Number: 5633265.3
April 26, 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

04/26/19

Site Name:

The Preserve Phase I ESA
12525 Douglas Road
Rancho Cordova, CA 95742
EDR Inquiry # 5633265.3

Client Name:

Youngdahl Consulting Group
1234 Glenhaven Court
El Dorado Hills, CA 95762
Contact: Dennis Eck

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Youngdahl Consulting Group 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 # 2A02-4450-BA3E

PO # PE19-200

Project The Preserve 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 #: 2A02-4450-BA3E

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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APPENDIX C
EDR Radius Map Report with GeoCheck®

The Preserve Phase I ESA
12525 Douglas Road
Rancho Cordova, CA 95742

Inquiry Number: 5633265.2s
May 01, 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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Detail Map	3
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Map Findings	8
Orphan Summary	220
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GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
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Physical Setting Source Records Searched	PSGR-1

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

12525 DOUGLAS ROAD
RANCHO CORDOVA, CA 95742

COORDINATES

Latitude (North):	38.5755860 - 38˚ 34' 32.10''
Longitude (West):	121.1964640 - 121˚ 11' 47.27''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	657109.8
UTM Y (Meters):	4271015.5
Elevation:	243 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5619686 BUFFALO CREEK, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140621
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
12525 DOUGLAS ROAD
RANCHO CORDOVA, CA 95742

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	AEROJET ROCKETDYNE I	US HWY 50 AND AEROJE	NPL, SEMS, CORRACTS, RCRA-TSDF, RCRA-LQG, US ENG..	Same	1 ft.
1	NORTH DOUGLAS	NORTHEAST OF DOUGLAS	CIWQS	Lower	1 ft.
A2	AMERICAN RIVER ASPHA	3417 GRANTLINE RD	AST, CERS HAZ WASTE, CERS TANKS, EMI, ENF,...	Higher	333, 0.063, ENE
A3	GRANTLINE PLANT	3417 GRANT LINE RD	AST	Higher	333, 0.063, ENE
4	INACTIVE RANCHO CORD	NIMBUS ROAD	CPS-SLIC	Lower	2246, 0.425, West
B5	GENERAL ELECTRIC MED	3920 SECURITY PARK	ENVIROSTOR	Lower	4256, 0.806, SSW
B6	AUTOMOTIVE IMPORTING	3920 SECURITY PARK D	SEMS-ARCHIVE, CORRACTS, RCRA-TSDF, RCRA-SQG,...	Lower	4256, 0.806, SSW
B7	GENERAL ELECTRIC MED	3920 SECURITY PARK	HWP, CERS	Lower	4256, 0.806, SSW

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

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

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA generators list

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

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

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land
Sacramento Co. CS ---------- Toxic Site Clean-Up List

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
UST ---------- Active UST Facilities
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP ---------- Voluntary Cleanup Program Properties
INDIAN VCP ---------- Voluntary Cleanup Priority Listing

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
Toxic Pits ---------- Toxic Pits Cleanup Act Sites
US CDL ---------- National Clandestine Laboratory Register
PFAS ---------- PFAS Contamination Site Location Listing

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
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
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking 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
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
ECHO	Enforcement & Compliance History Information
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
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
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
CERS CERS
NON-CASE INFO NON-CASE INFO (GEOTRACKER)
WIP Well Investigation Program Case List
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
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

Federal NPL site list

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and

identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 03/11/2019 has revealed that there is 1 NPL site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
Cerclis ID:: 901718				
EPA Id: CAD980358832				

Federal CERCLIS list

SEMS: 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.

A review of the SEMS list, as provided by EDR, and dated 03/11/2019 has revealed that there is 1 SEMS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
Site ID: 0901718				
EPA Id: CAD980358832				

Federal RCRA CORRACTS facilities list

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 03/25/2019 has revealed that there are 2 CORRACTS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
EPA ID:: CAD000030494				

Lower Elevation	Address	Direction / Distance	Map ID	Page
AUTOMOTIVE IMPORTING	***3920 SECURITY PARK D***	***SSW 1/2 - 1 (0.806 mi.)***	***B6***	***208***
EPA ID:: CAD000819680				

EXECUTIVE SUMMARY

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: 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.

A review of the RCRA-TSDF list, as provided by EDR, and dated 03/25/2019 has revealed that there is 1 RCRA-TSDF site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
EPA ID:: CAD000030494				

Federal RCRA generators list

RCRA-LQG: 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.

A review of the RCRA-LQG list, as provided by EDR, and dated 03/25/2019 has revealed that there is 1 RCRA-LQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
EPA ID:: CAD000030494				

Federal institutional controls / engineering controls registries

US ENG CONTROLS: A listing of sites with engineering controls in place.

A review of the US ENG CONTROLS list, as provided by EDR, and dated 01/31/2019 has revealed that there is 1 US ENG CONTROLS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
EPA ID:: CAD980358832				
EPA ID:: CAD980358832				

US INST CONTROL: 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.

A review of the US INST CONTROL list, as provided by EDR, and dated 01/31/2019 has revealed that there is 1 US INST CONTROL site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
EPA ID:: CAD000030494				
EPA ID:: CAD980358832				

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 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
Facility Id: 80001284				
Status: Refer: SMBRP				

Lower Elevation	Address	Direction / Distance	Map ID	Page
GENERAL ELECTRIC MED	3920 SECURITY PARK	SSW 1/2 - 1 (0.806 mi.)	B5	207
Facility Id: 80001343				
Status: No Action Required				

State and tribal leaking storage tank lists

CPS-SLIC: 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.

A review of the CPS-SLIC list, as provided by EDR, has revealed that there is 1 CPS-SLIC site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
INACTIVE RANCHO CORD	NIMBUS ROAD	W 1/4 - 1/2 (0.425 mi.)	4	206
Database: CPS-SLIC, Date of Government Version: 12/10/2018 Global Id: T10000003290 Facility Status: Open - Remediation				

State and tribal registered storage tank lists

AST: A listing of aboveground storage tank petroleum storage tank locations.

A review of the AST list, as provided by EDR, has revealed that there are 2 AST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AMERICAN RIVER ASPHA	***3417 GRANTLINE RD***	***ENE 0 - 1/8 (0.063 mi.)***	***A2***	***178***
Database: AST, Date of Government Version: 07/06/2016				
GRANTLINE PLANT	3417 GRANT LINE RD	ENE 0 - 1/8 (0.063 mi.)	A3	205
Database: AST, Date of Government Version: 07/06/2016				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

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.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 10/22/2018 has revealed that there is 1 CERS HAZ WASTE site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AMERICAN RIVER ASPHA	***3417 GRANTLINE RD***	***ENE 0 - 1/8 (0.063 mi.)***	***A2***	***178***

Local Lists of Registered Storage Tanks

SWEEPS UST: 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.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***

Status: A
Tank Status: A
Comp Number: 35377

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
Facility Id: 00000019591				

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.

A review of the CERS TANKS list, as provided by EDR, and dated 10/22/2018 has revealed that there is 1 CERS TANKS site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AMERICAN RIVER ASPHA	***3417 GRANTLINE RD***	***ENE 0 - 1/8 (0.063 mi.)***	***A2***	***178***

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
Facility Id: 34006488				
Status: A				
Status: I				

Other Ascertainable Records

US FIN ASSUR: 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.

A review of the US FIN ASSUR list, as provided by EDR, and dated 01/31/2019 has revealed that there is 1 US FIN ASSUR site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***
EPA ID: CAD000030494				

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 03/11/2019 has revealed that there is 1 ROD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I EPA ID:: CAD980358832	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***

PRP: A listing of verified Potentially Responsible Parties

A review of the PRP list, as provided by EDR, and dated 03/11/2019 has revealed that there is 1 PRP site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***

PADS: The PCB Activity Database identifies generators, transporters, commercial storers and/or brokers and disposers of PCBs who are required to notify the United States Environmental Protection Agency of such activities. The source of this database is the U.S. EPA.

A review of the PADS list, as provided by EDR, and dated 09/14/2018 has revealed that there is 1 PADS site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I EPAID:: CAD000030494	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***

CONSENT: Major Legal settlements that establish responsibility and standards for cleanup at NPL (superfund) sites. Released periodically by U.S. District Courts after settlement by parties to litigation matters.

A review of the CONSENT list, as provided by EDR, and dated 12/31/2018 has revealed that there is 1 CONSENT site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AEROJET ROCKETDYNE I	***US HWY 50 AND AEROJE***	***0 - 1/8 (0.000 mi.)***	***0***	***8***

HWP: Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

A review of the HWP list, as provided by EDR, and dated 02/19/2019 has revealed that there is 1 HWP site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
GENERAL ELECTRIC MED EPA Id: CAD000819680	***3920 SECURITY PARK***	***SSW 1/2 - 1 (0.806 mi.)***	***B7***	***217***

Cleanup Status: CLOSED

Sacramento Co. ML: Sacramento County Master List. Any business that has hazardous materials on site - hazardous materials storage sites, underground storage tanks, waste generators.

A review of the Sacramento Co. ML list, as provided by EDR, and dated 11/07/2018 has revealed that there is 1 Sacramento Co. ML site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AMERICAN RIVER ASPHA	***3417 GRANTLINE RD***	***ENE 0 - 1/8 (0.063 mi.)***	***A2***	***178***

CIWQS: 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.

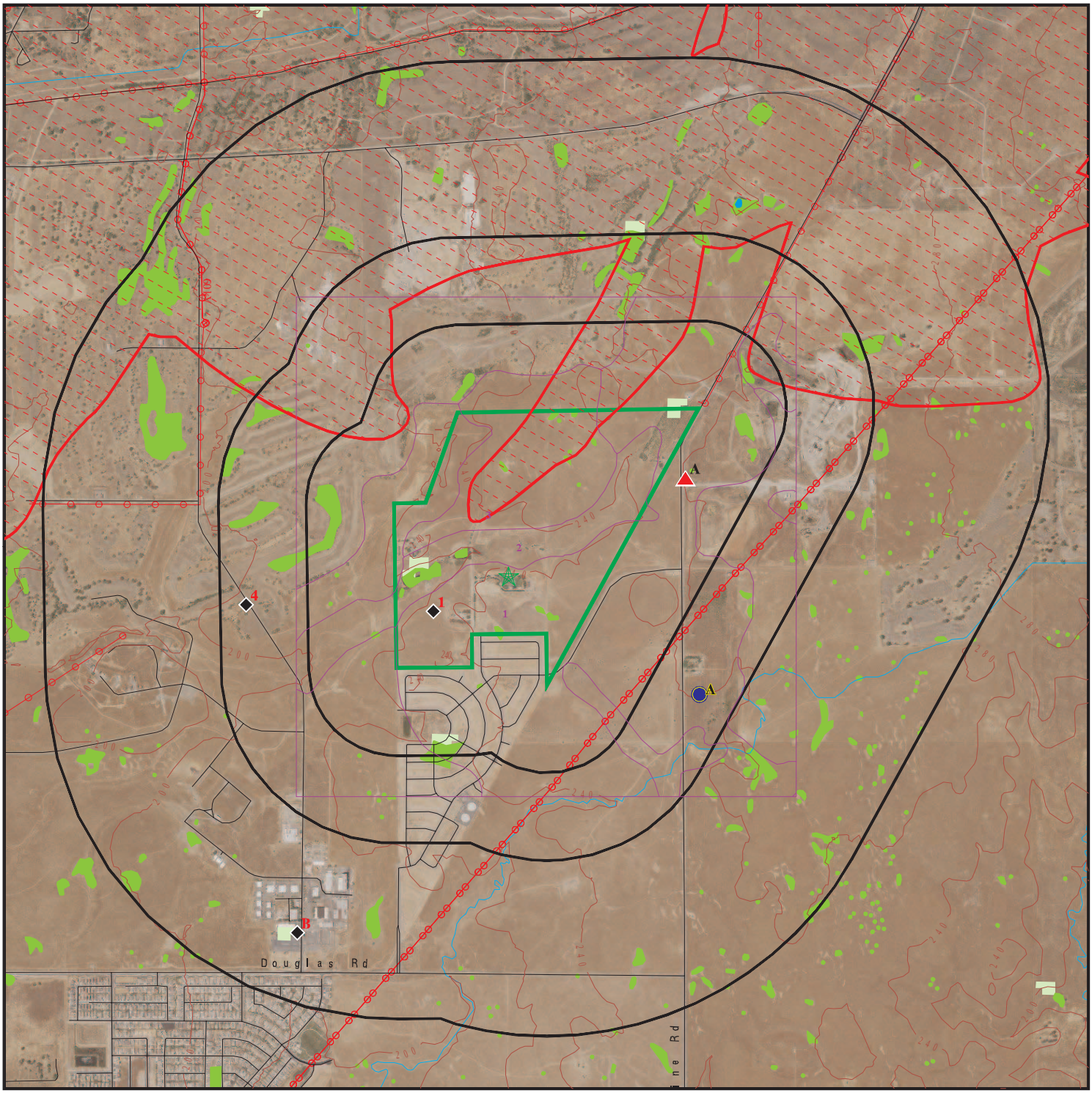
A review of the CIWQS list, as provided by EDR, and dated 03/05/2019 has revealed that there is 1 CIWQS site within approximately 0.001 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
NORTH DOUGLAS	NORTHEAST OF DOUGLAS	0 - 1/8 (0.000 mi.)	1	177

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 5633265.2S



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

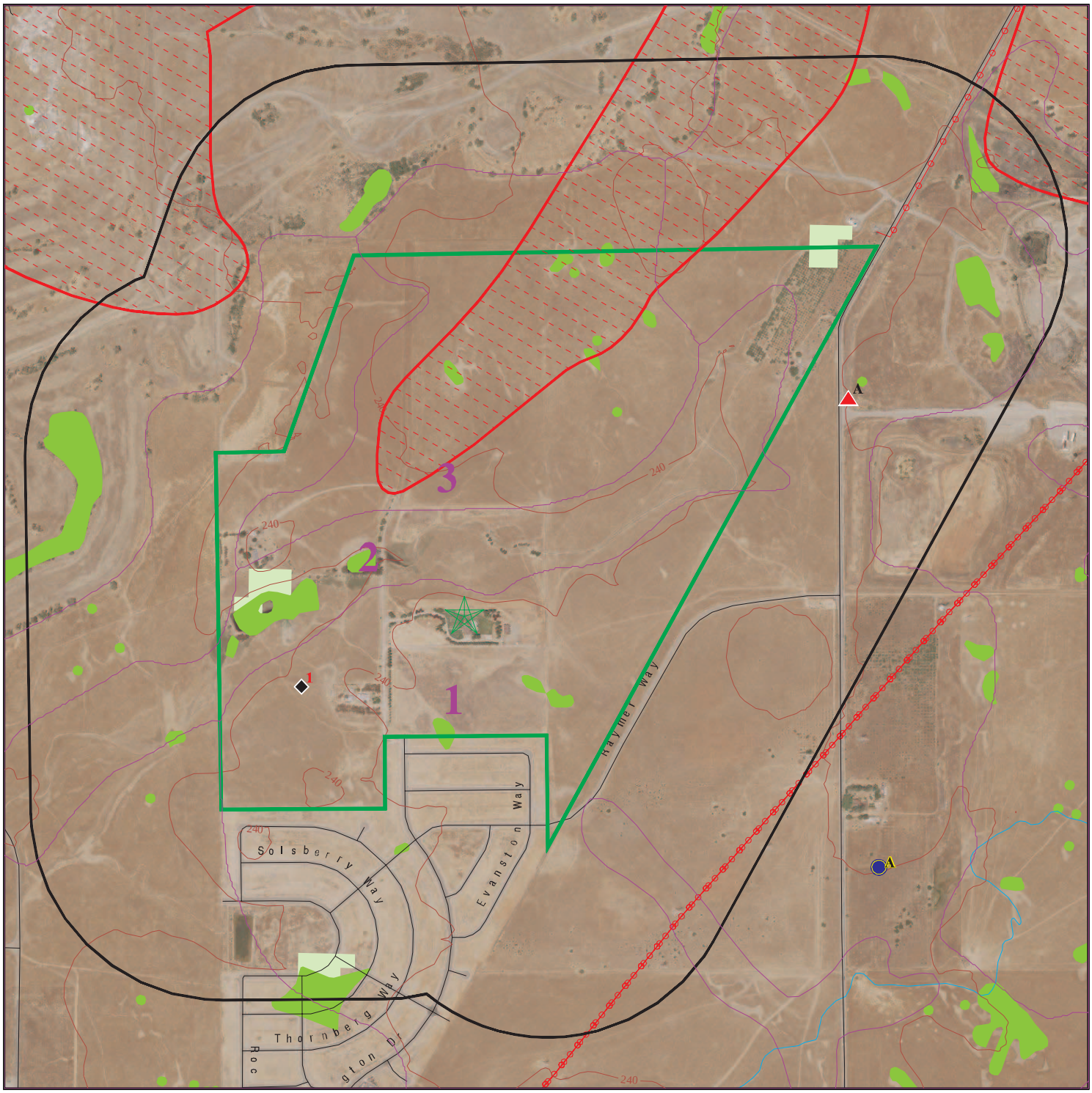
N

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:	The Preserve Phase I ESA	CLIENT:	Youngdahl Consulting Group
ADDRESS:	12525 Douglas Road Rancho Cordova CA 95742	CONTACT:	Dennis Eck
		INQUIRY #:	5633265.2s
LAT/LONG:	38.575586 / 121.196464	DATE:	May 01, 2019 10:30 am

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DETAIL MAP - 5633265.2S



0 1/8 1/4 1/2 Miles

- 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
- Indian Reservations BIA
- Power transmission lines
- 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:	The Preserve Phase I ESA	CLIENT:	Youngdahl Consulting Group
ADDRESS:	12525 Douglas Road Rancho Cordova CA 95742	CONTACT:	Dennis Eck
		INQUIRY #:	5633265.2s
LAT/LONG:	38.575586 / 121.196464	DATE:	May 01, 2019 10:31 am

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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		1	0	0	0	NR	1
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		1	0	0	NR	NR	1
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		1	0	0	1	NR	2
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		1	0	0	NR	NR	1
Federal RCRA generators list								
RCRA-LQG	0.250		1	0	NR	NR	NR	1
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		1	0	0	NR	NR	1
US INST CONTROL	0.500		1	0	0	NR	NR	1
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		1	0	0	1	NR	2
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	1	NR	NR	1
Sacramento Co. CS	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		2	0	NR	NR	NR	2
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN 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		1	0	NR	NR	NR	1
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		1	0	NR	NR	NR	1
HIST UST	0.250		1	0	NR	NR	NR	1
CERS TANKS	0.250		1	0	NR	NR	NR	1
CA FID UST	0.250		1	0	NR	NR	NR	1
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		1	NR	NR	NR	NR	1
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		1	0	0	0	NR	1
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		1	NR	NR	NR	NR	1
PADS	0.001		1	NR	NR	NR	NR	1
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		1	0	0	0	NR	1
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
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	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	1	NR	1
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
Sacramento Co. ML	0.250		1	0	NR	NR	NR	1
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		1	NR	NR	NR	NR	1
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	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	22	0	1	3	0	26

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

NPL **AEROJET ROCKETDYNE INC** **NPL** **1000333003**
Region **US HWY 50 AND AEROJET RD** **SEMS** **CAD000030494**
RANCHO CORDOVA, CA **CORRACTS**
< 1/8 **RCRA-TSDF**
1 ft. **RCRA-LQG**
US ENG CONTROLS
US INST CONTROL
ENVIROSTOR
SWEEPS UST
HIST UST
CA FID UST
US FIN ASSUR
ROD
PRP
PADS
CONSENT

NPL:

EPA ID:	CAD980358832
Cerclis ID:	901718
EPA Region:	9
Federal:	N
Final Date:	1983-09-08 00:00:00
Site Score:	54.630000000000003
Latitude:	38.608331
Longitude:	-121.2

Category Details:

NPL Status:	Currently on the Final NPL
Category Description:	Depth To Aquifer-> 50 And <= 100 Feet
Category Value:	80

NPL Status:	Currently on the Final NPL
Category Description:	Distance To Nearest Population-> 0 And <= 1/4 Mile
Category Value:	10

Site Details:

Site Name:	AEROJET GENERAL CORP.
Site Status:	Final
Site Zip:	95670
Site City:	RANCHO CORDOVA
Site State:	CA
Federal Site:	No
Site County:	SACRAMENTO
EPA Region:	09
Date Proposed:	12/30/82
Date Deleted:	Not reported
Date Finalized:	09/08/83

Substance Details:

NPL Status:	Currently on the Final NPL
Substance ID:	Not reported
Substance:	Not reported
CAS #:	Not reported
Pathway:	Not reported
Scoring:	Not reported

NPL Status:	Currently on the Final NPL

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Substance ID: A046
Substance: POLYCHLORINATED BIPHENYLS
CAS #: 1336-36-3
Pathway: GROUND WATER PATHWAY
Scoring: 3

NPL Status: Currently on the Final NPL
Substance ID: A046
Substance: POLYCHLORINATED BIPHENYLS
CAS #: 1336-36-3
Pathway: SURFACE WATER PATHWAY
Scoring: 3

NPL Status: Currently on the Final NPL
Substance ID: U210
Substance: TETRACHLOROETHENE
CAS #: 127-18-4
Pathway: GROUND WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: U210
Substance: TETRACHLOROETHENE
CAS #: 127-18-4
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: U228
Substance: TRICHLOROETHYLENE (TCE)
CAS #: 79-01-6
Pathway: NO PATHWAY INDICATED
Scoring: 1

Summary Details:

Conditions at listing October 1981): The Aerojet General Corp. Site covers 8,500 acres in the eastern portion of Sacramento County, California, adjacent to the Rancho Cordova area population 40,000). The northeast edge of the site is approximately 0.5 mile from the American River. Underlying the site are extensive 50-foot deep) gold dredge tailings, a remnant of past mining operations. The upper aquifer is 80 feet below the surface. Ground water is used extensively throughoutthe Rancho Cordova area to supply municipal, domestic, and industrial water. Since 1953, Aerojet and its subsidiaries have disposed of, on-site, unknown quantities of ha ardous waste, including trichloroethylene, tetrachloroethylene, chloroform, Freon and other chemicals associated with rocket propellants, and various chemical processing wastes. Soil on-site is contaminated. Monitoring data show extensive ground water contamination on- and off-site, primarily with trichloroethylene. In April 1979, Aerojet and its subsidiaries started ground water studies to examine the impact of past disposal practices and to determine the requirements for cleanup. In December 1979, the State filed suit against Aerojet and a subsidiary, Cordova Chemical. Status July 1983): EPA has worked with the State since 1979, providing technical assistance through the Emergency Response Team, the Las Vegas lab, and Region IX. In March 1982, the State requested EPA s assistance in evaluating Aerojet s Proposal for a Ground Water Quality Control Program. EPA found major technical problems in Aerojet s proposal. In the past, a confidentiality

AEROJET ROCKETDYNE INC (Continued) **1000333003**

agreement between Aerojet and the State limited EPA access to the documents that would allow EPA to independently assess the company s progress toward cleanup. The agreement is no longer in effect. On February 25, 1983, Region IX requested information from Aerojet regarding soil and ground water contamination. EPA will soon complete review of the documents received in response.

Site Status Details:
NPL Status: Final
Proposed Date: 12/30/1982
Final Date: 09/08/1983
Deleted Date: Not reported

Narratives Details:
NPL Name: AEROJET GENERAL CORP.
City: RANCHO CORDOVA
State: CA

SEMS:
Site ID: 0901718
EPA ID: CAD980358832
Cong District: 3,7
FIPS Code: 06067
Latitude: 38.608331
Longitude: -121.200000
FF: N
NPL: Currently on the Final NPL
Non NPL Status: Not reported

SEMS Detail:
Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 00
Action Code: AR
Action Name: ADMIN REC
SEQ: 2
Start Date: 2001-07-20 04:00:00
Finish Date: 7/20/2001 4:00:00 AM
Qual: E
Current Action Lead: EPA Perf In-Hse

Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 00
Action Code: AR
Action Name: ADMIN REC
SEQ: 1
Start Date: 1993-07-12 04:00:00

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Finish Date:	7/8/1994 4:00:00 AM
Qual:	V
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	NP
Action Name:	PROPOSED
SEQ:	1
Start Date:	1982-12-30 05:00:00
Finish Date:	12/30/1982 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1979-08-01 04:00:00
Finish Date:	8/1/1979 4:00:00 AM
Qual:	L
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	MA
Action Name:	ST COOP
SEQ:	1
Start Date:	1991-09-30 04:00:00
Finish Date:	7/10/2018 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	NF

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Action Name:	NPL FINL
SEQ:	1
Start Date:	1983-09-08 04:00:00
Finish Date:	9/8/1983 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	RS
Action Name:	RV ASSESS
SEQ:	1
Start Date:	1992-10-22 04:00:00
Finish Date:	10/22/1992 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	RS
Action Name:	RV ASSESS
SEQ:	2
Start Date:	1990-07-02 04:00:00
Finish Date:	7/2/1990 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	CR
Action Name:	CI
SEQ:	3
Start Date:	2013-04-26 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F

AEROJET ROCKETDYNE INC (Continued) **1000333003**

FF:	N
OU:	00
Action Code:	CR
Action Name:	CI
SEQ:	1
Start Date:	1986-05-01 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	06
Action Code:	RO
Action Name:	ROD
SEQ:	5
Start Date:	2015-07-22 04:00:00
Finish Date:	7/22/2015 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	CR
Action Name:	CI
SEQ:	2
Start Date:	2011-07-29 05:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	FE
Action Name:	5 YEAR
SEQ:	1
Start Date:	2015-11-03 05:00:00
Finish Date:	9/22/2016 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718

AEROJET ROCKETDYNE INC (Continued) **1000333003**

EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 03
Action Code: RO
Action Name: ROD
SEQ: 2
Start Date: 2001-07-20 04:00:00
Finish Date: 7/20/2001 4:00:00 AM
Qual: Not reported
Current Action Lead: EPA Perf

Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 05
Action Code: RO
Action Name: ROD
SEQ: 4
Start Date: 2011-02-15 05:00:00
Finish Date: 2/15/2011 5:00:00 AM
Qual: Not reported
Current Action Lead: EPA Perf

Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 11
Action Code: BD
Action Name: PRP RI/FS
SEQ: 8
Start Date: 2017-04-11 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: EPA Ovrsght

Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 10
Action Code: FS
Action Name: FS
SEQ: 1
Start Date: 2016-10-31 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: EPA Ovrsght

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	17
Start Date:	2014-03-27 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	23
Start Date:	2011-09-20 04:00:00
Finish Date:	3/27/2014 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	12
Start Date:	2013-09-23 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	12
Start Date:	2011-09-20 04:00:00
Finish Date:	9/23/2013 4:00:00 AM

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	13
Start Date:	2012-11-14 05:00:00
Finish Date:	7/23/2014 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	13
Start Date:	2011-09-26 04:00:00
Finish Date:	11/14/2012 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	11
Start Date:	2013-08-21 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD

AEROJET ROCKETDYNE INC (Continued) **1000333003**

SEQ:	11
Start Date:	2011-09-20 04:00:00
Finish Date:	8/21/2013 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	4
Start Date:	2012-03-08 05:00:00
Finish Date:	9/26/2013 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	4
Start Date:	2011-09-26 04:00:00
Finish Date:	3/8/2012 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	06
Action Code:	BE
Action Name:	PRP RD
SEQ:	5
Start Date:	2015-12-14 05:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N

AEROJET ROCKETDYNE INC (Continued) **1000333003**

OU:	02
Action Code:	BB
Action Name:	PRP RV
SEQ:	1
Start Date:	1995-05-08 04:00:00
Finish Date:	11/22/1995 5:00:00 AM
Qual:	S
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	9
Start Date:	2012-10-01 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	9
Start Date:	2011-09-26 04:00:00
Finish Date:	10/1/2012 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	10
Start Date:	2011-09-26 04:00:00
Finish Date:	6/17/2015 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	10
Start Date:	2015-06-17 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BB
Action Name:	PRP RV
SEQ:	2
Start Date:	2009-11-03 05:00:00
Finish Date:	5/24/2010 5:00:00 AM
Qual:	C
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	03
Action Code:	ME
Action Name:	PRP LR
SEQ:	1
Start Date:	2011-07-07 05:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	03
Action Code:	BF
Action Name:	PRP RA
SEQ:	2
Start Date:	2003-09-12 04:00:00
Finish Date:	8/22/2012 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	03
Action Code:	BE
Action Name:	PRP RD
SEQ:	2
Start Date:	2002-09-20 04:00:00
Finish Date:	2/20/2009 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	09
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	7
Start Date:	1989-09-30 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	08
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	6
Start Date:	1989-09-30 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	07
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	5
Start Date:	1989-09-30 04:00:00
Finish Date:	Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	06
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	4
Start Date:	1989-09-30 04:00:00
Finish Date:	7/22/2015 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	3
Start Date:	1989-09-30 04:00:00
Finish Date:	2/15/2011 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	04
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	2
Start Date:	1989-09-30 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	01
Action Code:	BD
Action Name:	PRP RI/FS

AEROJET ROCKETDYNE INC (Continued) **1000333003**

SEQ: 1
Start Date: 1988-09-08 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: EPA Ovrsght

Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 00
Action Code: HR
Action Name: HAZRANK
SEQ: 1
Start Date: 1982-12-01 05:00:00
Finish Date: 12/1/1982 5:00:00 AM
Qual: Not reported
Current Action Lead: St Perf

Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 00
Action Code: DS
Action Name: DISCVRY
SEQ: 1
Start Date: 1979-04-01 05:00:00
Finish Date: 4/1/1979 5:00:00 AM
Qual: Not reported
Current Action Lead: St Perf

Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N
OU: 00
Action Code: SI
Action Name: SI
SEQ: 1
Start Date: 1979-06-01 04:00:00
Finish Date: 12/1/1982 5:00:00 AM
Qual: H
Current Action Lead: St Perf

Region: 09
Site ID: 0901718
EPA ID: CAD980358832
Site Name: AEROJET GENERAL CORP.
NPL: F
FF: N

AEROJET ROCKETDYNE INC (Continued) **1000333003**

OU:	02
Action Code:	RV
Action Name:	RMVL
SEQ:	1
Start Date:	1995-11-22 05:00:00
Finish Date:	2/15/2011 5:00:00 AM
Qual:	S
Current Action Lead:	St Perf

CORRACTS:

EPA ID:	CAD000030494
EPA Region:	09
Area Name:	SWMUS 55, 373, 374, 375
Actual Date:	20050818
Action:	CA999NF - Corrective Action Process Terminated, No Further Action
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not reported
Schedule end date:	Not reported

EPA ID:	CAD000030494
EPA Region:	09
Area Name:	SWMUS 55, 373, 374, 375
Actual Date:	20050818
Action:	CA200 - RFI Approved
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not reported
Schedule end date:	Not reported

EPA ID:	CAD000030494
EPA Region:	09
Area Name:	ENTIRE FACILITY
Actual Date:	20050816
Action:	CA725YE - Current Human Exposures Under Control, Yes, Current Human Exposures Under Control has been verified
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	20050816
Schedule end date:	Not reported

EPA ID:	CAD000030494
EPA Region:	09
Area Name:	SWMUS 55, 373, 374, 375
Actual Date:	20050518
Action:	CA190 - RFI Report Received
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not reported
Schedule end date:	Not reported

EPA ID: CAD000030494

AEROJET ROCKETDYNE INC (Continued) **1000333003**

EPA Region: 09
Area Name: SWMUS 55, 373, 374, 375
Actual Date: 20050131
Action: CA150 - RFI Workplan Approved
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000030494
EPA Region: 09
Area Name: SWMUS 55, 373, 374, 375
Actual Date: 20050105
Action: CA110 - RFI Workplan Received
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000030494
EPA Region: 09
Area Name: UNITS L, M, N, P, Q
Actual Date: 20010417
Action: CA200 - RFI Approved
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000030494
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 20001211
Action: CA750NO - Migration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: 20001211
Schedule end date: Not reported

EPA ID: CAD000030494
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 20001211
Action: CA725NO - Current Human Exposures Under Control, Current human exposures are NOT under control
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: 20001211
Schedule end date: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

EPA ID: CAD000030494
EPA Region: 09
Area Name: UNITS L, M, N, P, Q
Actual Date: 19990831
Action: CA150 - RFI Workplan Approved
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000030494
EPA Region: 09
Area Name: MCDONALD DOUGLAS (3500 ACRE PARCEL)
Actual Date: 19940630
Action: CA600SR - Stabilization Measures Implemented, Primary measure is source removal and/or treatment
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000030494
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19940621
Action: CA050 - RFA Completed
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: 19940621
Schedule end date: Not reported

EPA ID: CAD000030494
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19940621
Action: CA070YE - RFA Determination Of Need For An RFI, RFI is Necessary
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: 19940621
Schedule end date: Not reported

EPA ID: CAD000030494
EPA Region: 09
Area Name: AEROJET (8500 ACRE PARCEL)
Actual Date: 19910601
Action: CA150 - RFI Workplan Approved
NAICS Code(s): 336412 332994
Aircraft Engine and Engine Parts Manufacturing
Small Arms Manufacturing
Original schedule date: Not reported
Schedule end date: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

RCRA-TSDF:
Date form received by agency: 02/27/2018
Facility name: AEROJET ROCKETDYNE INC
Facility address: US HWY 50 AND AEROJET RD
RANCHO CORDOVA, CA 95813-6000
EPA ID: CAD000030494
Mailing address: PO BOX 13222
SACRAMENTO, CA 95813
Contact: JIM BUEHLER
Contact address: PO BOX 13222
SACRAMENTO, CA 95813
Contact country: US
Contact telephone: 916-355-4682
Contact email: JIM.BUEHLER@ROCKET.COM
EPA Region: 09
Land type: Private
Classification: TSDF
Description: Handler is engaged in the treatment, storage or disposal of hazardous waste
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:
Owner/operator name: AEROJET ROCKETDYNE, INC.
Owner/operator address: PO BOX 13222
SACRAMENTO, CA 95813
Owner/operator country: US
Owner/operator telephone: 916-355-4682
Owner/operator email: JIM.BUEHLER@ROCKET.COM
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 10/01/2005
Owner/Op end date: Not reported

Owner/operator name: AEROJET ROCKETDYNE, INC.
Owner/operator address: PO BOX 13222
SACRAMENTO, CA 95813
Owner/operator country: US
Owner/operator telephone: 916-355-4682
Owner/operator email: JIM.BUEHLER@ROCKET.COM
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Owner/Operator Type: Operator
Owner/Op start date: 10/01/2005
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: Yes
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Universal Waste Summary:
Waste type: E
Accumulated waste on-site: No
Generated waste on-site: Yes

Waste type: Batteries
Accumulated waste on-site: Yes
Generated waste on-site: Not reported

Waste type: Lamps
Accumulated waste on-site: Yes
Generated waste on-site: Not reported

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB's

. Waste code: 291
. Waste name: Latex waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 512
. Waste name: Other empty containers 30 gallons or more

. Waste code: 513
. Waste name: Empty containers less than 30 gallons

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 591
. Waste name: Baghouse waste

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 751
. Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

. Waste code: 791
. Waste name: Liquids with pH < 2

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D037
. Waste name: PENTACHLOROPHENOL

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND

AEROJET ROCKETDYNE INC (Continued) **1000333003**

SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F027
. Waste name: DISCARDED UNUSED FORMULATIONS CONTAINING TRI-, TETRA-, OR PENTACHLOROPHENOL OR DISCARDED UNUSED FORMULATIONS CONTAINING COMPOUNDS DERIVED FROM THESE CHLOROPHENOLS. (THIS LISTING DOES NOT INCLUDE FORMULATIONS CONTAINING HEXACHLOROPHENE SYNTHESIZED FROM PREPURIFIED 2,4,5-TRICHLOROPHENOL AS THE SOLE COMPONENT.)

. Waste code: P068
. Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

. Waste code: P082
. Waste name: METHANIMINE, N-METHYL-N-NITROSO- (OR) N-NITROSODIMETHYLAMINE

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: P105
. Waste name: SODIUM AZIDE

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U134
. Waste name: HYDROFLUORIC ACID (C,T) (OR) HYDROGEN FLUORIDE (C,T)

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Historical Generators:
Date form received by agency: 02/18/2016
Site name: AEROJET ROCKETDYNE, INC.

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 123
. Waste name: Unspecified alkaline solution

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 133
. Waste name: Aqueous solution with 10% or more total organic residues

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB’s

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 512
. Waste name: Other empty containers 30 gallons or more

. Waste code: 513
. Waste name: Empty containers less than 30 gallons

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 591
. Waste name: Baghouse waste

. Waste code: 731
. Waste name: Liquids with polychlorinated biphenyls > 50 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 751
. Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL

AEROJET ROCKETDYNE INC (Continued) **1000333003**

KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P068
. Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U160
. Waste name: 2-BUTANONE, PEROXIDE (R,T) (OR) METHYL ETHYL KETONE PEROXIDE (R,T)

Date form received by agency: 03/01/2014
Site name: AEROJET ROCKETDYNE INC
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB's

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 512
. Waste name: Other empty containers 30 gallons or more

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 591
. Waste name: Baghouse waste

. Waste code: 611
. Waste name: Contaminated soil from site clean-ups

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 731
. Waste name: Liquids with polychlorinated biphenyls > 50 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 751
. Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

. Waste code: 791

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE

AEROJET ROCKETDYNE INC (Continued) **1000333003**

ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: P068
. Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 09/11/2012
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 134

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 211
. Waste name: Halogenated solvents (chloroform, methyl chloride, perchloroethylene, etc.)

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB’s

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 512
. Waste name: Other empty containers 30 gallons or more

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 591
. Waste name: Baghouse waste

. Waste code: 611
. Waste name: Contaminated soil from site clean-ups

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: P068
. Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U220
. Waste name: BENZENE, METHYL- (OR) TOLUENE

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 07/30/2010

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F001
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE,

AEROJET ROCKETDYNE INC (Continued) **1000333003**

1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

Date form received by agency: 03/27/2008
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND

AEROJET ROCKETDYNE INC (Continued) **1000333003**

F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: D043
. Waste name: VINYL CHLORIDE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D018
. Waste name: BENZENE

. Waste code: D011
. Waste name: SILVER

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D008
. Waste name: LEAD

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D005
. Waste name: BARIUM

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: P105
. Waste name: SODIUM AZIDE

. Waste code: U029
. Waste name: METHANE, BROMO- (OR) METHYL BROMIDE

. Waste code: U043
. Waste name: ETHENE, CHLORO- (OR) VINYL CHLORIDE

. Waste code: U045
. Waste name: METHANE, CHLORO- (I,T) (OR) METHYL CHLORIDE (I,T)

. Waste code: U075
. Waste name: DICHLORODIFLUOROMETHANE (OR) METHANE, DICHLORODIFLUORO-

. Waste code: U080
. Waste name: METHANE, DICHLORO- (OR) METHYLENE CHLORIDE

. Waste code: U115
. Waste name: ETHYLENE OXIDE (I,T) (OR) OXIRANE (I,T)

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 02/23/2006
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium,

AEROJET ROCKETDYNE INC (Continued) **1000333003**

beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 491
. Waste name: Unspecified sludge waste

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 711
. Waste name: Liquids with cyanides > 1000 mg/l

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND

AEROJET ROCKETDYNE INC (Continued) **1000333003**

SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 02/20/2004
Site name: AERO JET - MISSILE AND SPACES PROPULSION
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D037
. Waste name: PENTACHLOROPHENOL

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Date form received by agency: 03/28/2002

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Site name: AEROJET MISSILE & SPACE PROPULSION
Classification: Large Quantity Generator

Date form received by agency: 10/12/2000
Site name: AEROJET PROPULSION & ENERGETIC SYSTEMS
Classification: Large Quantity Generator

Date form received by agency: 03/04/1999
Site name: AEROJET SACRAMENTO OPERATIONS
Classification: Large Quantity Generator

Date form received by agency: 09/01/1996
Site name: AEROJET GENERAL CORPORATION
Classification: Large Quantity Generator

Date form received by agency: 02/07/1996
Site name: AEROJET SACRAMENTO OPERATIONS
Classification: Large Quantity Generator

Date form received by agency: 03/25/1994
Site name: US AEROJET RCRA FACILITY
Classification: Large Quantity Generator

Date form received by agency: 03/26/1992
Site name: UNITED STATES-AEROJET RCRA FACILITY
Classification: Large Quantity Generator

Date form received by agency: 04/16/1990
Site name: US AEROJET RCRA FACILITY
Classification: Large Quantity Generator

Date form received by agency: 08/18/1980
Site name: AEROJET GENERAL CORPORATION
Classification: Large Quantity Generator

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs): 132357.1

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Amount (Lbs):	45750
Waste code:	D003
Waste name:	A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
Amount (Lbs):	124114.4
Waste code:	D005
Waste name:	BARIUM
Amount (Lbs):	2617
Waste code:	D006
Waste name:	CADMIUM
Amount (Lbs):	7205
Waste code:	D007
Waste name:	CHROMIUM
Amount (Lbs):	21161.8
Waste code:	D008
Waste name:	LEAD
Amount (Lbs):	9919
Waste code:	D009
Waste name:	MERCURY
Amount (Lbs):	464
Waste code:	D010
Waste name:	SELENIUM
Amount (Lbs):	5860
Waste code:	D011
Waste name:	SILVER
Amount (Lbs):	1451
Waste code:	D018
Waste name:	BENZENE
Amount (Lbs):	6.7
Waste code:	D022
Waste name:	CHLOROFORM
Amount (Lbs):	2521.8
Waste code:	D028
Waste name:	1,2-DICHLOROETHANE
Amount (Lbs):	27650
Waste code:	D035
Waste name:	METHYL ETHYL KETONE
Amount (Lbs):	1347.6
Waste code:	D038
Waste name:	PYRIDINE
Amount (Lbs):	3406.8

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Waste code: D040
Waste name: TRICHLOROETHYLENE
Amount (Lbs): 24000

Waste code: F002
Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 65890.2

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 65468

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 56935.4

Waste code: P068
Waste name: HYDRAZINE, METHYL-
Amount (Lbs): 127

Waste code: P081
Waste name: NITROGLYCERINE (R)
Amount (Lbs): 355

Waste code: P098
Waste name: POTASSIUM CYANIDE
Amount (Lbs): 10

Waste code: U002
Waste name: ACETONE (I)
Amount (Lbs): 60

Waste code: U133
Waste name: HYDRAZINE (R,T)

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Amount (Lbs): 127

Waste code: U160
Waste name: 2-BUTANONE, PEROXIDE (R,T)
Amount (Lbs): 22

Corrective Action Summary:

Event date: 01/01/1978
Event: STABILIZATION/INTERIM MEASURES DECISION-PRIMARY MEAS IS SOURCE REMOVL &/OR TRT

Event date: 01/01/1982
Event: STABILIZATION/INTERIM MEASURES DECISION-GROUNDWATER EXTRACTION & TREATMENT

Event date: 01/01/1986
Event: STABILIZATION CONSTRUCTION COMPLETED

Event date: 09/08/1988
Event: INVESTIGATION IMPOSITION

Event date: 09/08/1988
Event: CMS IMPOSITION

Event date: 06/23/1989
Event: INVESTIGATION IMPOSITION

Event date: 06/01/1991
Event: INVESTIGATION WORKPLAN APPROVED

Event date: 06/21/1994
Event: RFA COMPLETED-ASSESSMENT WAS A RFA

Event date: 06/21/1994
Event: RFA COMPLETED

Event date: 06/21/1994
Event: DETERMINATION OF NEED FOR AN INVESTIGATION-INVESTIGATION IS NECESSARY

Event date: 06/30/1994
Event: INVESTIGATION IMPOSITION

Event date: 06/30/1994
Event: CMS IMPOSITION

Event date: 06/30/1994
Event: STABILIZATION/INTERIM MEASURES DECISION-PRIMARY MEAS IS SOURCE REMOVL &/OR TRT

Event date: 04/17/1995
Event: INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL

Event date: 06/30/1995
Event: CMS IMPOSITION

Event date: 01/01/1996

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Event:	REFERRED TO A NON-RCRA AUTHORITY-REFERRED TO CERCLA
Event date:	01/01/1997
Event:	STABILIZATION CONSTRUCTION COMPLETED
Event date:	11/26/1997
Event:	CA PRIORITIZATION-HIGH CA PRIORITY
Event date:	04/02/1998
Event:	STABILIZATION MEASURES EVALUATION-FACILITY IS AMENABLE TO STABILIZATION
Event date:	04/02/1998
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/02/1998
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/02/1998
Event:	REFERRED TO A NON-RCRA AUTHORITY
Event date:	08/31/1999
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	12/23/1999
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	12/11/2000
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/11/2000
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/28/2000
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/28/2000
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/17/2001
Event:	INVESTIGATION COMPLETE
Event date:	11/22/2002
Event:	INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL
Event date:	01/05/2005
Event:	INVESTIGATION WORKPLAN RECEIVED
Event date:	01/31/2005
Event:	INVESTIGATION WORKPLAN APPROVED

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Event date: 05/18/2005
Event: INVESTIGATION REPORT RECEIVED

Event date: 08/16/2005
Event: HUMAN EXPOSURES CONTROLLED DETERMINATION-YES, APPLICABLE AS OF THIS DATE

Event date: 08/16/2005
Event: HUMAN EXPOSURES CONTROLLED DETERMINATION-YES, APPLICABLE AS OF THIS DATE

Event date: 08/18/2005
Event: INVESTIGATION COMPLETE

Event date: 08/18/2005
Event: CA PROCESS IS TERMINATED-NO FURTHER ACTION

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 12/01/2015
Date achieved compliance: 12/02/2015
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/02/2015
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 12/01/2015
Date achieved compliance: 12/02/2015
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/02/2015
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 12/23/2013
Date achieved compliance: 02/24/2014
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/23/2013
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 12/23/2013
Date achieved compliance: 02/24/2014
Violation lead agency: State
Enforcement action: SINGLE SITE CA/FO
Enforcement action date: 06/20/2014
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 3200
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 12/23/2013
Date achieved compliance: 02/24/2014
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/23/2013
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 12/23/2013
Date achieved compliance: 02/24/2014
Violation lead agency: State
Enforcement action: SINGLE SITE CA/FO
Enforcement action date: 06/20/2014
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 3200
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 04/25/2012
Date achieved compliance: 05/29/2012
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/01/2012
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 04/25/2012
Date achieved compliance: 05/29/2012
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/01/2012
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 04/25/2012
Date achieved compliance: 05/29/2012
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/01/2012
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 12/16/2008
Date achieved compliance: 12/16/2008
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/16/2008
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 10/10/2006
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 10/11/2005
Date achieved compliance: 11/22/2005
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/13/2005
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 06/01/2004
Date achieved compliance: 12/21/2006
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/01/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 06/01/2004
Date achieved compliance: 12/21/2006
Violation lead agency: State
Enforcement action: SINGLE SITE CA/FO
Enforcement action date: 12/21/2006
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 114000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/03/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Area of violation: TSD - General Facility Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/03/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/03/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/24/2003

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/03/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Permits - Application
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Permits - Application
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Permits - Application

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 10/05/2000

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Permits - Application
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: F - 264.110-120.G
Area of violation: TSD - Closure/Post-Closure
Date violation determined: 04/02/1997
Date achieved compliance: 06/05/1997
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 04/02/1997
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.30-34.C
Area of violation: Generators - General
Date violation determined: 01/17/1996
Date achieved compliance: 01/31/1996
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 01/17/1996
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 264.340-352.O
Area of violation: TSD - Incinerator Standards
Date violation determined: 05/19/1995
Date achieved compliance: 01/17/1996
Violation lead agency: EPA
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/19/1995
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 264.190-201.J
Area of violation: TSD - General
Date violation determined: 05/19/1995
Date achieved compliance: 01/17/1996
Violation lead agency: EPA

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/19/1995
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 264.170-177.I
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 264.30-37.C
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 268 ALL
Area of violation: LDR - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 264.30-37.C
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.50-60
Area of violation: Generators - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 264.170-177.I
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 268 ALL
Area of violation: LDR - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 270
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 270
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.50-60
Area of violation: Generators - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 264.140-150.H
Area of violation: TSD - Financial Requirements
Date violation determined: 03/20/1991
Date achieved compliance: 01/22/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 04/06/1991
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 270
Area of violation: TSD - General
Date violation determined: 01/22/1990
Date achieved compliance: 05/03/1990
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/08/1990
Enf. disposition status: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 10/12/2017
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 09/18/2017
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/26/2016
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/01/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 12/02/2015
Evaluation lead agency: State

Evaluation date: 12/01/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Manifest/Records/Reporting
Date achieved compliance: 12/02/2015
Evaluation lead agency: State

Evaluation date: 11/06/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/29/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/05/2014
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/04/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/24/2014
Evaluation: NOT A SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 01/23/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General Facility Standards
Date achieved compliance: 02/24/2014
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 02/24/2014
Evaluation lead agency: State

Evaluation date: 09/24/2012
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 08/22/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/31/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General Facility Standards
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Manifest
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

Evaluation date: 04/16/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 04/10/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/01/2010
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/25/2010
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/02/2009
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/16/2008
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 12/16/2008
Evaluation lead agency: State

Evaluation date: 07/29/2008
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/10/2008
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/21/2006
Evaluation: NOT A SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/10/2006
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 09/22/2006
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: EPA Contractor/Grantee

Evaluation date: 06/20/2006
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/19/2005
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/11/2005
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: TSD - Financial Requirements
Date achieved compliance: 11/22/2005
Evaluation lead agency: State

Evaluation date: 08/03/2004
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 06/01/2004
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/01/2004
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 12/21/2006
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 12/23/2003
Evaluation: NOT A SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/24/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Financial Requirements
Date achieved compliance: 12/23/2003
Evaluation lead agency: State

Evaluation date: 06/24/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Container Use and Management
Date achieved compliance: 12/23/2003
Evaluation lead agency: State

Evaluation date: 06/24/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - General Facility Standards
Date achieved compliance: 12/23/2003
Evaluation lead agency: State

Evaluation date: 06/24/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Tank System Standards
Date achieved compliance: 12/23/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Tank System Standards
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: Generators - Records/Reporting
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Container Use and Management
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Preparedness and Prevention
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Contingency Plan and Emergency Procedures

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - General Facility Standards
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: Generators - Manifest
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Tank System Standards
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Manifest
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Preparedness and Prevention
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Manifest/Records/Reporting
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General Facility Standards
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Permits - Application
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Container Use and Management
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Records/Reporting
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 12/02/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/20/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/29/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/16/1997
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 04/01/1997
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Closure/Post-Closure
Date achieved compliance: 06/05/1997
Evaluation lead agency: State

Evaluation date: 01/17/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 01/31/1996
Evaluation lead agency: State

Evaluation date: 02/27/1995
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: 01/17/1996
Evaluation lead agency: EPA

Evaluation date: 02/27/1995
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/27/1995
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Incinerator Standards
Date achieved compliance: 01/17/1996
Evaluation lead agency: EPA

Evaluation date: 01/22/1993
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 01/19/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: LDR - General
Date achieved compliance: 06/24/1993
Evaluation lead agency: State

Evaluation date: 01/19/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 06/24/1993
Evaluation lead agency: State

Evaluation date: 01/19/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 06/24/1993
Evaluation lead agency: State

Evaluation date: 03/20/1992
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/16/1992
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/14/1992
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 03/18/1991
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Financial Requirements
Date achieved compliance: 01/22/1993
Evaluation lead agency: State

Evaluation date: 10/19/1990
Evaluation: OPERATION AND MAINTENANCE INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 01/23/1990
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 01/22/1990
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 05/03/1990
Evaluation lead agency: State

Evaluation date: 07/07/1989
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/13/1989
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 11/24/1987
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/06/1987
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

RCRA-LQG:
Date form received by agency: 02/27/2018
Facility name: AEROJET ROCKETDYNE INC
Facility address: US HWY 50 AND AEROJET RD
RANCHO CORDOVA, CA 95813-6000
EPA ID: CAD000030494
Mailing address: PO BOX 13222
SACRAMENTO, CA 95813
Contact: JIM BUEHLER
Contact address: PO BOX 13222

AEROJET ROCKETDYNE INC (Continued) **1000333003**

SACRAMENTO, CA 95813
Contact country: US
Contact telephone: 916-355-4682
Contact email: JIM.BUEHLER@ROCKET.COM
EPA Region: 09
Land type: Private
Classification: TSDF
Description: Handler is engaged in the treatment, storage or disposal of hazardous waste
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:
Owner/operator name: AEROJET ROCKETDYNE, INC.
Owner/operator address: PO BOX 13222
SACRAMENTO, CA 95813
Owner/operator country: US
Owner/operator telephone: 916-355-4682
Owner/operator email: JIM.BUEHLER@ROCKET.COM
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 10/01/2005
Owner/Op end date: Not reported

Owner/operator name: AEROJET ROCKETDYNE, INC.
Owner/operator address: PO BOX 13222
SACRAMENTO, CA 95813
Owner/operator country: US
Owner/operator telephone: 916-355-4682
Owner/operator email: JIM.BUEHLER@ROCKET.COM
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 10/01/2005
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: Yes

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Universal Waste Summary:
Waste type: E
Accumulated waste on-site: No
Generated waste on-site: Yes

Waste type: Batteries
Accumulated waste on-site: Yes
Generated waste on-site: Not reported

Waste type: Lamps
Accumulated waste on-site: Yes
Generated waste on-site: Not reported

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 261

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste name: Polychlorinated biphenyls and material containing PCB's

. Waste code: 291
. Waste name: Latex waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 512
. Waste name: Other empty containers 30 gallons or more

. Waste code: 513
. Waste name: Empty containers less than 30 gallons

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 591
. Waste name: Baghouse waste

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 751
. Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste name: REACTIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D037
. Waste name: PENTACHLOROPHENOL

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR

AEROJET ROCKETDYNE INC (Continued) **1000333003**

MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F027
. Waste name: DISCARDED UNUSED FORMULATIONS CONTAINING TRI-, TETRA-, OR PENTACHLOROPHENOL OR DISCARDED UNUSED FORMULATIONS CONTAINING COMPOUNDS DERIVED FROM THESE CHLOROPHENOLS. (THIS LISTING DOES NOT INCLUDE FORMULATIONS CONTAINING HEXACHLOROPHENE SYNTHESIZED FROM PREPURIFIED 2,4,5-TRICHLOROPHENOL AS THE SOLE COMPONENT.)

. Waste code: P068
. Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

. Waste code: P082
. Waste name: METHANIMINE, N-METHYL-N-NITROSO- (OR) N-NITROSODIMETHYLAMINE

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: P105
. Waste name: SODIUM AZIDE

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U134
. Waste name: HYDROFLUORIC ACID (C,T) (OR) HYDROGEN FLUORIDE (C,T)

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Historical Generators:
Date form received by agency: 02/18/2016
Site name: AEROJET ROCKETDYNE, INC.
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 123
. Waste name: Unspecified alkaline solution

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 133
. Waste name: Aqueous solution with 10% or more total organic residues

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB’s

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 512
. Waste name: Other empty containers 30 gallons or more

. Waste code: 513
. Waste name: Empty containers less than 30 gallons

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 591
. Waste name: Baghouse waste

. Waste code: 731
. Waste name: Liquids with polychlorinated biphenyls > 50 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 751
. Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P068
. Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

. Waste code: P081

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U160
. Waste name: 2-BUTANONE, PEROXIDE (R,T) (OR) METHYL ETHYL KETONE PEROXIDE (R,T)

Date form received by agency: 03/01/2014
Site name: AEROJET ROCKETDYNE INC
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB's

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 512
. Waste name: Other empty containers 30 gallons or more

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 591
. Waste name: Baghouse waste

. Waste code: 611
. Waste name: Contaminated soil from site clean-ups

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 731
. Waste name: Liquids with polychlorinated biphenyls > 50 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 751
. Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED

AEROJET ROCKETDYNE INC (Continued) **1000333003**

SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: P068
. Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 09/11/2012
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 211
. Waste name: Halogenated solvents (chloroform, methyl chloride, perchloroethylene, etc.)

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB's

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 512
. Waste name: Other empty containers 30 gallons or more

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 591
. Waste name: Baghouse waste

. Waste code: 611
. Waste name: Contaminated soil from site clean-ups

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE,

AEROJET ROCKETDYNE INC (Continued) **1000333003**

CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: P068
. Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U220
. Waste name: BENZENE, METHYL- (OR) TOLUENE

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 07/30/2010
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F001
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2,

AEROJET ROCKETDYNE INC (Continued) **1000333003**

TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

Date form received by agency: 03/27/2008
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: D043
. Waste name: VINYL CHLORIDE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D018
. Waste name: BENZENE

. Waste code: D011
. Waste name: SILVER

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D008
. Waste name: LEAD

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D005
. Waste name: BARIUM

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL

AEROJET ROCKETDYNE INC (Continued) **1000333003**

BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: P105
. Waste name: SODIUM AZIDE

. Waste code: U029
. Waste name: METHANE, BROMO- (OR) METHYL BROMIDE

. Waste code: U043
. Waste name: ETHENE, CHLORO- (OR) VINYL CHLORIDE

. Waste code: U045
. Waste name: METHANE, CHLORO- (I,T) (OR) METHYL CHLORIDE (I,T)

. Waste code: U075
. Waste name: DICHLORODIFLUOROMETHANE (OR) METHANE, DICHLORODIFLUORO-

. Waste code: U080
. Waste name: METHANE, DICHLORO- (OR) METHYLENE CHLORIDE

. Waste code: U115
. Waste name: ETHYLENE OXIDE (I,T) (OR) OXIRANE (I,T)

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 02/23/2006
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 491
. Waste name: Unspecified sludge waste

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 711
. Waste name: Liquids with cyanides > 1000 mg/l

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT

AEROJET ROCKETDYNE INC (Continued) **1000333003**

MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: LABP
. Waste name: LAB PACK

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 02/20/2004
Site name: AERO JET - MISSILE AND SPACES PROPULSION
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

AEROJET ROCKETDYNE INC (Continued) **1000333003**

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D037
. Waste name: PENTACHLOROPHENOL

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Date form received by agency: 03/28/2002
Site name: AEROJET MISSILE & SPACE PROPULSION
Classification: Large Quantity Generator

Date form received by agency: 10/12/2000
Site name: AEROJET PROPULSION & ENERGETIC SYSTEMS
Classification: Large Quantity Generator

Date form received by agency: 03/04/1999
Site name: AEROJET SACRAMENTO OPERATIONS
Classification: Large Quantity Generator

Date form received by agency: 09/01/1996

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Site name: AEROJET GENERAL CORPORATION
Classification: Large Quantity Generator

Date form received by agency: 02/07/1996
Site name: AEROJET SACRAMENTO OPERATIONS
Classification: Large Quantity Generator

Date form received by agency: 03/25/1994
Site name: US AEROJET RCRA FACILITY
Classification: Large Quantity Generator

Date form received by agency: 03/26/1992
Site name: UNITED STATES-AEROJET RCRA FACILITY
Classification: Large Quantity Generator

Date form received by agency: 04/16/1990
Site name: US AEROJET RCRA FACILITY
Classification: Large Quantity Generator

Date form received by agency: 08/18/1980
Site name: AEROJET GENERAL CORPORATION
Classification: Large Quantity Generator

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs): 132357.1

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs): 45750

Waste code: D003
Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
Amount (Lbs): 124114.4

Waste code: D005
Waste name: BARIUM

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Amount (Lbs):	2617
Waste code:	D006
Waste name:	CADMIUM
Amount (Lbs):	7205
Waste code:	D007
Waste name:	CHROMIUM
Amount (Lbs):	21161.8
Waste code:	D008
Waste name:	LEAD
Amount (Lbs):	9919
Waste code:	D009
Waste name:	MERCURY
Amount (Lbs):	464
Waste code:	D010
Waste name:	SELENIUM
Amount (Lbs):	5860
Waste code:	D011
Waste name:	SILVER
Amount (Lbs):	1451
Waste code:	D018
Waste name:	BENZENE
Amount (Lbs):	6.7
Waste code:	D022
Waste name:	CHLOROFORM
Amount (Lbs):	2521.8
Waste code:	D028
Waste name:	1,2-DICHLOROETHANE
Amount (Lbs):	27650
Waste code:	D035
Waste name:	METHYL ETHYL KETONE
Amount (Lbs):	1347.6
Waste code:	D038
Waste name:	PYRIDINE
Amount (Lbs):	3406.8
Waste code:	D040
Waste name:	TRICHLOROETHYLENE
Amount (Lbs):	24000
Waste code:	F002
Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE

AEROJET ROCKETDYNE INC (Continued) **1000333003**

OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 65890.2

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 65468

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 56935.4

Waste code: P068
Waste name: HYDRAZINE, METHYL-
Amount (Lbs): 127

Waste code: P081
Waste name: NITROGLYCERINE (R)
Amount (Lbs): 355

Waste code: P098
Waste name: POTASSIUM CYANIDE
Amount (Lbs): 10

Waste code: U002
Waste name: ACETONE (I)
Amount (Lbs): 60

Waste code: U133
Waste name: HYDRAZINE (R,T)
Amount (Lbs): 127

Waste code: U160
Waste name: 2-BUTANONE, PEROXIDE (R,T)
Amount (Lbs): 22

Corrective Action Summary:
Event date: 01/01/1978
Event: STABILIZATION/INTERIM MEASURES DECISION-PRIMARY MEAS IS SOURCE REMOVL &/OR TRT

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Event date: 01/01/1982
Event: STABILIZATION/INTERIM MEASURES DECISION-GROUNDWATER EXTRACTION & TREATMENT

Event date: 01/01/1986
Event: STABILIZATION CONSTRUCTION COMPLETED

Event date: 09/08/1988
Event: INVESTIGATION IMPOSITION

Event date: 09/08/1988
Event: CMS IMPOSITION

Event date: 06/23/1989
Event: INVESTIGATION IMPOSITION

Event date: 06/01/1991
Event: INVESTIGATION WORKPLAN APPROVED

Event date: 06/21/1994
Event: RFA COMPLETED-ASSESSMENT WAS A RFA

Event date: 06/21/1994
Event: RFA COMPLETED

Event date: 06/21/1994
Event: DETERMINATION OF NEED FOR AN INVESTIGATION-INVESTIGATION IS NECESSARY

Event date: 06/30/1994
Event: INVESTIGATION IMPOSITION

Event date: 06/30/1994
Event: CMS IMPOSITION

Event date: 06/30/1994
Event: STABILIZATION/INTERIM MEASURES DECISION-PRIMARY MEAS IS SOURCE REMOVL &/OR TRT

Event date: 04/17/1995
Event: INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL

Event date: 06/30/1995
Event: CMS IMPOSITION

Event date: 01/01/1996
Event: REFERRED TO A NON-RCRA AUTHORITY-REFERRED TO CERCLA

Event date: 01/01/1997
Event: STABILIZATION CONSTRUCTION COMPLETED

Event date: 11/26/1997
Event: CA PRIORITIZATION-HIGH CA PRIORITY

Event date: 04/02/1998
Event: STABILIZATION MEASURES EVALUATION-FACILITY IS AMENABLE TO STABILIZATION

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Event date:	04/02/1998
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/02/1998
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/02/1998
Event:	REFERRED TO A NON-RCRA AUTHORITY
Event date:	08/31/1999
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	12/23/1999
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	12/11/2000
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/11/2000
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/28/2000
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/28/2000
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/17/2001
Event:	INVESTIGATION COMPLETE
Event date:	11/22/2002
Event:	INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL
Event date:	01/05/2005
Event:	INVESTIGATION WORKPLAN RECEIVED
Event date:	01/31/2005
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	05/18/2005
Event:	INVESTIGATION REPORT RECEIVED
Event date:	08/16/2005
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-YES, APPLICABLE AS OF THIS DATE
Event date:	08/16/2005
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-YES, APPLICABLE AS OF THIS DATE
Event date:	08/18/2005

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Event: INVESTIGATION COMPLETE

Event date: 08/18/2005
Event: CA PROCESS IS TERMINATED-NO FURTHER ACTION

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 12/01/2015
Date achieved compliance: 12/02/2015
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/02/2015
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 12/01/2015
Date achieved compliance: 12/02/2015
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/02/2015
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 12/23/2013
Date achieved compliance: 02/24/2014
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/23/2013
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 12/23/2013
Date achieved compliance: 02/24/2014
Violation lead agency: State
Enforcement action: SINGLE SITE CA/FO
Enforcement action date: 06/20/2014
Enf. disposition status: Not reported
Enf. disp. status date: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 3200
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 12/23/2013
Date achieved compliance: 02/24/2014
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/23/2013
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 12/23/2013
Date achieved compliance: 02/24/2014
Violation lead agency: State
Enforcement action: SINGLE SITE CA/FO
Enforcement action date: 06/20/2014
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 3200
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: State Statute or Regulation
Date violation determined: 04/25/2012
Date achieved compliance: 05/29/2012
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/01/2012
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 04/25/2012
Date achieved compliance: 05/29/2012
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/01/2012
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 04/25/2012
Date achieved compliance: 05/29/2012
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/01/2012
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 12/16/2008
Date achieved compliance: 12/16/2008
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/16/2008
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 10/10/2006
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 10/11/2005
Date achieved compliance: 11/22/2005
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 12/13/2005
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 06/01/2004
Date achieved compliance: 12/21/2006
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/01/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 06/01/2004
Date achieved compliance: 12/21/2006
Violation lead agency: State
Enforcement action: SINGLE SITE CA/FO
Enforcement action date: 12/21/2006
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 114000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/03/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/03/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/03/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/24/2003
Date achieved compliance: 12/23/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/03/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Area of violation: TSD - Container Use and Management
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 06/11/2002

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 06/11/2002
Date achieved compliance: 09/25/2003
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement action date: 06/17/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Permits - Application
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Permits - Application
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General Facility Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Manifest
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Generators - Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Permits - Application
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Regulation violated: Not reported
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: REFERRAL TO ATTORNEY GENERAL
Enforcement action date: 05/30/2002
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Preparedness and Prevention
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 1200000
Paid penalty amount: Not reported

Regulation violated: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Area of violation: Permits - Application
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Tank System Standards
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date: 03/25/2004
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Manifest/Records/Reporting
Date violation determined: 10/05/2000
Date achieved compliance: 09/23/2002
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 10/19/2000
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: F - 264.110-120.G
Area of violation: TSD - Closure/Post-Closure

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date violation determined: 04/02/1997
Date achieved compliance: 06/05/1997
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 04/02/1997
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.30-34.C
Area of violation: Generators - General
Date violation determined: 01/17/1996
Date achieved compliance: 01/31/1996
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 01/17/1996
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 264.340-352.O
Area of violation: TSD - Incinerator Standards
Date violation determined: 05/19/1995
Date achieved compliance: 01/17/1996
Violation lead agency: EPA
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/19/1995
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 264.190-201.J
Area of violation: TSD - General
Date violation determined: 05/19/1995
Date achieved compliance: 01/17/1996
Violation lead agency: EPA
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/19/1995
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 264.170-177.I
Area of violation: TSD - General
Date violation determined: 05/24/1993

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 264.30-37.C
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 268 ALL
Area of violation: LDR - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 264.30-37.C
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.50-60
Area of violation: Generators - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 264.170-177.I
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 268 ALL
Area of violation: LDR - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 270
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date: 12/13/1994
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: 35000
Paid penalty amount: 35000

Regulation violated: FR - 270
Area of violation: TSD - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.50-60
Area of violation: Generators - General
Date violation determined: 05/24/1993
Date achieved compliance: 06/24/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/24/1993
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 264.140-150.H
Area of violation: TSD - Financial Requirements
Date violation determined: 03/20/1991
Date achieved compliance: 01/22/1993
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 04/06/1991
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 270
Area of violation: TSD - General
Date violation determined: 01/22/1990
Date achieved compliance: 05/03/1990
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/08/1990
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 10/12/2017
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 09/18/2017
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/26/2016
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/01/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 12/02/2015
Evaluation lead agency: State

Evaluation date: 12/01/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Manifest/Records/Reporting
Date achieved compliance: 12/02/2015
Evaluation lead agency: State

Evaluation date: 11/06/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/29/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/05/2014
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/04/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/24/2014
Evaluation: NOT A SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 01/23/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General Facility Standards
Date achieved compliance: 02/24/2014
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 02/24/2014
Evaluation lead agency: State

Evaluation date: 09/24/2012
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 08/22/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 07/31/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General Facility Standards
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Manifest
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 04/16/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 04/10/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/01/2010
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/25/2010
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/02/2009
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/16/2008
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 12/16/2008
Evaluation lead agency: State

Evaluation date: 07/29/2008
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/10/2008
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/21/2006
Evaluation: NOT A SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/10/2006
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 09/22/2006
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: EPA Contractor/Grantee

Evaluation date: 06/20/2006
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/19/2005
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/11/2005
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: TSD - Financial Requirements
Date achieved compliance: 11/22/2005
Evaluation lead agency: State

Evaluation date: 08/03/2004
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State Contractor/Grantee

Evaluation date: 06/01/2004
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/01/2004
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 12/21/2006
Evaluation lead agency: State

Evaluation date: 12/23/2003
Evaluation: NOT A SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/24/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Financial Requirements
Date achieved compliance: 12/23/2003
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 06/24/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Container Use and Management
Date achieved compliance: 12/23/2003
Evaluation lead agency: State

Evaluation date: 06/24/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - General Facility Standards
Date achieved compliance: 12/23/2003
Evaluation lead agency: State

Evaluation date: 06/24/2003
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Tank System Standards
Date achieved compliance: 12/23/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Tank System Standards
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: Generators - Records/Reporting
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Container Use and Management
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Preparedness and Prevention
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: TSD - General Facility Standards
Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 06/11/2002
Evaluation: FOLLOW-UP INSPECTION
Area of violation: Generators - Manifest

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: 09/25/2003
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Tank System Standards
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Manifest
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Preparedness and Prevention
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Manifest/Records/Reporting
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General Facility Standards
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Contingency Plan and Emergency Procedures
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Permits - Application
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Container Use and Management
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Records/Reporting
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 12/02/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/20/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/29/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/16/1997
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 04/01/1997
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Closure/Post-Closure
Date achieved compliance: 06/05/1997
Evaluation lead agency: State

Evaluation date: 01/17/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 01/31/1996
Evaluation lead agency: State

Evaluation date: 02/27/1995
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 01/17/1996
Evaluation lead agency: EPA

Evaluation date: 02/27/1995
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/27/1995
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Incinerator Standards

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Date achieved compliance: 01/17/1996
Evaluation lead agency: EPA

Evaluation date: 01/22/1993
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 01/19/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: LDR - General
Date achieved compliance: 06/24/1993
Evaluation lead agency: State

Evaluation date: 01/19/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 06/24/1993
Evaluation lead agency: State

Evaluation date: 01/19/1993
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 06/24/1993
Evaluation lead agency: State

Evaluation date: 03/20/1992
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/16/1992
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/14/1992
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/18/1991
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Financial Requirements
Date achieved compliance: 01/22/1993
Evaluation lead agency: State

Evaluation date: 10/19/1990
Evaluation: OPERATION AND MAINTENANCE INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Evaluation date: 01/23/1990
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 01/22/1990
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 05/03/1990
Evaluation lead agency: State

Evaluation date: 07/07/1989
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 06/13/1989
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 11/24/1987
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 10/06/1987
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

US ENG CONTROLS:
EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Actual Date: 01/05/2011
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Alternate Drinking Water, Permanent Replacement
Contact Name: Not reported
Contact Phone and Ext: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Alternate Drinking Water, Temporary Replacement
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Biological Treatment, (N.O.S.)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Discharge
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Extraction
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Liquid Phase Carbon Adsorption
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Operations & Maintenance (O&M)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Publicly Owned Treatment Works (POTW)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: Pump And Treat
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: UV Oxidation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Air Stripping
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Biological Treatment, (Ex-Situ)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Carbon Adsorption
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Chemical Reduction/Oxidation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Extraction
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Reuse as Process Water
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: UV Oxidation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Engineering Control: Cap
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Engineering Control: Disposal
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Engineering Control: Excavation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Engineering Control: Soil Vapor Extraction (in-situ)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Engineering Control: Treatment, (N.O.S.)
Contact Name: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil Gas
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil Gas
Engineering Control: Vapor Intrusion Pathway Mitigation, (N.O.S)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

US INST CONTROL:
EPA ID: CAD000030494
Site ID: Not reported
Name: AEROJET ROCKETDYNE INC
Action Name: Not reported
Address: US HWY 50 AND AEROJET RD
RANCHO CORDOVA, CA 95813-6000
EPA Region: 9
County: SACRAMENTO
Event Code: CA772PR
Inst. Control: Not reported
Actual Date: 04/17/1995
Complet. Date: 01/01/1900
Operable Unit: Not reported
Contaminated Media : Not reported
Contact Name : JIM BUEHLER
Contact Phone and Ext : 916-355-4682
Event Code Description: INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL

EPA ID: CAD000030494
Site ID: Not reported
Name: AEROJET ROCKETDYNE INC
Action Name: Not reported
Address: US HWY 50 AND AEROJET RD
RANCHO CORDOVA, CA 95813-6000
EPA Region: 9
County: SACRAMENTO
Event Code: CA772PR
Inst. Control: Not reported
Actual Date: 11/22/2002
Complet. Date: 01/01/1900
Operable Unit: Not reported
Contaminated Media : Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Contact Name : JIM BUEHLER
Contact Phone and Ext : 916-355-4682
Event Code Description: INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Covenant
Actual Date: 07/31/2001
Complet. Date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Groundwater use/well drilling regulation
Actual Date: 07/31/2001
Complet. Date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Notice in Newspaper
Actual Date: 07/31/2001
Complet. Date: 07/20/2001
Operable Unit: 03
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Covenant
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Deed Restriction
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Groundwater use/well drilling regulation
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Covenant
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Deed Notices
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Land Use Restriction
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670

AEROJET ROCKETDYNE INC (Continued) **1000333003**

EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Covenant
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil Gas
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Deed Notices
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil Gas
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CAD980358832
Site ID: 0901718
Name: AEROJET GENERAL CORP.
Action Name: RECORD OF DECISION
Address: HWY US 50 & AEROJET RD
RANCHO CORDOVA, CA 95670
EPA Region: 09
County: SACRAMENTO
Event Code: Not reported
Inst. Control: Land Use Restriction
Actual Date: 01/05/2011
Complet. Date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil Gas
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

ENVIROSTOR:
Facility ID: 80001284
Status: Refer: SMBRP
Status Date: 11/12/2010
Site Code: 510115
Site Type: Corrective Action
Site Type Detailed: Corrective Action
Acres: 0
NPL: NO

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Regulatory Agencies: SMBRP
Lead Agency: MBR
Program Manager: Not reported
Supervisor: William Beckman
Division Branch: Cleanup Sacramento
Assembly: 08
Senate: 08
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 38.61555
Longitude: -121.2032
APN: 123-01-1234
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: 123-01-1234
Alias Type: APN
Alias Name: CAD000030494
Alias Type: EPA Identification Number
Alias Name: T10000002980
Alias Type: GeoTracker Global ID
Alias Name: 100002
Alias Type: Project Code (Site Code)
Alias Name: 510115
Alias Type: Project Code (Site Code)
Alias Name: 34370002
Alias Type: Envirostor ID Number
Alias Name: 80001284
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RCRA Facility Assessment Report
Completed Date: 06/21/1994
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 02/15/1995
Comments: Placeholder for LUR for Injection Wells 1 and 2. Part of Permit Closure and not part of Corrective Action. Type changed to Correspondence.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 11/22/2002
Comments: Tracking of Waterboard and EPA Land Use Restriction for off-site groundwater for Carve-out area. No DTSC jurisdiction or involvement in LUR

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: MCDONALD DOUGLAS (3500 ACRE PARCEL)

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Completed Document Type: Consent Agreement
Completed Date: 06/30/1994
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Historical Operating Permit Authority
Completed Date: 06/10/1997
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AEROJET (8500 ACRE PARCEL)
Completed Document Type: Consent Decree
Completed Date: 09/08/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Consent Order
Completed Date: 08/16/1990
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Consent Order
Completed Date: 06/10/1997
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Unilateral Order (I/SE, RAO, CAO, EPA AO)
Completed Date: 06/23/1989
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Interim Measures Questionnaire
Completed Date: 04/02/1998
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: SWMUs 55, 373, 374, 375
Completed Document Type: RFI Workplan
Completed Date: 01/31/2005
Comments: Changed date from 08/30/04 to 01/31/05 (03/14/06 - ps).

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AEROJET (8500 ACRE PARCEL)
Completed Document Type: Interim Measures Implementation Report
Completed Date: 01/01/1986
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: MCDONALD DOUGLAS (3500 ACRE PARCEL)
Completed Document Type: Interim Measures Implementation Report
Completed Date: 01/01/1997
Comments: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: UNITS L, M, N, P, Q
Completed Document Type: RFI Report
Completed Date: 04/17/2001
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: SWMUs 55, 373, 374, 375
Completed Document Type: RFI Report
Completed Date: 08/18/2005
Comments: ps 03/14/06 - Four Grit piles were analyzed for perchlorate and metals, no further action required.

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: MCDONALD DOUGLAS (3500 ACRE PARCEL)
Completed Document Type: Interim Measures Workplan
Completed Date: 06/30/1994
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AEROJET (8500 ACRE PARCEL)
Completed Document Type: RFI Workplan
Completed Date: 06/01/1991
Comments: PHASE I WORKPLAN RSARACINO 19980402.17:17S

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: UNITS L, M, N, P, Q
Completed Document Type: RFI Workplan
Completed Date: 12/23/1999
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: UNITS L, M, N, P, Q
Completed Document Type: RFI Workplan
Completed Date: 08/31/1999
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AEROJET (8500 ACRE PARCEL)
Completed Document Type: Interim Measures Workplan
Completed Date: 01/01/1982
Comments: Not reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AEROJET (8500 ACRE PARCEL)
Completed Document Type: Interim Measures Workplan
Completed Date: 01/01/1978
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Groundwater Migration Controlled
Completed Date: 12/11/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Completed Document Type: Human Exposure Controlled
Completed Date: 12/11/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Human Exposure Controlled
Completed Date: 08/16/2005
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

SWEEPS UST:
Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 2-N-G-
SWRCB Tank Id: 34-000-035377-000001
Tank Status: A
Capacity: 8121
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: REG UNLEADED
Number Of Tanks: 32

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 2-S-G-
SWRCB Tank Id: 34-000-035377-000002
Tank Status: A
Capacity: 8121
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: LEADED
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 7-E-2D
SWRCB Tank Id: 34-000-035377-000003
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1023-E-2D
SWRCB Tank Id: 34-000-035377-000004
Tank Status: A
Capacity: 7500
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1023-W-2D
SWRCB Tank Id: 34-000-035377-000005
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1028-E-2D

AEROJET ROCKETDYNE INC (Continued) **1000333003**

SWRCB Tank Id: 34-000-035377-000006
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1030-S-2D
SWRCB Tank Id: 34-000-035377-000007
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1034-E-2D
SWRCB Tank Id: 34-000-035377-000008
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1037-S-2D
SWRCB Tank Id: 34-000-035377-000009
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1050-E-2D
SWRCB Tank Id: 34-000-035377-000010
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1056-S-2D
SWRCB Tank Id: 34-000-035377-000011
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1058-W-2D
SWRCB Tank Id: 34-000-035377-000012
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1062-N-2D
SWRCB Tank Id: 34-000-035377-000013
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1086-N-2D
SWRCB Tank Id: 34-000-035377-000014
Tank Status: A
Capacity: 12000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 1096-W-2D
SWRCB Tank Id: 34-000-035377-000015
Tank Status: A
Capacity: 10000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 5026-N-2D
SWRCB Tank Id: 34-000-035377-000016

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 5026-S-2D
SWRCB Tank Id: 34-000-035377-000017
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 5038-N-2D
SWRCB Tank Id: 34-000-035377-000018
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 5068-E-2D
SWRCB Tank Id: 34-000-035377-000019
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 5080-S-2D
SWRCB Tank Id: 34-000-035377-000020
Tank Status: A
Capacity: 10000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 20019-E-2D
SWRCB Tank Id: 34-000-035377-000021
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 46035-S-2D
SWRCB Tank Id: 34-000-035377-000022
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 46046-S-2D
SWRCB Tank Id: 34-000-035377-000023
Tank Status: A
Capacity: 350
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 46068-S-2D
SWRCB Tank Id: 34-000-035377-000024
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 48012-W-2D
SWRCB Tank Id: 34-000-035377-000025
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 48021-N-2D
SWRCB Tank Id: 34-000-035377-000026
Tank Status: A

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Capacity: 10000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 49010-S-2D
SWRCB Tank Id: 34-000-035377-000027
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 49015-N-2D
SWRCB Tank Id: 34-000-035377-000028
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 49016-N-2D
SWRCB Tank Id: 34-000-035377-000029
Tank Status: A
Capacity: 5000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 49093-E-WO
SWRCB Tank Id: 34-000-035377-000030
Tank Status: A
Capacity: 500
Active Date: 07-01-85
Tank Use: OIL
STG: W
Content: WASTE OIL
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 7-W-CL-A
SWRCB Tank Id: 34-000-035377-000031
Tank Status: A
Capacity: 10000
Active Date: 07-01-85
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: Not reported

Status: Active
Comp Number: 35377
Number: 9
Board Of Equalization: 44-019214
Referral Date: 07-01-85
Action Date: Not reported
Created Date: 02-29-88
Owner Tank Id: 15011-E-2D
SWRCB Tank Id: 34-000-035377-000032
Tank Status: A
Capacity: 3000
Active Date: 07-01-85
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: Not reported

HIST UST:
File Number: 0001FD2A
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001FD2A.pdf
Region: STATE
Facility ID: 00000019591
Facility Type: Other

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Other Type:	CONSTRUCTION
Contact Name:	E.L. MEYER
Telephone:	9163554621
Owner Name:	DELTA CONSTRUCTION COMPANY
Owner Address:	AEROJECT RD AND HWY 50
Owner City,St,Zip:	RANCHO CORDOVA, CA 95670
Total Tanks:	0004
Tank Num:	001
Container Num:	DELTA - LA
Year Installed:	1979
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	101
Leak Detection:	Not reported
Tank Num:	002
Container Num:	DELTA-GAS-
Year Installed:	1979
Tank Capacity:	00002000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	3/16
Leak Detection:	10
Tank Num:	003
Container Num:	DELTA-20
Year Installed:	1982
Tank Capacity:	00008000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	3/16
Leak Detection:	10
Tank Num:	004
Container Num:	DELTA-3
Year Installed:	1984
Tank Capacity:	00000026
Tank Used for:	WASTE
Type of Fuel:	Not reported
Container Construction Thickness:	6
Leak Detection:	Visual

Click here for Geo Tracker PDF:

CA FID UST:

Facility ID:	34006488
Regulated By:	UTNKA
Regulated ID:	00035377
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	9163552740
Mail To:	Not reported
Mailing Address:	P O BOX
Mailing Address 2:	Not reported
Mailing City,St,Zip:	RANCHO CORDOVA 95670

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

Facility ID: 34006488
Regulated By: UTNKA
Regulated ID: 00035378
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 9163554621
Mail To: Not reported
Mailing Address: P O BOX 15699C
Mailing Address 2: Not reported
Mailing City,St,Zip: RANCHO CORDOVA 95670
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

Facility ID: 34006488
Regulated By: UTNKA
Regulated ID: 00035380
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 9163554621
Mail To: Not reported
Mailing Address: P O BOX 15699C
Mailing Address 2: Not reported
Mailing City,St,Zip: RANCHO CORDOVA 95670
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

Facility ID: 34006488
Regulated By: UTNKA
Regulated ID: 00035461
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 9163554621
Mail To: Not reported
Mailing Address: P O BOX
Mailing Address 2: Not reported
Mailing City,St,Zip: RANCHO CORDOVA 95670
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported

AEROJET ROCKETDYNE INC (Continued) **1000333003**

NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

Facility ID: 34006488
Regulated By: UTNKI
Regulated ID: 00019591
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 9163554621
Mail To: Not reported
Mailing Address: P O BOX 156994 DEPT
Mailing Address 2: Not reported
Mailing City,St,Zip: RANCHO CORDOVA 95670
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Inactive

US FIN ASSUR:
EPA ID: CAD000030494
County: Not reported
Mechanism type: S
Mechanism Type Description: SURETY BOND GUARANTEEING PERFORMANCE
Cost estimate: 3958885.49
Face value: 7069501.9
Effective date: 2011-11-30 00:00:00
Provider: WESTCHESTER FIRE INS. CO.
EPA region: 9

EPA ID: CAD000030494
County: Not reported
Mechanism type: L
Mechanism Type Description: LETTER OF CREDIT
Cost estimate: 831922
Face value: 849392.36
Effective date: 2012-09-12 00:00:00
Provider: WELL FARGO
EPA region: 9

EPA ID: CAD000030494
County: Not reported
Mechanism type: S
Mechanism Type Description: SURETY BOND GUARANTEEING PERFORMANCE
Cost estimate: 864681.42
Face value: 7069501.9
Effective date: 2011-11-30 00:00:00
Provider: WESTCHESTER FIRE INS. CO.
EPA region: 9

EPA ID: CAD000030494
County: Not reported
Mechanism type: X

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Mechanism Type Description: STANDBY TRUST FUND
Cost estimate: 864681.42
Face value: 0
Effective date: 2006-04-26 00:00:00
Provider: BANK OF NEW YORK MELLON
EPA region: 9

EPA ID: CAD000030494
County: Not reported
Mechanism type: X
Mechanism Type Description: STANDBY TRUST FUND
Cost estimate: 2000000
Face value: 8000000
Effective date: 2016-02-28 00:00:00
Provider: GREAT AMERICAN E&S INS. COMPANY
EPA region: 9

EPA ID: CAD000030494
County: Not reported
Mechanism type: I
Mechanism Type Description: INSURANCE
Cost estimate: 8000000
Face value: 8000000
Effective date: 2013-02-28 00:00:00
Provider: INDIAN HARBORS INS.
EPA region: 9

EPA ID: CAD000030494
County: Not reported
Mechanism type: X
Mechanism Type Description: STANDBY TRUST FUND
Cost estimate: 3958885.49
Face value: 0
Effective date: 2006-04-26 00:00:00
Provider: BANK OF NEW YORK MELLON
EPA region: 9

EPA ID: CAD000030494
County: Not reported
Mechanism type: L
Mechanism Type Description: LETTER OF CREDIT
Cost estimate: 3808899
Face value: 3888885.88
Effective date: 2012-09-12 00:00:00
Provider: WACHOVIA BANK
EPA region: 9

EPA ID: CAD000030494
County: Not reported
Mechanism type: X
Mechanism Type Description: STANDBY TRUST FUND
Cost estimate: 6000000
Face value: 8000000
Effective date: 2016-02-28 00:00:00
Provider: GREAT AMERICAN E&S INS. COMPANY
EPA region: 9

AEROJET ROCKETDYNE INC (Continued) **1000333003**

ROD:

EPA ID:	CAD980358832
RG:	9
Site ID:	901718
Name:	AEROJET GENERAL CORP.
Action:	GOVT Decision Document (ROD)
Operable Unit Number:	WESTERN GW OU
SEQ ID:	2
Action Completion:	2001-07-20 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

EPA ID:	CAD980358832
RG:	9
Site ID:	901718
Name:	AEROJET GENERAL CORP.
Action:	GOVT ROD for PRP Remedy
Operable Unit Number:	PERIMETER GW
SEQ ID:	4
Action Completion:	2011-02-15 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

EPA ID:	CAD980358832
RG:	9
Site ID:	901718
Name:	AEROJET GENERAL CORP.
Action:	GOVT ROD for PRP Remedy
Operable Unit Number:	BOUNDARY OU GW & SOIL
SEQ ID:	5
Action Completion:	2015-07-22 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

PRP:

PRP Name:	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	CORDOVA CHEMICAL CO.
	CORDOVA CHEMICAL CO.
	CORDOVA CHEMICAL CO.
	CORDOVA CHEMICAL CO.
	CORDOVA CHEMICAL CO.

PADS:

EPAID:	CAD000030494
Facility name:	US GEN CORP AEROJET SACRAMENTO
Facility Address:	HIGHWAY 50 & AEROJET RD RANCHO CORDOVA, CA 95670
Facility country:	US

AEROJET ROCKETDYNE INC (Continued) **1000333003**

Generator:	Yes
Storer:	No
Transporter:	No
Disposer:	No
Research facility:	No
Smelter:	No
Facility owner name:	GENCORP AEROJET
Contact title:	Not reported
Contact name:	ED MYER
Contact tel:	916-355-4621
Contact extension:	Not reported
Contact Email:	Not reported
Mailing address:	PO BOX 15699
	SACRAMENTO, CA 95852-1699
Mailing country:	US
Cert. date:	04/02/1990

CONSENT:

EPA ID:	CAD980358832
Site ID:	Not reported
Case Title:	U.S. V. AEROJET-GENERAL CORPORATION & CORDOVA CHEMICAL COMPANY
Court Num:	86-0064 86-63
District:	California, East
Entered Date:	19980730
Name:	AEROJET GENERAL CORP
Address:	HWY 50 AND AEROJET RD
City:	RANCHO CORDOVA
County:	Not reported
State:	CA
Zip:	95670

EPA ID:	CAD980358832
Site ID:	Not reported
Case Title:	U.S. V. AEROJET-GENERAL CORPORATION & CORDOVA CHEMICAL COMPANY
Court Num:	86-0064 86-63
District:	California, East
Entered Date:	20020415
Name:	AEROJET GENERAL CORP
Address:	HWY 50 AND AEROJET RD
City:	RANCHO CORDOVA
County:	Not reported
State:	CA
Zip:	95670

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1 **NORTH DOUGLAS** **CIWQS S121659258**
NORTHEAST OF DOUGLAS ROAD AND AMERICANOS ROAD **N/A**
< 1/8 **RANCHO CORDOVA, CA 95670**
1 ft.

Relative: Lower
Actual: 221 ft.

CIWQS:

Agency:	MS Rialto North Douglas LLC
Agency Address:	1420 Rocky Ridge Drive Suite 320, Roseville, CA 95661
Place/Project Type:	Construction - Residential, Utility: Repairs of individual water lines and Flushing
SIC/NAICS:	Not reported
Region:	5S
Program:	CONSTW

NORTH DOUGLAS (Continued) **S121659258**

Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	5S34C360061
NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	12/16/2010
Termination Date:	03/04/2011
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	38.574204
Longitude:	-121.200414

A2 **AMERICAN RIVER ASPHALT** **AST** **S102315643**
ENE **3417 GRANTLINE RD** **CERS HAZ WASTE** **N/A**
< 1/8 **RANCHO CORDOVA, CA 95742** **CERS TANKS**
0.063 mi. **EMI**
333 ft. **Site 1 of 2 in cluster A** **ENF**
Sacramento Co. ML
Relative: Higher **NPDES**
WDS
Actual: 260 ft. **CIWQS**
CERS

AST:

Certified Unified Program Agencies:	Not reported
Owner:	Teichert Materials
Total Gallons:	Not reported
CERSID:	10219426
Facility ID:	Not reported
Business Name:	Teichert Aggregates
Phone:	(916) 351-0123
Fax:	Not reported
Mailing Address:	3417 Grant Line Road
Mailing Address City:	Rancho Cordova
Mailing Address State:	CA
Mailing Address Zip Code:	95742
Operator Name:	Teichert Aggregates - Grantline Plant
Operator Phone:	916-351-0123
Owner Phone:	916-484-3301
Owner Mail Address:	PO Box 15002
Owner State:	CA
Owner Zip Code:	95851
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000231531

AMERICAN RIVER ASPHALT (Continued) **S102315643**

CERS HAZ WASTE:
Site ID: 160028
CERS ID: 10219426
CERS Description: Hazardous Waste Generator

Evaluation:
Eval General Type: Other/Unknown
Eval Date: 11-23-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: No violations observed this date.
Eval Division: Sacramento County Env Management Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed this date.
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed this date.
Eval Division: Sacramento County Env Management Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 160028
Facility Name: Teichert Materials - Grantline Plant
Env Int Type Code: HWG
Program ID: 10219426
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 38.579710
Longitude: -121.182210

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Alberto Ramirez
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Entity Title: Not reported
Affiliation Address: 3417 Grant Line Road
Affiliation City: Rancho Cordova
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95742
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Teichert Aggregates - Grantline Plant
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (916) 351-0123

Affiliation Type Desc: CUPA District
Entity Name: Sacramento County Environmental Management Departm
Entity Title: Not reported
Affiliation Address: 10590 Armstrong Avenue, Suite A
Affiliation City: Sacramento
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95655
Affiliation Phone: (916) 875-8550

Affiliation Type Desc: Identification Signer
Entity Name: Becky Wood
Entity Title: EH&S Manager
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Alberto Ramirez
Entity Title: Not reported
Affiliation Address: PO Box 15002
Affiliation City: Sacramento
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95851
Affiliation Phone: (916) 484-3348

Affiliation Type Desc: Legal Owner
Entity Name: Teichert Materials
Entity Title: Not reported
Affiliation Address: PO Box 15002
Affiliation City: Sacramento
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 95851
Affiliation Phone: (916) 484-3301

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Affiliation Type Desc: Parent Corporation
Entity Name: Teichert Aggregates
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

CERS TANKS:
Site ID: 160028
CERS ID: 10219426
CERS Description: Aboveground Petroleum Storage

Evaluation:
Eval General Type: Other/Unknown
Eval Date: 11-23-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: No violations observed this date.
Eval Division: Sacramento County Env Management Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed this date.
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed this date.
Eval Division: Sacramento County Env Management Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 160028
Facility Name: Teichert Materials - Grantline Plant
Env Int Type Code: HWG
Program ID: 10219426
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 38.579710
Longitude: -121.182210

Affiliation:
Affiliation Type Desc: Document Preparer

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Entity Name:	Alberto Ramirez
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	3417 Grant Line Road
Affiliation City:	Rancho Cordova
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	95742
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Teichert Aggregates - Grantline Plant
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(916) 351-0123
Affiliation Type Desc:	CUPA District
Entity Name:	Sacramento County Environmental Management Departm
Entity Title:	Not reported
Affiliation Address:	10590 Armstrong Avenue, Suite A
Affiliation City:	Sacramento
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	95655
Affiliation Phone:	(916) 875-8550
Affiliation Type Desc:	Identification Signer
Entity Name:	Becky Wood
Entity Title:	EH&S Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Alberto Ramirez
Entity Title:	Not reported
Affiliation Address:	PO Box 15002
Affiliation City:	Sacramento
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	95851

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Affiliation Phone:	(916) 484-3348
Affiliation Type Desc:	Legal Owner
Entity Name:	Teichert Materials
Entity Title:	Not reported
Affiliation Address:	PO Box 15002
Affiliation City:	Sacramento
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	95851
Affiliation Phone:	(916) 484-3301
Affiliation Type Desc:	Parent Corporation
Entity Name:	Teichert Aggregates
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

EMI:

Year:	1993
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	1
Particulate Matter Tons/Yr:	4
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2
Year:	1995
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	1
Particulate Matter Tons/Yr:	4
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Year:	1996
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	3
Carbon Monoxide Emissions Tons/Yr:	4
NOX - Oxides of Nitrogen Tons/Yr:	10
SOX - Oxides of Sulphur Tons/Yr:	3
Particulate Matter Tons/Yr:	12
Part. Matter 10 Micrometers and Smllr Tons/Yr:	4

Year:	1997
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	4
Reactive Organic Gases Tons/Yr:	4
Carbon Monoxide Emissions Tons/Yr:	5
NOX - Oxides of Nitrogen Tons/Yr:	13
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	11
Part. Matter 10 Micrometers and Smllr Tons/Yr:	6

Year:	1998
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	4
Reactive Organic Gases Tons/Yr:	4
Carbon Monoxide Emissions Tons/Yr:	6
NOX - Oxides of Nitrogen Tons/Yr:	14
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	11
Part. Matter 10 Micrometers and Smllr Tons/Yr:	7

Year:	1999
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5
Reactive Organic Gases Tons/Yr:	5
Carbon Monoxide Emissions Tons/Yr:	7
NOX - Oxides of Nitrogen Tons/Yr:	17
SOX - Oxides of Sulphur Tons/Yr:	2
Particulate Matter Tons/Yr:	14
Part. Matter 10 Micrometers and Smllr Tons/Yr:	8

Year:	2000
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5
Reactive Organic Gases Tons/Yr:	5
Carbon Monoxide Emissions Tons/Yr:	7
NOX - Oxides of Nitrogen Tons/Yr:	18
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	15
Part. Matter 10 Micrometers and Smllr Tons/Yr:	9

Year:	2001
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	49
NOX - Oxides of Nitrogen Tons/Yr:	15
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	16
Part. Matter 10 Micrometers and Smllr Tons/Yr:	7

Year:	2001
County Code:	34
Air Basin:	SV
Facility ID:	14
Air District Name:	SAC
SIC Code:	1442
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0

AMERICAN RIVER ASPHALT (Continued) **S102315643**

NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	45
Part. Matter 10 Micrometers and Smllr Tons/Yr:	16

Year:	2002
County Code:	34
Air Basin:	SV
Facility ID:	118
Air District Name:	SAC
SIC Code:	2951
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	49
NOX - Oxides of Nitrogen Tons/Yr:	15
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	16
Part. Matter 10 Micrometers and Smllr Tons/Yr:	7

Year:	2013
County Code:	34
Air Basin:	SV
Facility ID:	14
Air District Name:	SAC
SIC Code:	1442
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2014
County Code:	34
Air Basin:	SV
Facility ID:	14
Air District Name:	SAC
SIC Code:	1442
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2015

AMERICAN RIVER ASPHALT (Continued) **S102315643**

County Code:	34
Air Basin:	SV
Facility ID:	14
Air District Name:	SAC
SIC Code:	1442
Air District Name:	SACRAMENTO METROPOLITAN AQMD
Community Health Air Pollution Info System:	N
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

ENF:

Region:	5S
Facility Id:	227787
Agency Name:	Not reported
Place Type:	Mining
Place Subtype:	Sand and Gravel Mining
Facility Type:	Industrial
Agency Type:	Not reported
# Of Agencies:	Not reported
Place Latitude:	38.57971
Place Longitude:	-121.18221
SIC Code 1:	1442
SIC Desc 1:	Construction Sand and Gravel
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	212321
NAICS Desc 1:	Construction Sand and Gravel Mining
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Enf Action
Design Flow:	Not reported
Threat To Water Quality:	Not reported
Complexity:	Not reported
Pretreatment:	Not reported
Facility Waste Type:	Not reported
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	Not reported
Program Category1:	Not reported
Program Category2:	WDR
# Of Programs:	Not reported
WDID:	Not reported
Reg Measure Id:	Not reported
Reg Measure Type:	Not reported
Region:	Not reported

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Order #:	Not reported
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	Not reported
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Not reported
Status Date:	Not reported
Effective Date:	Not reported
Expiration/Review Date:	Not reported
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	Not reported
Individual/General:	Not reported
Fee Code:	Not reported
Direction/Voice:	Not reported
Enforcement Id(EID):	244638
Region:	5S
Order / Resolution Number:	Not reported
Enforcement Action Type:	Notice of Violation
Effective Date:	04/25/2003
Adoption/Issuance Date:	04/25/2003
Achieve Date:	Not reported
Termination Date:	04/25/2003
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Historical
Title:	NOV 04/25/2003 for Teichert Aggregates, Grantline Plant
Description:	NOV for failure to submit wastewater characterization report required by WDRS.
Program:	WDR
Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

Region:	5S
Facility Id:	227787
Agency Name:	Grant Line Road Properties LLC
Place Type:	Mining
Place Subtype:	Sand and Gravel Mining
Facility Type:	Industrial
Agency Type:	Privately-Owned Business
# Of Agencies:	2
Place Latitude:	38.57971

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Place Longitude:	-121.18221
SIC Code 1:	1442
SIC Desc 1:	Construction Sand and Gravel
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	212321
NAICS Desc 1:	Construction Sand and Gravel Mining
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	1.5
Threat To Water Quality:	2
Complexity:	C
Pretreatment:	N - POTW does not have EPA approved pretreatment prog.
Facility Waste Type:	Solid wastes, NEC
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	WDRMINING
Program Category1:	WDR
Program Category2:	WDR
# Of Programs:	1
WDID:	5A342027001
Reg Measure Id:	131503
Reg Measure Type:	WDR
Region:	5S
Order #:	R5-2002-0123
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	N - No
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Active
Status Date:	09/04/2018
Effective Date:	06/07/2002
Expiration/Review Date:	06/07/2012
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	58 - Non15 Based on (TTWQ)/CPLX)
Direction/Voice:	Passive
Enforcement Id(EID):	385448
Region:	5S
Order / Resolution Number:	Not reported

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Enforcement Action Type:	Oral Communication
Effective Date:	06/07/2012
Adoption/Issuance Date:	06/07/2012
Achieve Date:	Not reported
Termination Date:	06/07/2012
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Historical
Title:	Oral Com 06/07/2012 for Teichert Aggregates
Description:	Contacted Discharger regarding late reporting.
Program:	WDR
Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

Region:	5S
Facility Id:	227787
Agency Name:	Grant Line Road Properties LLC
Place Type:	Mining
Place Subtype:	Sand and Gravel Mining
Facility Type:	Industrial
Agency Type:	Privately-Owned Business
# Of Agencies:	2
Place Latitude:	38.57971
Place Longitude:	-121.18221
SIC Code 1:	1442
SIC Desc 1:	Construction Sand and Gravel
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	212321
NAICS Desc 1:	Construction Sand and Gravel Mining
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	1.5
Threat To Water Quality:	2
Complexity:	C
Pretreatment:	N - POTW does not have EPA approved pretreatment prog.
Facility Waste Type:	Solid wastes, NEC
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	WDRMINING
Program Category1:	WDR
Program Category2:	WDR
# Of Programs:	1

AMERICAN RIVER ASPHALT (Continued) **S102315643**

WDID:	5A342027001
Reg Measure Id:	131503
Reg Measure Type:	WDR
Region:	5S
Order #:	R5-2002-0123
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	N - No
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Active
Status Date:	09/04/2018
Effective Date:	06/07/2002
Expiration/Review Date:	06/07/2012
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	58 - Non15 Based on (TTWQ)/CPLX)
Direction/Voice:	Passive
Enforcement Id(EID):	237414
Region:	5S
Order / Resolution Number:	Not reported
Enforcement Action Type:	Notice of Violation
Effective Date:	08/13/2001
Adoption/Issuance Date:	08/13/2001
Achieve Date:	Not reported
Termination Date:	08/13/2001
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Historical
Title:	NOV 08/13/2001 for Teichert Aggregates, Grantline Plant
Description:	NOV sent to Discharger for incomplete monitoring reports.
Program:	WDR
Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

Region:	5S
Facility Id:	227787
Agency Name:	Grant Line Road Properties LLC
Place Type:	Mining
Place Subtype:	Sand and Gravel Mining
Facility Type:	Industrial

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Agency Type:	Privately-Owned Business
# Of Agencies:	2
Place Latitude:	38.57971
Place Longitude:	-121.18221
SIC Code 1:	1442
SIC Desc 1:	Construction Sand and Gravel
SIC Code 2:	Not reported
SIC Desc 2:	Not reported
SIC Code 3:	Not reported
SIC Desc 3:	Not reported
NAICS Code 1:	212321
NAICS Desc 1:	Construction Sand and Gravel Mining
NAICS Code 2:	Not reported
NAICS Desc 2:	Not reported
NAICS Code 3:	Not reported
NAICS Desc 3:	Not reported
# Of Places:	1
Source Of Facility:	Reg Meas
Design Flow:	1.5
Threat To Water Quality:	2
Complexity:	C
Pretreatment:	N - POTW does not have EPA approved pretreatment prog.
Facility Waste Type:	Solid wastes, NEC
Facility Waste Type 2:	Not reported
Facility Waste Type 3:	Not reported
Facility Waste Type 4:	Not reported
Program:	WDRMINING
Program Category1:	WDR
Program Category2:	WDR
# Of Programs:	1
WDID:	5A342027001
Reg Measure Id:	131503
Reg Measure Type:	WDR
Region:	5S
Order #:	R5-2002-0123
Npdes# CA#:	Not reported
Major-Minor:	Not reported
Npdes Type:	Not reported
Reclamation:	N - No
Dredge Fill Fee:	Not reported
301H:	Not reported
Application Fee Amt Received:	Not reported
Status:	Active
Status Date:	09/04/2018
Effective Date:	06/07/2002
Expiration/Review Date:	06/07/2012
Termination Date:	Not reported
WDR Review - Amend:	Not reported
WDR Review - Revise/Renew:	Not reported
WDR Review - Rescind:	Not reported
WDR Review - No Action Required:	Not reported
WDR Review - Pending:	Not reported
WDR Review - Planned:	Not reported
Status Enrollee:	N
Individual/General:	I
Fee Code:	58 - Non15 Based on (TTWQ)/CPLX)
Direction/Voice:	Passive

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Enforcement Id(EID):	232040
Region:	5S
Order / Resolution Number:	Not reported
Enforcement Action Type:	Notice of Violation
Effective Date:	04/06/2000
Adoption/Issuance Date:	04/06/2000
Achieve Date:	Not reported
Termination Date:	04/06/2000
ACL Issuance Date:	Not reported
EPL Issuance Date:	Not reported
Status:	Historical
Title:	NOV 04/06/2000 for Teichert Aggregates, Grantline Plant
Description:	Sent NOV
Program:	WDR
Latest Milestone Completion Date:	Not reported
# Of Programs1:	1
Total Assessment Amount:	0
Initial Assessed Amount:	0
Liability $ Amount:	0
Project $ Amount:	0
Liability $ Paid:	0
Project $ Completed:	0
Total $ Paid/Completed Amount:	0

Sacramento Co. ML:

Facility Id:	Not reported
Facility Status:	Not reported
FD:	Not reported
Billing Codes BP:	A
Billing Codes UST:	Not reported
WG Bill Code:	A
Target Property Bill Cod:	Not reported
Food Bill Code:	Not reported
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	Not reported
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

NPDES:

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5S34I016853

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	10/09/2001
Operator Name:	Teichert Aggregates
Operator Address:	PO Box 15002
Operator City:	Sacramento
Operator State:	California
Operator Zip:	95851

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5S
Regulatory Measure ID:	200867
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5S34I016853
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	10/09/2001
Status:	Active
Status Date:	10/09/2001
Place Size:	1500
Place Size Unit:	Acres
Contact:	Mike Cunningham
Contact Title:	Not reported
Contact Phone:	916-351-0123
Contact Phone Ext:	Not reported
Contact Email:	mcunningham@teichert.com
Operator Name:	Teichert Aggregates
Operator Address:	PO Box 15002
Operator City:	Sacramento
Operator State:	California
Operator Zip:	95851
Operator Contact:	Michael Cunningham
Operator Contact Title:	Plant Manager
Operator Contact Phone:	916-386-6873

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Operator Contact Phone Ext:	Not reported
Operator Contact Email:	mcunningham@teichert.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	916-351-0123
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Y
Receiving Water Name:	Morrison Creek
Certifier:	Dana Davis
Certifier Title:	President
Certification Date:	12-MAR-15
Primary Sic:	1442-Construction Sand and Gravel
Secondary Sic:	2951-Asphalt Paving Mixtures and Blocks
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	5S
Regulatory Measure ID:	200867
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5S34I016853
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	10/09/2001
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Teichert Aggregates
Discharge Address:	PO Box 15002
Discharge City:	Sacramento
Discharge State:	California
Discharge Zip:	95851

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Facility Status:	Active
NPDES Number:	CAS000001
Region:	5S
Agency Number:	0
Regulatory Measure ID:	200867
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	5S34I016853
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	10/09/2001
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	PO Box 15002
Discharge Name:	Teichert Aggregates
Discharge City:	Sacramento
Discharge State:	California
Discharge Zip:	95851
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5S
Regulatory Measure ID:	200867
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5S34I016853
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	10/09/2001
Status:	Active
Status Date:	10/09/2001
Place Size:	1500
Place Size Unit:	Acres
Contact:	Mike Cunningham
Contact Title:	Not reported
Contact Phone:	916-351-0123
Contact Phone Ext:	Not reported
Contact Email:	mcunningham@teichert.com

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Operator Name:	Teichert Aggregates
Operator Address:	PO Box 15002
Operator City:	Sacramento
Operator State:	California
Operator Zip:	95851
Operator Contact:	Michael Cunningham
Operator Contact Title:	Plant Manager
Operator Contact Phone:	916-386-6873
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	mcunningham@teichert.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	916-351-0123
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Y
Receiving Water Name:	Morrison Creek
Certifier:	Dana Davis
Certifier Title:	President
Certification Date:	12-MAR-15
Primary Sic:	1442-Construction Sand and Gravel
Secondary Sic:	2951-Asphalt Paving Mixtures and Blocks
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	5S
Regulatory Measure ID:	200867
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5S34I016853
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Effective Date Of Regulatory Measure:	10/09/2001
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Teichert Aggregates
Discharge Address:	PO Box 15002
Discharge City:	Sacramento
Discharge State:	California
Discharge Zip:	95851
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

WDS:

Facility ID:	5S 34I003836
Facility Type:	Other - Does not fall into the category of Municipal/Domestic, Industrial, Agricultural or Solid Waste (Class I, II or III)
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	0
Facility Telephone:	9169856370
Facility Contact:	JERRY HANSEN
Agency Name:	AMERICAN RIVER AGGREGATES
Agency Address:	PO BOX 981
Agency City,St,Zip:	FOLSOM 95630
Agency Contact:	JOHN KEMP
Agency Telephone:	9169856370
Agency Type:	Private
SIC Code:	2951
SIC Code 2:	Not reported
Primary Waste Type:	Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and non putrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).
Primary Waste:	STORMS
Waste Type2:	Not reported
Waste2:	Stormwater Runoff
Primary Waste Type:	Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and non putrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Design Flow:	0
Baseline Flow:	0
Reclamation:	No reclamation requirements associated with this facility.
POTW:	The facility is not a POTW.
Treat To Water:	Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity:	Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or

AMERICAN RIVER ASPHALT (Continued) **S102315643**

dischargers having waste storage systems with land disposal such as dairy waste ponds.

Facility ID:	5S 34I016853
Facility Type:	Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and repairing, oil production, storage and disposal operations, water pumping.
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	0
Facility Telephone:	9163510123
Facility Contact:	Steve Azevedo
Agency Name:	TEICHERT & SON INC
Agency Address:	PO BOX 15002
Agency City,St,Zip:	SACRAMENTO 958511002
Agency Contact:	Steve AZEVEDO
Agency Telephone:	9164843011
Agency Type:	Private
SIC Code:	0
SIC Code 2:	Not reported
Primary Waste Type:	Not reported
Primary Waste:	Not reported
Waste Type2:	Not reported
Waste2:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Design Flow:	0
Baseline Flow:	0
Reclamation:	Not reported
POTW:	Not reported
Treat To Water:	Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity:	Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

CIWQS:

Agency:	Grant Line Road Properties LLC
Agency Address:	3500 American River Drive, Sacramento, CA 95864
Place/Project Type:	Sand and Gravel Mining
SIC/NAICS:	1442
Region:	5S
Program:	WDRMINING
Regulatory Measure Status:	Active

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Regulatory Measure Type:	WDR
Order Number:	R5-2002-0123
WDID:	5A342027001
NPDES Number:	Not reported
Adoption Date:	06/07/2002
Effective Date:	06/07/2002
Termination Date:	Not reported
Expiration/Review Date:	06/07/2012
Design Flow:	1.5
Major/Minor:	Not reported
Complexity:	C
TTWQ:	2
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	38.57971
Longitude:	-121.18221

Agency:	Teichert Aggregates
Agency Address:	PO Box 15002, Sacramento, CA 95851
Place/Project Type:	Industrial - Construction Sand and Gravel
SIC/NAICS:	Multiple
Region:	5S
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	5S34I016853
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	10/09/2001
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	38.582826
Longitude:	-121.186173

Agency:	Teichert Aggregates
Agency Address:	Po Box 15002, Sacramento, CA 95851-1002
Place/Project Type:	Sand and Gravel Mining
SIC/NAICS:	1442
Region:	5S
Program:	WDR, WDRMINING
Regulatory Measure Status:	Active
Regulatory Measure Type:	WDR
Order Number:	R5-2002-0123
WDID:	5A342027001
NPDES Number:	Not reported
Adoption Date:	06/07/2002
Effective Date:	06/07/2002
Termination Date:	Not reported
Expiration/Review Date:	06/07/2012
Design Flow:	1.5

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Major/Minor:	Not reported
Complexity:	C
TTWQ:	2
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	38.57971
Longitude:	-121.18221

Agency:	American River Asphalt
Agency Address:	PO Box 1142, Folsom, CA 95763
Place/Project Type:	Industrial - Asphalt Paving Mixtures and Blocks
SIC/NAICS:	2951
Region:	5S
Program:	INDSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	5S34I003836
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	04/03/1992
Termination Date:	09/08/2004
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	38.582826
Longitude:	-121.186173

CERS TANKS:

Site ID:	160028
CERS ID:	10219426
Site Name:	TEICHERT MATERIALS - GRANTLINE PLANT
CERS Description:	Chemical Storage Facilities

Evaluation:

Eval General Type:	Other/Unknown
Eval Date:	11-23-2016
Violations Found:	No
Eval Type:	Other, not routine, done by local agency
Eval Notes:	No violations observed this date.
Eval Division:	Sacramento County Env Management Department
Eval Program:	APSA
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	07-22-2016
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	No violations observed this date.
Eval Division:	Sacramento County Env Management Department
Eval Program:	HW
Eval Source:	CERS

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-22-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed this date.
Eval Division: Sacramento County Env Management Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 160028
Facility Name: Teichert Materials - Grantline Plant
Env Int Type Code: HWG
Program ID: 10219426
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 38.579710
Longitude: -121.182210

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Alberto Ramirez
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 3417 Grant Line Road
Affiliation City: Rancho Cordova
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95742
Affiliation Phone: Not reported

Affiliation Type Desc: Operator
Entity Name: Teichert Aggregates - Grantline Plant
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (916) 351-0123

Affiliation Type Desc: CUPA District
Entity Name: Sacramento County Environmental Management Departm
Entity Title: Not reported
Affiliation Address: 10590 Armstrong Avenue, Suite A
Affiliation City: Sacramento
Affiliation State: CA

AMERICAN RIVER ASPHALT (Continued) **S102315643**

Affiliation Country:	Not reported
Affiliation Zip:	95655
Affiliation Phone:	(916) 875-8550
Affiliation Type Desc:	Identification Signer
Entity Name:	Becky Wood
Entity Title:	EH&S Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Alberto Ramirez
Entity Title:	Not reported
Affiliation Address:	PO Box 15002
Affiliation City:	Sacramento
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	95851
Affiliation Phone:	(916) 484-3348
Affiliation Type Desc:	Legal Owner
Entity Name:	Teichert Materials
Entity Title:	Not reported
Affiliation Address:	PO Box 15002
Affiliation City:	Sacramento
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	95851
Affiliation Phone:	(916) 484-3301
Affiliation Type Desc:	Parent Corporation
Entity Name:	Teichert Aggregates
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

A3 **GRANTLINE PLANT** **AST** **A100107597**
ENE **3417 GRANT LINE RD** **N/A**
< 1/8 **RANCHO CORDOVA, CA**
0.063 mi.
333 ft. **Site 2 of 2 in cluster A**

Relative:
Higher

Actual:
260 ft.

AST:

Certified Unified Program Agencies:	Sacramento
Owner:	A.TEICHERT & SON, INC.
Total Gallons:	34,760
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported

GRANTLINE PLANT (Continued) **A100107597**

Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

---

4 **INACTIVE RANCHO CORDOVA TEST SITE - INACTIVE RANCH** **CPS-SLIC** **S111293395**
West **NIMBUS ROAD** **N/A**
1/4-1/2 **RANCHO CORDOVA, CA 95670**
0.425 mi.
2246 ft.

Relative: **Lower**
Actual: **204 ft.**

CPS-SLIC:

Site Name:	INACTIVE RANCHO CORDOVA TEST SITE - INACTIVE RANCHO CORDOVA TEST SITE - SIGMA DEBRIS AREA
Region:	STATE
Facility Status:	**Open - Remediation**
Status Date:	09/28/2011
Global Id:	T10000003290
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency Case Number:	Not reported
Latitude:	38.5744743358981
Longitude:	-121.210269927979
Case Type:	Cleanup Program Site
Case Worker:	AMM
Local Agency:	Not reported
RB Case Number:	Not reported
File Location:	Regional Board
Potential Media Affected:	Aquifer used for drinking water supply, Contaminated Surface / Structure, Indoor Air, Other Groundwater (uses other than drinking water), Sediments, Soil, Soil Vapor, Surface water
Potential Contaminants of Concern:	Arsenic, Copper, Lead, Mercury (elemental), Other Metal, Silver
Site History:	Investigation involving soil vapor and groundwater sampling and analysis was conducted between 1992 and 2002. Designated as a No Further Action site in a Remedial Action Plan. Contaminants of concern were identified as metals, perchlorate, and volatile organics. Metals were found at elevated levels in surface soil, but neither perchlorate or any volatile organics were detected in any of the soil samples. Investigation data shows that the Site is not a threat to human health and the environment. Removal of metal, wooden, and other debris can occur as part of future development.

INACTIVE RANCHO CORDOVA TEST SITE - INACTIVE RANCHO CORDOVA (Continued) **S111293395**

Click here to access the California GeoTracker records for this facility:

B5 **GENERAL ELECTRIC MEDICAL SYSTEMS** **ENVIROSTOR** **S118757512**
SSW **3920 SECURITY PARK** **N/A**
1/2-1 **RANCHO CORDOVA, CA 95670**
0.806 mi.
4256 ft. **Site 1 of 3 in cluster B**

Relative:
Lower

Actual:
208 ft.

ENVIROSTOR:

Facility ID:	80001343
Status:	No Action Required
Status Date:	09/02/2009
Site Code:	100393
Site Type:	Corrective Action
Site Type Detailed:	Corrective Action
Acres:	0.25
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	WM
Program Manager:	Paul Ruffin
Supervisor:	Rizgar Ghazi
Division Branch:	Cleanup Sacramento
Assembly:	08
Senate:	08
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	38.56099
Longitude:	-121.2081
APN:	NONE SPECIFIED
Past Use:	AEROSPACE ROCKET TESTING/LAUNCH, MANUFACTURING - ELECTRONIC
Potential COC:	Trichloroethylene (TCE
Confirmed COC:	Trichloroethylene (TCE
Potential Description:	SOIL
Alias Name:	CAD000819680
Alias Type:	EPA Identification Number
Alias Name:	100393
Alias Type:	Project Code (Site Code)
Alias Name:	80001343
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	RCRA Facility Assessment Report
Completed Date:	09/11/1998
Comments:	Completed in August 1998
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	No Further Action Letter
Completed Date:	07/30/2009
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported

GENERAL ELECTRIC MEDICAL SYSTEMS (Continued) **S118757512**

Completed Document Type:	Preliminary Assessment Report
Completed Date:	08/31/1991
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

B6 **AUTOMOTIVE IMPORTING MFG INC** **SEMS-ARCHIVE** **1000214137**
SSW **3920 SECURITY PARK DR** **CORRACTS** **CAD000819680**
1/2-1 **RANCHO CORDOVA, CA 95742** **RCRA-TSDF**
0.806 mi. **RCRA-SQG**
4256 ft. **Site 2 of 3 in cluster B** **FINDS**
ECHO
Relative: **HAZNET**
Lower

Actual: **208 ft.**

SEMS Archive:

Site ID:	0903397
EPA ID:	CAD000819680
Cong District:	03
FIPS Code:	06067
FF:	N
NPL:	Not on the NPL
Non NPL Status:	Deferred to RCRA (Subtitle C)

SEMS Archive Detail:

Region:	09
Site ID:	0903397
EPA ID:	CAD000819680
Site Name:	GENERAL ELECTRIC MEDICAL SYSTEMS
NPL:	N
FF:	N
OU:	00
Action Code:	VS
Action Name:	ARCH SITE
SEQ:	1
Start Date:	Not reported
Finish Date:	1996-01-23 05:00:00
Qual:	Not reported
Current Action Lead:	EPA Perf In-Hse

Region:	09
Site ID:	0903397
EPA ID:	CAD000819680
Site Name:	GENERAL ELECTRIC MEDICAL SYSTEMS
NPL:	N
FF:	N
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1991-03-01 05:00:00

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

Finish Date: 1991-03-01 05:00:00
Qual: Not reported
Current Action Lead: EPA Perf

Region: 09
Site ID: 0903397
EPA ID: CAD000819680
Site Name: GENERAL ELECTRIC MEDICAL SYSTEMS
NPL: N
FF: N
OU: 00
Action Code: PA
Action Name: PA
SEQ: 1
Start Date: Not reported
Finish Date: 1991-09-16 04:00:00
Qual: D
Current Action Lead: EPA Perf

CORRACTS:

EPA ID: CAD000819680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: Not reported
Action: CA03193
NAICS Code(s): Not reported
Original schedule date: 19931001
Schedule end date: Not reported

EPA ID: CAD000819680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19980911
Action: CA050RF - RFA Completed, Assessment was an RFA
NAICS Code(s): Not reported
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000819680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19910831
Action: CA075ME - CA Prioritization, Facility or area was assigned a medium corrective action priority
NAICS Code(s): Not reported
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000819680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19910831
Action: CA049PA
NAICS Code(s): Not reported
Original schedule date: Not reported
Schedule end date: Not reported

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

EPA ID: CAD000819680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19910831
Action: CA074ME
NAICS Code(s): Not reported
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: CAD000819680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19910831
Action: CA029WQ
NAICS Code(s): Not reported
Original schedule date: Not reported
Schedule end date: Not reported

RCRA-TSDF:
Date form received by agency: 09/01/1996
Facility name: GENERAL ELECTRIC MEDICAL SYSTEMS
Facility address: 3920 SECURITY PARK DR
RANCHO CORDOVA, CA 95742
EPA ID: CAD000819680
Contact: Not reported
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 09
Land type: Private
Classification: TSDF
Description: Handler is engaged in the treatment, storage or disposal of hazardous waste

Owner/Operator Summary:
Owner/operator name: GENERAL ELECTRIC CO
Owner/operator address: 3920 SECURITY PARK
CITY NOT REPORTED, CA 99999
Owner/operator country: Not reported
Owner/operator telephone: 916-361-4202
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: MCDONNELL DOUGLAS CORP
Owner/operator address: 11505 DOUGLAS RD
RANCHO CORDOVA, CA 95670
Owner/operator country: Not reported
Owner/operator telephone: 916-351-0550
Owner/operator email: Not reported

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 02/14/1996
Site name: GENERAL ELECTRIC MEDICAL SYSTEMS
Classification: Large Quantity Generator

Corrective Action Summary:
Event date: 08/31/1991
Event: LEAD AGENCY DETERMINATION

Event date: 08/31/1991
Event: CA PRIORITIZATION-MEDIUM CA PRIORITY

Event date: 08/31/1991
Event: PA OR CERCLA INSPECTION

Event date: 08/31/1991
Event: NCAPS RANKING/PRIORITY

Event date: 09/11/1998
Event: RFA COMPLETED-ASSESSMENT WAS A RFA

Event date: Not reported
Event: REEVALUATE IN FY

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 05/19/1988
Date achieved compliance: 07/23/1988
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

Enforcement action date: 05/26/1988
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:

Evaluation date: 05/30/1991
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/22/1989
Evaluation: FOCUSED COMPLIANCE INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/21/1989
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/19/1988
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: TSD - Financial Requirements
Date achieved compliance: 07/23/1988
Evaluation lead agency: State

Evaluation date: 01/19/1988
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/22/1987
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

RCRA-SQG:

Date form received by agency: 09/01/1996
Facility name: GENERAL ELECTRIC MEDICAL SYSTEMS
Facility address: 3920 SECURITY PARK DR
RANCHO CORDOVA, CA 95742
EPA ID: CAD000819680
Contact: Not reported
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: Not reported
Contact email: Not reported

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

EPA Region: 09
Land type: Private
Classification: TSDF
Description: Handler is engaged in the treatment, storage or disposal of hazardous waste

Owner/Operator Summary:
Owner/operator name: GENERAL ELECTRIC CO
Owner/operator address: 3920 SECURITY PARK
CITY NOT REPORTED, CA 99999
Owner/operator country: Not reported
Owner/operator telephone: 916-361-4202
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: MCDONNELL DOUGLAS CORP
Owner/operator address: 11505 DOUGLAS RD
RANCHO CORDOVA, CA 95670
Owner/operator country: Not reported
Owner/operator telephone: 916-351-0550
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 02/14/1996
Site name: GENERAL ELECTRIC MEDICAL SYSTEMS
Classification: Large Quantity Generator

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

Corrective Action Summary:
Event date: 08/31/1991
Event: LEAD AGENCY DETERMINATION

Event date: 08/31/1991
Event: CA PRIORITIZATION-MEDIUM CA PRIORITY

Event date: 08/31/1991
Event: PA OR CERCLA INSPECTION

Event date: 08/31/1991
Event: NCAPS RANKING/PRIORITY

Event date: 09/11/1998
Event: RFA COMPLETED-ASSESSMENT WAS A RFA

Event date: Not reported
Event: REEVALUATE IN FY

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 05/19/1988
Date achieved compliance: 07/23/1988
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/26/1988
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 05/30/1991
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/22/1989
Evaluation: FOCUSED COMPLIANCE INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 02/21/1989
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/19/1988
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: TSD - Financial Requirements

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

Date achieved compliance: 07/23/1988
Evaluation lead agency: State

Evaluation date: 01/19/1988
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 12/22/1987
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110000609173

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Registry ID: 110009552607

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid: 1000214137
Registry ID: 110009552607
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110009552607

Envid: 1000214137
Registry ID: 110000609173
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110000609173

HAZNET:

Site Name: GENERAL ELECTRIC MEDICAL SYSTEMS
Year: 1996
GEPAID: CAD000819680
Contact: MCDONNEL DOUGLAS CORPORATION
Telephone: 0000000000
Mailing Name: Not reported

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

Mailing Address: 3920 SECURITY PARK
Mailing City,St,Zip: RANCHO CORDOVA, CA 956700000
Gen County: Not reported
TSD EPA ID: WAD000812909
TSD County: Not reported
Waste Category: Asbestos containing waste
Disposal Method: Not reported
Tons: 2.2500
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Sacramento

Site Name: GENERAL ELECTRIC MEDICAL SYSTEMS
Year: 1996
GEPAID: CAD000819680
Contact: MCDONNEL DOUGLAS CORPORATION
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 3920 SECURITY PARK
Mailing City,St,Zip: RANCHO CORDOVA, CA 956700000
Gen County: Not reported
TSD EPA ID: WAD000812909
TSD County: Not reported
Waste Category: Other inorganic solid waste
Disposal Method: Not reported
Tons: 1.9836
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Sacramento

Site Name: GENERAL ELECTRIC MEDICAL SYSTEMS
Year: 1996
GEPAID: CAD000819680
Contact: MCDONNEL DOUGLAS CORPORATION
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 3920 SECURITY PARK
Mailing City,St,Zip: RANCHO CORDOVA, CA 956700000
Gen County: Not reported
TSD EPA ID: CA0000084517
TSD County: Not reported
Waste Category: Hydrocarbon solvents (benzene, hexane, Stoddard, Etc.)
Disposal Method: Transfer Station
Tons: 1.6262
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Sacramento

Site Name: GENERAL ELECTRIC MEDICAL SYSTEMS
Year: 1995
GEPAID: CAD000819680
Contact: MCDONNEL DOUGLAS CORPORATION
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 3920 SECURITY PARK
Mailing City,St,Zip: RANCHO CORDOVA, CA 956700000
Gen County: Not reported

AUTOMOTIVE IMPORTING MFG INC (Continued) **1000214137**

TSD EPA ID:	WAD000812909
TSD County:	Not reported
Waste Category:	Other inorganic solid waste
Disposal Method:	Not reported
Tons:	.7129
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Sacramento
Site Name:	GENERAL ELECTRIC MEDICAL SYSTEMS
Year:	1993
GEPAID:	CAD000819680
Contact:	MCDONNEL DOUGLAS CORPORATION
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	3920 SECURITY PARK
Mailing City,St,Zip:	RANCHO CORDOVA, CA 956700000
Gen County:	Not reported
TSD EPA ID:	CAT000613950
TSD County:	Not reported
Waste Category:	Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method:	Transfer Station
Tons:	3.74999999999
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Sacramento

Click this hyperlink while viewing on your computer to access additional CA_HAZNET: detail in the EDR Site Report.

B7 **GENERAL ELECTRIC MEDICAL SYSTEMS** **HWP** **S111865965**
SSW **3920 SECURITY PARK** **CERS** **N/A**
1/2-1 **RANCHO CORDOVA, CA 95670**
0.806 mi.
4256 ft. **Site 3 of 3 in cluster B**

Relative:
Lower

Actual:
208 ft.

HWP:

EPA Id:	CAD000819680
Cleanup Status:	CLOSED
Latitude:	38.56099
Longitude:	-121.2081
Facility Type:	Historical - Non-Operating
Facility Size:	Not reported
Team:	Not reported
Supervisor:	Not reported
Site Code:	100393
Assembly District:	08
Senate District:	08
Public Information Officer:	Not reported
Public Information Officer:	Not reported

Activities:

EPA Id:	CAD000819680
Facility Type:	Historical - Non-Operating
Unit Names:	CONTAIN1, TANKTRT, TANKTRT1
Event Description:	New Operating Permit - CALL-IN LETTER ISSUED
Actual Date:	02/15/1982

GENERAL ELECTRIC MEDICAL SYSTEMS (Continued) **S111865965**

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST RECEIVED
Actual Date: 11/30/1987

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: New Operating Permit - FINAL PERMIT
Actual Date: 06/29/1987

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: New Operating Permit - FINAL PERMIT (EXPIRES)
Actual Date: 06/29/1992

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: New Operating Permit - APPLICATION PART A RECEIVED
Actual Date: 11/19/1980

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: New Operating Permit - FINAL PERMIT (EFFECTIVE)
Actual Date: 06/29/1987

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST ACKNOWLEDGED
Actual Date: 10/21/1988

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: New Operating Permit - APPLICATION PART B RECEIVED
Actual Date: 06/10/1982

Closure:

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: Closure Final - CLOSURE PLAN APPROVED
Actual Date: 10/21/1988

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: Closure Final - CLOSURE PLAN RECEIVED
Actual Date: 11/30/1987

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating

GENERAL ELECTRIC MEDICAL SYSTEMS (Continued) **S111865965**

Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: Closure Final - RECEIVE CLOSURE CERTIFICATION
Actual Date: 12/22/1988

EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Unit Names: CONTAIN1, TANKTRT, TANKTRT1
Event Description: Closure Final - ISSUE CLOSURE VERIFICATION
Actual Date: 06/28/1991

Alias:
EPA Id: CAD000819680
Facility Type: Historical - Non-Operating
Alias Type: Project Code (Site Code)
Alias: 100393

CERS TANKS:
Site ID: 194650
CERS ID: CAD000819680
Site Name: GENERAL ELECTRIC MEDICAL SYSTEMS
CERS Description: Hazardous Waste

Affiliation:
Affiliation Type Desc: Facility Contact
Entity Name: NON-DELIVERABLE 4/94 FEE FORM
Entity Title: Not reported
Affiliation Address: --
Affiliation City: RANCHO CORDOVA
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 956700000
Affiliation Phone: 9163614200

Affiliation Type Desc: Facility Owner
Entity Name: MCDONNEL DOUGLAS CORPORATION
Entity Title: Not reported
Affiliation Address: --
Affiliation City: --
Affiliation State: 99
Affiliation Country: Not reported
Affiliation Zip: --
Affiliation Phone: 0000000000

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

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 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

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: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
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: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
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 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 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

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 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 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 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 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 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 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

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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/25/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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

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

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 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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

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

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: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Quarterly

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: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 34

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: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 48

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: 03/26/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 34

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: 04/26/2019
Next Scheduled EDR Contact: 08/12/2019
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: 04/23/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

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: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
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

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

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: 08/05/2019
Data Release Frequency: Quarterly

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

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

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: 08/05/2019
Data Release Frequency: Quarterly

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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/24/2019
Next Scheduled EDR Contact: 08/05/2019
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

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/30/2019
Next Scheduled EDR Contact: 08/12/2019
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

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

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

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

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 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

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 04/18/2019
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 11
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

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

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 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

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: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
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: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47
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: 03/18/2019
Date Data Arrived at EDR: 03/19/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 41
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: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47

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: 08/05/2019
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

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

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: 04/29/2019
Next Scheduled EDR Contact: 08/12/2019
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: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
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: 04/29/2019
Next Scheduled EDR Contact: 08/12/2019
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: 04/10/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 19

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: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
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: 04/11/2019
Date Data Arrived at EDR: 04/12/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 18
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: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 48

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: 03/06/2019
Date Data Arrived at EDR: 03/06/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 54

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: 03/04/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 47

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: 03/05/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/29/2019
Number of Days to Update: 53

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: 04/03/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 19

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: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/23/2019
Next Scheduled EDR Contact: 08/05/2019
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: 04/25/2019
Next Scheduled EDR Contact: 08/12/2019
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

THE PRESERVE PHASE I ESA
12525 DOUGLAS ROAD
RANCHO CORDOVA, CA 95742

TARGET PROPERTY COORDINATES

Latitude (North):	38.575586 - 38° 34' 32.11''
Longitude (West):	121.196464 - 121° 11' 47.27''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	657109.8
UTM Y (Meters):	4271015.5
Elevation:	243 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5619686 BUFFALO CREEK, 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).

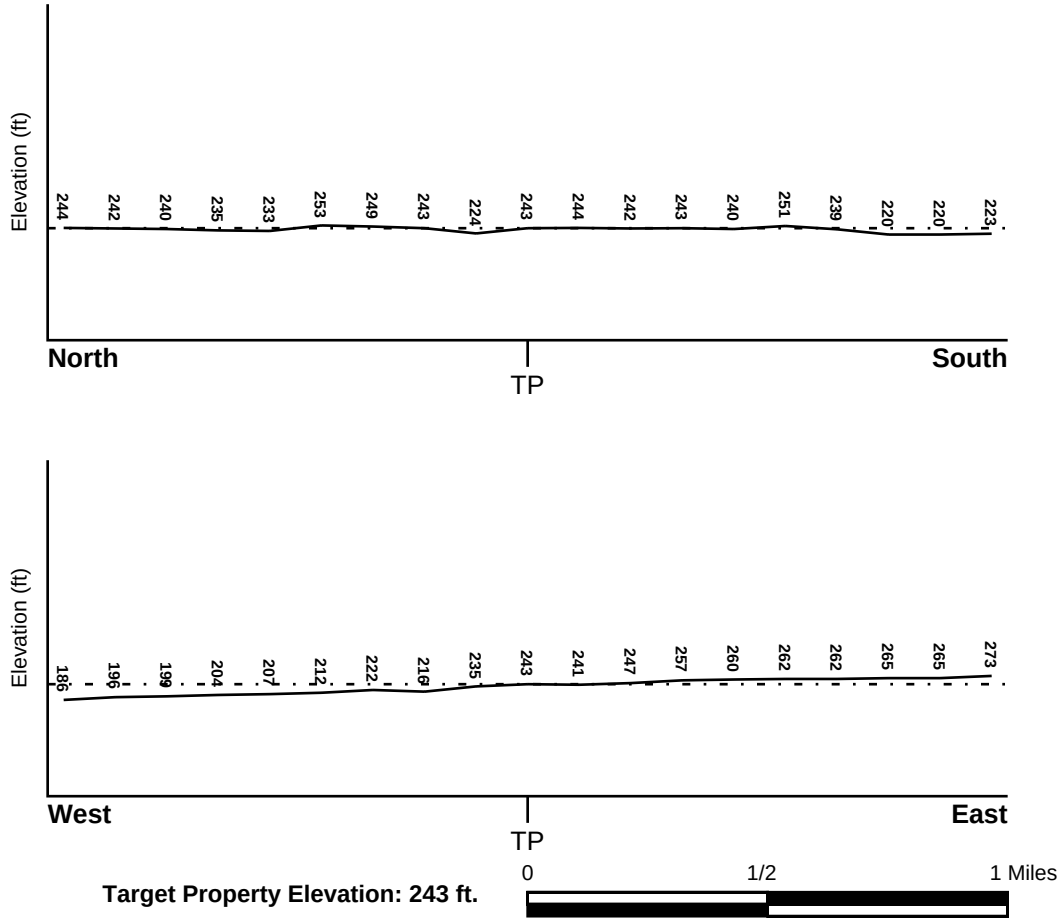
TOPOGRAPHIC INFORMATION

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 West

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
06067C0250H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06067C0240H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
BUFFALO CREEK	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

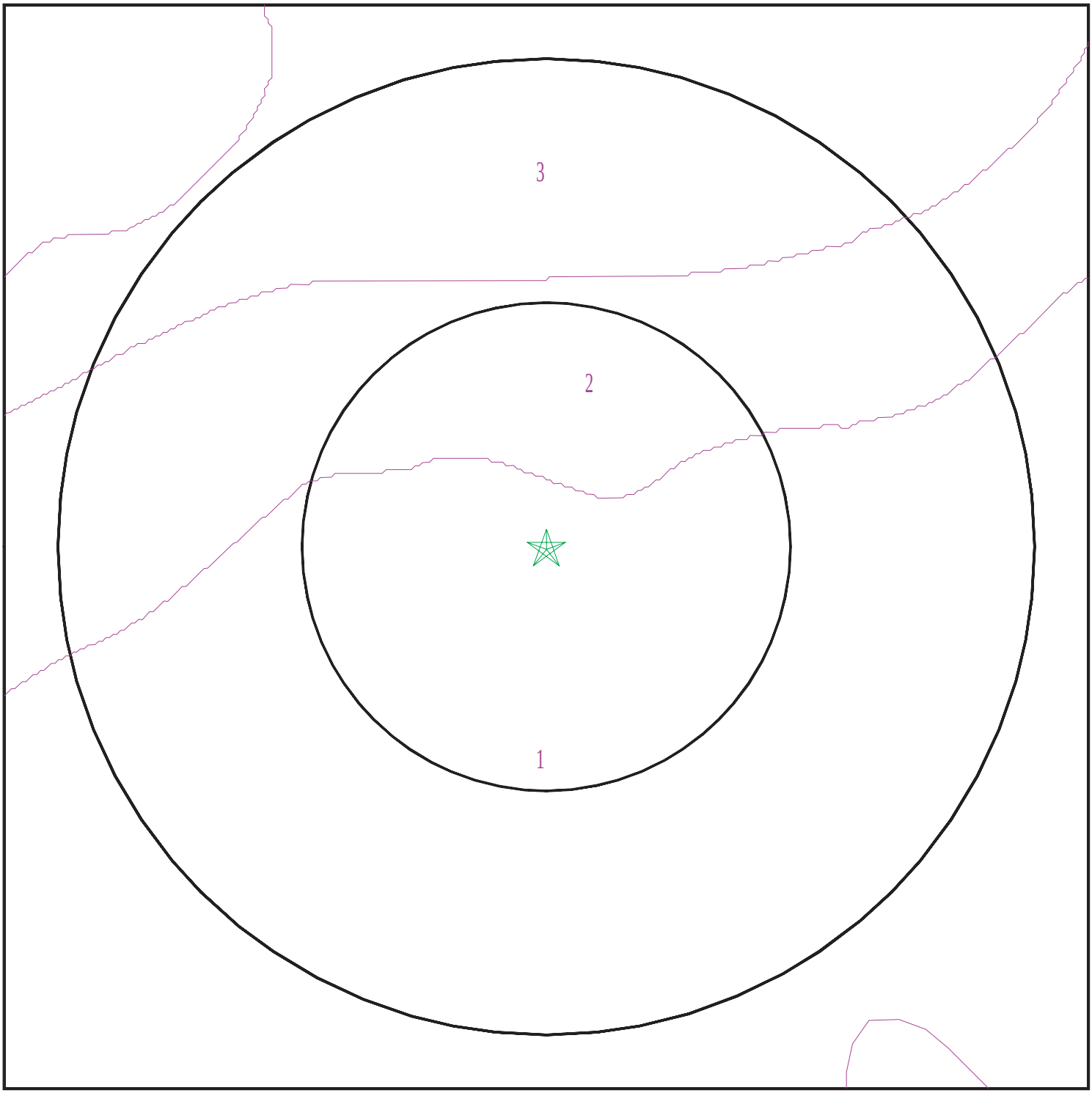
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

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 - 5633265.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	The Preserve Phase I ESA	CLIENT:	Youngdahl Consulting Group
ADDRESS:	12525 Douglas Road Rancho Cordova CA 95742	CONTACT:	Dennis Eck
LAT/LONG:	38.575586 / 121.196464	INQUIRY #:	5633265.2s
		DATE:	May 01, 2019 10:32 am

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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: RED BLUFF

Soil Surface Texture: 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: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 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	7 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6.5 Min: 5.6
2	7 inches	25 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6.5 Min: 5.6
3	25 inches	42 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6.5 Min: 5.6
4	42 inches	68 inches	gravelly clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6.5 Min: 5.6

Soil Map ID: 2

Soil Component Name: HICKSVILLE

Soil Surface Texture: gravelly 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: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 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	12 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 6.6
2	12 inches	42 inches	gravelly clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 6.6
3	42 inches	64 inches	stratified very gravelly sandy loam to clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 7.8 Min: 6.6

Soil Map ID: 3

Soil Component Name: REDDING

Soil Surface Texture: gravelly 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: Moderately well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 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	7 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
2	7 inches	20 inches	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
3	20 inches	27 inches	gravelly clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
4	27 inches	66 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000189193	1/2 - 1 Mile ESE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

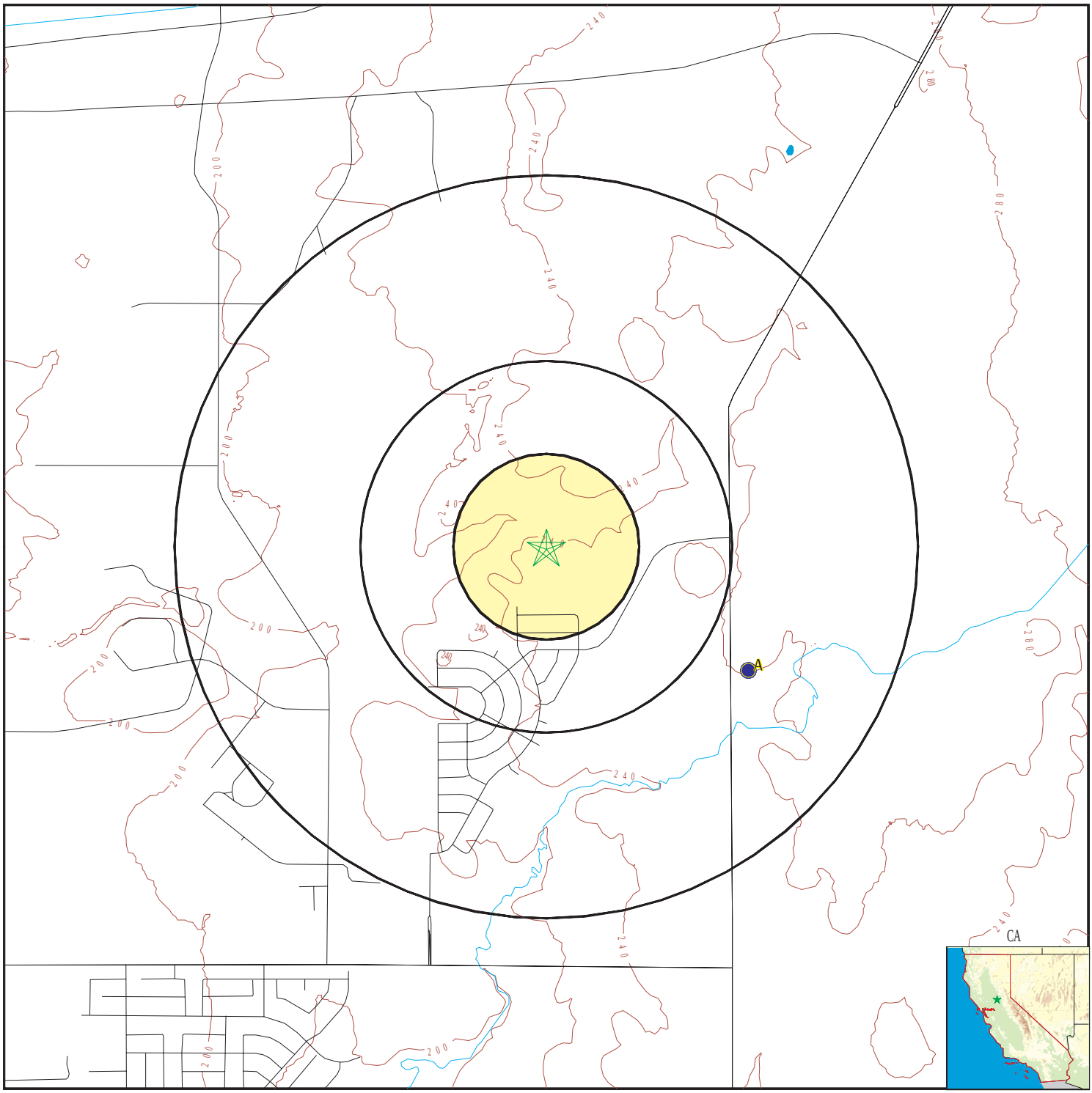
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	CADWR8000038442	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 5633265.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	The Preserve Phase I ESA	CLIENT:	Youngdahl Consulting Group
ADDRESS:	12525 Douglas Road Rancho Cordova CA 95742	CONTACT:	Dennis Eck
		INQUIRY #:	5633265.2s
LAT/LONG:	38.575586 / 121.196464	DATE:	May 01, 2019 10:32 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
A1 **ESE** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADWR8000038442**

State Well #:	08N07E02N001M	Station ID:	30672
Well Name:	SCGA #20	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	675
Basin Name:	South American	Well Completion Rpt #:	21010

	Database	EDR ID Number
A2 **ESE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000189193**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	008N007E02N001M	Type:	Well
Description:	COMPUTER GENERATED LAT/LONG		
HUC:	Not Reported	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:	19560126	Well Depth:	600
Well Depth Units:	ft	Well Hole Depth:	675
Well Hole Depth Units:	ft		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95742	6	0

Federal EPA Radon Zone for SACRAMENTO 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 SACRAMENTO COUNTY, CA

Number of sites tested: 52

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.665 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.200 pCi/L	100%	0%	0%
Basement	8.350 pCi/L	50%	50%	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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APPENDIX D
EDR Vapor Encroachment Screen

The Preserve Phase I ESA
12525 Douglas Road
Rancho Cordova, CA 95742

Inquiry Number: 5633265.2s
June 5, 2019

EDR Vapor Encroachment Screen

Prepared using EDR's Vapor Encroachment Worksheet

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Primary Map	**2**
Secondary Map	**3**
Map Findings	**4**
Record Sources and Currency	**GR-1**

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 EDR. The report was designed to assist parties seeking to meet the search requirements of the ASTM Standard Practice for Assessment of Vapor Encroachment into Structures on Property Involved in Real Estate Transactions (E 2600).

STANDARD ENVIRONMENTAL RECORDS	Default Area of Concern (Miles)*	property	1/10	> 1/10
Federal NPL site list	1.0	0	1	0
Federal Delisted NPL site list	1.0	0	0	0
Federal CERCLIS list	0.5	0	1	0
Federal CERCLIS NFRAP site list	0.5	0	0	0
Federal RCRA CORRACTS facilities list	1.0	0	1	0
Federal RCRA non-CORRACTS TSD facilities list	0.5	0	1	0
Federal RCRA generators list	0.25	0	1	0
Federal institutional controls / engineering controls registries	0.5	0	1	0
Federal ERNS list	0.001	0	0	-
State- and tribal - equivalent NPL	1.0	0	0	0
State- and tribal - equivalent CERCLIS	1.0	0	1	0
State and tribal landfill and/or solid waste disposal site lists	0.5	0	0	0
State and tribal leaking storage tank lists	0.5	0	0	0
State and tribal registered storage tank lists	0.25	0	0	0
State and tribal institutional control / engineering control registries	not searched	-	-	-
State and tribal voluntary cleanup sites	0.5	0	0	0
State and tribal Brownfields sites	0.5	0	0	0

ADDITIONAL ENVIRONMENTAL RECORDS				
Local Brownfield lists	0.5	0	0	0
Local Lists of Landfill / Solid Waste Disposal Sites	0.5	0	0	0
Local Lists of Hazardous waste / Contaminated Sites	1.0	0	0	0
Local Lists of Registered Storage Tanks	0.25	0	1	0
Local Land Records	0.5	0	0	0
Records of Emergency Release Reports	0.5	0	0	0
Other Ascertainable Records	1.0	0	1	0

EDR HIGH RISK HISTORICAL RECORDS				
EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

*The Default Area of Concern may be adjusted by the environmental professional using experience and professional judgement. Each category may include several databases, and each database may have a different distance. A list of individual databases is provided at the back of this report.

EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

THE PRESERVE PHASE I ESA
12525 DOUGLAS ROAD
RANCHO CORDOVA, CA 95742

COORDINATES

Latitude (North):	38.575586 - 38° 34′ 32.10388″
Longitude (West):	121.196464 - 121° 11′ 47.27234″
Elevation:	243 ft. above sea level

EXECUTIVE SUMMARY

SEARCH RESULTS

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
AERO JET ROCKETDYNE INC	US HWY 50 AND AEROJET RD	<1/10 N	Region	8

RCRA-TSDF: RCRA-TSDF
ROD: ROD
CONSENT: CONSENT
RCRA-LQG: RCRA-LQG
PRP: PRP
SEMS: SEMS
US ENG CONTROLS: US ENG CONTROLS
CORRACTS: CORRACTS
PADS: PADS
US INST CONTROL: US INST CONTROL
US FIN ASSUR: US FIN ASSUR
NPL: NPL
SWEEPS UST: SWEEPS UST
CA FID UST: CA FID UST
HIST UST: HIST UST
ENVIROSTOR: ENVIROSTOR

ADDITIONAL ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
AERO JET ROCKETDYNE INC	US HWY 50 AND AEROJET RD	<1/10 N	Region	

RCRA-TSDF: RCRA-TSDF
ROD: ROD
CONSENT: CONSENT
RCRA-LQG: RCRA-LQG
PRP: PRP
SEMS: SEMS
US ENG CONTROLS: US ENG CONTROLS
CORRACTS: CORRACTS
PADS: PADS
US INST CONTROL: US INST CONTROL
US FIN ASSUR: US FIN ASSUR
NPL: NPL
SWEEPS UST: SWEEPS UST
CA FID UST: CA FID UST
HIST UST: HIST UST
ENVIROSTOR: ENVIROSTOR

EDR HIGH RISK HISTORICAL RECORDS

Name	Address	Dist/Dir	Map ID	Page

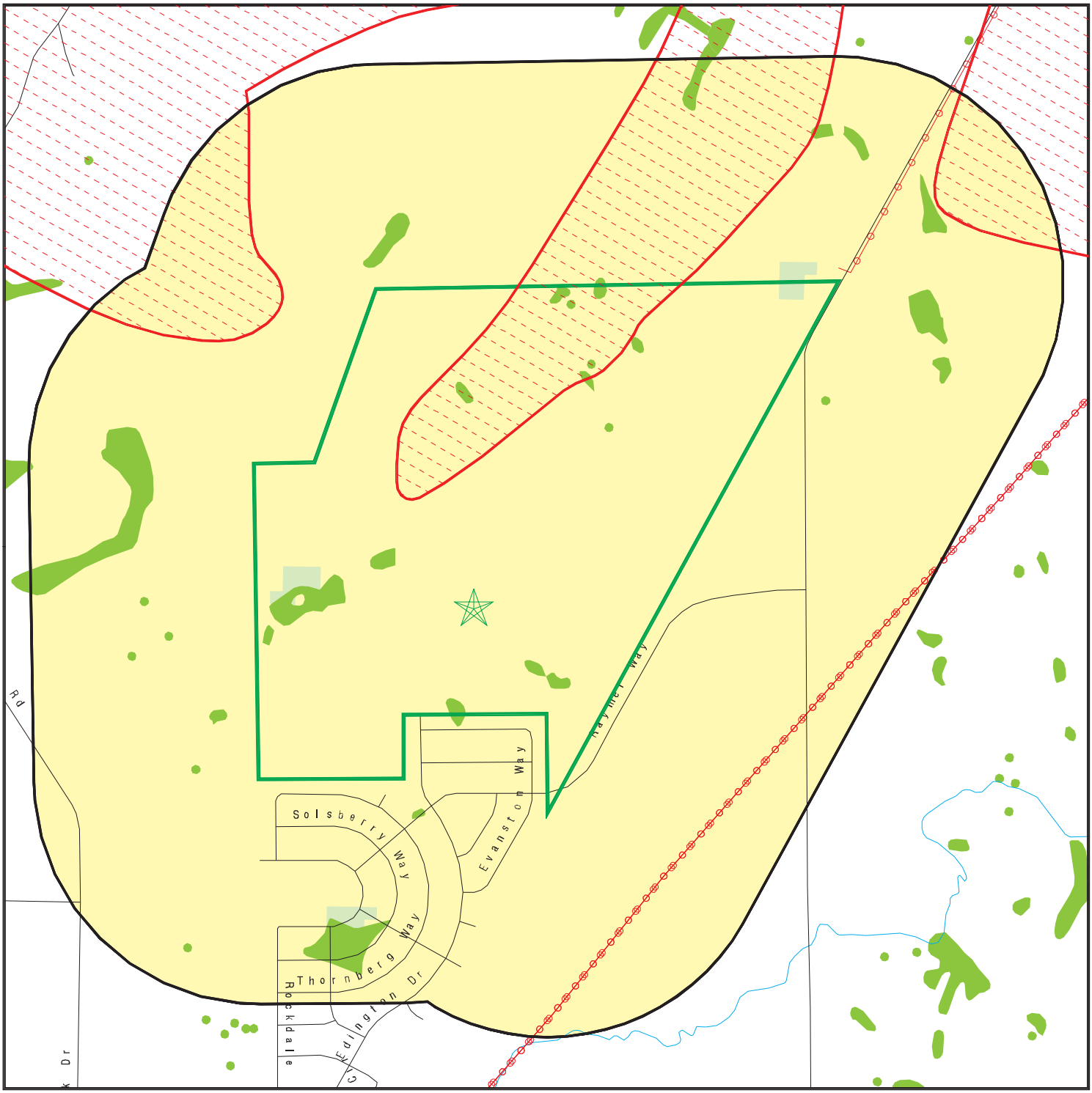
Not Reported

EDR RECOVERED GOVERNMENT ARCHIVES

Name	Address	Dist/Dir	Map ID	Page

Not Reported

PRIMARY MAP - 5633265.2S



0 300 1/3 1/2 Miles

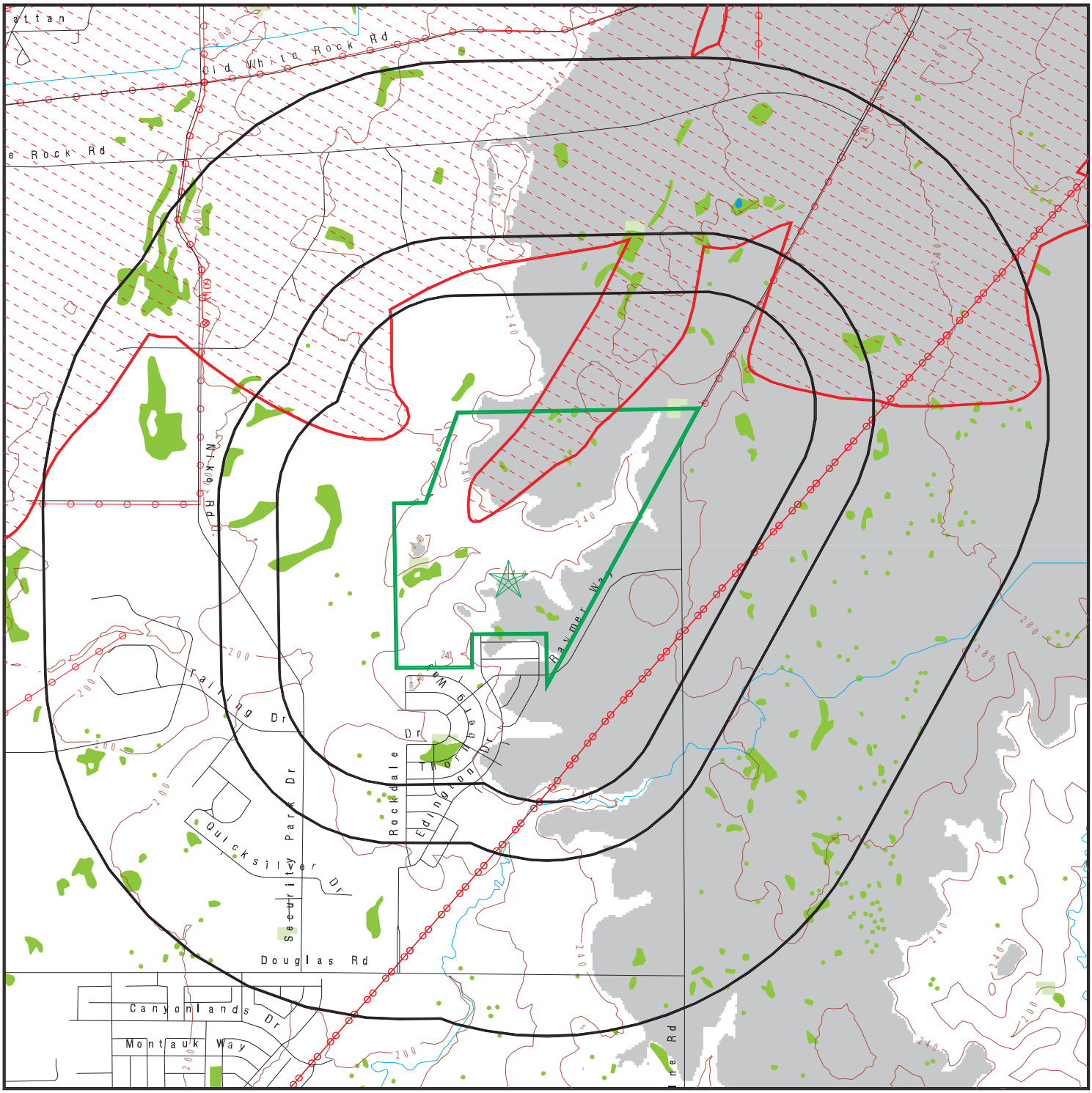
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year 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:	The Preserve Phase I ESA	CLIENT:	Youngdahl Consulting Group
ADDRESS:	12525 Douglas Road Rancho Cordova CA 95742	CONTACT:	Dennis Eck
		INQUIRY #:	5633265.2s
LAT/LONG:	38.575586 / 121.196464	DATE:	May 01, 2019 10:30 am

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SECONDARY MAP - 5633265.2S



- 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
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- 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: The Preserve Phase I ESA	CLIENT: Youngdahl Consulting Group
ADDRESS: 12525 Douglas Road Rancho Cordova CA 95742	CONTACT: Dennis Eck INQUIRY #: 5633265.2s
LAT/LONG: 38.575586 / 121.196464	DATE: May 01, 2019 10:29 am

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MAP FINDINGS

LEGEND

FACILITY NAME **FACILITY ADDRESS, CITY, ST, ZIP**		EDR SITE ID NUMBER
◆ **MAP ID#**	Direction Distance Range (Distance feet / miles) Relative Elevation Feet Above Sea Level	ASTM 2600 Record Sources found in this report. Each database searched has been assigned to one or more categories. For detailed information about categorization, see the section of the report Records Searched and Currency.

Worksheet:

Comments:
Comments may be added on the online Vapor Encroachment Worksheet.

DATABASE ACRONYM: Applicable categories (A hoverbox with database description).

AEROJET ROCKETDYNE INC US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA,		1000333003
Region	N <1/10 (0 ft. / 0 mi.)	Federal NPL site list Federal CERCLIS list Federal RCRA CORRACTS facilities list Federal RCRA non-CORRACTS TSD facilities list Federal RCRA generators list Federal institutional controls / engineering controls registries State- and tribal - equivalent CERCLIS Local Lists of Registered Storage Tanks Other Ascertainable Records

Worksheet:

NPL: Federal NPL site list

EPA ID:	CAD980358832
Cerclis ID:	901718
EPA Region:	9
Federal:	N
Final Date:	1983-09-08 00:00:00
Site Score:	54.630000000000003
Latitude:	38.608331
Longitude:	-121.2

Category Details:

NPL Status:	Currently on the Final NPL
Category Description:	Depth To Aquifer-> 50 And <= 100 Feet
Category Value:	80
NPL Status:	Currently on the Final NPL
Category Description:	Distance To Nearest Population-> 0 And <= 1/4 Mile
Category Value:	10

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Site Details:

Site Name:	AEROJET GENERAL CORP.
Site Status:	Final
Site Zip:	95670
Site City:	RANCHO CORDOVA
Site State:	CA
Federal Site:	No
Site County:	SACRAMENTO
EPA Region:	09
Date Proposed:	12/30/82
Date Deleted:	Not Reported
Date Finalized:	09/08/83

Substance Details:

NPL Status:	Currently on the Final NPL
Substance ID:	Not Reported
Substance:	Not Reported
CAS #:	Not Reported
Pathway:	Not Reported
Scoring:	Not Reported

NPL Status:	Currently on the Final NPL
Substance ID:	A046
Substance:	POLYCHLORINATED BIPHENYLS
CAS #:	1336-36-3
Pathway:	GROUND WATER PATHWAY
Scoring:	3

NPL Status:	Currently on the Final NPL
Substance ID:	A046
Substance:	POLYCHLORINATED BIPHENYLS
CAS #:	1336-36-3
Pathway:	SURFACE WATER PATHWAY
Scoring:	3

NPL Status:	Currently on the Final NPL
Substance ID:	U210
Substance:	TETRACHLOROETHENE
CAS #:	127-18-4
Pathway:	GROUND WATER PATHWAY
Scoring:	2

NPL Status:	Currently on the Final NPL
Substance ID:	U210
Substance:	TETRACHLOROETHENE
CAS #:	127-18-4
Pathway:	SURFACE WATER PATHWAY
Scoring:	2

NPL Status:	Currently on the Final NPL
Substance ID:	U228

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Substance:	TRICHLOROETHYLENE (TCE)
CAS #:	79-01-6
Pathway:	NO PATHWAY INDICATED
Scoring:	1

Summary Details:

Conditions at listing October 1981): The Aerojet General Corp. Site covers 8,500 acres in the eastern portion of Sacramento County, California, adjacent to the Rancho Cordova area population 40,000). The northeast edge of the site is approximately 0.5 mile from the American River. Underlying the site are extensive 50-foot deep) gold dredge tailings, a remnant of past mining operations. The upper aquifer is 80 feet below the surface. Ground water is used extensively throughoutthe Rancho Cordova area to supply municipal, domestic, and industrial water. Since 1953, Aerojet and its subsidiaries have disposed of, on-site, unknown quantities of ha ardous waste, including trichloroethylene, tetrachloroethylene, chloroform, Freon and other chemicals associated with rocket propellants, and various chemical processing wastes. Soil on-site is contaminated. Monitoring data show extensive ground water contamination on- and off-site, primarily with trichloroethylene. In April 1979, Aerojet and its subsidiaries started ground water studies to examine the impact of past disposal practices and to determine the requirements for cleanup. In December 1979, the State filed suit against Aerojet and a subsidiary, Cordova Chemical. Status July 1983): EPA has worked with the State since 1979, providing technical assistance through the Emergency Response Team, the Las Vegas lab, and Region IX. In March 1982, the State requested EPA s assistance in evaluating Aerojet s Proposal for a Ground Water Quality Control Program. EPA found major technical problems in Aerojet s proposal. In the past, a confidentiality agreement between Aerojet and the State limited EPA access to the documents that would allow EPA to independently assess the company s progress toward cleanup. The agreement is no longer in effect. On February 25, 1983, Region IX requested information from Aerojet regarding soil and ground water contamination. EPA will soon complete review of the documents received in response.

Site Status Details:

NPL Status:	Final
Proposed Date:	12/30/1982
Final Date:	09/08/1983
Deleted Date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Narratives Details:

NPL Name:	AEROJET GENERAL CORP.
City:	RANCHO CORDOVA
State:	CA

SEMS: Federal CERCLIS list

Site ID:	0901718
EPA ID:	CAD980358832
Cong District:	3,7
FIPS Code:	06067
Latitude:	38.608331
Longitude:	-121.200000
FF:	N
NPL:	Currently on the Final NPL
Non NPL Status:	Not Reported

SEMS Detail:

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	AR
Action Name:	ADMIN REC
SEQ:	2
Start Date:	2001-07-20 04:00:00
Finish Date:	7/20/2001 4:00:00 AM
Qual:	E
Current Action Lead:	EPA Perf In-Hse
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	AR
Action Name:	ADMIN REC
SEQ:	1
Start Date:	1993-07-12 04:00:00
Finish Date:	7/8/1994 4:00:00 AM
Qual:	V
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	NP
Action Name:	PROPOSED
SEQ:	1
Start Date:	1982-12-30 05:00:00
Finish Date:	12/30/1982 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1979-08-01 04:00:00
Finish Date:	8/1/1979 4:00:00 AM
Qual:	L
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	MA
Action Name:	ST COOP
SEQ:	1
Start Date:	1991-09-30 04:00:00
Finish Date:	7/10/2018 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	NF

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Name:	NPL FINL
SEQ:	1
Start Date:	1983-09-08 04:00:00
Finish Date:	9/8/1983 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	RS
Action Name:	RV ASSESS
SEQ:	1
Start Date:	1992-10-22 04:00:00
Finish Date:	10/22/1992 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	RS
Action Name:	RV ASSESS
SEQ:	2
Start Date:	1990-07-02 04:00:00
Finish Date:	7/2/1990 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	CR
Action Name:	CI
SEQ:	3
Start Date:	2013-04-26 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Perf

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	CR
Action Name:	CI
SEQ:	1
Start Date:	1986-05-01 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	06
Action Code:	RO
Action Name:	ROD
SEQ:	5
Start Date:	2015-07-22 04:00:00
Finish Date:	7/22/2015 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	CR
Action Name:	CI
SEQ:	2
Start Date:	2011-07-29 05:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

OU:	00
Action Code:	FE
Action Name:	5 YEAR
SEQ:	1
Start Date:	2015-11-03 05:00:00
Finish Date:	9/22/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	03
Action Code:	RO
Action Name:	ROD
SEQ:	2
Start Date:	2001-07-20 04:00:00
Finish Date:	7/20/2001 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	RO
Action Name:	ROD
SEQ:	4
Start Date:	2011-02-15 05:00:00
Finish Date:	2/15/2011 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	11
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	8
Start Date:	2017-04-11 04:00:00
Finish Date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	10
Action Code:	FS
Action Name:	FS
SEQ:	1
Start Date:	2016-10-31 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	17
Start Date:	2014-03-27 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	23
Start Date:	2011-09-20 04:00:00
Finish Date:	3/27/2014 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	12
Start Date:	2013-09-23 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	12
Start Date:	2011-09-20 04:00:00
Finish Date:	9/23/2013 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	13
Start Date:	2012-11-14 05:00:00
Finish Date:	7/23/2014 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	13

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Start Date:	2011-09-26 04:00:00
Finish Date:	11/14/2012 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	11
Start Date:	2013-08-21 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	11
Start Date:	2011-09-20 04:00:00
Finish Date:	8/21/2013 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	4
Start Date:	2012-03-08 05:00:00
Finish Date:	9/26/2013 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	4
Start Date:	2011-09-26 04:00:00
Finish Date:	3/8/2012 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	06
Action Code:	BE
Action Name:	PRP RD
SEQ:	5
Start Date:	2015-12-14 05:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	02
Action Code:	BB
Action Name:	PRP RV
SEQ:	1
Start Date:	1995-05-08 04:00:00
Finish Date:	11/22/1995 5:00:00 AM
Qual:	S
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Name:	PRP RA
SEQ:	9
Start Date:	2012-10-01 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	9
Start Date:	2011-09-26 04:00:00
Finish Date:	10/1/2012 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BE
Action Name:	PRP RD
SEQ:	10
Start Date:	2011-09-26 04:00:00
Finish Date:	6/17/2015 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BF
Action Name:	PRP RA
SEQ:	10
Start Date:	2015-06-17 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BB
Action Name:	PRP RV
SEQ:	2
Start Date:	2009-11-03 05:00:00
Finish Date:	5/24/2010 5:00:00 AM
Qual:	C
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	03
Action Code:	ME
Action Name:	PRP LR
SEQ:	1
Start Date:	2011-07-07 05:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	03
Action Code:	BF
Action Name:	PRP RA
SEQ:	2
Start Date:	2003-09-12 04:00:00
Finish Date:	8/22/2012 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght

Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

OU:	03
Action Code:	BE
Action Name:	PRP RD
SEQ:	2
Start Date:	2002-09-20 04:00:00
Finish Date:	2/20/2009 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	09
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	7
Start Date:	1989-09-30 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	08
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	6
Start Date:	1989-09-30 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	07
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	5
Start Date:	1989-09-30 04:00:00
Finish Date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	06
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	4
Start Date:	1989-09-30 04:00:00
Finish Date:	7/22/2015 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	05
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	3
Start Date:	1989-09-30 04:00:00
Finish Date:	2/15/2011 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	04
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	2
Start Date:	1989-09-30 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

NPL:	F
FF:	N
OU:	01
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	1
Start Date:	1988-09-08 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	HR
Action Name:	HAZRANK
SEQ:	1
Start Date:	1982-12-01 05:00:00
Finish Date:	12/1/1982 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	St Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1979-04-01 05:00:00
Finish Date:	4/1/1979 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	St Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	00
Action Code:	SI
Action Name:	SI
SEQ:	1

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Start Date:	1979-06-01 04:00:00
Finish Date:	12/1/1982 5:00:00 AM
Qual:	H
Current Action Lead:	St Perf
Region:	09
Site ID:	0901718
EPA ID:	CAD980358832
Site Name:	AEROJET GENERAL CORP.
NPL:	F
FF:	N
OU:	02
Action Code:	RV
Action Name:	RMVL
SEQ:	1
Start Date:	1995-11-22 05:00:00
Finish Date:	2/15/2011 5:00:00 AM
Qual:	S
Current Action Lead:	St Perf

CORRACTS: Federal RCRA CORRACTS facilities list

EPA ID:	CAD000030494
EPA Region:	09
Area Name:	SWMUS 55, 373, 374, 375
Actual Date:	20050818
Action:	CA999NF - Corrective Action Process Terminated, No Further Action
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	SWMUS 55, 373, 374, 375
Actual Date:	20050818
Action:	CA200 - RFI Approved
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	ENTIRE FACILITY
Actual Date:	20050816
Action:	CA725YE - Current Human Exposures Under Control, Yes, Current Human Exposures Under Control has been verified

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	20050816
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	SWMUS 55, 373, 374, 375
Actual Date:	20050518
Action:	CA190 - RFI Report Received
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	SWMUS 55, 373, 374, 375
Actual Date:	20050131
Action:	CA150 - RFI Workplan Approved
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	SWMUS 55, 373, 374, 375
Actual Date:	20050105
Action:	CA110 - RFI Workplan Received
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	UNITS L, M, N, P, Q
Actual Date:	20010417
Action:	CA200 - RFI Approved
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

EPA ID:	CAD000030494
EPA Region:	09
Area Name:	ENTIRE FACILITY
Actual Date:	20001211
Action:	CA750NO - Migration of Contaminated Groundwater under Control, Unacceptable migration of contaminated groundwater is observed or expected
NAICS Code(s):	336412 332994
	Aircraft Engine and Engine Parts Manufacturing
	Small Arms Manufacturing
Original schedule date:	20001211
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	ENTIRE FACILITY
Actual Date:	20001211
Action:	CA725NO - Current Human Exposures Under Control, Current human exposures are NOT under control
NAICS Code(s):	336412 332994
	Aircraft Engine and Engine Parts Manufacturing
	Small Arms Manufacturing
Original schedule date:	20001211
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	UNITS L, M, N, P, Q
Actual Date:	19990831
Action:	CA150 - RFI Workplan Approved
NAICS Code(s):	336412 332994
	Aircraft Engine and Engine Parts Manufacturing
	Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	MCDONALD DOUGLAS (3500 ACRE PARCEL)
Actual Date:	19940630
Action:	CA600SR - Stabilization Measures Implemented, Primary measure is source removal and/or treatment
NAICS Code(s):	336412 332994
	Aircraft Engine and Engine Parts Manufacturing
	Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	ENTIRE FACILITY
Actual Date:	19940621

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action:	CA050 - RFA Completed
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	19940621
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	ENTIRE FACILITY
Actual Date:	19940621
Action:	CA070YE - RFA Determination Of Need For An RFI, RFI is Necessary
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	19940621
Schedule end date:	Not Reported
EPA ID:	CAD000030494
EPA Region:	09
Area Name:	AEROJET (8500 ACRE PARCEL)
Actual Date:	19910601
Action:	CA150 - RFI Workplan Approved
NAICS Code(s):	336412 332994 Aircraft Engine and Engine Parts Manufacturing Small Arms Manufacturing
Original schedule date:	Not Reported
Schedule end date:	Not Reported

RCRA-TSDF: Federal RCRA non-CORRACTS TSD facilities list

Date form received by agency:	02/27/2018
Facility name:	AEROJET ROCKETDYNE INC
Facility address:	US HWY 50 AND AEROJET RD RANCHO CORDOVA, CA 95813-6000
EPA ID:	CAD000030494
Mailing address:	PO BOX 13222 SACRAMENTO, CA 95813
Contact:	JIM BUEHLER
Contact address:	PO BOX 13222 SACRAMENTO, CA 95813
Contact country:	US
Contact telephone:	916-355-4682
Contact email:	JIM.BUEHLER@ROCKET.COM
EPA Region:	09
Land type:	Private
Classification:	TSDF
Description:	Handler is engaged in the treatment, storage or disposal of hazardous waste

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	AEROJET ROCKETDYNE, INC.
Owner/operator address:	PO BOX 13222 SACRAMENTO, CA 95813
Owner/operator country:	US
Owner/operator telephone:	916-355-4682
Owner/operator email:	JIM.BUEHLER@ROCKET.COM
Owner/operator fax:	Not Reported
Owner/operator extension:	Not Reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	10/01/2005
Owner/Op end date:	Not Reported
Owner/operator name:	AEROJET ROCKETDYNE, INC.
Owner/operator address:	PO BOX 13222 SACRAMENTO, CA 95813
Owner/operator country:	US
Owner/operator telephone:	916-355-4682
Owner/operator email:	JIM.BUEHLER@ROCKET.COM
Owner/operator fax:	Not Reported
Owner/operator extension:	Not Reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	10/01/2005
Owner/Op end date:	Not Reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	Yes
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Used oil transfer facility: No
Used oil transporter: No

Universal Waste Summary:

Waste type: E
Accumulated waste on-site: No
Generated waste on-site: Yes

Waste type: Batteries
Accumulated waste on-site: Yes
Generated waste on-site: Not Reported

Waste type: Lamps
Accumulated waste on-site: Yes
Generated waste on-site: Not Reported

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB's

. Waste code: 291
. Waste name: Latex waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste code: 343
- Waste name: Unspecified organic liquid mixture

- Waste code: 351
- Waste name: Organic solids with halogens

- Waste code: 352
- Waste name: Other organic solids

- Waste code: 512
- Waste name: Other empty containers 30 gallons or more

- Waste code: 513
- Waste name: Empty containers less than 30 gallons

- Waste code: 541
- Waste name: Photochemicals / photo processing waste

- Waste code: 551
- Waste name: Laboratory waste chemicals

- Waste code: 591
- Waste name: Baghouse waste

- Waste code: 725
- Waste name: Liquids with mercury > 20 mg/l

- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l

- Waste code: 751
- Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

- Waste code: 791
- Waste name: Liquids with pH < 2

- Waste code: 792
- Waste name: Liquids with pH < 2 with metals

- Waste code: D001
- Waste name: IGNITABLE WASTE

- Waste code: D002
- Waste name: CORROSIVE WASTE

- Waste code: D003
- Waste name: REACTIVE WASTE

- Waste code: D006
- Waste name: CADMIUM

- Waste code: D007
- Waste name: CHROMIUM

- Waste code: D008
- Waste name: LEAD

- Waste code: D009
- Waste name: MERCURY

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	D010
. Waste name:	SELENIUM
. Waste code:	D011
. Waste name:	SILVER
. Waste code:	D018
. Waste name:	BENZENE
. Waste code:	D022
. Waste name:	CHLOROFORM
. Waste code:	D028
. Waste name:	1,2-DICHLOROETHANE
. Waste code:	D035
. Waste name:	METHYL ETHYL KETONE
. Waste code:	D037
. Waste name:	PENTACHLOROPHENOL
. Waste code:	D038
. Waste name:	PYRIDINE
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F027
. Waste name:	DISCARDED UNUSED FORMULATIONS CONTAINING TRI-, TETRA-, OR PENTACHLOROPHENOL OR DISCARDED UNUSED FORMULATIONS CONTAINING COMPOUNDS DERIVED FROM THESE CHLOROPHENOLS. (THIS LISTING DOES NOT INCLUDE FORMULATIONS CONTAINING HEXACHLOROPHENE SYNTHESIZED FROM PREPURIFIED 2,4,5-TRICHLOROPHENOL AS THE SOLE COMPONENT.)
. Waste code:	P068
. Waste name:	HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste code: P082
- Waste name: METHANIMINE, N-METHYL-N-NITROSO- (OR) N-NITROSODIMETHYLAMINE

- Waste code: P098
- Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

- Waste code: P105
- Waste name: SODIUM AZIDE

- Waste code: U002
- Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

- Waste code: U133
- Waste name: HYDRAZINE (R,T)

- Waste code: U134
- Waste name: HYDROFLUORIC ACID (C,T) (OR) HYDROGEN FLUORIDE (C,T)

- Waste code: U223
- Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Historical Generators:

Date form received by agency: 02/18/2016
Site name: AEROJET ROCKETDYNE, INC.
Classification: Large Quantity Generator

- Waste code: 121
- Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

- Waste code: 122
- Waste name: Alkaline solution without metals (pH > 12.5)

- Waste code: 123
- Waste name: Unspecified alkaline solution

- Waste code: 132
- Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

- Waste code: 133
- Waste name: Aqueous solution with 10% or more total organic residues

- Waste code: 134
- Waste name: Aqueous solution with <10% total organic residues

- Waste code: 135
- Waste name: Unspecified aqueous solution

- Waste code: 141
- Waste name: Off-specification, aged, or surplus inorganics

- Waste code: 151
- Waste name: Asbestos-containing waste

- Waste code: 181
- Waste name: Other inorganic solid waste

- Waste code: 212

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
- Waste code: 213
- Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
- Waste code: 214
- Waste name: Unspecified solvent mixture
- Waste code: 221
- Waste name: Waste oil and mixed oil
- Waste code: 223
- Waste name: Unspecified oil-containing waste
- Waste code: 261
- Waste name: Polychlorinated biphenyls and material containing PCB's
- Waste code: 331
- Waste name: Off-specification, aged, or surplus organics
- Waste code: 341
- Waste name: Organic liquids (nonsolvents) with halogens
- Waste code: 343
- Waste name: Unspecified organic liquid mixture
- Waste code: 351
- Waste name: Organic solids with halogens
- Waste code: 352
- Waste name: Other organic solids
- Waste code: 512
- Waste name: Other empty containers 30 gallons or more
- Waste code: 513
- Waste name: Empty containers less than 30 gallons
- Waste code: 541
- Waste name: Photochemicals / photo processing waste
- Waste code: 551
- Waste name: Laboratory waste chemicals
- Waste code: 591
- Waste name: Baghouse waste
- Waste code: 731
- Waste name: Liquids with polychlorinated biphenyls > 50 mg/l
- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l
- Waste code: 751
- Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg
- Waste code: 791
- Waste name: Liquids with pH < 2
- Waste code: 792

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: Liquids with pH < 2 with metals
- Waste code: D001
- Waste name: IGNITABLE WASTE
- Waste code: D002
- Waste name: CORROSIVE WASTE
- Waste code: D003
- Waste name: REACTIVE WASTE
- Waste code: D005
- Waste name: BARIUM
- Waste code: D006
- Waste name: CADMIUM
- Waste code: D007
- Waste name: CHROMIUM
- Waste code: D008
- Waste name: LEAD
- Waste code: D009
- Waste name: MERCURY
- Waste code: D010
- Waste name: SELENIUM
- Waste code: D011
- Waste name: SILVER
- Waste code: D018
- Waste name: BENZENE
- Waste code: D022
- Waste name: CHLOROFORM
- Waste code: D028
- Waste name: 1,2-DICHLOROETHANE
- Waste code: D035
- Waste name: METHYL ETHYL KETONE
- Waste code: D038
- Waste name: PYRIDINE
- Waste code: D040
- Waste name: TRICHLORETHYLENE
- Waste code: F002
- Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: F003

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	P068
. Waste name:	HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE
. Waste code:	P081
. Waste name:	1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)
. Waste code:	P098
. Waste name:	POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)
. Waste code:	U002
. Waste name:	2-PROPANONE (I) (OR) ACETONE (I)
. Waste code:	U133
. Waste name:	HYDRAZINE (R,T)
. Waste code:	U160
. Waste name:	2-BUTANONE, PEROXIDE (R,T) (OR) METHYL ETHYL KETONE PEROXIDE (R,T)
Date form received by agency:	03/01/2014
Site name:	AEROJET ROCKETDYNE INC
Classification:	Large Quantity Generator
. Waste code:	121
. Waste name:	Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)
. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)
. Waste code:	132
. Waste name:	Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)
. Waste code:	134
. Waste name:	Aqueous solution with <10% total organic residues
. Waste code:	135
. Waste name:	Unspecified aqueous solution
. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics
. Waste code:	151
. Waste name:	Asbestos-containing waste

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste code: 181
- Waste name: Other inorganic solid waste

- Waste code: 212
- Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

- Waste code: 213
- Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

- Waste code: 214
- Waste name: Unspecified solvent mixture

- Waste code: 221
- Waste name: Waste oil and mixed oil

- Waste code: 261
- Waste name: Polychlorinated biphenyls and material containing PCB's

- Waste code: 331
- Waste name: Off-specification, aged, or surplus organics

- Waste code: 341
- Waste name: Organic liquids (nonsolvents) with halogens

- Waste code: 343
- Waste name: Unspecified organic liquid mixture

- Waste code: 351
- Waste name: Organic solids with halogens

- Waste code: 352
- Waste name: Other organic solids

- Waste code: 512
- Waste name: Other empty containers 30 gallons or more

- Waste code: 541
- Waste name: Photochemicals / photo processing waste

- Waste code: 551
- Waste name: Laboratory waste chemicals

- Waste code: 591
- Waste name: Baghouse waste

- Waste code: 611
- Waste name: Contaminated soil from site clean-ups

- Waste code: 725
- Waste name: Liquids with mercury > 20 mg/l

- Waste code: 731
- Waste name: Liquids with polychlorinated biphenyls > 50 mg/l

- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l

- Waste code: 751
- Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	791
. Waste name:	Liquids with pH < 2
. Waste code:	792
. Waste name:	Liquids with pH < 2 with metals
. Waste code:	D001
. Waste name:	IGNITABLE WASTE
. Waste code:	D002
. Waste name:	CORROSIVE WASTE
. Waste code:	D003
. Waste name:	REACTIVE WASTE
. Waste code:	D005
. Waste name:	BARIUM
. Waste code:	D006
. Waste name:	CADMIUM
. Waste code:	D007
. Waste name:	CHROMIUM
. Waste code:	D008
. Waste name:	LEAD
. Waste code:	D009
. Waste name:	MERCURY
. Waste code:	D010
. Waste name:	SELENIUM
. Waste code:	D011
. Waste name:	SILVER
. Waste code:	D018
. Waste name:	BENZENE
. Waste code:	D022
. Waste name:	CHLOROFORM
. Waste code:	D028
. Waste name:	1,2-DICHLOROETHANE
. Waste code:	D035
. Waste name:	METHYL ETHYL KETONE
. Waste code:	D038
. Waste name:	PYRIDINE
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	LABP
. Waste name:	LAB PACK
. Waste code:	P068
. Waste name:	HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE
. Waste code:	P098
. Waste name:	POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)
. Waste code:	U133
. Waste name:	HYDRAZINE (R,T)
. Waste code:	U223
. Waste name:	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)
Date form received by agency:	09/11/2012
Site name:	AEROJET - GENERAL CORPORATION
Classification:	Large Quantity Generator
. Waste code:	121
. Waste name:	Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)
. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)
. Waste code:	132
. Waste name:	Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)
. Waste code:	134
. Waste name:	Aqueous solution with <10% total organic residues
. Waste code:	135
. Waste name:	Unspecified aqueous solution
. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics
. Waste code:	151
. Waste name:	Asbestos-containing waste
. Waste code:	181

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: Other inorganic solid waste
- Waste code: 211
- Waste name: Halogenated solvents (chloroform, methyl chloride, perchloroethylene, etc.)
- Waste code: 212
- Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
- Waste code: 213
- Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
- Waste code: 214
- Waste name: Unspecified solvent mixture
- Waste code: 221
- Waste name: Waste oil and mixed oil
- Waste code: 223
- Waste name: Unspecified oil-containing waste
- Waste code: 261
- Waste name: Polychlorinated biphenyls and material containing PCB's
- Waste code: 331
- Waste name: Off-specification, aged, or surplus organics
- Waste code: 341
- Waste name: Organic liquids (nonsolvents) with halogens
- Waste code: 343
- Waste name: Unspecified organic liquid mixture
- Waste code: 351
- Waste name: Organic solids with halogens
- Waste code: 352
- Waste name: Other organic solids
- Waste code: 512
- Waste name: Other empty containers 30 gallons or more
- Waste code: 541
- Waste name: Photochemicals / photo processing waste
- Waste code: 551
- Waste name: Laboratory waste chemicals
- Waste code: 591
- Waste name: Baghouse waste
- Waste code: 611
- Waste name: Contaminated soil from site clean-ups
- Waste code: 725
- Waste name: Liquids with mercury > 20 mg/l
- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l
- Waste code: 791

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: Liquids with pH < 2
- Waste code: 792
- Waste name: Liquids with pH < 2 with metals
- Waste code: D001
- Waste name: IGNITABLE WASTE
- Waste code: D002
- Waste name: CORROSIVE WASTE
- Waste code: D003
- Waste name: REACTIVE WASTE
- Waste code: D005
- Waste name: BARIUM
- Waste code: D006
- Waste name: CADMIUM
- Waste code: D007
- Waste name: CHROMIUM
- Waste code: D008
- Waste name: LEAD
- Waste code: D009
- Waste name: MERCURY
- Waste code: D010
- Waste name: SELENIUM
- Waste code: D011
- Waste name: SILVER
- Waste code: D018
- Waste name: BENZENE
- Waste code: D022
- Waste name: CHLOROFORM
- Waste code: D028
- Waste name: 1,2-DICHLOROETHANE
- Waste code: D035
- Waste name: METHYL ETHYL KETONE
- Waste code: D038
- Waste name: PYRIDINE
- Waste code: F002
- Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: F003

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	LABP
. Waste name:	LAB PACK
. Waste code:	P068
. Waste name:	HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE
. Waste code:	U133
. Waste name:	HYDRAZINE (R,T)
. Waste code:	U220
. Waste name:	BENZENE, METHYL- (OR) TOLUENE
. Waste code:	U223
. Waste name:	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)
Date form received by agency:	07/30/2010
Site name:	AEROJET - GENERAL CORPORATION
Classification:	Large Quantity Generator
. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)
. Waste code:	134
. Waste name:	Aqueous solution with <10% total organic residues
. Waste code:	135
. Waste name:	Unspecified aqueous solution
. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics
. Waste code:	181
. Waste name:	Other inorganic solid waste
. Waste code:	212
. Waste name:	Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
. Waste code:	213
. Waste name:	Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
. Waste code:	214
. Waste name:	Unspecified solvent mixture
. Waste code:	221

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: Waste oil and mixed oil
- Waste code: 331
- Waste name: Off-specification, aged, or surplus organics
- Waste code: 341
- Waste name: Organic liquids (nonsolvents) with halogens
- Waste code: 343
- Waste name: Unspecified organic liquid mixture
- Waste code: 351
- Waste name: Organic solids with halogens
- Waste code: 352
- Waste name: Other organic solids
- Waste code: 541
- Waste name: Photochemicals / photo processing waste
- Waste code: 551
- Waste name: Laboratory waste chemicals
- Waste code: 725
- Waste name: Liquids with mercury > 20 mg/l
- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l
- Waste code: 791
- Waste name: Liquids with pH < 2
- Waste code: 792
- Waste name: Liquids with pH < 2 with metals
- Waste code: D001
- Waste name: IGNITABLE WASTE
- Waste code: D002
- Waste name: CORROSIVE WASTE
- Waste code: D003
- Waste name: REACTIVE WASTE
- Waste code: D005
- Waste name: BARIUM
- Waste code: D006
- Waste name: CADMIUM
- Waste code: D007
- Waste name: CHROMIUM
- Waste code: D008
- Waste name: LEAD
- Waste code: D009
- Waste name: MERCURY
- Waste code: D010

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: SELENIUM
- Waste code: D011
- Waste name: SILVER
- Waste code: D018
- Waste name: BENZENE
- Waste code: D022
- Waste name: CHLOROFORM
- Waste code: D028
- Waste name: 1,2-DICHLOROETHANE
- Waste code: D035
- Waste name: METHYL ETHYL KETONE
- Waste code: D038
- Waste name: PYRIDINE
- Waste code: D040
- Waste name: TRICHLORETHYLENE
- Waste code: F001
- Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: F002
- Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: F003
- Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: F005
- Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: LABP
- Waste name: LAB PACK

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	U133
. Waste name:	HYDRAZINE (R,T)
Date form received by agency:	03/27/2008
Site name:	AEROJET - GENERAL CORPORATION
Classification:	Large Quantity Generator
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	D043
. Waste name:	VINYL CHLORIDE
. Waste code:	D040
. Waste name:	TRICHLORETHYLENE
. Waste code:	D039
. Waste name:	TETRACHLOROETHYLENE
. Waste code:	D038
. Waste name:	PYRIDINE
. Waste code:	D035
. Waste name:	METHYL ETHYL KETONE
. Waste code:	D028
. Waste name:	1,2-DICHLOROETHANE
. Waste code:	D022
. Waste name:	CHLOROFORM
. Waste code:	D018
. Waste name:	BENZENE
. Waste code:	D011
. Waste name:	SILVER
. Waste code:	D010
. Waste name:	SELENIUM
. Waste code:	D009
. Waste name:	MERCURY
. Waste code:	D008
. Waste name:	LEAD
. Waste code:	D007
. Waste name:	CHROMIUM
. Waste code:	D006
. Waste name:	CADMIUM
. Waste code:	D005
. Waste name:	BARIUM

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	D004
. Waste name:	ARSENIC
. Waste code:	D003
. Waste name:	REACTIVE WASTE
. Waste code:	D002
. Waste name:	CORROSIVE WASTE
. Waste code:	D001
. Waste name:	IGNITABLE WASTE
. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	LABP
. Waste name:	LAB PACK
. Waste code:	P105
. Waste name:	SODIUM AZIDE
. Waste code:	U029
. Waste name:	METHANE, BROMO- (OR) METHYL BROMIDE
. Waste code:	U043
. Waste name:	ETHENE, CHLORO- (OR) VINYL CHLORIDE
. Waste code:	U045
. Waste name:	METHANE, CHLORO- (I,T) (OR) METHYL CHLORIDE (I,T)
. Waste code:	U075
. Waste name:	DICHLORODIFLUOROMETHANE (OR) METHANE, DICHLORODIFLUORO-
. Waste code:	U080
. Waste name:	METHANE, DICHLORO- (OR) METHYLENE CHLORIDE
. Waste code:	U115
. Waste name:	ETHYLENE OXIDE (I,T) (OR) OXIRANE (I,T)
. Waste code:	U223
. Waste name:	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)
Date form received by agency:	02/23/2006
Site name:	AEROJET - GENERAL CORPORATION
Classification:	Large Quantity Generator

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	121
. Waste name:	Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)
. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)
. Waste code:	132
. Waste name:	Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)
. Waste code:	134
. Waste name:	Aqueous solution with <10% total organic residues
. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics
. Waste code:	181
. Waste name:	Other inorganic solid waste
. Waste code:	212
. Waste name:	Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
. Waste code:	213
. Waste name:	Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
. Waste code:	214
. Waste name:	Unspecified solvent mixture
. Waste code:	331
. Waste name:	Off-specification, aged, or surplus organics
. Waste code:	341
. Waste name:	Organic liquids (nonsolvents) with halogens
. Waste code:	343
. Waste name:	Unspecified organic liquid mixture
. Waste code:	351
. Waste name:	Organic solids with halogens
. Waste code:	352
. Waste name:	Other organic solids
. Waste code:	491
. Waste name:	Unspecified sludge waste
. Waste code:	541
. Waste name:	Photochemicals / photo processing waste
. Waste code:	551
. Waste name:	Laboratory waste chemicals
. Waste code:	711
. Waste name:	Liquids with cyanides > 1000 mg/l
. Waste code:	725
. Waste name:	Liquids with mercury > 20 mg/l
. Waste code:	741

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	Liquids with halogenated organic compounds > 1000 mg/l
. Waste code:	791
. Waste name:	Liquids with pH < 2
. Waste code:	D001
. Waste name:	IGNITABLE WASTE
. Waste code:	D002
. Waste name:	CORROSIVE WASTE
. Waste code:	D003
. Waste name:	REACTIVE WASTE
. Waste code:	D005
. Waste name:	BARIUM
. Waste code:	D006
. Waste name:	CADMIUM
. Waste code:	D007
. Waste name:	CHROMIUM
. Waste code:	D008
. Waste name:	LEAD
. Waste code:	D009
. Waste name:	MERCURY
. Waste code:	D010
. Waste name:	SELENIUM
. Waste code:	D011
. Waste name:	SILVER
. Waste code:	D022
. Waste name:	CHLOROFORM
. Waste code:	D028
. Waste name:	1,2-DICHLOROETHANE
. Waste code:	D035
. Waste name:	METHYL ETHYL KETONE
. Waste code:	D038
. Waste name:	PYRIDINE
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F003

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	LABP
. Waste name:	LAB PACK
. Waste code:	U223
. Waste name:	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)
Date form received by agency:	02/20/2004
Site name:	AERO JET - MISSILE AND SPACES PROPULSION
Classification:	Large Quantity Generator
. Waste code:	D001
. Waste name:	IGNITABLE WASTE
. Waste code:	D002
. Waste name:	CORROSIVE WASTE
. Waste code:	D003
. Waste name:	REACTIVE WASTE
. Waste code:	D005
. Waste name:	BARIUM
. Waste code:	D006
. Waste name:	CADMIUM
. Waste code:	D007
. Waste name:	CHROMIUM
. Waste code:	D008
. Waste name:	LEAD
. Waste code:	D009
. Waste name:	MERCURY
. Waste code:	D010
. Waste name:	SELENIUM
. Waste code:	D011
. Waste name:	SILVER
. Waste code:	D018
. Waste name:	BENZENE
. Waste code:	D022

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	CHLOROFORM
. Waste code:	D035
. Waste name:	METHYL ETHYL KETONE
. Waste code:	D037
. Waste name:	PENTACHLOROPHENOL
. Waste code:	D038
. Waste name:	PYRIDINE
. Waste code:	D040
. Waste name:	TRICHLORETHYLENE
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Date form received by agency:	03/28/2002
Site name:	AEROJET MISSILE & SPACE PROPULSION
Classification:	Large Quantity Generator
Date form received by agency:	10/12/2000
Site name:	AEROJET PROPULSION & ENERGETIC SYSTEMS
Classification:	Large Quantity Generator
Date form received by agency:	03/04/1999
Site name:	AEROJET SACRAMENTO OPERATIONS
Classification:	Large Quantity Generator
Date form received by agency:	09/01/1996
Site name:	AEROJET GENERAL CORPORATION
Classification:	Large Quantity Generator
Date form received by agency:	02/07/1996
Site name:	AEROJET SACRAMENTO OPERATIONS
Classification:	Large Quantity Generator

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date form received by agency:	03/25/1994
Site name:	US AEROJET RCRA FACILITY
Classification:	Large Quantity Generator
Date form received by agency:	03/26/1992
Site name:	UNITED STATES-AEROJET RCRA FACILITY
Classification:	Large Quantity Generator
Date form received by agency:	04/16/1990
Site name:	US AEROJET RCRA FACILITY
Classification:	Large Quantity Generator
Date form received by agency:	08/18/1980
Site name:	AEROJET GENERAL CORPORATION
Classification:	Large Quantity Generator

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code:	D001
Waste name:	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs):	132357.1
Waste code:	D002
Waste name:	A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs):	45750
Waste code:	D003
Waste name:	A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
Amount (Lbs):	124114.4
Waste code:	D005
Waste name:	BARIUM
Amount (Lbs):	2617
Waste code:	D006
Waste name:	CADMIUM
Amount (Lbs):	7205
Waste code:	D007
Waste name:	CHROMIUM

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Amount (Lbs):	21161.8
Waste code:	D008
Waste name:	LEAD
Amount (Lbs):	9919
Waste code:	D009
Waste name:	MERCURY
Amount (Lbs):	464
Waste code:	D010
Waste name:	SELENIUM
Amount (Lbs):	5860
Waste code:	D011
Waste name:	SILVER
Amount (Lbs):	1451
Waste code:	D018
Waste name:	BENZENE
Amount (Lbs):	6.7
Waste code:	D022
Waste name:	CHLOROFORM
Amount (Lbs):	2521.8
Waste code:	D028
Waste name:	1,2-DICHLOROETHANE
Amount (Lbs):	27650
Waste code:	D035
Waste name:	METHYL ETHYL KETONE
Amount (Lbs):	1347.6
Waste code:	D038
Waste name:	PYRIDINE
Amount (Lbs):	3406.8
Waste code:	D040
Waste name:	TRICHLOROETHYLENE
Amount (Lbs):	24000
Waste code:	F002
Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs):	65890.2
Waste code:	F003

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Waste name:	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs):	65468
Waste code:	F005
Waste name:	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs):	56935.4
Waste code:	P068
Waste name:	HYDRAZINE, METHYL-
Amount (Lbs):	127
Waste code:	P081
Waste name:	NITROGLYCERINE (R)
Amount (Lbs):	355
Waste code:	P098
Waste name:	POTASSIUM CYANIDE
Amount (Lbs):	10
Waste code:	U002
Waste name:	ACETONE (I)
Amount (Lbs):	60
Waste code:	U133
Waste name:	HYDRAZINE (R,T)
Amount (Lbs):	127
Waste code:	U160
Waste name:	2-BUTANONE, PEROXIDE (R,T)
Amount (Lbs):	22

Corrective Action Summary:

Event date:	01/01/1978
Event:	STABILIZATION/INTERIM MEASURES DECISION-PRIMARY MEAS IS SOURCE REMOVL &/OR TRT
Event date:	01/01/1982
Event:	STABILIZATION/INTERIM MEASURES DECISION-GROUNDWATER EXTRACTION & TREATMENT
Event date:	01/01/1986
Event:	STABILIZATION CONSTRUCTION COMPLETED
Event date:	09/08/1988
Event:	INVESTIGATION IMPOSITION
Event date:	09/08/1988
Event:	CMS IMPOSITION

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Event date:	06/23/1989
Event:	INVESTIGATION IMPOSITION
Event date:	06/01/1991
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	06/21/1994
Event:	RFA COMPLETED-ASSESSMENT WAS A RFA
Event date:	06/21/1994
Event:	RFA COMPLETED
Event date:	06/21/1994
Event:	DETERMINATION OF NEED FOR AN INVESTIGATION-INVESTIGATION IS NECESSARY
Event date:	06/30/1994
Event:	INVESTIGATION IMPOSITION
Event date:	06/30/1994
Event:	CMS IMPOSITION
Event date:	06/30/1994
Event:	STABILIZATION/INTERIM MEASURES DECISION-PRIMARY MEAS IS SOURCE REMOVL &/OR TRT
Event date:	04/17/1995
Event:	INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL
Event date:	06/30/1995
Event:	CMS IMPOSITION
Event date:	01/01/1996
Event:	REFERRED TO A NON-RCRA AUTHORITY-REFERRED TO CERCLA
Event date:	01/01/1997
Event:	STABILIZATION CONSTRUCTION COMPLETED
Event date:	11/26/1997
Event:	CA PRIORITIZATION-HIGH CA PRIORITY
Event date:	04/02/1998
Event:	STABILIZATION MEASURES EVALUATION-FACILITY IS AMENABLE TO STABILIZATION
Event date:	04/02/1998
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/02/1998
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/02/1998
Event:	REFERRED TO A NON-RCRA AUTHORITY
Event date:	08/31/1999
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	12/23/1999
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	12/11/2000
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Event date:	12/11/2000
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/28/2000
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/28/2000
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/17/2001
Event:	INVESTIGATION COMPLETE
Event date:	11/22/2002
Event:	INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL
Event date:	01/05/2005
Event:	INVESTIGATION WORKPLAN RECEIVED
Event date:	01/31/2005
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	05/18/2005
Event:	INVESTIGATION REPORT RECEIVED
Event date:	08/16/2005
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-YES, APPLICABLE AS OF THIS DATE
Event date:	08/16/2005
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-YES, APPLICABLE AS OF THIS DATE
Event date:	08/18/2005
Event:	INVESTIGATION COMPLETE
Event date:	08/18/2005
Event:	CA PROCESS IS TERMINATED-NO FURTHER ACTION

Facility Has Received Notices of Violations:

Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	12/01/2015
Date achieved compliance:	12/02/2015
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/02/2015
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	State Statute or Regulation
Date violation determined:	12/01/2015
Date achieved compliance:	12/02/2015

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/02/2015
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	State Statute or Regulation
Date violation determined:	12/23/2013
Date achieved compliance:	02/24/2014
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/23/2013
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	12/23/2013
Date achieved compliance:	02/24/2014
Violation lead agency:	State
Enforcement action:	SINGLE SITE CA/FO
Enforcement action date:	06/20/2014
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	3200
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	12/23/2013
Date achieved compliance:	02/24/2014
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/23/2013
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Regulation violated:	Not Reported
Area of violation:	State Statute or Regulation
Date violation determined:	12/23/2013
Date achieved compliance:	02/24/2014
Violation lead agency:	State
Enforcement action:	SINGLE SITE CA/FO
Enforcement action date:	06/20/2014
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	3200
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	State Statute or Regulation
Date violation determined:	04/25/2012
Date achieved compliance:	05/29/2012
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/01/2012
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	04/25/2012
Date achieved compliance:	05/29/2012
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/01/2012
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	04/25/2012
Date achieved compliance:	05/29/2012
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/01/2012
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - General
Date violation determined:	12/16/2008
Date achieved compliance:	12/16/2008
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/16/2008
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - General
Date violation determined:	10/10/2006
Date achieved compliance:	Not Reported
Violation lead agency:	State
Enforcement action:	Not Reported
Enforcement action date:	Not Reported
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	Not Reported
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Financial Requirements
Date violation determined:	10/11/2005
Date achieved compliance:	11/22/2005
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/13/2005
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General
Date violation determined:	06/01/2004
Date achieved compliance:	12/21/2006
Violation lead agency:	State

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/01/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General
Date violation determined:	06/01/2004
Date achieved compliance:	12/21/2006
Violation lead agency:	State
Enforcement action:	SINGLE SITE CA/FO
Enforcement action date:	12/21/2006
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	114000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	07/03/2003
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	TSD - Tank System Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	07/03/2003
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Financial Requirements
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	07/03/2003
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Financial Requirements
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Financial Requirements
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement action date:	07/03/2003
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	06/11/2002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Permits - Application
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Permits - Application
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	TSD - Container Use and Management
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Permits - Application
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Permits - Application
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	F - 264.110-120.G
Area of violation:	TSD - Closure/Post-Closure
Date violation determined:	04/02/1997
Date achieved compliance:	06/05/1997
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	04/02/1997
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 262.30-34.C
Area of violation:	Generators - General
Date violation determined:	01/17/1996
Date achieved compliance:	01/31/1996
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	01/17/1996

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 264.340-352.O
Area of violation:	TSD - Incinerator Standards
Date violation determined:	05/19/1995
Date achieved compliance:	01/17/1996
Violation lead agency:	EPA
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/19/1995
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	EPA
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 264.190-201.J
Area of violation:	TSD - General
Date violation determined:	05/19/1995
Date achieved compliance:	01/17/1996
Violation lead agency:	EPA
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/19/1995
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	EPA
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 264.170-177.I
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000
Regulation violated:	FR - 264.30-37.C
Area of violation:	TSD - General
Date violation determined:	05/24/1993

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000
Regulation violated:	FR - 268 ALL
Area of violation:	LDR - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000
Regulation violated:	FR - 264.30-37.C
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 262.50-60
Area of violation:	Generators - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Paid penalty amount:	35000
Regulation violated:	FR - 264.170-177.I
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 268 ALL
Area of violation:	LDR - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 270
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000
Regulation violated:	FR - 270
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 262.50-60
Area of violation:	Generators - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 264.140-150.H
Area of violation:	TSD - Financial Requirements
Date violation determined:	03/20/1991
Date achieved compliance:	01/22/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	04/06/1991
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 270
Area of violation:	TSD - General
Date violation determined:	01/22/1990
Date achieved compliance:	05/03/1990
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	03/08/1990
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Evaluation Action Summary:

Evaluation date:	10/12/2017
Evaluation:	FINANCIAL RECORD REVIEW

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 09/18/2017
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 07/26/2016
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 12/01/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 12/02/2015
Evaluation lead agency: State

Evaluation date: 12/01/2015
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Manifest/Records/Reporting
Date achieved compliance: 12/02/2015
Evaluation lead agency: State

Evaluation date: 11/06/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 10/29/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 03/05/2014
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 03/04/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 02/24/2014
Evaluation: NOT A SIGNIFICANT NON-COMPLIER

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 01/23/2014
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General Facility Standards
Date achieved compliance: 02/24/2014
Evaluation lead agency: State

Evaluation date: 12/23/2013
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: State Statute or Regulation
Date achieved compliance: 02/24/2014
Evaluation lead agency: State

Evaluation date: 09/24/2012
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 08/22/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 07/31/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General Facility Standards
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation: State Statute or Regulation
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

Evaluation date: 04/25/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Manifest
Date achieved compliance: 05/29/2012
Evaluation lead agency: State

Evaluation date: 04/16/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 04/10/2012
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 06/01/2010
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 05/25/2010
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 12/02/2009
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 12/16/2008
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 12/16/2008
Evaluation lead agency: State

Evaluation date: 07/29/2008
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 06/10/2008
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/21/2006
Evaluation:	NOT A SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/10/2006
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - General
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	09/22/2006
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	EPA Contractor/Grantee
Evaluation date:	06/20/2006
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/19/2005
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/11/2005
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	TSD - Financial Requirements
Date achieved compliance:	11/22/2005
Evaluation lead agency:	State
Evaluation date:	08/03/2004
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State Contractor/Grantee
Evaluation date:	06/01/2004
Evaluation:	SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	06/01/2004
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	TSD - General
Date achieved compliance:	12/21/2006
Evaluation lead agency:	State
Evaluation date:	12/23/2003
Evaluation:	NOT A SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	06/24/2003
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Financial Requirements
Date achieved compliance:	12/23/2003
Evaluation lead agency:	State
Evaluation date:	06/24/2003
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Container Use and Management
Date achieved compliance:	12/23/2003
Evaluation lead agency:	State
Evaluation date:	06/24/2003
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - General Facility Standards
Date achieved compliance:	12/23/2003
Evaluation lead agency:	State
Evaluation date:	06/24/2003
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Tank System Standards
Date achieved compliance:	12/23/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Tank System Standards
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	Generators - Records/Reporting
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Container Use and Management
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	TSD - Preparedness and Prevention
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - General Facility Standards
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	Generators - Manifest
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Tank System Standards
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - Manifest
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Preparedness and Prevention
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Manifest/Records/Reporting
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General Facility Standards
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation: TSD - Contingency Plan and Emergency Procedures
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Permits - Application
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Container Use and Management
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: SIGNIFICANT NON-COMPLIER
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 10/05/2000
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Records/Reporting
Date achieved compliance: 09/23/2002
Evaluation lead agency: State

Evaluation date: 12/02/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 10/20/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 05/29/1998
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 12/16/1997
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 04/01/1997
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	TSD - Closure/Post-Closure
Date achieved compliance:	06/05/1997
Evaluation lead agency:	State
Evaluation date:	01/17/1996
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - General
Date achieved compliance:	01/31/1996
Evaluation lead agency:	State
Evaluation date:	02/27/1995
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General
Date achieved compliance:	01/17/1996
Evaluation lead agency:	EPA
Evaluation date:	02/27/1995
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	02/27/1995
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Incinerator Standards
Date achieved compliance:	01/17/1996
Evaluation lead agency:	EPA
Evaluation date:	01/22/1993
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	01/19/1993
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	LDR - General
Date achieved compliance:	06/24/1993
Evaluation lead agency:	State
Evaluation date:	01/19/1993
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - General
Date achieved compliance:	06/24/1993
Evaluation lead agency:	State
Evaluation date:	01/19/1993
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General
Date achieved compliance:	06/24/1993
Evaluation lead agency:	State
Evaluation date:	03/20/1992
Evaluation:	FINANCIAL RECORD REVIEW

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 03/16/1992
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 02/14/1992
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 03/18/1991
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - Financial Requirements
Date achieved compliance: 01/22/1993
Evaluation lead agency: State

Evaluation date: 10/19/1990
Evaluation: OPERATION AND MAINTENANCE INSPECTION
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 01/23/1990
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 01/22/1990
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: TSD - General
Date achieved compliance: 05/03/1990
Evaluation lead agency: State

Evaluation date: 07/07/1989
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 06/13/1989
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not Reported
Date achieved compliance: Not Reported
Evaluation lead agency: State

Evaluation date: 11/24/1987
Evaluation: FINANCIAL RECORD REVIEW

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/06/1987
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State

RCRA-LQG: Federal RCRA generators list

Date form received by agency:	02/27/2018
Facility name:	AEROJET ROCKETDYNE INC
Facility address:	US HWY 50 AND AEROJET RD RANCHO CORDOVA, CA 95813-6000
EPA ID:	CAD000030494
Mailing address:	PO BOX 13222 SACRAMENTO, CA 95813
Contact:	JIM BUEHLER
Contact address:	PO BOX 13222 SACRAMENTO, CA 95813
Contact country:	US
Contact telephone:	916-355-4682
Contact email:	JIM.BUEHLER@ROCKET.COM
EPA Region:	09
Land type:	Private
Classification:	TSDF
Description:	Handler is engaged in the treatment, storage or disposal of hazardous waste
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	AEROJET ROCKETDYNE, INC.
Owner/operator address:	PO BOX 13222 SACRAMENTO, CA 95813
Owner/operator country:	US
Owner/operator telephone:	916-355-4682
Owner/operator email:	JIM.BUEHLER@ROCKET.COM
Owner/operator fax:	Not Reported
Owner/operator extension:	Not Reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	10/01/2005
Owner/Op end date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Owner/operator name:	AEROJET ROCKETDYNE, INC.
Owner/operator address:	PO BOX 13222 SACRAMENTO, CA 95813
Owner/operator country:	US
Owner/operator telephone:	916-355-4682
Owner/operator email:	JIM.BUEHLER@ROCKET.COM
Owner/operator fax:	Not Reported
Owner/operator extension:	Not Reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	10/01/2005
Owner/Op end date:	Not Reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	Yes
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Universal Waste Summary:

Waste type:	E
Accumulated waste on-site:	No
Generated waste on-site:	Yes
Waste type:	Batteries
Accumulated waste on-site:	Yes
Generated waste on-site:	Not Reported
Waste type:	Lamps
Accumulated waste on-site:	Yes
Generated waste on-site:	Not Reported
. Waste code:	121
. Waste name:	Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)
. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)
. Waste code:	134

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: Aqueous solution with <10% total organic residues
- Waste code: 141
- Waste name: Off-specification, aged, or surplus inorganics
- Waste code: 181
- Waste name: Other inorganic solid waste
- Waste code: 212
- Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
- Waste code: 213
- Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
- Waste code: 214
- Waste name: Unspecified solvent mixture
- Waste code: 221
- Waste name: Waste oil and mixed oil
- Waste code: 223
- Waste name: Unspecified oil-containing waste
- Waste code: 261
- Waste name: Polychlorinated biphenyls and material containing PCB's
- Waste code: 291
- Waste name: Latex waste
- Waste code: 331
- Waste name: Off-specification, aged, or surplus organics
- Waste code: 341
- Waste name: Organic liquids (nonsolvents) with halogens
- Waste code: 343
- Waste name: Unspecified organic liquid mixture
- Waste code: 351
- Waste name: Organic solids with halogens
- Waste code: 352
- Waste name: Other organic solids
- Waste code: 512
- Waste name: Other empty containers 30 gallons or more
- Waste code: 513
- Waste name: Empty containers less than 30 gallons
- Waste code: 541
- Waste name: Photochemicals / photo processing waste
- Waste code: 551
- Waste name: Laboratory waste chemicals
- Waste code: 591
- Waste name: Baghouse waste
- Waste code: 725

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 741
. Waste name: Liquids with halogenated organic compounds > 1000 mg/l

. Waste code: 751
. Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D037
. Waste name: PENTACHLOROPHENOL

. Waste code: D038
. Waste name: PYRIDINE

. Waste code: F002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F027
. Waste name:	DISCARDED UNUSED FORMULATIONS CONTAINING TRI-, TETRA-, OR PENTACHLOROPHENOL OR DISCARDED UNUSED FORMULATIONS CONTAINING COMPOUNDS DERIVED FROM THESE CHLOROPHENOLS. (THIS LISTING DOES NOT INCLUDE FORMULATIONS CONTAINING HEXACHLOROPHENE SYNTHESIZED FROM PREPURIFIED 2,4,5-TRICHLOROPHENOL AS THE SOLE COMPONENT.)
. Waste code:	P068
. Waste name:	HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE
. Waste code:	P082
. Waste name:	METHANIMINE, N-METHYL-N-NITROSO- (OR) N-NITROSODIMETHYLAMINE
. Waste code:	P098
. Waste name:	POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)
. Waste code:	P105
. Waste name:	SODIUM AZIDE
. Waste code:	U002
. Waste name:	2-PROPANONE (I) (OR) ACETONE (I)
. Waste code:	U133
. Waste name:	HYDRAZINE (R,T)
. Waste code:	U134
. Waste name:	HYDROFLUORIC ACID (C,T) (OR) HYDROGEN FLUORIDE (C,T)
. Waste code:	U223
. Waste name:	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Historical Generators:

Date form received by agency:	02/18/2016
Site name:	AEROJET ROCKETDYNE, INC.

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Classification:	Large Quantity Generator
. Waste code:	121
. Waste name:	Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)
. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)
. Waste code:	123
. Waste name:	Unspecified alkaline solution
. Waste code:	132
. Waste name:	Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)
. Waste code:	133
. Waste name:	Aqueous solution with 10% or more total organic residues
. Waste code:	134
. Waste name:	Aqueous solution with <10% total organic residues
. Waste code:	135
. Waste name:	Unspecified aqueous solution
. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics
. Waste code:	151
. Waste name:	Asbestos-containing waste
. Waste code:	181
. Waste name:	Other inorganic solid waste
. Waste code:	212
. Waste name:	Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
. Waste code:	213
. Waste name:	Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
. Waste code:	214
. Waste name:	Unspecified solvent mixture
. Waste code:	221
. Waste name:	Waste oil and mixed oil
. Waste code:	223
. Waste name:	Unspecified oil-containing waste
. Waste code:	261
. Waste name:	Polychlorinated biphenyls and material containing PCB's
. Waste code:	331
. Waste name:	Off-specification, aged, or surplus organics
. Waste code:	341
. Waste name:	Organic liquids (nonsolvents) with halogens
. Waste code:	343
. Waste name:	Unspecified organic liquid mixture

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste code: 351
- Waste name: Organic solids with halogens

- Waste code: 352
- Waste name: Other organic solids

- Waste code: 512
- Waste name: Other empty containers 30 gallons or more

- Waste code: 513
- Waste name: Empty containers less than 30 gallons

- Waste code: 541
- Waste name: Photochemicals / photo processing waste

- Waste code: 551
- Waste name: Laboratory waste chemicals

- Waste code: 591
- Waste name: Baghouse waste

- Waste code: 731
- Waste name: Liquids with polychlorinated biphenyls > 50 mg/l

- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l

- Waste code: 751
- Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

- Waste code: 791
- Waste name: Liquids with pH < 2

- Waste code: 792
- Waste name: Liquids with pH < 2 with metals

- Waste code: D001
- Waste name: IGNITABLE WASTE

- Waste code: D002
- Waste name: CORROSIVE WASTE

- Waste code: D003
- Waste name: REACTIVE WASTE

- Waste code: D005
- Waste name: BARIUM

- Waste code: D006
- Waste name: CADMIUM

- Waste code: D007
- Waste name: CHROMIUM

- Waste code: D008
- Waste name: LEAD

- Waste code: D009
- Waste name: MERCURY

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste code: D010
- Waste name: SELENIUM

- Waste code: D011
- Waste name: SILVER

- Waste code: D018
- Waste name: BENZENE

- Waste code: D022
- Waste name: CHLOROFORM

- Waste code: D028
- Waste name: 1,2-DICHLOROETHANE

- Waste code: D035
- Waste name: METHYL ETHYL KETONE

- Waste code: D038
- Waste name: PYRIDINE

- Waste code: D040
- Waste name: TRICHLORETHYLENE

- Waste code: F002
- Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

- Waste code: F003
- Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

- Waste code: F005
- Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

- Waste code: P068
- Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE

- Waste code: P081
- Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

- Waste code: P098
- Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

- Waste code: U002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	2-PROPANONE (I) (OR) ACETONE (I)
. Waste code:	U133
. Waste name:	HYDRAZINE (R,T)
. Waste code:	U160
. Waste name:	2-BUTANONE, PEROXIDE (R,T) (OR) METHYL ETHYL KETONE PEROXIDE (R,T)
Date form received by agency:	03/01/2014
Site name:	AEROJET ROCKETDYNE INC
Classification:	Large Quantity Generator
. Waste code:	121
. Waste name:	Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)
. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)
. Waste code:	132
. Waste name:	Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)
. Waste code:	134
. Waste name:	Aqueous solution with <10% total organic residues
. Waste code:	135
. Waste name:	Unspecified aqueous solution
. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics
. Waste code:	151
. Waste name:	Asbestos-containing waste
. Waste code:	181
. Waste name:	Other inorganic solid waste
. Waste code:	212
. Waste name:	Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
. Waste code:	213
. Waste name:	Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
. Waste code:	214
. Waste name:	Unspecified solvent mixture
. Waste code:	221
. Waste name:	Waste oil and mixed oil
. Waste code:	261
. Waste name:	Polychlorinated biphenyls and material containing PCB's
. Waste code:	331
. Waste name:	Off-specification, aged, or surplus organics
. Waste code:	341
. Waste name:	Organic liquids (nonsolvents) with halogens
. Waste code:	343
. Waste name:	Unspecified organic liquid mixture

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste code: 351
- Waste name: Organic solids with halogens

- Waste code: 352
- Waste name: Other organic solids

- Waste code: 512
- Waste name: Other empty containers 30 gallons or more

- Waste code: 541
- Waste name: Photochemicals / photo processing waste

- Waste code: 551
- Waste name: Laboratory waste chemicals

- Waste code: 591
- Waste name: Baghouse waste

- Waste code: 611
- Waste name: Contaminated soil from site clean-ups

- Waste code: 725
- Waste name: Liquids with mercury > 20 mg/l

- Waste code: 731
- Waste name: Liquids with polychlorinated biphenyls > 50 mg/l

- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l

- Waste code: 751
- Waste name: Solids or sludge with halogenated organic comp. > 1000 mg/kg

- Waste code: 791
- Waste name: Liquids with pH < 2

- Waste code: 792
- Waste name: Liquids with pH < 2 with metals

- Waste code: D001
- Waste name: IGNITABLE WASTE

- Waste code: D002
- Waste name: CORROSIVE WASTE

- Waste code: D003
- Waste name: REACTIVE WASTE

- Waste code: D005
- Waste name: BARIUM

- Waste code: D006
- Waste name: CADMIUM

- Waste code: D007
- Waste name: CHROMIUM

- Waste code: D008
- Waste name: LEAD

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	D009
. Waste name:	MERCURY
. Waste code:	D010
. Waste name:	SELENIUM
. Waste code:	D011
. Waste name:	SILVER
. Waste code:	D018
. Waste name:	BENZENE
. Waste code:	D022
. Waste name:	CHLOROFORM
. Waste code:	D028
. Waste name:	1,2-DICHLOROETHANE
. Waste code:	D035
. Waste name:	METHYL ETHYL KETONE
. Waste code:	D038
. Waste name:	PYRIDINE
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	LABP
. Waste name:	LAB PACK
. Waste code:	P068
. Waste name:	HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE
. Waste code:	P098
. Waste name:	POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 09/11/2012
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 132
. Waste name: Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 211
. Waste name: Halogenated solvents (chloroform, methyl chloride, perchloroethylene, etc.)

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 261
. Waste name: Polychlorinated biphenyls and material containing PCB's

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: Organic liquids (nonsolvents) with halogens
- Waste code: 343
- Waste name: Unspecified organic liquid mixture
- Waste code: 351
- Waste name: Organic solids with halogens
- Waste code: 352
- Waste name: Other organic solids
- Waste code: 512
- Waste name: Other empty containers 30 gallons or more
- Waste code: 541
- Waste name: Photochemicals / photo processing waste
- Waste code: 551
- Waste name: Laboratory waste chemicals
- Waste code: 591
- Waste name: Baghouse waste
- Waste code: 611
- Waste name: Contaminated soil from site clean-ups
- Waste code: 725
- Waste name: Liquids with mercury > 20 mg/l
- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l
- Waste code: 791
- Waste name: Liquids with pH < 2
- Waste code: 792
- Waste name: Liquids with pH < 2 with metals
- Waste code: D001
- Waste name: IGNITABLE WASTE
- Waste code: D002
- Waste name: CORROSIVE WASTE
- Waste code: D003
- Waste name: REACTIVE WASTE
- Waste code: D005
- Waste name: BARIUM
- Waste code: D006
- Waste name: CADMIUM
- Waste code: D007
- Waste name: CHROMIUM
- Waste code: D008
- Waste name: LEAD
- Waste code: D009

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: MERCURY
- Waste code: D010
- Waste name: SELENIUM
- Waste code: D011
- Waste name: SILVER
- Waste code: D018
- Waste name: BENZENE
- Waste code: D022
- Waste name: CHLOROFORM
- Waste code: D028
- Waste name: 1,2-DICHLOROETHANE
- Waste code: D035
- Waste name: METHYL ETHYL KETONE
- Waste code: D038
- Waste name: PYRIDINE
- Waste code: F002
- Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: F003
- Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: F005
- Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
- Waste code: LABP
- Waste name: LAB PACK
- Waste code: P068
- Waste name: HYDRAZINE, METHYL- (OR) METHYL HYDRAZINE
- Waste code: U133
- Waste name: HYDRAZINE (R,T)
- Waste code: U220
- Waste name: BENZENE, METHYL- (OR) TOLUENE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code: U223
. Waste name: BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)

Date form received by agency: 07/30/2010
Site name: AEROJET - GENERAL CORPORATION
Classification: Large Quantity Generator

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 134
. Waste name: Aqueous solution with <10% total organic residues

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 341
. Waste name: Organic liquids (nonsolvents) with halogens

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 351
. Waste name: Organic solids with halogens

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 741

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste name: Liquids with halogenated organic compounds > 1000 mg/l
- Waste code: 791
- Waste name: Liquids with pH < 2
- Waste code: 792
- Waste name: Liquids with pH < 2 with metals
- Waste code: D001
- Waste name: IGNITABLE WASTE
- Waste code: D002
- Waste name: CORROSIVE WASTE
- Waste code: D003
- Waste name: REACTIVE WASTE
- Waste code: D005
- Waste name: BARIUM
- Waste code: D006
- Waste name: CADMIUM
- Waste code: D007
- Waste name: CHROMIUM
- Waste code: D008
- Waste name: LEAD
- Waste code: D009
- Waste name: MERCURY
- Waste code: D010
- Waste name: SELENIUM
- Waste code: D011
- Waste name: SILVER
- Waste code: D018
- Waste name: BENZENE
- Waste code: D022
- Waste name: CHLOROFORM
- Waste code: D028
- Waste name: 1,2-DICHLOROETHANE
- Waste code: D035
- Waste name: METHYL ETHYL KETONE
- Waste code: D038
- Waste name: PYRIDINE
- Waste code: D040
- Waste name: TRICHLORETHYLENE
- Waste code: F001

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	LABP
. Waste name:	LAB PACK
. Waste code:	U133
. Waste name:	HYDRAZINE (R,T)
Date form received by agency:	03/27/2008
Site name:	AEROJET - GENERAL CORPORATION
Classification:	Large Quantity Generator
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	D043
. Waste name:	VINYL CHLORIDE
. Waste code:	D040
. Waste name:	TRICHLORETHYLENE
. Waste code:	D039
. Waste name:	TETRACHLOROETHYLENE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	D038
. Waste name:	PYRIDINE
. Waste code:	D035
. Waste name:	METHYL ETHYL KETONE
. Waste code:	D028
. Waste name:	1,2-DICHLOROETHANE
. Waste code:	D022
. Waste name:	CHLOROFORM
. Waste code:	D018
. Waste name:	BENZENE
. Waste code:	D011
. Waste name:	SILVER
. Waste code:	D010
. Waste name:	SELENIUM
. Waste code:	D009
. Waste name:	MERCURY
. Waste code:	D008
. Waste name:	LEAD
. Waste code:	D007
. Waste name:	CHROMIUM
. Waste code:	D006
. Waste name:	CADMIUM
. Waste code:	D005
. Waste name:	BARIUM
. Waste code:	D004
. Waste name:	ARSENIC
. Waste code:	D003
. Waste name:	REACTIVE WASTE
. Waste code:	D002
. Waste name:	CORROSIVE WASTE
. Waste code:	D001
. Waste name:	IGNITABLE WASTE
. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	LABP
. Waste name:	LAB PACK
. Waste code:	P105
. Waste name:	SODIUM AZIDE
. Waste code:	U029
. Waste name:	METHANE, BROMO- (OR) METHYL BROMIDE
. Waste code:	U043
. Waste name:	ETHENE, CHLORO- (OR) VINYL CHLORIDE
. Waste code:	U045
. Waste name:	METHANE, CHLORO- (I,T) (OR) METHYL CHLORIDE (I,T)
. Waste code:	U075
. Waste name:	DICHLORODIFLUOROMETHANE (OR) METHANE, DICHLORODIFLUORO-
. Waste code:	U080
. Waste name:	METHANE, DICHLORO- (OR) METHYLENE CHLORIDE
. Waste code:	U115
. Waste name:	ETHYLENE OXIDE (I,T) (OR) OXIRANE (I,T)
. Waste code:	U223
. Waste name:	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)
Date form received by agency:	02/23/2006
Site name:	AEROJET - GENERAL CORPORATION
Classification:	Large Quantity Generator
. Waste code:	121
. Waste name:	Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)
. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)
. Waste code:	132
. Waste name:	Aqueous solution w/metals (< restricted levels and see waste code 121 for a list of metals)
. Waste code:	134
. Waste name:	Aqueous solution with <10% total organic residues
. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics
. Waste code:	181
. Waste name:	Other inorganic solid waste
. Waste code:	212
. Waste name:	Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste code: 213
- Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

- Waste code: 214
- Waste name: Unspecified solvent mixture

- Waste code: 331
- Waste name: Off-specification, aged, or surplus organics

- Waste code: 341
- Waste name: Organic liquids (nonsolvents) with halogens

- Waste code: 343
- Waste name: Unspecified organic liquid mixture

- Waste code: 351
- Waste name: Organic solids with halogens

- Waste code: 352
- Waste name: Other organic solids

- Waste code: 491
- Waste name: Unspecified sludge waste

- Waste code: 541
- Waste name: Photochemicals / photo processing waste

- Waste code: 551
- Waste name: Laboratory waste chemicals

- Waste code: 711
- Waste name: Liquids with cyanides > 1000 mg/l

- Waste code: 725
- Waste name: Liquids with mercury > 20 mg/l

- Waste code: 741
- Waste name: Liquids with halogenated organic compounds > 1000 mg/l

- Waste code: 791
- Waste name: Liquids with pH < 2

- Waste code: D001
- Waste name: IGNITABLE WASTE

- Waste code: D002
- Waste name: CORROSIVE WASTE

- Waste code: D003
- Waste name: REACTIVE WASTE

- Waste code: D005
- Waste name: BARIUM

- Waste code: D006
- Waste name: CADMIUM

- Waste code: D007
- Waste name: CHROMIUM

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste code:	D008
. Waste name:	LEAD
. Waste code:	D009
. Waste name:	MERCURY
. Waste code:	D010
. Waste name:	SELENIUM
. Waste code:	D011
. Waste name:	SILVER
. Waste code:	D022
. Waste name:	CHLOROFORM
. Waste code:	D028
. Waste name:	1,2-DICHLOROETHANE
. Waste code:	D035
. Waste name:	METHYL ETHYL KETONE
. Waste code:	D038
. Waste name:	PYRIDINE
. Waste code:	F002
. Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F003
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	LABP
. Waste name:	LAB PACK
. Waste code:	U223
. Waste name:	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) (OR) TOLUENE DIISOCYANATE (R,T)
Date form received by agency:	02/20/2004
Site name:	AERO JET - MISSILE AND SPACES PROPULSION
Classification:	Large Quantity Generator

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

- Waste code: D001
- Waste name: IGNITABLE WASTE

- Waste code: D002
- Waste name: CORROSIVE WASTE

- Waste code: D003
- Waste name: REACTIVE WASTE

- Waste code: D005
- Waste name: BARIUM

- Waste code: D006
- Waste name: CADMIUM

- Waste code: D007
- Waste name: CHROMIUM

- Waste code: D008
- Waste name: LEAD

- Waste code: D009
- Waste name: MERCURY

- Waste code: D010
- Waste name: SELENIUM

- Waste code: D011
- Waste name: SILVER

- Waste code: D018
- Waste name: BENZENE

- Waste code: D022
- Waste name: CHLOROFORM

- Waste code: D035
- Waste name: METHYL ETHYL KETONE

- Waste code: D037
- Waste name: PENTACHLOROPHENOL

- Waste code: D038
- Waste name: PYRIDINE

- Waste code: D040
- Waste name: TRICHLORETHYLENE

- Waste code: F002
- Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

- Waste code: F003

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
. Waste code:	F005
. Waste name:	THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Date form received by agency:	03/28/2002
Site name:	AEROJET MISSILE & SPACE PROPULSION
Classification:	Large Quantity Generator
Date form received by agency:	10/12/2000
Site name:	AEROJET PROPULSION & ENERGETIC SYSTEMS
Classification:	Large Quantity Generator
Date form received by agency:	03/04/1999
Site name:	AEROJET SACRAMENTO OPERATIONS
Classification:	Large Quantity Generator
Date form received by agency:	09/01/1996
Site name:	AEROJET GENERAL CORPORATION
Classification:	Large Quantity Generator
Date form received by agency:	02/07/1996
Site name:	AEROJET SACRAMENTO OPERATIONS
Classification:	Large Quantity Generator
Date form received by agency:	03/25/1994
Site name:	US AEROJET RCRA FACILITY
Classification:	Large Quantity Generator
Date form received by agency:	03/26/1992
Site name:	UNITED STATES-AEROJET RCRA FACILITY
Classification:	Large Quantity Generator
Date form received by agency:	04/16/1990
Site name:	US AEROJET RCRA FACILITY
Classification:	Large Quantity Generator
Date form received by agency:	08/18/1980
Site name:	AEROJET GENERAL CORPORATION
Classification:	Large Quantity Generator

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Waste code:	D001
Waste name:	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs):	132357.1
Waste code:	D002
Waste name:	A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs):	45750
Waste code:	D003
Waste name:	A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
Amount (Lbs):	124114.4
Waste code:	D005
Waste name:	BARIUM
Amount (Lbs):	2617
Waste code:	D006
Waste name:	CADMIUM
Amount (Lbs):	7205
Waste code:	D007
Waste name:	CHROMIUM
Amount (Lbs):	21161.8
Waste code:	D008
Waste name:	LEAD
Amount (Lbs):	9919
Waste code:	D009
Waste name:	MERCURY
Amount (Lbs):	464
Waste code:	D010
Waste name:	SELENIUM
Amount (Lbs):	5860
Waste code:	D011
Waste name:	SILVER
Amount (Lbs):	1451
Waste code:	D018
Waste name:	BENZENE
Amount (Lbs):	6.7
Waste code:	D022

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Waste name:	CHLOROFORM
Amount (Lbs):	2521.8
Waste code:	D028
Waste name:	1,2-DICHLOROETHANE
Amount (Lbs):	27650
Waste code:	D035
Waste name:	METHYL ETHYL KETONE
Amount (Lbs):	1347.6
Waste code:	D038
Waste name:	PYRIDINE
Amount (Lbs):	3406.8
Waste code:	D040
Waste name:	TRICHLOROETHYLENE
Amount (Lbs):	24000
Waste code:	F002
Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs):	65890.2
Waste code:	F003
Waste name:	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs):	65468
Waste code:	F005
Waste name:	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs):	56935.4
Waste code:	P068
Waste name:	HYDRAZINE, METHYL-
Amount (Lbs):	127
Waste code:	P081
Waste name:	NITROGLYCERINE (R)
Amount (Lbs):	355
Waste code:	P098
Waste name:	POTASSIUM CYANIDE
Amount (Lbs):	10

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Waste code:	U002
Waste name:	ACETONE (I)
Amount (Lbs):	60
Waste code:	U133
Waste name:	HYDRAZINE (R,T)
Amount (Lbs):	127
Waste code:	U160
Waste name:	2-BUTANONE, PEROXIDE (R,T)
Amount (Lbs):	22

Corrective Action Summary:

Event date:	01/01/1978
Event:	STABILIZATION/INTERIM MEASURES DECISION-PRIMARY MEAS IS SOURCE REMOVL &/OR TRT
Event date:	01/01/1982
Event:	STABILIZATION/INTERIM MEASURES DECISION-GROUNDWATER EXTRACTION & TREATMENT
Event date:	01/01/1986
Event:	STABILIZATION CONSTRUCTION COMPLETED
Event date:	09/08/1988
Event:	INVESTIGATION IMPOSITION
Event date:	09/08/1988
Event:	CMS IMPOSITION
Event date:	06/23/1989
Event:	INVESTIGATION IMPOSITION
Event date:	06/01/1991
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	06/21/1994
Event:	RFA COMPLETED-ASSESSMENT WAS A RFA
Event date:	06/21/1994
Event:	RFA COMPLETED
Event date:	06/21/1994
Event:	DETERMINATION OF NEED FOR AN INVESTIGATION-INVESTIGATION IS NECESSARY
Event date:	06/30/1994
Event:	INVESTIGATION IMPOSITION
Event date:	06/30/1994
Event:	CMS IMPOSITION
Event date:	06/30/1994
Event:	STABILIZATION/INTERIM MEASURES DECISION-PRIMARY MEAS IS SOURCE REMOVL &/OR TRT
Event date:	04/17/1995
Event:	INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL
Event date:	06/30/1995

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Event:	CMS IMPOSITION
Event date:	01/01/1996
Event:	REFERRED TO A NON-RCRA AUTHORITY-REFERRED TO CERCLA
Event date:	01/01/1997
Event:	STABILIZATION CONSTRUCTION COMPLETED
Event date:	11/26/1997
Event:	CA PRIORITIZATION-HIGH CA PRIORITY
Event date:	04/02/1998
Event:	STABILIZATION MEASURES EVALUATION-FACILITY IS AMENABLE TO STABILIZATION
Event date:	04/02/1998
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/02/1998
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/02/1998
Event:	REFERRED TO A NON-RCRA AUTHORITY
Event date:	08/31/1999
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	12/23/1999
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	12/11/2000
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/11/2000
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/28/2000
Event:	RELEASE TO GW CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	12/28/2000
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-FACILITY DOES NOT MEET DEFINITION
Event date:	04/17/2001
Event:	INVESTIGATION COMPLETE
Event date:	11/22/2002
Event:	INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL
Event date:	01/05/2005
Event:	INVESTIGATION WORKPLAN RECEIVED
Event date:	01/31/2005
Event:	INVESTIGATION WORKPLAN APPROVED
Event date:	05/18/2005
Event:	INVESTIGATION REPORT RECEIVED
Event date:	08/16/2005
Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-YES, APPLICABLE AS OF THIS DATE
Event date:	08/16/2005

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Event:	HUMAN EXPOSURES CONTROLLED DETERMINATION-YES, APPLICABLE AS OF THIS DATE
Event date:	08/18/2005
Event:	INVESTIGATION COMPLETE
Event date:	08/18/2005
Event:	CA PROCESS IS TERMINATED-NO FURTHER ACTION

Facility Has Received Notices of Violations:

Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	12/01/2015
Date achieved compliance:	12/02/2015
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/02/2015
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	State Statute or Regulation
Date violation determined:	12/01/2015
Date achieved compliance:	12/02/2015
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/02/2015
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	State Statute or Regulation
Date violation determined:	12/23/2013
Date achieved compliance:	02/24/2014
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/23/2013
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	TSD - General Facility Standards
Date violation determined:	12/23/2013
Date achieved compliance:	02/24/2014
Violation lead agency:	State
Enforcement action:	SINGLE SITE CA/FO
Enforcement action date:	06/20/2014
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	3200
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	12/23/2013
Date achieved compliance:	02/24/2014
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/23/2013
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	State Statute or Regulation
Date violation determined:	12/23/2013
Date achieved compliance:	02/24/2014
Violation lead agency:	State
Enforcement action:	SINGLE SITE CA/FO
Enforcement action date:	06/20/2014
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	3200
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	State Statute or Regulation
Date violation determined:	04/25/2012
Date achieved compliance:	05/29/2012
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/01/2012
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	04/25/2012
Date achieved compliance:	05/29/2012
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/01/2012
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	04/25/2012
Date achieved compliance:	05/29/2012
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/01/2012
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - General
Date violation determined:	12/16/2008
Date achieved compliance:	12/16/2008
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/16/2008
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - General
Date violation determined:	10/10/2006
Date achieved compliance:	Not Reported
Violation lead agency:	State
Enforcement action:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement action date:	Not Reported
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	Not Reported
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Financial Requirements
Date violation determined:	10/11/2005
Date achieved compliance:	11/22/2005
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	12/13/2005
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General
Date violation determined:	06/01/2004
Date achieved compliance:	12/21/2006
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/01/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General
Date violation determined:	06/01/2004
Date achieved compliance:	12/21/2006
Violation lead agency:	State
Enforcement action:	SINGLE SITE CA/FO
Enforcement action date:	12/21/2006
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	114000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	07/03/2003
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	07/03/2003
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Financial Requirements
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	07/03/2003
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Financial Requirements
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Financial Requirements
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/24/2003
Date achieved compliance:	12/23/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	07/03/2003
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	06/11/2002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	06/11/2002
Date achieved compliance:	09/25/2003
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	06/17/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Area of violation:	TSD - General Facility Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Permits - Application
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Permits - Application
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Container Use and Management
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - General Facility Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Manifest
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Generators - Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Permits - Application
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date violation determined:	10/05/2000

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	REFERRAL TO ATTORNEY GENERAL
Enforcement action date:	05/30/2002
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Preparedness and Prevention
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	FINAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	1200000

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	Permits - Application
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Tank System Standards
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	INITIAL CIVIL JUDICIAL ACTION FOR COMPLIANCE AND/OR MONETARY PENALTY
Enforcement action date:	03/25/2004
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	Not Reported
Area of violation:	TSD - Manifest/Records/Reporting
Date violation determined:	10/05/2000
Date achieved compliance:	09/23/2002
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	10/19/2000
Enf. disposition status:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	F - 264.110-120.G
Area of violation:	TSD - Closure/Post-Closure
Date violation determined:	04/02/1997
Date achieved compliance:	06/05/1997
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	04/02/1997
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 262.30-34.C
Area of violation:	Generators - General
Date violation determined:	01/17/1996
Date achieved compliance:	01/31/1996
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	01/17/1996
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 264.340-352.O
Area of violation:	TSD - Incinerator Standards
Date violation determined:	05/19/1995
Date achieved compliance:	01/17/1996
Violation lead agency:	EPA
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/19/1995
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	EPA
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 264.190-201.J
Area of violation:	TSD - General
Date violation determined:	05/19/1995
Date achieved compliance:	01/17/1996

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Violation lead agency:	EPA
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/19/1995
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	EPA
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 264.170-177.I
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000
Regulation violated:	FR - 264.30-37.C
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000
Regulation violated:	FR - 268 ALL
Area of violation:	LDR - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Regulation violated:	FR - 264.30-37.C
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	FR - 262.50-60
Area of violation:	Generators - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000

Regulation violated:	FR - 264.170-177.I
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Regulation violated:	FR - 268 ALL
Area of violation:	LDR - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 270
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	FINAL 3008(A) COMPLIANCE ORDER
Enforcement action date:	12/13/1994
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	35000
Paid penalty amount:	35000
Regulation violated:	FR - 270
Area of violation:	TSD - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 262.50-60
Area of violation:	Generators - General
Date violation determined:	05/24/1993
Date achieved compliance:	06/24/1993
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	05/24/1993
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 264.140-150.H
Area of violation:	TSD - Financial Requirements
Date violation determined:	03/20/1991
Date achieved compliance:	01/22/1993
Violation lead agency:	State

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	04/06/1991
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported
Regulation violated:	FR - 270
Area of violation:	TSD - General
Date violation determined:	01/22/1990
Date achieved compliance:	05/03/1990
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	03/08/1990
Enf. disposition status:	Not Reported
Enf. disp. status date:	Not Reported
Enforcement lead agency:	State
Proposed penalty amount:	Not Reported
Final penalty amount:	Not Reported
Paid penalty amount:	Not Reported

Evaluation Action Summary:

Evaluation date:	10/12/2017
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	09/18/2017
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	07/26/2016
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/01/2015
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	State Statute or Regulation
Date achieved compliance:	12/02/2015
Evaluation lead agency:	State
Evaluation date:	12/01/2015
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Manifest/Records/Reporting
Date achieved compliance:	12/02/2015

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	State
Evaluation date:	11/06/2014
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/29/2014
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	03/05/2014
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	03/04/2014
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	02/24/2014
Evaluation:	NOT A SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	01/23/2014
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/23/2013
Evaluation:	SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/23/2013
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General Facility Standards
Date achieved compliance:	02/24/2014
Evaluation lead agency:	State
Evaluation date:	12/23/2013
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	State Statute or Regulation
Date achieved compliance:	02/24/2014

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	State
Evaluation date:	09/24/2012
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	08/22/2012
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	07/31/2012
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	04/25/2012
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General Facility Standards
Date achieved compliance:	05/29/2012
Evaluation lead agency:	State
Evaluation date:	04/25/2012
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	State Statute or Regulation
Date achieved compliance:	05/29/2012
Evaluation lead agency:	State
Evaluation date:	04/25/2012
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - Manifest
Date achieved compliance:	05/29/2012
Evaluation lead agency:	State
Evaluation date:	04/16/2012
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	04/10/2012
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	06/01/2010
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	State
Evaluation date:	05/25/2010
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/02/2009
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/16/2008
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - General
Date achieved compliance:	12/16/2008
Evaluation lead agency:	State
Evaluation date:	07/29/2008
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	06/10/2008
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/21/2006
Evaluation:	NOT A SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/10/2006
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - General
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	09/22/2006
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	EPA Contractor/Grantee
Evaluation date:	06/20/2006
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	State
Evaluation date:	12/19/2005
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/11/2005
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	TSD - Financial Requirements
Date achieved compliance:	11/22/2005
Evaluation lead agency:	State
Evaluation date:	08/03/2004
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State Contractor/Grantee
Evaluation date:	06/01/2004
Evaluation:	SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	06/01/2004
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General
Date achieved compliance:	12/21/2006
Evaluation lead agency:	State
Evaluation date:	12/23/2003
Evaluation:	NOT A SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	06/24/2003
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Financial Requirements
Date achieved compliance:	12/23/2003
Evaluation lead agency:	State
Evaluation date:	06/24/2003
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Container Use and Management
Date achieved compliance:	12/23/2003
Evaluation lead agency:	State
Evaluation date:	06/24/2003
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - General Facility Standards
Date achieved compliance:	12/23/2003

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	State
Evaluation date:	06/24/2003
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Tank System Standards
Date achieved compliance:	12/23/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Tank System Standards
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	Generators - Records/Reporting
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Container Use and Management
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Preparedness and Prevention
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	TSD - General Facility Standards
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	06/11/2002
Evaluation:	FOLLOW-UP INSPECTION
Area of violation:	Generators - Manifest
Date achieved compliance:	09/25/2003
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Tank System Standards
Date achieved compliance:	09/23/2002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - Manifest
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Preparedness and Prevention
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Manifest/Records/Reporting
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General Facility Standards
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Contingency Plan and Emergency Procedures
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Permits - Application
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Container Use and Management
Date achieved compliance:	09/23/2002
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	SIGNIFICANT NON-COMPLIER
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/05/2000
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - Records/Reporting
Date achieved compliance:	09/23/2002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	State
Evaluation date:	12/02/1998
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/20/1998
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	05/29/1998
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	12/16/1997
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	04/01/1997
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Closure/Post-Closure
Date achieved compliance:	06/05/1997
Evaluation lead agency:	State
Evaluation date:	01/17/1996
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - General
Date achieved compliance:	01/31/1996
Evaluation lead agency:	State
Evaluation date:	02/27/1995
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General
Date achieved compliance:	01/17/1996
Evaluation lead agency:	EPA
Evaluation date:	02/27/1995
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	02/27/1995
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Incinerator Standards
Date achieved compliance:	01/17/1996

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	EPA
Evaluation date:	01/22/1993
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	01/19/1993
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	LDR - General
Date achieved compliance:	06/24/1993
Evaluation lead agency:	State
Evaluation date:	01/19/1993
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Generators - General
Date achieved compliance:	06/24/1993
Evaluation lead agency:	State
Evaluation date:	01/19/1993
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General
Date achieved compliance:	06/24/1993
Evaluation lead agency:	State
Evaluation date:	03/20/1992
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	03/16/1992
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	02/14/1992
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	03/18/1991
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - Financial Requirements
Date achieved compliance:	01/22/1993
Evaluation lead agency:	State
Evaluation date:	10/19/1990
Evaluation:	OPERATION AND MAINTENANCE INSPECTION
Area of violation:	Not Reported
Date achieved compliance:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Evaluation lead agency:	State
Evaluation date:	01/23/1990
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	01/22/1990
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	TSD - General
Date achieved compliance:	05/03/1990
Evaluation lead agency:	State
Evaluation date:	07/07/1989
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	06/13/1989
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	11/24/1987
Evaluation:	FINANCIAL RECORD REVIEW
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State
Evaluation date:	10/06/1987
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not Reported
Date achieved compliance:	Not Reported
Evaluation lead agency:	State

US ENG CONTROLS: Federal institutional controls / engineering controls registries

EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Address:	HWY US 50 & AEROJET RD RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Actual Date:	01/05/2011
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	002

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Alternate Drinking Water, Permanent Replacement
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Alternate Drinking Water, Temporary Replacement
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Biological Treatment, (N.O.S.)
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Discharge
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Extraction
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Liquid Phase Carbon Adsorption
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Monitoring
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Operations & Maintenance (O&M)
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Publicly Owned Treatment Works (POTW)
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Engineering Control:	Pump And Treat
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Engineering Control:	UV Oxidation
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Groundwater
Engineering Control:	Air Stripping
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Groundwater
Engineering Control:	Biological Treatment, (Ex-Situ)
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Groundwater
Engineering Control:	Carbon Adsorption
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Groundwater
Engineering Control:	Chemical Reduction/Oxidation
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported
Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Groundwater
Engineering Control:	Extraction
Contact Name:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Contact Phone and Ext: Not Reported
Event Code Description: Not Reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Monitoring
Contact Name: Not Reported
Contact Phone and Ext: Not Reported
Event Code Description: Not Reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Reuse as Process Water
Contact Name: Not Reported
Contact Phone and Ext: Not Reported
Event Code Description: Not Reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: UV Oxidation
Contact Name: Not Reported
Contact Phone and Ext: Not Reported
Event Code Description: Not Reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Engineering Control: Cap
Contact Name: Not Reported
Contact Phone and Ext: Not Reported
Event Code Description: Not Reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 02/15/2011
Operable Unit: 05
Contaminated Media : Soil
Engineering Control: Disposal
Contact Name: Not Reported
Contact Phone and Ext: Not Reported
Event Code Description: Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil
Engineering Control:	Excavation
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil
Engineering Control:	Soil Vapor Extraction (in-situ)
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil
Engineering Control:	Treatment, (N.O.S.)
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil Gas
Engineering Control:	Monitoring
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

Action ID:	004
Action Name:	RECORD OF DECISION
Action Completion date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil Gas
Engineering Control:	Vapor Intrusion Pathway Mitigation, (N.O.S)
Contact Name:	Not Reported
Contact Phone and Ext:	Not Reported
Event Code Description:	Not Reported

US INST CONTROL: Federal institutional controls / engineering controls registries

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

EPA ID:	CAD000030494
Site ID:	Not Reported
Name:	AEROJET ROCKETDYNE INC
Action Name:	Not Reported
Address:	US HWY 50 AND AEROJET RD
	RANCHO CORDOVA, CA 95813-6000
EPA Region:	9
County:	SACRAMENTO
Event Code:	CA772PR
Inst. Control:	Not Reported
Actual Date:	04/17/1995
Complet. Date:	01/01/1900
Operable Unit:	Not Reported
Contaminated Media :	Not Reported
Contact Name :	JIM BUEHLER
Contact Phone and Ext :	916-355-4682
Event Code Description:	INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL

EPA ID:	CAD000030494
Site ID:	Not Reported
Name:	AEROJET ROCKETDYNE INC
Action Name:	Not Reported
Address:	US HWY 50 AND AEROJET RD
	RANCHO CORDOVA, CA 95813-6000
EPA Region:	9
County:	SACRAMENTO
Event Code:	CA772PR
Inst. Control:	Not Reported
Actual Date:	11/22/2002
Complet. Date:	01/01/1900
Operable Unit:	Not Reported
Contaminated Media :	Not Reported
Contact Name :	JIM BUEHLER
Contact Phone and Ext :	916-355-4682
Event Code Description:	INSTITUTIONAL CONTROLS ESTABLISHED-PROPRIETARY CONTROL

EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD
	RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Covenant
Actual Date:	07/31/2001
Complet. Date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Groundwater use/well drilling regulation
Actual Date:	07/31/2001
Complet. Date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Notice in Newspaper
Actual Date:	07/31/2001
Complet. Date:	07/20/2001
Operable Unit:	03
Contaminated Media :	Groundwater
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Covenant

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Groundwater
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD
	RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Deed Restriction
Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Groundwater
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD
	RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Groundwater use/well drilling regulation
Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Groundwater
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD
	RANCHO CORDOVA, CA 95670

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Covenant
Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Deed Notices
Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Land Use Restriction
Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD
	RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Covenant
Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil Gas
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD
	RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Deed Notices
Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil Gas
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported
EPA ID:	CAD980358832
Site ID:	0901718
Name:	AEROJET GENERAL CORP.
Action Name:	RECORD OF DECISION
Address:	HWY US 50 & AEROJET RD
	RANCHO CORDOVA, CA 95670
EPA Region:	09
County:	SACRAMENTO
Event Code:	Not Reported
Inst. Control:	Land Use Restriction
Actual Date:	01/05/2011
Complet. Date:	02/15/2011
Operable Unit:	05
Contaminated Media :	Soil Gas
Contact Name :	Not Reported
Contact Phone and Ext :	Not Reported
Event Code Description:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

ENVIROSTOR: State- and tribal - equivalent CERCLIS

Facility ID:	80001284
Status:	Refer: SMBRP
Status Date:	11/12/2010
Site Code:	510115
Site Type:	Corrective Action
Site Type Detailed:	Corrective Action
Acres:	0
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	MBR
Program Manager:	Not Reported
Supervisor:	William Beckman
Division Branch:	Cleanup Sacramento
Assembly:	08
Senate:	08
Special Program:	Not Reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not Reported
Latitude:	38.61555
Longitude:	-121.2032
APN:	123-01-1234
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	123-01-1234
Alias Type:	APN
Alias Name:	CAD000030494
Alias Type:	EPA Identification Number
Alias Name:	T10000002980
Alias Type:	GeoTracker Global ID
Alias Name:	100002
Alias Type:	Project Code (Site Code)
Alias Name:	510115
Alias Type:	Project Code (Site Code)
Alias Name:	34370002
Alias Type:	Envirostor ID Number
Alias Name:	80001284
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not Reported
Completed Document Type:	RCRA Facility Assessment Report
Completed Date:	06/21/1994
Comments:	Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not Reported
Completed Document Type: Correspondence
Completed Date: 02/15/1995
Comments: Placeholder for LUR for Injection Wells 1 and 2. Part of Permit Closure and not part of Corrective Action. Type changed to Correspondence.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not Reported
Completed Document Type: Correspondence
Completed Date: 11/22/2002
Comments: Tracking of Waterboard and EPA Land Use Restriction for off-site groundwater for Carve-out area. No DTSC jurisdiction or involvement in LUR

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: MCDONALD DOUGLAS (3500 ACRE PARCEL)
Completed Document Type: Consent Agreement
Completed Date: 06/30/1994
Comments: Not Reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not Reported
Completed Document Type: * Historical Operating Permit Authority
Completed Date: 06/10/1997
Comments: Not Reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AEROJET (8500 ACRE PARCEL)
Completed Document Type: Consent Decree
Completed Date: 09/08/1988
Comments: Not Reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not Reported
Completed Document Type: Consent Order
Completed Date: 08/16/1990
Comments: Not Reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not Reported
Completed Document Type: Consent Order
Completed Date: 06/10/1997
Comments: Not Reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not Reported
Completed Document Type: Unilateral Order (I/SE, RAO, CAO, EPA AO)
Completed Date: 06/23/1989
Comments: Not Reported

Completed Area Name: PROJECT WIDE

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Completed Sub Area Name: Not Reported
Completed Document Type: Interim Measures Questionnaire
Completed Date: 04/02/1998
Comments: Not Reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: SWMUs 55, 373, 374, 375
Completed Document Type: RFI Workplan
Completed Date: 01/31/2005
Comments: Changed date from 08/30/04 to 01/31/05 (03/14/06 - ps).

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AEROJET (8500 ACRE PARCEL)
Completed Document Type: Interim Measures Implementation Report
Completed Date: 01/01/1986
Comments: Not Reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: MCDONALD DOUGLAS (3500 ACRE PARCEL)
Completed Document Type: Interim Measures Implementation Report
Completed Date: 01/01/1997
Comments: Not Reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: UNITS L, M, N, P, Q
Completed Document Type: RFI Report
Completed Date: 04/17/2001
Comments: Not Reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: SWMUs 55, 373, 374, 375
Completed Document Type: RFI Report
Completed Date: 08/18/2005
Comments: ps 03/14/06 - Four Grit piles were analyzed for perchlorate and metals, no further action required.

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: MCDONALD DOUGLAS (3500 ACRE PARCEL)
Completed Document Type: Interim Measures Workplan
Completed Date: 06/30/1994
Comments: Not Reported

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: AEROJET (8500 ACRE PARCEL)
Completed Document Type: RFI Workplan
Completed Date: 06/01/1991
Comments: PHASE I WORKPLAN RSARACINO 19980402.17:17S

Completed Area Name: Sites With No Operable Unit
Completed Sub Area Name: UNITS L, M, N, P, Q
Completed Document Type: RFI Workplan
Completed Date: 12/23/1999
Comments: Not Reported

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Completed Area Name:	Sites With No Operable Unit
Completed Sub Area Name:	UNITS L, M, N, P, Q
Completed Document Type:	RFI Workplan
Completed Date:	08/31/1999
Comments:	Not Reported
Completed Area Name:	Sites With No Operable Unit
Completed Sub Area Name:	AEROJET (8500 ACRE PARCEL)
Completed Document Type:	Interim Measures Workplan
Completed Date:	01/01/1982
Comments:	Not Reported
Completed Area Name:	Sites With No Operable Unit
Completed Sub Area Name:	AEROJET (8500 ACRE PARCEL)
Completed Document Type:	Interim Measures Workplan
Completed Date:	01/01/1978
Comments:	Not Reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not Reported
Completed Document Type:	Groundwater Migration Controlled
Completed Date:	12/11/2000
Comments:	Not Reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not Reported
Completed Document Type:	Human Exposure Controlled
Completed Date:	12/11/2000
Comments:	Not Reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not Reported
Completed Document Type:	Human Exposure Controlled
Completed Date:	08/16/2005
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

SWEEPS UST: Local Lists of Registered Storage Tanks

Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	2-N-G-
SWRCB Tank Id:	34-000-035377-000001
Tank Status:	A
Capacity:	8121
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	32
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	2-S-G-
SWRCB Tank Id:	34-000-035377-000002
Tank Status:	A
Capacity:	8121
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	LEADED
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	7-E-2D
SWRCB Tank Id:	34-000-035377-000003
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1023-E-2D
SWRCB Tank Id:	34-000-035377-000004
Tank Status:	A
Capacity:	7500
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1023-W-2D
SWRCB Tank Id:	34-000-035377-000005
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1028-E-2D
SWRCB Tank Id:	34-000-035377-000006
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1030-S-2D
SWRCB Tank Id:	34-000-035377-000007
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1034-E-2D
SWRCB Tank Id:	34-000-035377-000008
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1037-S-2D
SWRCB Tank Id:	34-000-035377-000009
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1050-E-2D
SWRCB Tank Id:	34-000-035377-000010
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1056-S-2D
SWRCB Tank Id:	34-000-035377-000011
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1058-W-2D
SWRCB Tank Id:	34-000-035377-000012
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1062-N-2D
SWRCB Tank Id:	34-000-035377-000013
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1086-N-2D
SWRCB Tank Id:	34-000-035377-000014
Tank Status:	A
Capacity:	12000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	1096-W-2D
SWRCB Tank Id:	34-000-035377-000015
Tank Status:	A
Capacity:	10000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	5026-N-2D
SWRCB Tank Id:	34-000-035377-000016
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	5026-S-2D
SWRCB Tank Id:	34-000-035377-000017
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	5038-N-2D
SWRCB Tank Id:	34-000-035377-000018
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	5068-E-2D
SWRCB Tank Id:	34-000-035377-000019
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	5080-S-2D
SWRCB Tank Id:	34-000-035377-000020
Tank Status:	A
Capacity:	10000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	20019-E-2D
SWRCB Tank Id:	34-000-035377-000021
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	46035-S-2D
SWRCB Tank Id:	34-000-035377-000022
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	46046-S-2D
SWRCB Tank Id:	34-000-035377-000023
Tank Status:	A
Capacity:	350
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	46068-S-2D
SWRCB Tank Id:	34-000-035377-000024
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	48012-W-2D
SWRCB Tank Id:	34-000-035377-000025
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	48021-N-2D
SWRCB Tank Id:	34-000-035377-000026
Tank Status:	A
Capacity:	10000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	49010-S-2D
SWRCB Tank Id:	34-000-035377-000027
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	49015-N-2D
SWRCB Tank Id:	34-000-035377-000028
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	49016-N-2D
SWRCB Tank Id:	34-000-035377-000029
Tank Status:	A
Capacity:	5000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	49093-E-WO
SWRCB Tank Id:	34-000-035377-000030
Tank Status:	A
Capacity:	500
Active Date:	07-01-85
Tank Use:	OIL
STG:	W
Content:	WASTE OIL
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	7-W-CL-A
SWRCB Tank Id:	34-000-035377-000031
Tank Status:	A
Capacity:	10000
Active Date:	07-01-85
Tank Use:	UNKNOWN
STG:	W
Content:	Not Reported
Number Of Tanks:	Not Reported
Status:	Active
Comp Number:	35377
Number:	9
Board Of Equalization:	44-019214
Referral Date:	07-01-85
Action Date:	Not Reported
Created Date:	02-29-88
Owner Tank Id:	15011-E-2D
SWRCB Tank Id:	34-000-035377-000032
Tank Status:	A
Capacity:	3000
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	Not Reported

HIST UST: Local Lists of Registered Storage Tanks

File Number:	0001FD2A
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001FD2A.pdf
Region:	STATE
Facility ID:	00000019591
Facility Type:	Other
Other Type:	CONSTRUCTION
Contact Name:	E.L. MEYER
Telephone:	9163554621
Owner Name:	DELTA CONSTRUCTION COMPANY
Owner Address:	AEROJECT RD AND HWY 50
Owner City,St,Zip:	RANCHO CORDOVA, CA 95670
Total Tanks:	0004
Tank Num:	001
Container Num:	DELTA - LA
Year Installed:	1979
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	101

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Leak Detection:	Not Reported
Tank Num:	002
Container Num:	DELTA-GAS-
Year Installed:	1979
Tank Capacity:	00002000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	3/16
Leak Detection:	10
Tank Num:	003
Container Num:	DELTA-20
Year Installed:	1982
Tank Capacity:	00008000
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	3/16
Leak Detection:	10
Tank Num:	004
Container Num:	DELTA-3
Year Installed:	1984
Tank Capacity:	00000026
Tank Used for:	WASTE
Type of Fuel:	Not Reported
Container Construction Thickness:	6
Leak Detection:	Visual
Click here for Geo Tracker PDF:	http://www.web.edrnet.com/ordering/switchboard/redirect.aspx?s=GRR_CA_HISTUST_PDF&img_id=0001FD2A

CA FID UST: Local Lists of Registered Storage Tanks

Facility ID:	34006488
Regulated By:	UTNKA
Regulated ID:	00035377
Cortese Code:	Not Reported
SIC Code:	Not Reported
Facility Phone:	9163552740
Mail To:	Not Reported
Mailing Address:	P O BOX
Mailing Address 2:	Not Reported
Mailing City,St,Zip:	RANCHO CORDOVA 95670
Contact:	Not Reported
Contact Phone:	Not Reported
DUNs Number:	Not Reported
NPDES Number:	Not Reported
EPA ID:	Not Reported
Comments:	Not Reported
Status:	Active
Facility ID:	34006488
Regulated By:	UTNKA

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Regulated ID:	00035378
Cortese Code:	Not Reported
SIC Code:	Not Reported
Facility Phone:	9163554621
Mail To:	Not Reported
Mailing Address:	P O BOX 15699C
Mailing Address 2:	Not Reported
Mailing City,St,Zip:	RANCHO CORDOVA 95670
Contact:	Not Reported
Contact Phone:	Not Reported
DUNs Number:	Not Reported
NPDES Number:	Not Reported
EPA ID:	Not Reported
Comments:	Not Reported
Status:	Active

Facility ID:	34006488
Regulated By:	UTNKA
Regulated ID:	00035380
Cortese Code:	Not Reported
SIC Code:	Not Reported
Facility Phone:	9163554621
Mail To:	Not Reported
Mailing Address:	P O BOX 15699C
Mailing Address 2:	Not Reported
Mailing City,St,Zip:	RANCHO CORDOVA 95670
Contact:	Not Reported
Contact Phone:	Not Reported
DUNs Number:	Not Reported
NPDES Number:	Not Reported
EPA ID:	Not Reported
Comments:	Not Reported
Status:	Active

Facility ID:	34006488
Regulated By:	UTNKA
Regulated ID:	00035461
Cortese Code:	Not Reported
SIC Code:	Not Reported
Facility Phone:	9163554621
Mail To:	Not Reported
Mailing Address:	P O BOX
Mailing Address 2:	Not Reported
Mailing City,St,Zip:	RANCHO CORDOVA 95670
Contact:	Not Reported
Contact Phone:	Not Reported
DUNs Number:	Not Reported
NPDES Number:	Not Reported
EPA ID:	Not Reported
Comments:	Not Reported
Status:	Active

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Facility ID:	34006488
Regulated By:	UTNKI
Regulated ID:	00019591
Cortese Code:	Not Reported
SIC Code:	Not Reported
Facility Phone:	9163554621
Mail To:	Not Reported
Mailing Address:	P O BOX 156994 DEPT
Mailing Address 2:	Not Reported
Mailing City,St,Zip:	RANCHO CORDOVA 95670
Contact:	Not Reported
Contact Phone:	Not Reported
DUNs Number:	Not Reported
NPDES Number:	Not Reported
EPA ID:	Not Reported
Comments:	Not Reported
Status:	Inactive

US FIN ASSUR: Other Ascertainable Records

EPA ID:	CAD000030494
County:	Not Reported
Mechanism type:	S
Mechanism Type Description:	SURETY BOND GUARANTEEING PERFORMANCE
Cost estimate:	3958885.49
Face value:	7069501.9
Effective date:	2011-11-30 00:00:00
Provider:	WESTCHESTER FIRE INS. CO.
EPA region:	9

EPA ID:	CAD000030494
County:	Not Reported
Mechanism type:	L
Mechanism Type Description:	LETTER OF CREDIT
Cost estimate:	831922
Face value:	849392.36
Effective date:	2012-09-12 00:00:00
Provider:	WELL FARGO
EPA region:	9

EPA ID:	CAD000030494
County:	Not Reported
Mechanism type:	S
Mechanism Type Description:	SURETY BOND GUARANTEEING PERFORMANCE
Cost estimate:	864681.42
Face value:	7069501.9
Effective date:	2011-11-30 00:00:00
Provider:	WESTCHESTER FIRE INS. CO.
EPA region:	9

EPA ID:	CAD000030494

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

County:	Not Reported
Mechanism type:	X
Mechanism Type Description:	STANDBY TRUST FUND
Cost estimate:	864681.42
Face value:	0
Effective date:	2006-04-26 00:00:00
Provider:	BANK OF NEW YORK MELLON
EPA region:	9
EPA ID:	CAD000030494
County:	Not Reported
Mechanism type:	X
Mechanism Type Description:	STANDBY TRUST FUND
Cost estimate:	2000000
Face value:	8000000
Effective date:	2016-02-28 00:00:00
Provider:	GREAT AMERICAN E&S INS. COMPANY
EPA region:	9
EPA ID:	CAD000030494
County:	Not Reported
Mechanism type:	I
Mechanism Type Description:	INSURANCE
Cost estimate:	8000000
Face value:	8000000
Effective date:	2013-02-28 00:00:00
Provider:	INDIAN HARBORS INS.
EPA region:	9
EPA ID:	CAD000030494
County:	Not Reported
Mechanism type:	X
Mechanism Type Description:	STANDBY TRUST FUND
Cost estimate:	3958885.49
Face value:	0
Effective date:	2006-04-26 00:00:00
Provider:	BANK OF NEW YORK MELLON
EPA region:	9
EPA ID:	CAD000030494
County:	Not Reported
Mechanism type:	L
Mechanism Type Description:	LETTER OF CREDIT
Cost estimate:	3808899
Face value:	3888885.88
Effective date:	2012-09-12 00:00:00
Provider:	WACHOVIA BANK
EPA region:	9
EPA ID:	CAD000030494
County:	Not Reported
Mechanism type:	X

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

Mechanism Type Description:	STANDBY TRUST FUND
Cost estimate:	6000000
Face value:	8000000
Effective date:	2016-02-28 00:00:00
Provider:	GREAT AMERICAN E&S INS. COMPANY
EPA region:	9

ROD: Other Ascertainable Records

EPA ID:	CAD980358832
RG:	9
Site ID:	901718
Name:	AEROJET GENERAL CORP.
Action:	GOVT Decision Document (ROD)
Operable Unit Number:	WESTERN GW OU
SEQ ID:	2
Action Completion:	2001-07-20 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported

EPA ID:	CAD980358832
RG:	9
Site ID:	901718
Name:	AEROJET GENERAL CORP.
Action:	GOVT ROD for PRP Remedy
Operable Unit Number:	PERIMETER GW
SEQ ID:	4
Action Completion:	2011-02-15 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported

EPA ID:	CAD980358832
RG:	9
Site ID:	901718
Name:	AEROJET GENERAL CORP.
Action:	GOVT ROD for PRP Remedy
Operable Unit Number:	BOUNDARY OU GW & SOIL
SEQ ID:	5
Action Completion:	2015-07-22 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported

PRP: Other Ascertainable Records

PRP Name:	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.
	AEROJET-GENERAL CORP.

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

AEROJET-GENERAL CORP.

AEROJET-GENERAL CORP.

AEROJET-GENERAL CORP.

CORDOVA CHEMICAL CO.

CORDOVA CHEMICAL CO.

CORDOVA CHEMICAL CO.

CORDOVA CHEMICAL CO.

CORDOVA CHEMICAL CO.

PADS: Other Ascertainable Records

EPAID:	CAD000030494
Facility name:	US GEN CORP AEROJET SACRAMENTO
Facility Address:	HIGHWAY 50 & AEROJET RD RANCHO CORDOVA, CA 95670
Facility country:	US
Generator:	Yes
Storer:	No
Transporter:	No
Disposer:	No
Research facility:	No
Smelter:	No
Facility owner name:	GENCORP AEROJET
Contact title:	Not Reported
Contact name:	ED MYER
Contact tel:	916-355-4621
Contact extension:	Not Reported
Contact Email:	Not Reported
Mailing address:	PO BOX 15699 SACRAMENTO, CA 95852-1699
Mailing country:	US
Cert. date:	04/02/1990

CONSENT: Other Ascertainable Records

EPA ID:	CAD980358832
Site ID:	Not Reported
Case Title:	U.S. V. AEROJET-GENERAL CORPORATION & CORDOVA CHEMICAL COMPANY
Court Num:	86-0064 86-63
District:	California, East
Entered Date:	19980730
Name:	AEROJET GENERAL CORP
Address:	HWY 50 AND AEROJET RD
City:	RANCHO CORDOVA
County:	Not Reported
State:	CA
Zip:	95670

AEROJET ROCKETDYNE INC, US HWY 50 AND AEROJET RD, RANCHO CORDOVA, CA (Continued)

EPA ID:	CAD980358832
Site ID:	Not Reported
Case Title:	U.S. V. AEROJET-GENERAL CORPORATION & CORDOVA CHEMICAL COMPANY
Court Num:	86-0064 86-63
District:	California, East
Entered Date:	20020415
Name:	AEROJET GENERAL CORP
Address:	HWY 50 AND AEROJET RD
City:	RANCHO CORDOVA
County:	Not Reported
State:	CA
Zip:	95670

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
ENVIRONMENTAL RECORDS						
Federal NPL site list						
US	NPL	National Priority List	EPA	03/11/2019	03/14/2019	04/01/2019
US	Proposed NPL	Proposed National Priority List Sites	EPA	03/11/2019	03/14/2019	04/01/2019
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
Federal CERCLIS list						
US	SEMS	Superfund Enterprise Management System	EPA	03/11/2019	03/14/2019	04/17/2019
Federal RCRA CORRACTS facilities list						
US	CORRACTS	Corrective Action Report	EPA	03/25/2019	03/27/2019	04/17/2019
Federal RCRA TSD facilities list						
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
Federal RCRA generators list						
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
US	RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generators	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
Federal institutional controls / engineering controls registries						
US	LUCIS	Land Use Control Information System	Department of the Navy	02/22/2019	03/07/2019	04/17/2019
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	01/31/2019	02/04/2019	03/08/2019
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	01/31/2019	02/04/2019	03/08/2019
Federal ERNS list						
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	02/04/2019	02/08/2019	03/08/2019
State and tribal - equivalent NPL						
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	01/28/2019	01/29/2019	03/05/2019
State and tribal - equivalent CERCLIS						
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	01/28/2019	01/29/2019	03/05/2019
State and tribal landfill / solid waste disposal						
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	02/11/2019	02/12/2019	03/05/2019
State and tribal leaking storage tank lists						
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/13/2018	05/18/2018	07/20/2018
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	04/12/2018	05/18/2018	07/20/2018
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/10/2018	05/18/2018	07/20/2018
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	04/25/2018	05/18/2018	07/20/2018
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	04/24/2018	05/18/2018	07/20/2018
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	04/01/2018	05/18/2018	07/20/2018
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	05/08/2018	05/18/2018	07/20/2018
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/12/2018	05/18/2018	07/20/2018
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
State and tribal registered storage tank lists						
CA	UST	Active UST Facilities	SWRCB	12/10/2018	12/11/2018	01/15/2019
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	03/11/2019	03/13/2019	04/03/2019
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	12/04/2018	12/06/2018	12/14/2018
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	04/12/2018	05/18/2018	07/20/2018
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/10/2018	05/18/2018	07/20/2018
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	04/25/2018	05/18/2018	07/20/2018
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	04/24/2018	05/18/2018	07/20/2018
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	04/01/2018	05/18/2018	07/20/2018
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/13/2018	05/18/2018	07/20/2018
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	05/08/2018	05/18/2018	07/20/2018
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/12/2018	05/18/2018	07/20/2018
US	FEMA UST	Underground Storage Tank Listing	FEMA	05/15/2017	05/30/2017	10/13/2017

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
State and tribal voluntary cleanup sites						
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	01/28/2019	01/29/2019	03/05/2019
State and tribal Brownfields sites						
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	03/25/2019	03/26/2019	04/29/2019
Other Records						
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	12/31/2018	02/11/2019	03/21/2019
US	ROD	Records Of Decision	EPA	03/11/2019	03/14/2019	04/01/2019
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	03/11/2019	03/14/2019	03/21/2019
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
CA	SWRCY	Recycler Database	Department of Conservation	03/11/2019	03/13/2019	04/30/2019
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	09/11/2018	09/12/2018	10/11/2018
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	02/24/2019	02/26/2019	04/17/2019
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	01/31/2019	02/04/2019	03/08/2019
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2005	08/07/2009	10/22/2009
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	07/01/2014	09/10/2014	10/20/2014
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	03/11/2019	03/14/2019	03/21/2019
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	Delisted NPL	National Priority List Deletions	EPA	03/11/2019	03/14/2019	04/01/2019
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	03/11/2019	03/14/2019	04/17/2019
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	02/08/2019	02/08/2019	03/21/2019
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	12/03/2018	01/29/2019	03/21/2019
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	02/24/2019	02/26/2019	04/17/2019
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	12/17/2018	12/18/2018	01/11/2019
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	12/31/2005	02/06/2006	01/11/2007
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	01/31/2015	07/08/2015	10/13/2015
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	06/23/2017	10/11/2017	11/03/2017
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	11/27/2018	02/27/2019	04/01/2019
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	PRP	Potentially Responsible Parties	EPA	03/11/2019	03/14/2019	04/17/2019
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2016	01/10/2018	01/12/2018
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	SSTS	Section 7 Tracking Systems	EPA	12/31/2009	12/10/2010	02/25/2011
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	PADS	PCB Activity Database System	EPA	09/14/2018	10/11/2018	12/07/2018
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	08/30/2016	09/08/2016	10/21/2016
US	RADINFO	Radiation Information Database	Environmental Protection Agency	01/02/2019	01/03/2019	03/15/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	02/15/2019	03/05/2019	03/15/2019
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RMP	Risk Management Plans	Environmental Protection Agency	02/01/2019	02/14/2019	03/21/2019
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017
US	PWS	Public Water System Data	EPA	12/17/2013	01/09/2014	10/15/2014
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	12/31/2017	06/12/2018	08/06/2018
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	10/24/2018	01/24/2019	03/05/2019
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	12/20/2018	12/21/2018	02/28/2019
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	01/23/2019	02/26/2019	04/01/2019
CA	CUPA SAN FRANCISCO CO	CUPA Facility Listing	San Francisco County Department of Environmen	04/18/2019	04/19/2019	04/30/2019
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	03/04/2019	03/05/2019	04/01/2019
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	02/27/2019	02/28/2019	04/01/2019
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	03/19/2019	03/22/2019	04/09/2019
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	12/13/2018	01/17/2019	03/05/2019
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2017	06/20/2018	08/06/2018
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	11/01/2018	11/02/2018	12/13/2018
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	01/10/2019	01/23/2019	03/05/2019
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	02/15/2019	02/19/2019	03/05/2019
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	03/26/2019	03/27/2019	04/30/2019
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2017	10/10/2018	11/16/2018
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	02/19/2019	02/20/2019	03/05/2019
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	01/07/2019	01/08/2019	03/05/2019
CA	ICE	ICE	Department of Toxic Subsances Control	02/19/2019	02/20/2019	03/05/2019
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	12/10/2018	12/11/2018	01/15/2019
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	02/28/2019	03/01/2019	04/02/2019
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
CA	MINES	Mines Site Location Listing	Department of Conservation	12/10/2018	12/12/2018	01/15/2019
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	02/20/2019	03/05/2019	04/02/2019
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	02/11/2019	02/12/2019	03/07/2019
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	03/04/2019	03/05/2019	04/05/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	PROC	Certified Processors Database	Department of Conservation	03/11/2019	03/13/2019	04/29/2019
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	03/18/2019	03/19/2019	04/29/2019
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	01/28/2019	01/29/2019	03/05/2019
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	04/27/2018	06/13/2018	07/17/2018
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	05/08/2018	07/11/2018	09/13/2018
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	03/03/2019	03/05/2019	04/01/2019
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	03/05/2019	03/05/2019	04/02/2019
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	12/10/2018	12/11/2018	01/15/2019
CA	PFAS	PFAS Contamination Site Location Listing	State Water Resources Control Board	02/21/2019	02/22/2019	04/15/2019
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	10/22/2018	10/23/2018	11/30/2018
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	02/19/2019	02/21/2019	04/01/2019
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2017	01/17/2019	04/01/2019
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/10/2018	09/11/2018	09/14/2018
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	10/22/2018	10/23/2018	11/30/2018
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	10/22/2018	10/23/2018	11/30/2018
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	12/10/2018	12/11/2018	01/15/2019
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	03/11/2019	03/13/2019	04/29/2019

HISTORICAL USE RECORDS

US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013

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St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
COUNTY RECORDS						
CA	CS ALAMEDA	Contaminated Sites	Alameda County Environmental Health Services	01/09/2019	01/11/2019	03/05/2019
CA	UST ALAMEDA	Underground Tanks	Alameda County Environmental Health Services	01/07/2019	01/08/2019	03/08/2019
CA	CUPA AMADOR	CUPA Facility List	Amador County Environmental Health	01/07/2019	01/08/2019	03/07/2019
CA	CUPA BUTTE	CUPA Facility Listing	Public Health Department	04/21/2017	04/25/2017	08/09/2017
CA	CUPA CALVERAS	CUPA Facility Listing	Calveras County Environmental Health	01/24/2019	01/25/2019	03/05/2019
CA	CUPA COLUSA	CUPA Facility List	Health & Human Services	02/27/2019	02/28/2019	04/01/2019
CA	SL CONTRA COSTA	Site List	Contra Costa Health Services Department	02/14/2019	02/19/2019	03/08/2019
CA	CUPA DEL NORTE	CUPA Facility List	Del Norte County Environmental Health Divisio	01/16/2019	02/05/2019	03/05/2019
CA	CUPA EL DORADO	CUPA Facility List	El Dorado County Environmental Management Dep	02/27/2019	02/28/2019	04/01/2019
CA	CUPA FRESNO	CUPA Resources List	Dept. of Community Health	04/10/2019	04/11/2019	04/30/2019
CA	CUPA GLENN	CUPA Facility List	Glenn County Air Pollution Control District	01/22/2018	01/24/2018	03/14/2018
CA	CUPA HUMBOLDT	CUPA Facility List	Humboldt County Environmental Health	12/11/2018	12/13/2018	01/15/2019
CA	CUPA IMPERIAL	CUPA Facility List	San Diego Border Field Office	01/18/2019	01/23/2019	03/05/2019
CA	CUPA INYO	CUPA Facility List	Inyo County Environmental Health Services	04/02/2018	04/03/2018	06/14/2018
CA	UST KERN	Underground Storage Tank Sites & Tank Listing	Kern County Environment Health Services Depar	01/28/2019	02/07/2019	03/08/2019
CA	CUPA KINGS	CUPA Facility List	Kings County Department of Public Health	02/14/2019	02/19/2019	03/05/2019
CA	CUPA LAKE	CUPA Facility List	Lake County Environmental Health	02/08/2019	02/12/2019	03/12/2019
CA	CUPA LASSEN	CUPA Facility List	Lassen County Environmental Health	01/17/2019	01/18/2019	03/05/2019
CA	AOCONCERN	Key Areas of Concerns in Los Angeles County		03/30/2009	03/31/2009	10/23/2009
CA	HMS LOS ANGELES	HMS: Street Number List	Department of Public Works	12/19/2018	01/10/2019	03/07/2019
CA	LF LOS ANGELES	List of Solid Waste Facilities	La County Department of Public Works	01/14/2019	01/15/2019	03/07/2019
CA	LF LOS ANGELES CITY	City of Los Angeles Landfills	Engineering & Construction Division	01/01/2019	01/15/2019	03/07/2019
CA	SITE MIT LOS ANGELES	Site Mitigation List	Community Health Services	01/30/2019	02/01/2019	03/07/2019
CA	UST EL SEGUNDO	City of El Segundo Underground Storage Tank	City of El Segundo Fire Department	01/21/2017	04/19/2017	05/10/2017
CA	UST LONG BEACH	City of Long Beach Underground Storage Tank	City of Long Beach Fire Department	03/09/2017	03/10/2017	05/03/2017
CA	UST TORRANCE	City of Torrance Underground Storage Tank	City of Torrance Fire Department	10/02/2018	10/05/2018	11/02/2018
CA	CUPA MADERA	CUPA Facility List	Madera County Environmental Health	02/20/2019	02/22/2019	03/07/2019
CA	UST MARIN	Underground Storage Tank Sites	Public Works Department Waste Management	09/26/2018	10/04/2018	11/02/2018
CA	CUPA MERCED	CUPA Facility List	Merced County Environmental Health	08/29/2018	08/31/2018	09/19/2018
CA	CUPA MONO	CUPA Facility List	Mono County Health Department	02/21/2019	02/26/2019	04/01/2019
CA	CUPA MONTEREY	CUPA Facility Listing	Monterey County Health Department	02/05/2019	02/07/2019	03/05/2019
CA	LUST NAPA	Sites With Reported Contamination	Napa County Department of Environmental Manag	01/09/2017	01/11/2017	03/02/2017
CA	UST NAPA	Closed and Operating Underground Storage Tank Sites	Napa County Department of Environmental Manag	02/21/2019	02/22/2019	03/08/2019
CA	CUPA NEVADA	CUPA Facility List	Community Development Agency	01/25/2019	01/29/2019	03/05/2019
CA	IND_SITE ORANGE	List of Industrial Site Cleanups	Health Care Agency	01/02/2019	02/07/2019	03/05/2019
CA	LUST ORANGE	List of Underground Storage Tank Cleanups	Health Care Agency	01/02/2019	02/08/2019	03/06/2019
CA	UST ORANGE	List of Underground Storage Tank Facilities	Health Care Agency	01/02/2019	02/05/2019	03/08/2019
CA	MS PLACER	Master List of Facilities	Placer County Health and Human Services	02/28/2019	03/01/2019	04/12/2019
CA	CUPA PLUMAS	CUPA Facility List	Plumas County Environmental Health	01/14/2019	01/18/2019	03/05/2019
CA	LUST RIVERSIDE	Listing of Underground Tank Cleanup Sites	Department of Environmental Health	04/11/2019	04/12/2019	04/30/2019
CA	UST RIVERSIDE	Underground Storage Tank Tank List	Department of Environmental Health	01/29/2019	01/31/2019	03/08/2019
CA	CS SACRAMENTO	Toxic Site Clean-Up List	Sacramento County Environmental Management	11/07/2018	01/04/2019	03/05/2019
CA	ML SACRAMENTO	Master Hazardous Materials Facility List	Sacramento County Environmental Management	11/07/2018	12/28/2018	03/05/2019
CA	CUPA SAN BENITO	CUPA Facility List	San Benito County Environmental Health	03/11/2019	03/13/2019	04/30/2019
CA	PERMITS SAN BERNARDINO	Hazardous Material Permits	San Bernardino County Fire Department Hazardo	02/27/2019	02/28/2019	04/02/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	HMMD SAN DIEGO	Hazardous Materials Management Division Database	Hazardous Materials Management Division	03/04/2019	03/05/2019	04/02/2019
CA	LF SAN DIEGO	Solid Waste Facilities	Department of Health Services	04/18/2018	04/24/2018	06/19/2018
CA	SAN DIEGO CO LOP	Local Oversight Program Listing	Department of Environmental Health	03/06/2019	03/06/2019	04/29/2019
CA	SAN DIEGO CO. SAM	Environmental Case Listing	San Diego County Department of Environmental	03/23/2010	06/15/2010	07/09/2010
CA	LUST SAN FRANCISCO	Local Oversite Facilities	Department Of Public Health San Francisco Cou	09/19/2008	09/19/2008	09/29/2008
CA	UST SAN FRANCISCO	Underground Storage Tank Information	Department of Public Health	11/05/2018	11/06/2018	12/14/2018
CA	UST SAN JOAQUIN	San Joaquin Co. UST	Environmental Health Department	06/22/2018	06/26/2018	07/11/2018
CA	CUPA SAN LUIS OBISPO	CUPA Facility List	San Luis Obispo County Public Health Departme	02/13/2019	02/15/2019	03/14/2019
CA	BI SAN MATEO	Business Inventory	San Mateo County Environmental Health Service	03/04/2019	03/13/2019	04/29/2019
CA	LUST SAN MATEO	Fuel Leak List	San Mateo County Environmental Health Service	12/13/2018	12/18/2018	01/23/2019
CA	CUPA SANTA BARBARA	CUPA Facility Listing	Santa Barbara County Public Health Department	09/08/2011	09/09/2011	10/07/2011
CA	CUPA SANTA CLARA	Cupa Facility List	Department of Environmental Health	02/13/2019	02/19/2019	03/06/2019
CA	HIST LUST SANTA CLARA	HIST LUST - Fuel Leak Site Activity Report	Santa Clara Valley Water District	03/29/2005	03/30/2005	04/21/2005
CA	LUST SANTA CLARA	LOP Listing	Department of Environmental Health	03/03/2014	03/05/2014	03/18/2014
CA	SAN JOSE HAZMAT	Hazardous Material Facilities	City of San Jose Fire Department	01/30/2019	02/01/2019	03/07/2019
CA	CUPA SANTA CRUZ	CUPA Facility List	Santa Cruz County Environmental Health	01/21/2017	02/22/2017	05/23/2017
CA	CUPA SHASTA	CUPA Facility List	Shasta County Department of Resource Manageme	06/15/2017	06/19/2017	08/09/2017
CA	LUST SOLANO	Leaking Underground Storage Tanks	Solano County Department of Environmental Man	03/05/2019	03/07/2019	04/29/2019
CA	UST SOLANO	Underground Storage Tanks	Solano County Department of Environmental Man	03/05/2019	03/07/2019	04/03/2019
CA	CUPA SONOMA	Cupa Facility List	County of Sonoma Fire & Emergency Services De	12/21/2018	12/27/2018	01/15/2019
CA	LUST SONOMA	Leaking Underground Storage Tank Sites	Department of Health Services	04/03/2019	04/11/2019	04/30/2019
CA	CUPA STANISLAUS	CUPA Facility List	Stanislaus County Department of Ennvironmenta	12/11/2018	12/13/2018	01/15/2019
CA	UST SUTTER	Underground Storage Tanks	Sutter County Environmental Health Services	02/28/2019	03/01/2019	04/03/2019
CA	CUPA TEHAMA	CUPA Facility List	Tehama County Department of Environmental Hea	12/13/2018	12/18/2018	01/15/2019
CA	CUPA TRINITY	CUPA Facility List	Department of Toxic Substances Control	01/18/2019	01/23/2019	03/06/2019
CA	CUPA TULARE	CUPA Facility List	Tulare County Environmental Health Services D	12/26/2018	12/27/2018	01/15/2019
CA	CUPA TUOLUMNE	CUPA Facility List	Divison of Environmental Health	04/23/2018	04/25/2018	06/25/2018
CA	BWT VENTURA	Business Plan, Hazardous Waste Producers, and Operating Unde	Ventura County Environmental Health Division	12/26/2018	01/24/2019	02/28/2019
CA	LF VENTURA	Inventory of Illegal Abandoned and Inactive Sites	Environmental Health Division	12/01/2011	12/01/2011	01/19/2012
CA	LUST VENTURA	Listing of Underground Tank Cleanup Sites	Environmental Health Division	05/29/2008	06/24/2008	07/31/2008
CA	MED WASTE VENTURA	Medical Waste Program List	Ventura County Resource Management Agency	12/26/2018	01/24/2019	03/07/2019
CA	UST VENTURA	Underground Tank Closed Sites List	Environmental Health Division	02/26/2019	03/13/2019	04/03/2019
CA	UST YOLO	Underground Storage Tank Comprehensive Facility Report	Yolo County Department of Health	12/26/2018	01/03/2019	01/16/2019
CA	CUPA YUBA	CUPA Facility List	Yuba County Environmental Health Department	02/08/2019	02/12/2019	03/06/2019

STREET AND ADDRESS INFORMATION

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Appendix H

DRAINAGE STUDY
FOR THE PRESERVE

Rancho Cordova, California
October 2018
Updated June 2019
Updated October 2019
Updated January 2020

Prepared for: Grantline Road, LLC

Prepared by: Ruggeri-Jensen-Azar
2541 Warren Drive
Rocklin, Ca.
(916) 630-8900

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1.0 Introduction

This Study addresses the required drainage analysis for The Preserve Tentative Subdivision Map by providing hydrologic and hydraulic analysis, Low Impact Development (LID), treatment control measures and hydromodification management for the proposed development area.

The following information is provided in this Drainage Study:

- A delineation of existing watersheds within the project limits (Figure 2).
- A delineation of proposed watersheds within the project limits (Figure 3).
- Hydrologic analyses for primary watersheds.
- LID Credits and Treatment BMP Sizing Calculations.
- Sacramento Hydrology Model (SAHM) Project Report.
- HEC-HMS analysis of 100-year, 24-hour storm (existing condition vs. developed condition)
- HEC-RAS analysis of Morrison Creek through project limits (10-year and 100-year storms)

1.1 Study Area

The Study Area for this Drainage Study is The Preserve project limits (see Figure 1), which includes offsite open space tributary to the headwaters of Morrison Creek. Morrison Creek flows through the project limits adjacent to the proposed development area. The overall project size is 283.5 acres, but only 100.0 acres will be developed while the remaining area will be classified as open space. Proposed storm drain infrastructure represented herein reflects the storm drain infrastructure needed to serve The Preserve area under buildout land use conditions as shown on the Tentative Subdivision Map. The vertical datum referenced with the elevation data used in this report is NAVD 88.

1.2 Storm Drainage Facility Design Standards

In this Drainage Study, and in accordance with City of Rancho Cordova and County of Sacramento design methods, proposed storm drain facilities have been sized based on the following criteria:

- Underground storm drains: The design of “onsite” storm drain systems will follow the Nolte Method design charts.
- Bio-Retention Basins: Storage volume calculated in the LID Credits and Treatment BMP Sizing Calculations (per the adopted “Stormwater Quality Design Manual” for the Sacramento Region) and included in the SAHM model.
- Hydromodification Basin: The design of the hydromodification (hydromod) basin was sized using the criteria in the SAMH program (comparing existing condition vs developed condition using Low Flow Threshold: 25 percent of a 2-year storm and High Flow

Threshold: 10-year storm). The basin was evaluated for the 10-year, 24-hour storm; 100-year, 24-hour storm and 100-year, 10-day storm with HEC-HMS.

2.0 Hydrology

The Existing Condition Drainage Map (Figure 2) and Developed Condition Drainage Map (Figure 3) delineate the watersheds for each condition within The Preserve. Copies of both maps are included in the Appendix along with output from SacCalc and HEC-HMS.

2.1 Sacramento Method

The Sacramento Method develops hydrographs for use in programs like HEC-HMS and XP-SWMM. This method also calculates peak flows from the hydrographs it develops. The hydrographs are developed based on a design storm, initial losses, constant losses, lag time and land use. The major contributor in loss coefficients is Soil Type. The U.S. Soil Conservation Service (SCS) has classified soils into four hydrologic categories (A, B, C & D) based on infiltration rates from prolonged wetting. Soil Type A has the highest infiltration rate and Type D has the lowest infiltration rate. The majority of The Preserve site is Type C with a small area near the creek being Type C/D. Below is a summary of the coefficients used in the program called SacCalc developed to calculate the Sacramento Method and Nolte Method.

Table 2-1, Hydrology Coefficients

Land Use	Initial Loss (in)	*Constant Losses (in/hr)	Percent Impervious	Precipitation Zone
Open Space (Grassland)	0.10	0.10	2	2
Recreation (Park)	0.10	0.10	5	2
Low Density Residential (6-8 du/ac)	0.10	0.10	50	2

*Notes:

1. Constant losses are based on combination of Type C and D soils.

The Design Storm selected for The Preserve project is the 100-year, 24-hour storm. The 10-year, 24-hour storm and 100-year, 10-day storm were also evaluated for the Developed Condition and are included in Appendix 1. This 100-year, 24-hour storm is appropriate for an analysis of a Hydromod Basin designed to reduce the peak flow from a Developed Condition to the Existing Condition peak flow. The hydrograph created with the Sacramento Method will be used in the Hydromod Basin routing with HEC-HMS. Below is a summary of the peak flows developed by the Sacramento Method.

Table 2-2

Project Development	100-year, 24-hour Peak Flow
Existing Condition	134 cfs
Developed Condition	171 cfs

2.2 HEC-HMS Modeling

The proposed Hydromodification Basin, to be discussed further in this study, is designed for 25 percent of the 2-year storm up to a 10-year storm using SAHM. While this addresses low flow design criteria, the basin is also analyzed for a 100-year, 24-hour storm using HEC-HMS. The 10-year, 24-hour storm and 100-year, 10-day storm were also evaluated for the Developed Condition and are included in Appendix 4. The stage-storage-discharge relationships for the hydromodification basin are provided in Table 1 of Appendix 4 and were applied to the HEC-HMS model. The 100-year, 24-hour hydrograph developed by SacCalc (using the Sacramento Method) for the Developed Condition is routed through the basin and the peak outflow is compared to the Existing Condition peak flow. The Developed Condition outlet peak flow from the basin is 117 cfs. This satisfies the requirement that the Developed Condition shall not exceed the Existing Condition peak flow.

2.3 Nolte Method

The storm drainage infrastructure to be designed within the public streets will be based on the Nolte Method for the Developed Condition. The project site is located in Hydrologic Zone 1.

The Tentative Subdivision Map shows preliminary pipe sizes that will be further evaluated with a detailed hydraulic analysis during improvement plan design.

3.0 Stormwater Quality Control Measures

The Stormwater Quality Design Manual (SQDM) for the Sacramento Region (July 2018) is the governing document for stormwater quality in Sacramento County. From Table 3-2 of the SQDM, the requirements for a single family residential development project over 20 acres are Source Control, Hydromodification Control, LID Control and Treatment Control. The source controls, storm drain markings and others, will be addressed with the grading and improvement plans. Hydromodification controls are determined with SAHM. LID and Treatment Controls are calculated with LID Credits and Treatment BMP Sizing Calculator. The SAHM Project Report and LID Credits and Treatment BMP Sizing output are provided in the Appendix. Included in the Appendix is Figure 4 showing the Stormwater Quality Control Measures.

3.1 Hydromodification Control

The SAHM developed for The Preserve project evaluates 100.0 acres of development. The remaining 185.3 acres within the project limits is left untouched and is not part of the model for the development area. SAHM compares the percent imperviousness of the Existing Condition (pre-project) and the Developed Condition (mitigated). A Hydromodification (Hydromod) Basin was prepared for the Developed Condition with 25 percent of a 2-year storm up to a 10-year storm being routed through the basin with SAMH. All the runoff from the Developed Condition is conveyed to the Hydromod Basin by overland release or storm drain pipe. The mitigated flows discharged from the basin do not exceed the pre-project flows.

3.2 LID Controls

The goal of LID controls is to reduce the impact of development by using design techniques that mimic a site's predevelopment runoff. The design techniques that will be implemented on The Preserve project are disconnected pavement, disconnected roof drains, interceptor trees, bio-retention basin and Stormwater Quality/Hydromod Basin.

The project is required to earn 100 points of LID credits. Each measure listed above earns points and is documented in the LID Credits and Treatment BMP Sizing Calculator (See Appendix A.3). The major contributor of LID credits is the dedication of open space. The Preserve project has 185.3 acres within the project limits that will be dedicated as open space. In addition to open space the project provides 65,000 square feet of bio-retention area to reach 100 points. The project satisfied that requirement by providing two basins adjacent to the Hydromod Basin. The bio-retention basins will route overflow runoff to the Hydromod Basin prior to discharge into the creek. Large storms, greater than a 10-year storm, will bypass the bio-retention areas and go directly to the Hydromod Basin. Diversion structures will be designed upstream of the bio-retention areas to direct larger flows into the Hydromod Basin.

3.3 Treatment Controls

The Preserve project will provide multiple treatment controls as part of the overall design of the project. Each LID control implemented reduces the size of the dedicated Stormwater Quality/Hydromod Basin. The final piece for treatment control is the Hydromod Basin. It has enough capacity to meet the requirements for Volume Based Design (WQV).

Table 3-1

Basin	Required Water Quality Volume (ac-ft)	Storage Volume Provided (ac-ft)	Water Quality Flow from hydromod basin @ storage volume (cfs)	Bio-Retention Area (sq. ft.)
Hydromod Basin	1.73	1.73	1.6	-
Bio-retention Basin 1	-	-	-	39,000
Bio-retention Basin 2	-	-	-	26,700

4.0 Morrison Creek Water Surface Elevation Analysis

Morrison Creek conveys runoff from the east side of Grant Line Road at the projects east boundary through the project limits to the western edge of The Preserve project site. There are two man-made ponds located near the western edge of the project site that store runoff. Per a requirement from the City of Rancho Cordova, The Preserve project evaluated the 10-year and 100-year water surface elevations of Morrison Creek through the project limits. The existing 10-year, 24-hour and 100-year, 24-hour storm flowrates for Morrison Creek are 194 cfs and 361 cfs respectively. These existing flowrates were developed for the Master Drainage Study (MDS) for Rio Del Oro in August 2005 by Wood Rodgers and calculated with the Sacramento Method. The existing flowrates are from US3 (Figure F from the MDS) and include The Preserve project site along with an additional 700 acres for a total drainage area of 1003 acres. The Preserve forms the western boundary of drainage area US3. Included in Appendix 7 are Figure F and the

Existing-Conditions Hydrology from the Rio Del Oro MDS.

4.1 HEC-RAS Analysis

The HEC-RAS analysis was prepared for the Existing and Developed Conditions on the project site. The Existing Condition cross sections (Figure 5) for the HEC-RAS model were developed from the existing topography for the project site and supplemental field survey points. The Developed Condition cross sections (Figure 6) used the existing topography, survey points and the preliminary grading plan included with the Tentative Subdivision Map. The Developed Condition 100-year water surface elevations from the HEC-RAS model have been plotted on the Tentative Subdivision Map and added to exhibits in this report.

The cross sections begin at the downstream end of the project site (western boundary) and continue upstream until the final cross section located east of Grant Line Road. The beginning water surface elevation at the downstream cross section is calculated based on a normal depth condition with a slope along the creek flowline at S=0.004. Along the way are two man-made ponds and an existing driveway. The two ponds are assumed full for the HEC-RAS analysis. The water surface for each pond is the lowest overflow elevation. The overflow elevation for the downstream pond is elevation 210.5 and the upper pond overflow elevation is 215.2. The existing driveway crosses the creek upstream of the upper pond. The typical Manning's 'n' Value used for the creek is 0.035. This value is appropriate for the grasses that grow along the creek. The 'n' values were increased to 0.04 at the overflows from the two ponds. The existing overflows from the two ponds show erosion and the output from the HEC-RAS model show higher velocities in these areas.

5.0 Summary

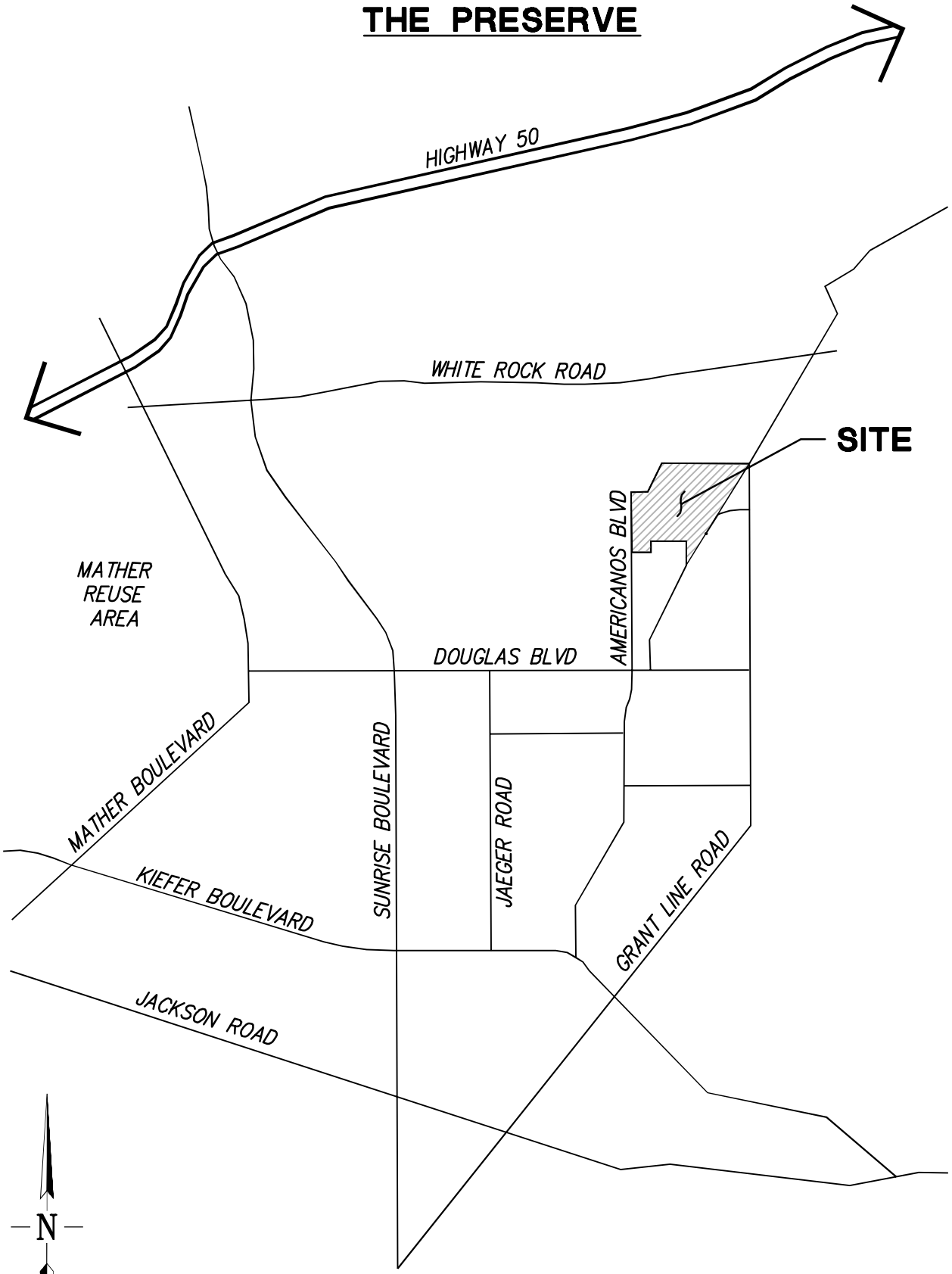
The Preserve project satisfies requirements for Stormwater Quality Control Measures established by the City of Rancho Cordova and County of Sacramento for a Single Family Residential Development with over 20 gross acres of area. The Hydromod Basin designed for Hydromodification will also meet flood control requirements for a 100-year, 24-hour storm event and the outlet invert elevation from the Hydromod Basin will be above the 100-year water surface elevation calculated from the HEC-RAS model of Morrison Creek.

6. Appendix

- Figure 1 – Vicinity Map
- Figure 2 – Existing Condition Drainage Map
- Figure 3 – Developed Condition Drainage Map
- Figure 4 – Stormwater Quality Control Measures Exhibit
- Figure 5 – HEC-RAS Existing Condition Cross Sections
- Figure 6 - HEC-RAS Developed Condition Cross Sections
- Appendix 1 - SacCalc-Sacramento Method 10-year, 24-hour storm; 100-year, 24-hour storm and 100-year, 10-day storm Input & Output for Developed Conditions and 100-year, 24-hour storm Input & Output for Existing Conditions
- Appendix 2 - SAHM Project Report
- Appendix 3 - Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations
- Appendix 4 - HEC-HMS Output for 10-year, 24-hour storm; 100-year, 24-hour storm and 100-year, 10-day storm
- Appendix 5 - Design Data Summary Sheet for Bioretention Basin
- Appendix 6 - Design Data Summary Sheet for Water Quality Detention Basin
- Appendix 7 – HEC-RAS Output for Existing Condition 10-year storm and 100-year storm
- Appendix 8 – HEC-RAS Output for Developed Condition 10-year storm and 100-year storm
- Appendix 9 – Bioretention Basin and Hydromodification Basin Outlet Details

- Appendix 10 – Drawdown Calculations
- Appendix 11 – Preliminary Grading Plan included with Tentative Map package
- Appendix 12 – Existing Conditions Plan included with Tentative Map package

FIGURE 1
VICINITY MAP
THE PRESERVE



NOT TO SCALE

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

PROJECT LIMITS

OFFSITE OPEN SPACE
185.3 AC.

CREEK CENTERLINE
MORRISON CREEK

EX-DA1
7.3 AC.

EX-DA2
18.4 AC.

EX-DA3
17.6 AC.

EX-DA4
4.2 AC.

EX-DA5
35.0 AC.

EX-DA6
12.7 AC.

EX-DA7
4.9 AC.

GRANT LINE ROAD

EDINGTON DRIVE

EVANSTON WAY

NORTH DOUGLAS VILLAGE 2
(351 M 4)

BARKSDALE WAY

THORNBERG WAY

NORTH DOUGLAS VILLAGE 1
(351 M 3)

RAYMAR WAY

PROJECT LIMITS

LEGEND

- EX-DA7 / 3.2 AC. — DRAINAGE AREA / DRAINAGE ACREAGE
- LIMITS OF SUB-BASIN
- SACRAMENTO COUNTY SOIL #193 TYPE C
- SACRAMENTO COUNTY SOIL #159 TYPE C/D
- SACRAMENTO COUNTY SOIL #198 TYPE D
- SACRAMENTO COUNTY SOIL #192 TYPE C

N

0 150 300 450

1 inch = 150 ft.

EXISTING CONDITIONS DRAINAGE MAP-FIGURE 2

CITY OF RANCHO CORDOVA, SACRAMENTO COUNTY, CALIFORNIA

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

DATE: OCTOBER 2019 JOB NO. 165018

O:\JOBS\165018\HYDRO\EXHIBITS\165018 EX-HYDROMAP (FIGURE 2).DWG 10/16/2019 11:34:12 AM SEAN DAVIS

PROJECT LIMITS

OFFSITE OPEN SPACE
185.3 AC.

100-YEAR WATER SURFACE
Q=361 cfs.

CREEK CENTERLINE
MORRISON CREEK

PROJECT LIMITS

ORPD NEIGHBORHOOD PARK 1

MORRISON CREEK

ORPD NEIGHBORHOOD PARK 2

OS-1
4.8 AC.

OS-2
7.6 AC.

DA1-1
0.7 AC.

DA1-3
1.6 AC.

DA1-4
2.6 AC.

DA1-5
2.7 AC.

DA1-6
1.7 AC.

DA1-2
2.8 AC.

DA1-7A
2.6 AC.

GRANT LINE ROAD

100-YEAR WATER SURFACE
Q=361 cfs.

BIO-RETENTION BASIN 1

PARK 8

HYDROID BASIN

100-YEAR WSEL = 207.0

BIO-RETENTION BASIN

DA3-1
3.0 AC.

DA1-8
14.7 AC.

OS-3
8.2 AC.

DA1-7
13.9 AC.

DA2-2A
1.4 AC.

DA2-3
4.9 AC.

DA2-5
15.7 AC.

DA2-4
5.0 AC.

DA2-2
2.6 AC.

DA2-1A
1.8 AC.

DA2-1
1.5 AC.

EX-DA7
0.2 AC.

PROJECT LIMITS

EDINGTON DRIVE

EVANSTON WAY

EVANSTON WAY

NORTH DOUGLAS VILLAGE 2
(351 M 4)

BARKSDALE WAY

RAYMAR WAY

THORNBERG WAY

DESIGN

NORTH DOUGLAS VILLAGE 1
(351 M 3)

RAYMAR WAY

LEGEND

- DA2 / 2.8 AC. — DRAINAGE AREA / DRAINAGE ACREAGE
- 7 — TIME OF CONCENTRATION NODE
- LIMITS OF SUB-BASIN
- SACRAMENTO COUNTY SOIL #193 TYPE C
- SACRAMENTO COUNTY SOIL #159 TYPE C/D
- SACRAMENTO COUNTY SOIL #198 TYPE D
- SACRAMENTO COUNTY SOIL #192 TYPE C

N

0 150 300 450

1 inch = 150 ft.

DEVELOPED CONDITIONS DRAINAGE MAP-FIGURE 3

CITY OF RANCHO CORDOVA, SACRAMENTO COUNTY, CALIFORNIA

RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

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STORMWATER QUALITY CONTROL MEASURES EXHIBIT-FIGURE 4

CITY OF RANCHO CORDOVA,
SACRAMENTO COUNTY, CALIFORNIA

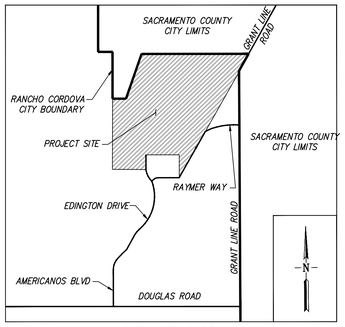
LOTS WITH SEPARATED SIDEWALKS

1 inch = 100 ft.

RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-5909

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VICINITY MAP
NTS

PROJECT LIMITS

MORRISON CREEK

PROJECT LIMITS

PROJECT LIMITS

HEC-RAS EXISTING CONDITION CROSS SECTIONS-FIGURE 5

CITY OF RANCHO CORDOVA, SACRAMENTO COUNTY, CALIFORNIA

N

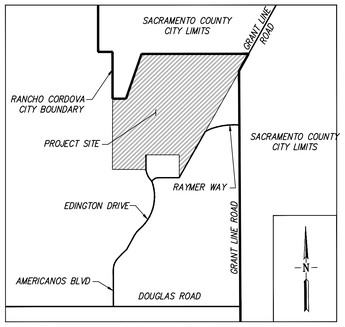
0 150 300 450

(IN FEET)
1 inch = 150 ft.

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

DATE: OCTOBER 2019 JOB NO. 165018

G:\JOBS\2016\165018\HYDRO\HEC-RAS SECTIONS.DWG 10/16/2019 1:00:30 PM SEAN DAMS



VICINITY MAP
NTS

PROJECT LIMITS

MORRISON CREEK

PROJECT LIMITS

PROJECT LIMITS

HEC-RAS DEVELOPED CONDITION CROSS SECTIONS-FIGURE 6

CITY OF RANCHO CORDOVA, SACRAMENTO COUNTY, CALIFORNIA

N

0 150 300 450

(IN FEET)
1 inch = 150 ft.

RJA
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Appendix

Appendix 1 - SacCalc-Sacramento Method 10-year, 24-hour storm; 100-year, 24-hour storm and 100-year, 10-day storm Input & Output for Developed Conditions and 100-year, 24-hour storm Input & Output for Existing Conditions

Sacramento Hydrologic Calculator Report

October 3, 2019 10:23

Project Title: Pre Development Hydrographs
Comments:
Prepared by:

Method: Sacramento County HEC-1 method
Date: 6/12/2018

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
EX-DA1	7.3	0	Basin "n"	-	Specified	.115	Specified	0.1	Computed	-
EX-DA2	18.4	0	Basin "n"	-	Specified	.115	Specified	0.1	Computed	-
EX-DA3	17.6	0	Basin "n"	-	Specified	0.115	Specified	0.1	Computed	-
EX-DA4	4.2	0	Basin "n"	-	Specified	0.115	Specified	0.1	Computed	-
EX-DA5	35	0	Basin "n"	-	Specified	0.115	Specified	0.1	Computed	-
EX-DA6	12.7	0	Basin "n"	-	Specified	.115	Specified	0.1	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
EX-DA1	400	200	.0425	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-DA2	1430	700	.019	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-DA3	1480	700	.020	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-DA4	580	200	.04	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-DA5	1280	600	.016	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EX-DA6	640	100	.03	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
EX-DA1	B																		
	C																7.3		
	D																		
EX-DA2	B																		
	C																16.6		
	D																1.8		
EX-DA3	B																		
	C																15.8		
	D																1.8		
EX-DA4	B																		
	C																3.8		
	D																0.4		
EX-DA5	B																		
	C																31.7		
	D																3.3		
EX-DA6	B																		
	C																12.7		
	D																		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

View HEC-1 output

Sacramento method results
(Project: Pre Development Hydrographs)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
EX-DA1	18.	12:07	.01			
EX-DA2	27.	12:21	.03			
EX-DA3	25.	12:21	.03			
JNC1	60.	12:20	.07			
EX-DA4	9.8	12:08	.01			
EX-DA5	52.	12:20	.05			
EX-DA6	32.	12:07	.02			
JNC2	75.	12:16	.08			
JNC3	134.	12:18	.15			

← Combined Peak flow at outlet to check from Existing Condition

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
EX-DA1	11.	12:07	.01			
EX-DA2	16.	12:21	.03			
EX-DA3	15.	12:21	.03			
JNC1	35.	12:20	.07			
EX-DA4	5.7	12:08	.01			
EX-DA5	31.	12:20	.05			
EX-DA6	18.	12:07	.02			
JNC2	44.	12:16	.08			
JNC3	79.	12:18	.15			

(100-year, 10-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
EX-DA1	4.7	153:00	.01			
EX-DA2	11.	153:04	.03			
EX-DA3	10.	153:04	.03			
JNC1	26.	153:02	.07			
EX-DA4	2.7	153:00	.01			
EX-DA5	21.	153:03	.05			
EX-DA6	8.1	153:00	.02			
JNC2	32.	153:01	.08			
JNC3	57.	153:01	.15			

Sacramento Hydrologic Calculator Report

October 3, 2019 10:18

Project Title: Developed Hydrograph for HEC-HMS
Comments:
Prepared by: SMD

Method: Sacramento County HEC-1 method
Date: 6/12/2019

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
RES1	48.1	0	Travel Time	-	-	-	Specified	0.1	Computed	-
OS2-3	15.8	0	Travel Time	-	-	-	Specified	0.1	Computed	-
RES2	33.1	0	Travel Time	-	-	-	Specified	0.1	Computed	-
RES3	3	0	Travel Time	-	-	-	Specified	0.1	Computed	-

Travel Time Component Method Data for Lag Time Computation

	Overflow		Gutter Flow			Channel and Pipe Flow					
Watershed	Land Use	Slope (ft/ft)	Length (ft)	Slope (ft/ft)	Side Slope (ft/ft)	Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Design or Flow (cfs)	Mannings "n"
RES1	Residential	-	180	0.0035	0.02:1	Pipe	400	.007	1.25	2	0.012
						Pipe	270	.0035	1.25	8	0.012
						Pipe	400	.0035	2	16	0.012
						Pipe	500	.005	2	18	0.012
						Pipe	580	.005	2	22	0.012
						Pipe	250	.006	2.5	24	0.012
						Pipe	450	.005	3	42	0.012
						Pipe	400	.02	3.5	59	0.012
OS2-3	Open Space	.01	-	-	-	Pipe	2200	.01	2	10	0.012
RES2	Residential	-	100	0.006	0.02:1	Pipe	350	.005	1.25	7	0.012
						Pipe	820	.005	2	14	0.012
						Pipe	800	.005	2	20	0.012
						Pipe	680	.005	2.5	26	0.012
						Pipe	370	.005	3	44	0.012
RES3	Residential	-	350	0.005	0.02:1	-	-	-	-	-	-

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
RES1	B																		
	C								43.3							4.8			
	D																		
OS2-3	B																		
	C															8.5			
	D															7.3			
RES2	B																		
	C								33.1										
	D																		
RES3	B																		
	C								3										
	D																		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

View HEC-1 output

Sacramento method results
(Project: Developed Hydrograph for HEC-HMS)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
OS2-3	28.	12:14	.02			
RES1	81.	12:17	.08			
RES2	58.	12:16	.05			
RES3	7.4	12:07	.00			
JNC1	143.	12:16	.13			
JNC2	171.	12:16	.16			

← Combined Peak Flow at outlet to creek from Developed Condition

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
OS2-3	15.	12:16	.02			
RES1	52.	12:14	.08			
RES2	37.	12:13	.05			
RES3	4.3	12:07	.00			
JNC1	92.	12:14	.13			
JNC2	107.	12:14	.16			

(100-year, 10-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
OS2-3	9.8	153:01	.02			
RES1	31.	153:02	.08			
RES2	22.	153:02	.05			
RES3	2.1	153:00	.00			
JNC1	55.	153:02	.13			
JNC2	65.	153:02	.16			

Appendix 2 - SAHM Project Report

SAHM

PROJECT REPORT

General Model Information

Project Name:	Divine-BIO1
Site Name:	Divine
Site Address:	
City:	Rancho Cordova
Report Date:	10/11/2019
Gage:	RANCHO C
Data Start:	1961/10/01
Data End:	2004/09/30
Timestep:	Hourly
Precip Scale:	1.056
Version Date:	2019/10/01

POC Thresholds

Low Flow Threshold for POC1:	25 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data

Pre-Project Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C,Grass,Mod (1-2%)	4.8
C,Grass,Steep(2-5%)	81.3
D,Grass,Steep(2-5%)	7.3
Pervious Total	93.4

Impervious Land Use	acre
Imperv,Mod (1-2%)	1.8
Impervious Total	1.8
Basin Total	95.2

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Development Area

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C,Grass,Mod (1-2%)	15.8
C,Grass,VSteep(>5%)	1.3
D,Grass,VSteep(>5%)	1
D,Grass,Steep(2-5%)	2.7
C,Grass,Steep(2-5%)	7.4
Pervious Total	28.2

Impervious Land Use	acre
Imperv,Mod (1-2%)	30.6
Impervious Total	30.6
Basin Total	58.8

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 1	Surface retention 1	

Development Area 2

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C,Grass,Mod (1-2%)	11.2
C,Grass,VSteep(>5%)	1.1
D,Grass,VSteep(>5%)	1
D,Grass,Steep(2-5%)	2.6
C,Grass,Steep(2-5%)	3.5
Pervious Total	19.4

Impervious Land Use	acre
Imperv,Mod (1-2%)	21.7
Impervious Total	21.7
Basin Total	41.1

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 2	Surface retention 2	

Routing Elements
Pre-Project Routing

Mitigated Routing

Water Quality Basin 1

Bottom Length:	310.00 ft.	
Bottom Width:	80.00 ft.	
Depth:	8 ft.	
Volume at riser head:	4.8579 acre-feet.	
Side slope 1:	4 To 1	
Side slope 2:	4 To 1	
Side slope 3:	4 To 1	
Side slope 4:	4 To 1	
Discharge Structure		
Riser Height:	6 ft.	
Riser Diameter:	54 in.	
Notch Type:	Rectangular	
Notch Width:	4.500 ft.	
Notch Height:	1.500 ft.	
Orifice 1 Diameter:	4 in.	Elevation:0 ft.
Orifice 2 Diameter:	4 in.	Elevation:1 ft.
Orifice 3 Diameter:	4 in.	Elevation:2 ft.
Element Flows To:		
Outlet 1	Outlet 2	

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.569	0.000	0.000	0.000
0.0889	0.575	0.050	0.129	0.000
0.1778	0.582	0.102	0.183	0.000
0.2667	0.588	0.154	0.224	0.000
0.3556	0.595	0.207	0.258	0.000
0.4444	0.601	0.260	0.289	0.000
0.5333	0.607	0.313	0.317	0.000
0.6222	0.614	0.368	0.342	0.000
0.7111	0.621	0.423	0.366	0.000
0.8000	0.627	0.478	0.388	0.000
0.8889	0.634	0.534	0.409	0.000
0.9778	0.640	0.591	0.429	0.000
1.0667	0.647	0.648	0.560	0.000
1.1556	0.654	0.706	0.638	0.000
1.2444	0.660	0.764	0.699	0.000
1.3333	0.667	0.823	0.752	0.000
1.4222	0.674	0.883	0.799	0.000
1.5111	0.680	0.943	0.844	0.000
1.6000	0.687	1.004	0.885	0.000
1.6889	0.694	1.066	0.924	0.000
1.7778	0.701	1.128	0.961	0.000
1.8667	0.708	1.190	0.997	0.000
1.9556	0.715	1.254	1.031	0.000
2.0444	0.721	1.317	1.156	0.000
2.1333	0.728	1.382	1.254	0.000
2.2222	0.735	1.447	1.331	0.000
2.3111	0.742	1.513	1.399	0.000
2.4000	0.749	1.579	1.461	0.000
2.4889	0.756	1.646	1.518	0.000
2.5778	0.763	1.714	1.572	0.000

2.6667	0.770	1.782	1.624	0.000
2.7556	0.777	1.851	1.673	0.000
2.8444	0.785	1.920	1.720	0.000
2.9333	0.792	1.990	1.766	0.000
3.0222	0.799	2.061	1.811	0.000
3.1111	0.806	2.132	1.854	0.000
3.2000	0.813	2.204	1.896	0.000
3.2889	0.820	2.277	1.937	0.000
3.3778	0.828	2.350	1.977	0.000
3.4667	0.835	2.424	2.016	0.000
3.5556	0.842	2.499	2.054	0.000
3.6444	0.849	2.574	2.091	0.000
3.7333	0.857	2.650	2.128	0.000
3.8222	0.864	2.726	2.164	0.000
3.9111	0.871	2.803	2.199	0.000
4.0000	0.879	2.881	2.234	0.000
4.0889	0.886	2.960	2.268	0.000
4.1778	0.894	3.039	2.302	0.000
4.2667	0.901	3.119	2.335	0.000
4.3556	0.909	3.199	2.367	0.000
4.4444	0.916	3.280	2.400	0.000
4.5333	0.924	3.362	2.522	0.000
4.6222	0.931	3.445	3.103	0.000
4.7111	0.939	3.528	3.947	0.000
4.8000	0.947	3.612	4.986	0.000
4.8889	0.954	3.696	6.188	0.000
4.9778	0.962	3.781	7.532	0.000
5.0667	0.969	3.867	9.005	0.000
5.1556	0.977	3.954	10.59	0.000
5.2444	0.985	4.041	12.29	0.000
5.3333	0.993	4.129	14.09	0.000
5.4222	1.000	4.218	15.99	0.000
5.5111	1.008	4.307	17.99	0.000
5.6000	1.016	4.397	20.07	0.000
5.6889	1.024	4.488	22.23	0.000
5.7778	1.032	4.579	24.48	0.000
5.8667	1.040	4.671	26.80	0.000
5.9556	1.048	4.764	29.20	0.000
6.0444	1.055	4.857	30.89	0.000
6.1333	1.063	4.952	32.79	0.000
6.2222	1.071	5.047	35.49	0.000
6.3111	1.079	5.142	38.78	0.000
6.4000	1.087	5.239	42.57	0.000
6.4889	1.096	5.336	46.77	0.000
6.5778	1.104	5.433	51.31	0.000
6.6667	1.112	5.532	56.13	0.000
6.7556	1.120	5.631	61.18	0.000
6.8444	1.128	5.731	66.37	0.000
6.9333	1.136	5.832	71.66	0.000
7.0222	1.144	5.933	76.97	0.000
7.1111	1.153	6.035	82.23	0.000
7.2000	1.161	6.138	87.38	0.000
7.2889	1.169	6.242	92.36	0.000
7.3778	1.177	6.346	97.11	0.000
7.4667	1.186	6.451	101.5	0.000
7.5556	1.194	6.557	105.7	0.000
7.6444	1.202	6.663	109.4	0.000
7.7333	1.211	6.771	112.8	0.000

Water Quality Treatment Volume - LID Credits and Treatment BMP Sizing Calcs V = 1.73 ac-ft

2-year Mitigated Flow = 14.7 cfs

10-year Mitigated Flow = 36.6 cfs

7.8222	1.219	6.879	115.8	0.000
7.9111	1.227	6.987	118.4	0.000
8.0000	1.236	7.097	120.6	0.000
8.0889	1.244	7.207	122.6	0.000

100-year, 24-hr HEC-HMS
= 116.7 cfs

Bioretention 1

Bottom Length:	250.00 ft.
Bottom Width:	100.00 ft.
Material thickness of first layer:	0.5
Material type for first layer:	Sandy loam
Material thickness of second layer:	1.5
Material type for second layer:	Amended 5 in/hr
Material thickness of third layer:	0.75
Material type for third layer:	GRAVEL
Underdrain used	
Underdrain Diameter (feet):	1.33
Orifice Diameter (in.):	14
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	2188.085
Total Outflow (ac-ft.):	2432.145
Percent Through Underdrain:	89.97
Discharge Structure	
Riser Height:	1 ft.
Riser Diameter:	36 in.
Element Flows To:	
Outlet 1	Outlet 2
Water Quality Basin 1	

Landscape Swale Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.7618	0.0000	0.0000	0.0000
0.0522	0.7592	0.0060	0.0000	0.0000
0.1044	0.7554	0.0121	0.0000	0.0000
0.1566	0.7517	0.0182	0.0000	0.0000
0.2088	0.7479	0.0244	0.0000	0.0000
0.2610	0.7442	0.0305	0.0000	0.0000
0.3132	0.7405	0.0368	0.0000	0.0000
0.3654	0.7367	0.0430	0.0000	0.0000
0.4176	0.7330	0.0493	0.0000	0.0000
0.4698	0.7293	0.0556	0.0000	0.0000
0.5220	0.7256	0.0689	0.0386	0.0000
0.5742	0.7219	0.0823	0.0572	0.0000
0.6264	0.7182	0.0957	0.0812	0.0000
0.6786	0.7145	0.1092	0.1111	0.0000
0.7308	0.7109	0.1228	0.1475	0.0000
0.7830	0.7072	0.1365	0.1908	0.0000
0.8352	0.7035	0.1502	0.2414	0.0000
0.8874	0.6999	0.1641	0.2998	0.0000
0.9396	0.6963	0.1780	0.3664	0.0000
0.9918	0.6926	0.1919	0.4009	0.0000
1.0440	0.6890	0.2060	0.4415	0.0000
1.0962	0.6854	0.2201	0.4633	0.0000
1.1484	0.6818	0.2343	0.4742	0.0000
1.2005	0.6782	0.2486	0.6115	0.0000
1.2527	0.6746	0.2629	0.6187	0.0000
1.3049	0.6710	0.2774	0.7214	0.0000
1.3571	0.6674	0.2919	0.8098	0.0000
1.4093	0.6639	0.3065	0.8339	0.0000
1.4615	0.6603	0.3212	0.9566	0.0000
1.5137	0.6568	0.3359	0.9863	0.0000
1.5659	0.6532	0.3507	1.0011	0.0000

1.6181	0.6497	0.3657	1.1602	0.0000
1.6703	0.6461	0.3806	1.3095	0.0000
1.7225	0.6426	0.3957	1.3419	0.0000
1.7747	0.6391	0.4108	1.3419	0.0000
1.8269	0.6356	0.4261	1.5776	0.0000
1.8791	0.6321	0.4414	1.7035	0.0000
1.9313	0.6286	0.4568	1.7664	0.0000
1.9835	0.6252	0.4722	1.8966	0.0000
2.0357	0.6217	0.4876	1.9616	0.0000
2.0879	0.6182	0.5030	2.0838	0.0000
2.1401	0.6148	0.5185	2.1448	0.0000
2.1923	0.6113	0.5341	2.1754	0.0000
2.2445	0.6079	0.5498	2.3023	0.0000
2.2967	0.6044	0.5656	2.5121	0.0000
2.3489	0.6010	0.5814	2.7489	0.0000
2.4011	0.5976	0.5973	2.9883	0.0000
2.4533	0.5942	0.6133	3.2206	0.0000
2.5055	0.5908	0.6294	3.4424	0.0000
2.5577	0.5874	0.6456	3.6533	0.0000
2.6099	0.5840	0.6618	3.8541	0.0000
2.6621	0.5806	0.6781	4.0874	0.0000
2.7143	0.5773	0.6945	4.0874	0.0000
2.7500	0.5739	0.7058	4.0874	0.0000

Landscape Swale Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.7500	0.7618	0.7058	0.0000	1.3625	0.0000
2.8022	0.7656	0.7457	0.0000	1.3625	0.0000
2.8544	0.7694	0.7857	0.0000	1.6469	0.0000
2.9066	0.7732	0.8260	0.0000	1.7892	0.0000
2.9588	0.7770	0.8665	0.0000	1.9314	0.0000
3.0110	0.7808	0.9071	0.0000	2.0736	0.0000
3.0632	0.7846	0.9480	0.0000	2.2159	0.0000
3.1154	0.7884	0.9890	0.0000	2.3581	0.0000
3.1676	0.7923	1.0303	0.0000	2.5003	0.0000
3.2198	0.7961	1.0717	0.0000	2.6426	0.0000
3.2720	0.8000	1.1134	0.0000	2.7848	0.0000
3.3242	0.8038	1.1552	0.0000	2.9270	0.0000
3.3764	0.8077	1.1973	0.0000	3.0693	0.0000
3.4286	0.8116	1.2396	0.0000	3.2115	0.0000
3.4808	0.8155	1.2820	0.0000	3.3538	0.0000
3.5330	0.8194	1.3247	0.0000	3.4960	0.0000
3.5852	0.8233	1.3676	0.0000	3.6382	0.0000
3.6374	0.8272	1.4106	0.0000	3.7805	0.0000
3.6896	0.8311	1.4539	0.0000	3.9227	0.0000
3.7418	0.8350	1.4974	0.0000	4.0649	0.0000
3.7940	0.8389	1.5411	0.2934	4.2072	0.0000
3.8462	0.8429	1.5850	0.9486	4.3494	0.0000
3.8984	0.8468	1.6291	1.8167	4.4916	0.0000
3.9505	0.8508	1.6734	2.8524	4.6339	0.0000
4.0027	0.8548	1.7179	4.0291	4.7761	0.0000
4.0549	0.8587	1.7626	5.3267	4.9183	0.0000
4.1071	0.8627	1.8075	6.7280	5.0606	0.0000
4.1593	0.8667	1.8527	8.2171	5.2028	0.0000
4.2115	0.8707	1.8980	9.7782	5.3450	0.0000
4.2637	0.8747	1.9436	11.396	5.4873	0.0000
4.3159	0.8787	1.9893	13.053	5.6295	0.0000
4.3681	0.8827	2.0353	14.735	5.7717	0.0000

4.4203	0.8868	2.0815	16.424	5.9140	0.0000
4.4725	0.8908	2.1279	18.105	6.0562	0.0000
4.5247	0.8948	2.1745	19.759	6.1984	0.0000
4.5769	0.8989	2.2213	21.373	6.3407	0.0000
4.6291	0.9030	2.2683	22.930	6.4829	0.0000
4.6813	0.9070	2.3156	24.416	6.6252	0.0000
4.7335	0.9111	2.3630	25.819	6.7674	0.0000
4.7500	0.9124	2.3781	27.127	6.8123	0.0000

Surface retention 1

Element Flows To:

Outlet 1	Outlet 2
Water Quality Basin 1	Bioretention 1

Bioretention 2

Bottom Length:	350.00 ft.
Bottom Width:	50.00 ft.
Material thickness of first layer:	0.5
Material type for first layer:	Sandy loam
Material thickness of second layer:	1.5
Material type for second layer:	Amended 5 in/hr
Material thickness of third layer:	0.75
Material type for third layer:	GRAVEL
Underdrain used	
Underdrain Diameter (feet):	1.17
Orifice Diameter (in.):	12
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	1559.701
Total Outflow (ac-ft.):	1723.055
Percent Through Underdrain:	90.52
Discharge Structure	
Riser Height:	1 ft.
Riser Diameter:	36 in.
Element Flows To:	
Outlet 1	Outlet 2
Water Quality Basin 1	

Landscape Swale Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.6149	0.0000	0.0000	0.0000
0.0522	0.6120	0.0042	0.0000	0.0000
0.1044	0.6077	0.0085	0.0000	0.0000
0.1566	0.6035	0.0128	0.0000	0.0000
0.2088	0.5992	0.0172	0.0000	0.0000
0.2610	0.5950	0.0216	0.0000	0.0000
0.3132	0.5908	0.0260	0.0000	0.0000
0.3654	0.5866	0.0305	0.0000	0.0000
0.4176	0.5824	0.0350	0.0000	0.0000
0.4698	0.5782	0.0396	0.0000	0.0000
0.5220	0.5740	0.0444	0.0270	0.0000
0.5742	0.5699	0.0492	0.0401	0.0000
0.6264	0.5657	0.0541	0.0568	0.0000
0.6786	0.5615	0.0591	0.0778	0.0000
0.7308	0.5574	0.0690	0.1032	0.0000
0.7830	0.5532	0.0791	0.1336	0.0000
0.8352	0.5491	0.0892	0.1690	0.0000
0.8874	0.5450	0.0994	0.2099	0.0000
0.9396	0.5409	0.1097	0.2565	0.0000
0.9918	0.5367	0.1201	0.2806	0.0000
1.0440	0.5326	0.1306	0.3091	0.0000
1.0962	0.5285	0.1412	0.3327	0.0000
1.1484	0.5245	0.1518	0.3445	0.0000
1.2005	0.5204	0.1626	0.4280	0.0000
1.2527	0.5163	0.1734	0.4331	0.0000
1.3049	0.5123	0.1843	0.5050	0.0000
1.3571	0.5082	0.1953	0.5669	0.0000
1.4093	0.5041	0.2064	0.5837	0.0000
1.4615	0.5001	0.2176	0.6696	0.0000
1.5137	0.4961	0.2289	0.7386	0.0000
1.5659	0.4921	0.2402	0.7425	0.0000

1.6181	0.4880	0.2517	0.7444	0.0000
1.6703	0.4840	0.2632	0.9166	0.0000
1.7225	0.4800	0.2749	0.9393	0.0000
1.7747	0.4760	0.2866	0.9471	0.0000
1.8269	0.4721	0.2984	1.1397	0.0000
1.8791	0.4681	0.3103	1.2418	0.0000
1.9313	0.4641	0.3223	1.2929	0.0000
1.9835	0.4602	0.3344	1.3910	0.0000
2.0357	0.4562	0.3464	1.4400	0.0000
2.0879	0.4523	0.3585	1.5303	0.0000
2.1401	0.4483	0.3707	1.5755	0.0000
2.1923	0.4444	0.3830	1.5981	0.0000
2.2445	0.4405	0.3954	1.6914	0.0000
2.2967	0.4366	0.4079	1.8456	0.0000
2.3489	0.4327	0.4205	2.0196	0.0000
2.4011	0.4288	0.4331	2.1955	0.0000
2.4533	0.4249	0.4459	2.3661	0.0000
2.5055	0.4210	0.4587	2.5291	0.0000
2.5577	0.4171	0.4717	2.6841	0.0000
2.6099	0.4133	0.4847	2.8612	0.0000
2.6621	0.4094	0.4978	2.8612	0.0000
2.7143	0.4056	0.5110	2.8612	0.0000
2.7500	0.4017	0.5201	2.8612	0.0000

Landscape Swale Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
2.7500	0.6149	0.5201	0.0000	0.9537	0.0000
2.8022	0.6191	0.5523	0.0000	0.9537	0.0000
2.8544	0.6234	0.5848	0.0000	1.1529	0.0000
2.9066	0.6277	0.6174	0.0000	1.2524	0.0000
2.9588	0.6320	0.6503	0.0000	1.3520	0.0000
3.0110	0.6363	0.6834	0.0000	1.4515	0.0000
3.0632	0.6406	0.7167	0.0000	1.5511	0.0000
3.1154	0.6449	0.7503	0.0000	1.6507	0.0000
3.1676	0.6492	0.7840	0.0000	1.7502	0.0000
3.2198	0.6535	0.8180	0.0000	1.8498	0.0000
3.2720	0.6578	0.8522	0.0000	1.9494	0.0000
3.3242	0.6622	0.8867	0.0000	2.0489	0.0000
3.3764	0.6665	0.9214	0.0000	2.1485	0.0000
3.4286	0.6709	0.9563	0.0000	2.2481	0.0000
3.4808	0.6752	0.9914	0.0000	2.3476	0.0000
3.5330	0.6796	1.0268	0.0000	2.4472	0.0000
3.5852	0.6840	1.0624	0.0000	2.5468	0.0000
3.6374	0.6884	1.0982	0.0000	2.6463	0.0000
3.6896	0.6928	1.1342	0.0000	2.7459	0.0000
3.7418	0.6972	1.1705	0.0000	2.8454	0.0000
3.7940	0.7016	1.2070	0.2934	2.9450	0.0000
3.8462	0.7060	1.2438	0.9486	3.0446	0.0000
3.8984	0.7105	1.2807	1.8167	3.1441	0.0000
3.9505	0.7149	1.3179	2.8524	3.2437	0.0000
4.0027	0.7193	1.3554	4.0291	3.3433	0.0000
4.0549	0.7238	1.3930	5.3267	3.4428	0.0000
4.1071	0.7282	1.4309	6.7280	3.5424	0.0000
4.1593	0.7327	1.4690	8.2171	3.6420	0.0000
4.2115	0.7372	1.5074	9.7782	3.7415	0.0000
4.2637	0.7417	1.5460	11.396	3.8411	0.0000
4.3159	0.7462	1.5848	13.053	3.9407	0.0000
4.3681	0.7507	1.6239	14.735	4.0402	0.0000

4.4203	0.7552	1.6632	16.424	4.1398	0.0000
4.4725	0.7597	1.7027	18.105	4.2393	0.0000
4.5247	0.7642	1.7425	19.759	4.3389	0.0000
4.5769	0.7688	1.7825	21.373	4.4385	0.0000
4.6291	0.7733	1.8228	22.930	4.5380	0.0000
4.6813	0.7778	1.8632	24.416	4.6376	0.0000
4.7335	0.7824	1.9040	25.819	4.7372	0.0000
4.7500	0.7838	1.9169	27.127	4.7686	0.0000

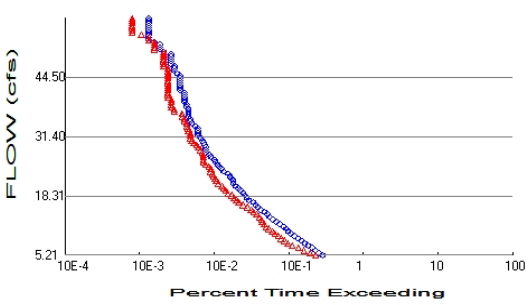
Surface retention 2

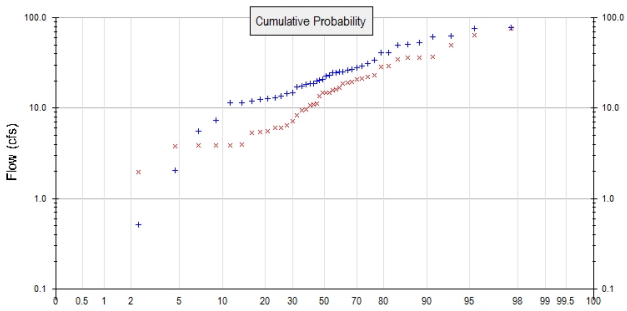
Element Flows To:

Outlet 1	Outlet 2
Water Quality Basin 1	Bioretention 2

Analysis Results

POC 1





\+ Pre-Project x Mitigated

Pre-Project Landuse Totals for POC #1
Total Pervious Area: 93.4
Total Impervious Area: 1.8

Mitigated Landuse Totals for POC #1
Total Pervious Area: 47.6
Total Impervious Area: 52.3

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	**Flow(cfs)**
2 year	20.8288
5 year	41.264845
10 year	57.600255
25 year	75.854205

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	14.7172
5 year	28.585955
10 year	36.596082
25 year	65.903659

Annual Peaks

Annual Peaks for Pre-Project and Mitigated. POC #1

Year	**Pre-Project**	**Mitigated**
1962	23.319	19.527
1963	11.584	8.328
1964	7.413	3.880
1965	24.493	16.724
1966	5.537	3.978
1967	22.500	21.112
1968	13.535	3.873
1969	18.868	13.685
1970	17.331	14.836
1971	26.017	21.981
1972	2.044	3.913
1973	52.708	28.956
1974	20.146	11.266
1975	27.939	6.050

1976	0.422	1.949
1977	0.515	1.550
1978	33.997	10.933
1979	11.350	6.079
1980	50.580	15.809
1981	11.889	7.112
1982	41.235	34.441
1983	49.968	36.627
1984	18.509	20.735
1985	17.590	14.717
1986	75.459	64.377
1987	12.656	6.479
1988	20.566	5.513
1989	29.501	19.088
1990	24.844	14.884
1991	25.109	10.727
1992	27.075	28.504
1993	20.829	15.968
1994	13.003	5.305
1995	78.358	75.574
1996	61.677	36.491
1997	62.742	50.265
1998	41.398	36.559
1999	14.789	9.411
2000	31.230	18.861
2001	12.473	3.830
2002	14.415	5.404
2003	18.188	9.729
2004	25.327	23.184

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	Pre-Project	Mitigated
1	78.3578	75.5744
2	75.4589	64.3767
3	62.7417	50.2652
4	61.6773	36.6274
5	52.7078	36.5585
6	50.5802	36.4907
7	49.9680	34.4406
8	41.3978	28.9561
9	41.2353	28.5037
10	33.9971	23.1842
11	31.2296	21.9812
12	29.5006	21.1117
13	27.9387	20.7350
14	27.0753	19.5272
15	26.0166	19.0876
16	25.3267	18.8612
17	25.1087	16.7242
18	24.8436	15.9679
19	24.4934	15.8086
20	23.3191	14.8843
21	22.4995	14.8358
22	20.8288	14.7172
23	20.5658	13.6846
24	20.1457	11.2657
25	18.8676	10.9328

26	18.5088	10.7267
27	18.1877	9.7292
28	17.5898	9.4114
29	17.3306	8.3276
30	14.7889	7.1120
31	14.4151	6.4794
32	13.5351	6.0791
33	13.0031	6.0498
34	12.6556	5.5134
35	12.4734	5.4039
36	11.8893	5.3047
37	11.5836	3.9776
38	11.3498	3.9128
39	7.4132	3.8796
40	5.5367	3.8728
41	2.0438	3.8305
42	0.5155	1.9486
43	0.4216	1.5503

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
5.2072	1077	863	80	Pass
5.7364	961	728	75	Pass
6.2656	863	607	70	Pass
6.7949	767	510	66	Pass
7.3241	689	420	60	Pass
7.8533	618	366	59	Pass
8.3825	560	332	59	Pass
8.9118	501	299	59	Pass
9.4410	444	274	61	Pass
9.9702	402	247	61	Pass
10.4994	367	228	62	Pass
11.0287	346	205	59	Pass
11.5579	320	187	58	Pass
12.0871	286	176	61	Pass
12.6163	259	165	63	Pass
13.1455	232	162	69	Pass
13.6748	207	151	72	Pass
14.2040	194	140	72	Pass
14.7332	179	128	71	Pass
15.2624	159	118	74	Pass
15.7917	145	106	73	Pass
16.3209	136	93	68	Pass
16.8501	126	81	64	Pass
17.3793	110	75	68	Pass
17.9085	103	69	66	Pass
18.4378	97	65	67	Pass
18.9670	92	58	63	Pass
19.4962	85	54	63	Pass
20.0254	79	50	63	Pass
20.5547	73	48	65	Pass
21.0839	68	43	63	Pass
21.6131	68	40	58	Pass
22.1423	65	39	60	Pass
22.6716	61	37	60	Pass
23.2008	58	36	62	Pass
23.7300	50	34	68	Pass
24.2592	47	34	72	Pass
24.7884	44	32	72	Pass
25.3177	42	29	69	Pass
25.8469	39	27	69	Pass
26.3761	38	27	71	Pass
26.9053	34	27	79	Pass
27.4346	32	27	84	Pass
27.9638	29	26	89	Pass
28.4930	29	25	86	Pass
29.0222	29	23	79	Pass
29.5514	28	22	78	Pass
30.0807	27	20	74	Pass
30.6099	26	19	73	Pass
31.1391	25	18	72	Pass
31.6683	23	18	78	Pass
32.1976	23	18	78	Pass
32.7268	23	17	73	Pass

33.2560	23	17	73	Pass
33.7852	21	16	76	Pass
34.3145	19	16	84	Pass
34.8437	18	15	83	Pass
35.3729	18	15	83	Pass
35.9021	17	14	82	Pass
36.4313	17	14	82	Pass
36.9606	17	11	64	Pass
37.4898	17	11	64	Pass
38.0190	16	10	62	Pass
38.5482	16	10	62	Pass
39.0775	15	10	66	Pass
39.6067	15	10	66	Pass
40.1359	15	9	60	Pass
40.6651	15	9	60	Pass
41.1943	15	9	60	Pass
41.7236	13	9	69	Pass
42.2528	13	9	69	Pass
42.7820	13	9	69	Pass
43.3112	13	9	69	Pass
43.8405	13	9	69	Pass
44.3697	13	9	69	Pass
44.8989	13	9	69	Pass
45.4281	12	9	75	Pass
45.9574	11	9	81	Pass
46.4866	11	9	81	Pass
47.0158	11	8	72	Pass
47.5450	10	8	80	Pass
48.0742	10	8	80	Pass
48.6035	10	8	80	Pass
49.1327	10	8	80	Pass
49.6619	10	8	80	Pass
50.1911	8	8	100	Pass
50.7204	7	6	85	Pass
51.2496	7	6	85	Pass
51.7788	7	6	85	Pass
52.3080	6	6	100	Pass
52.8373	5	5	100	Pass
53.3665	5	5	100	Pass
53.8957	5	4	80	Pass
54.4249	5	3	60	Pass
54.9541	5	3	60	Pass
55.4834	5	3	60	Pass
56.0126	5	3	60	Pass
56.5418	5	3	60	Pass
57.0710	5	3	60	Pass
57.6003	5	3	60	Pass

Water Quality

Drawdown Time Results

Pond: Water Quality Basin 1

Days	Stage(feet)	Percent of Total Run Time
1	0.950	6.9747
2	4.662	0.4361
3	8.000	N/A
4	8.000	N/A
5	8.000	N/A

Maximum Stage: 8.000 Drawdown Time: 02 01:41:30

Appendix 3 - Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations

Appendix D-1: Residential Sites: Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations

Name of Drainage Shed: Morrison Creek
Location of project: Sacramento

Fill in Blue Highlighted boxes

Step 1 - Open Space and Pervious Area Credits

Is your project within the drainage area of a common drainage plan that includes open space? If not, skip to 1 b.

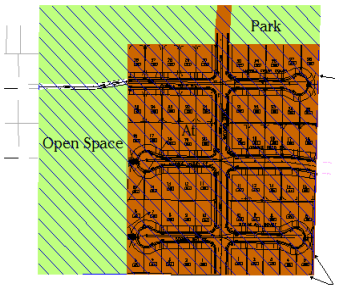
1 a. Common Drainage Plan Area		acres	A_{CDP}	
Common Drainage Plan Open Space (Off-project)	0	acres	A_{OS}	**see area example below**
a. Natural storage reservoirs and drainage corridors	0	acres		
b. Buffer zones for natural water bodies	0	acres		
c. Natural areas including existing trees, other vegetation, and soil	0	acres		
d. Common landscape area/park	0	acres		
e. Regional Flood Control/Drainage basins	0	acres		
1 b. Project Drainage Shed Area (Total)	285.10	acres	A	
Project-Specific Open Space (In-project, communal)**	205.90	acres	A_{PSOS}	**see area example below**
a. Natural storage reservoirs and drainage corridors	61.80	acres		
b. Buffer zones for natural water bodies	61.80	acres		
c. Natural areas including existing trees, other vegetation, and soil	61.70	acres		
d. Landscape area/park	12.40	acres		
e. Flood Control/Drainage basins	8.20	acres		

** Doesn't include impervious areas within individual lots and surrounding individual units. That is accounted for below using Form D-1a in Step 2.

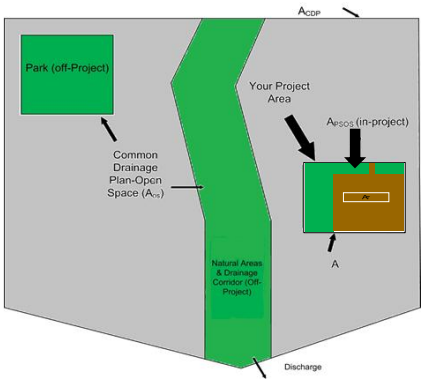
Area with Runoff Reduction Potential	$A - A_{PSOS}$ =	79.20	acres	A_T
Number of Units in A_T		434		
Number of units per acre in A_T	DU/A_T =	6	DUA	
Assumed Initial Impervious Fraction of A_T (determined using Table D-1a)		0.4	I	
Open Space & Pervious Area LID Credit (Step 1)	$(A_{OS}/A_{CDP}+A_{PSOS}/A)x100$ =	72	pts	

Table D-1a

Dwelling units per acre	Imperviousness
1	0.17
2	0.25
3,4	0.35
5,6	0.40
7	0.50
8,9	0.55
10-14	0.60
15-20	0.70



A - Drainage Shed Area
A_{PSOS} Parks and Open Space
A_T - Area with Runoff Reduction Potential



Step 2 - Runoff Reduction Credits

Runoff Reduction Measures		Effective Area Managed (A_C)	
Disconnected Roof Drains (see Fact Sheet)	use Form D-1a for credits →	4.90	acres
Disconnected Pavement (see Fact Sheet)	use Form D-1b for credits →	0.35	acres
Interceptor Trees (see Fact Sheet)	use Form D-1c for credits →	0.30	acres
Alternative Driveway Design (see Fact Sheet)	use Form D-1d for credits →	0.00	acres
Total Effective Area Managed (Credit Area)	A_C	5.54	acres EAM
Runoff Reduction Credit (Step 2)	$(A_C / A_T)*100$ =	7	pts

Form D-1a: Disconnected Roof Drains Worksheet

See Fact Sheet for more information regarding Disconnected Roof Drain credit guidelines

Effective Area Managed (A_C)

1. Determine efficiency Multiplier

Runoff is directed to a dispersal trench or dry well (Type A and B soils only)		1.00
Runoff is directed across landscaping, determine setback		
25 ft +	Use multiplier of	1.00
≥ 20 and < 25 ft	Use multiplier of	0.90
≥ 15 and < 20 ft	Use multiplier of	0.70
≥ 10 and < 15 ft	Use multiplier of	0.45
≥ 5 and < 10 ft	Use multiplier of	0.25

Efficiency Multiplier → 0.45 Box J1

2. Determine percentage of roof drains disconnected → 100.0% Box J2

3. Select project density in dwelling units per acre:

1	Use reduction factor of	0.08
2	Use reduction factor of	0.13
3,4	Use reduction factor of	0.19
5,6	Use reduction factor of	0.23
7	Use reduction factor of	0.29
8,9	Use reduction factor of	0.33
10-14	Use reduction factor of	0.37
15-20	Use reduction factor of	0.44

Reduction Factor → 0.23 Box J3

4. Determine Area Managed

Multiply Box J3 by A_T, and enter the result in Box J4: 18.1 acres Box J4

5. Multiply Boxes J1, J2 and J4, and enter 60% of the Result in Box J: 4.9 acres Box J

This is the amount of area credit to enter into the "Disconnected Roof Drains" Box of Form D-1

Form D-1b: Disconnected Pavement Worksheet

See Fact Sheet for more information regarding NDC Pavement credit guidelines

Effective Area Managed (A_C)

Divided Sidewalks

1. Determine percentage of units with divided Sidewalks: 18.2% Box K1

Multiply Box K1, A_T, and 0.04 and enter 60% of the result in Box K: 0.35 acres Box K

This is the amount of area credit to enter into the "Disconnected Pavement" Box of Form D-1

Form D-1c: Interceptor Tree Worksheet

See Fact Sheet for more information regarding Interceptor Tree credit guidelines

Effective Area Managed (A_C)

New Evergreen Trees

1. Enter number of new evergreen trees that qualify as Interceptor Trees in Box L1: 217 trees Box L1

2. Multiply Box L1 by 200 and enter result in Box L2: 43400 sq. ft. Box L2

New Deciduous Trees

3. Enter number of new deciduous trees that qualify as Interceptor Trees in Box L3: 217 trees Box L3

4. Multiply Box L3 by 100 and enter result in Box L4: 21700 sq. ft. Box L4

Existing Tree Canopy

5. Enter square footage of existing tree canopy that qualifies as Existing Tree canopy in Box L5: sq. ft. Box L5

6. Multiply Box L5 by 0.5 and enter the result in Box L6: 0 sq. ft. Box L6

Total Interceptor Tree Credits

Add Boxes L2, L4, and L6 and enter it into Box L7: 65100 sq. ft. Box L7

Divide Box L7 by 43,560 and multiply by 20% to get effective area managed and enter the result in Box L8: 0.30 acres Box L8

This is the amount of area credit to enter into the "Interceptor Trees" Box of Form D-1

Form D-1d: Alternative Driveway Design

See Fact Sheet for more information regarding Alternative Driveway Design credit guidelines

1. Select type of driveway

Pervious Driveway:	Multiplier:
Cobblestone Block P	0.40
Pervious Concrete/A	0.60
Modular Block Porous Pavement	0.75
Porous Gravel	
Not Directly-connected	1.00

Box M1

2. Determine percentage of units with Alternative Driveways:

Box M2

4. Multiply Boxes M1, M2, A_T and 0.04, and enter the result in Box M
This is the amount of area credit to enter into the "Alternative Driveway Design" Box of Form D-1

0.00 acres

Step 3 - Runoff Management Credits

Capture and Use Credits

Impervious Area Managed by Rain barrels, Cisterns, and automatically-emptied systems
(see Fact Sheet) enter gallons, for simple rain barrels — 0.00 acres

Automated-Control Capture and Use System
(see Fact Sheet, then enter impervious area managed by the system) — 0.00 acres

Bioretention/Infiltration Credits

Impervious Area Managed by Bioretention BMPs
(see Fact Sheet)
Bioretention Area 65,700 sq ft
Subdrain Elevation inches
Ponding Depth, inches 12.0 inches — 8.44 acres

Impervious Area Managed by Infiltration BMPs
(see Fact Sheet)
Drawdown Time, hrs 12 drawdown_hrs_inf
Soil Infiltration Rate, in/hr 0.50 soil_inf_rate
Sizing Option 1: Capture Volume, acre-ft capture_vol_inf — 0.00 acres
Sizing Option 2: Infiltration BMP surface area, sq ft soil_surface_area — 0.00 acres
Basin or trench? Basin approximate BMP depth 0.50 ft

Impervious Area Managed by Amended Soil or Mulch Beds
(see Fact Sheet) Mulched Infiltration Area, sq ft mulch_area — 0.00 acres

Total Effective Area Managed by Capture-and-Use/Bioretention/Infiltration BMPs — 8.44 A_{LIDc}

Runoff Management Credit (Step 3) A_{LIDC}/A_T*200 = 21.3 pts

Total LID Credits (Step 1+2+3) LID compliant, check for treatment sizing in Step 4 — 100.5

Does project require hydromodification management? If yes, proceed to using SacHM.

Adjusted Area for Flow-Based, Non-LID Treatment $A_T - A_C - A_{LIDC}$ = 65.22 A_{AT}

Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $(A_T*I-A_C-A_{LIDC}) / A$ = 0.062 I_A

Further treatment is required, see choose flow-based or volume-based sizing in Step 4

Step 4a Treatment - Flow-Based (Rational Method)

Form D-1e

Calculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Adjusted Treatment Area

Determine C Factor using Table D-1b — 0.00 C

Determine i using Table D-1c (Rainfall Intensity) — 0.18 i

A_{AT} from Step 2 — 65.22 A_{AT}

Flow = C * i * A_{AT} — 0.00 cfs

TABLE D-1b

Development Type	Runoff Coefficient (Rational), C
Single-family areas	0.50
Multi-units, detached	0.60
Apartment dwelling areas	0.70
Multi-units, attached	0.75
User Specified	0.00

Table D-1c

	Rainfall Intensity
Roseville	i = 0.20 in/hr
Sacramento	i = 0.18 in/hr
Folsom	i = 0.20 in/hr

Step 4b Treatment - Volume-Based (ASCE-WEF)

Calculate water quality volume (Acre-Feet):	WQV = Area x Maximized Detention Volume (P_0)				
Obtain A from Step 1	285.10	A	24	hrs	Specified Draw Down time
Obtain P_0: Maximized Detention Volume from figures E-1 to E-4 in Appendix E of this manual using I_A from Step 2.	0.07	P_0			
Calculate treatment volume (acre-ft): **Treatment volume = A x (P_0 / 12)**	1.73	Acre-Feet			

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Appendix 4 - HEC-HMS Output for 10-year, 24-hour storm; 100-year, 24-hour storm and 100-year, 10-day storm

Project: The Preserve Simulation Run: RES10+OS10 thru Basin

Start of Run: 01Nov2018, 00:00
End of Run: 02Nov2018, 00:00
Compute Time: 11Oct2019, 11:30:37

Basin Model: Developed Site-10
Meteorologic Model: 10-yr, 24-h
Control Specifications: 10yr, 24-hr

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
RES1 hydrograph	0.1314	91.9	01Nov2018, 12:14	1.96
OS1 hydrograph	0.0247	15.3	01Nov2018, 12:16	1.12
DET1	0.1561	65.9	01Nov2018, 12:30	1.42

Project: The Preserve Simulation Run: RES10+OS10 thru Basin
Reservoir: DET1

Start of Run:	01Nov2018, 00:00	Basin Model:	Developed Site-10
End of Run:	02Nov2018, 00:00	Meteorologic Model:	10-yr, 24-h
Compute Time:	11Oct2019, 11:30:37	Control Specifications:	10yr, 24-hr

Volume Units: IN

Computed Results

Peak Inflow:	106.8 (CFS)	Date/Time of Peak Inflow:	01Nov2018, 12:14
Peak Discharge:	65.9 (CFS)	Date/Time of Peak Discharge	01Nov2018, 12:30
Inflow Volume:	1.83 (IN)	Peak Storage:	5.7 (AC-FT)
Discharge Volume	1.42 (IN)	Peak Elevation:	214.3 (FT)

Project: The Preserve Simulation Run: RES100+OS100 thru Basin

Start of Run: 01Nov2018, 00:00 Basin Model: Developed Site-100
End of Run: 02Nov2018, 00:00 Meteorologic Model: 100-yr, 24-h
Compute Time: 11Oct2019, 11:30:32 Control Specifications: 100yr, 24-hr

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
RES1 hydrograph	0.1314	143.5	01Nov2018, 12:16	3.10
OS1 hydrograph	0.0247	28.3	01Nov2018, 12:14	2.23
DET1	0.1561	116.7	01Nov2018, 12:28	2.55

Project: The Preserve Simulation Run: RES100+OS100 thru Basin

Reservoir: DET1

Start of Run:	01Nov2018, 00:00	Basin Model:	Developed Site-100
End of Run:	02Nov2018, 00:00	Meteorologic Model:	100-yr, 24-h
Compute Time:	11Oct2019, 11:30:32	Control Specifications:	100yr, 24-hr

Volume Units:IN

Computed Results

Peak Inflow:	171.2 (CFS)	Date/Time of Peak Inflow:	01Nov2018, 12:16
Peak Discharge:	116.7 (CFS)	Date/Time of Peak Discharge	01Nov2018, 12:28
Inflow Volume:	2.96 (IN)	Peak Storage:	6.9 (AC-FT)
Discharge Volume	2.55 (IN)	Peak Elevation:	215.4 (FT)

Project: The Preserve Simulation Run: (RES100+OS100) 10 day

Start of Run: 01Nov2018, 00:00 Basin Model: Developed Site-100-10day
End of Run: 11Nov2018, 00:00 Meteorologic Model: 100-yr, 10-day
Compute Time: 11Oct2019, 11:30:41 Control Specifications:100yr, 10-day

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
RES1 hydrograph	0.1314	55.1	07Nov2018, 09:00	7.50
OS1 hydrograph	0.0247	9.8	07Nov2018, 08:59	4.64
DET1	0.1561	62.3	07Nov2018, 09:10	6.65

Project: The Preserve Simulation Run: (RES100+OS100) 10 day
Reservoir: DET1

Start of Run:	01Nov2018, 00:00	Basin Model:	Developed Site-100-10day
End of Run:	11Nov2018, 00:00	Meteorologic Model:	100-yr, 10-day
Compute Time:	11Oct2019, 11:30:41	Control Specifications:	100yr, 10-day

Volume Units: IN

Computed Results

Peak Inflow:	64.9 (CFS)	Date/Time of Peak Inflow:	07Nov2018, 09:00
Peak Discharge:	62.3 (CFS)	Date/Time of Peak Discharge	07Nov2018, 09:10
Inflow Volume:	7.05 (IN)	Peak Storage:	5.7 (AC-FT)
Discharge Volume	6.65 (IN)	Peak Elevation:	214.3 (FT)

Appendix 4-Table 1					
Hydromod Basin Stage-Storage-Discharge					
Basin Bottom Elevation (feet) =	207.5	100-year maximum water surface (feet) =	215.4	Top of Bank Elevation (feet) =	216.5
Stage (feet)	Basin Stage-Grading (feet)		Area (acres)	Volume (ac-ft)	Discharge (cfs)
0	207.5		0.569	0	0
0.0889	207.5889		0.575	0.05	0.129
0.1778	207.6778		0.582	0.102	0.183
0.2667	207.7667		0.588	0.154	0.224
0.3556	207.8556		0.595	0.207	0.258
0.4444	207.9444		0.601	0.26	0.289
0.5333	208.0333		0.607	0.313	0.317
0.6222	208.1222		0.614	0.368	0.342
0.7111	208.2111		0.621	0.423	0.366
0.8	208.3		0.627	0.478	0.388
0.8889	208.3889		0.634	0.534	0.409
0.9778	208.4778		0.64	0.591	0.429
1.0667	208.5667		0.647	0.648	0.56
1.1556	208.6556		0.654	0.706	0.638
1.2444	208.7444		0.66	0.764	0.699
1.3333	208.8333		0.667	0.823	0.752
1.4222	208.9222		0.674	0.883	0.799
1.5111	209.0111		0.68	0.943	0.844
1.6	209.1		0.687	1.004	0.885
1.6889	209.1889		0.694	1.066	0.924
1.7778	209.2778		0.701	1.128	0.961
1.8667	209.3667		0.708	1.19	0.997
1.9556	209.4556		0.715	1.254	1.031
2.0444	209.5444		0.721	1.317	1.156
2.1333	209.6333		0.728	1.382	1.254
2.2222	209.7222		0.735	1.447	1.331
2.3111	209.8111		0.742	1.513	1.399
2.4	209.9		0.749	1.579	1.461
2.4889	209.9889		0.756	1.646	1.518
2.5778	210.0778		0.763	1.714	1.572
2.6667	210.1667		0.77	1.782	1.624
2.7556	210.2556		0.777	1.851	1.673
2.8444	210.3444		0.785	1.92	1.72
2.9333	210.4333		0.792	1.99	1.766
3.0222	210.5222		0.799	2.061	1.811
3.1111	210.6111		0.806	2.132	1.854
3.2	210.7		0.813	2.204	1.896
3.2889	210.7889		0.82	2.277	1.937
3.3778	210.8778		0.828	2.35	1.977
3.4667	210.9667		0.835	2.424	2.016
3.5556	211.0556		0.842	2.499	2.054
3.6444	211.1444		0.849	2.574	2.091
3.7333	211.2333		0.857	2.65	2.128
3.8222	211.3222		0.864	2.726	2.164
3.9111	211.4111		0.871	2.803	2.199
4	211.5		0.879	2.881	2.234
4.0889	211.5889		0.886	2.96	2.268
4.1778	211.6778		0.894	3.039	2.302
4.2667	211.7667		0.901	3.119	2.335
4.3556	211.8556		0.909	3.199	2.367

Appendix 4-Table 1					
Hydromod Basin Stage-Storage-Discharge					
Basin Bottom Elevation (feet) =	207.5	100-year maximum water surface (feet) =	215.4	Top of Bank Elevation (feet) =	216.5
Stage (feet)	Basin Stage-Grading (feet)		Area (acres)	Volume (ac-ft)	Discharge (cfs)
4.4444	211.9444		0.916	3.28	2.4
4.5333	212.0333		0.924	3.362	2.522
4.6222	212.1222		0.931	3.445	3.103
4.7111	212.2111		0.939	3.528	3.947
4.8	212.3		0.947	3.612	4.986
4.8889	212.3889		0.954	3.696	6.188
4.9778	212.4778		0.962	3.781	7.532
5.0667	212.5667		0.969	3.867	9.005
5.1556	212.6556		0.977	3.954	10.59
5.2444	212.7444		0.985	4.041	12.29
5.3333	212.8333		0.993	4.129	14.09
5.4222	212.9222		1	4.218	15.99
5.5111	213.0111		1.008	4.307	17.99
5.6	213.1		1.016	4.397	20.07
5.6889	213.1889		1.024	4.488	22.23
5.7778	213.2778		1.032	4.579	24.48
5.8667	213.3667		1.04	4.671	26.8
5.9556	213.4556		1.048	4.764	29.2
6.0444	213.5444		1.055	4.857	30.89
6.1333	213.6333		1.063	4.952	32.79
6.2222	213.7222		1.071	5.047	35.49
6.3111	213.8111		1.079	5.142	38.78
6.4	213.9		1.087	5.239	42.57
6.4889	213.9889		1.096	5.336	46.77
6.5778	214.0778		1.104	5.433	51.31
6.6667	214.1667		1.112	5.532	56.13
6.7556	214.2556		1.12	5.631	61.18
6.8444	214.3444		1.128	5.731	66.37
6.9333	214.4333		1.136	5.832	71.66
7.0222	214.5222		1.144	5.933	76.97
7.1111	214.6111		1.153	6.035	82.23
7.2	214.7		1.161	6.138	87.38
7.2889	214.7889		1.169	6.242	92.36
7.3778	214.8778		1.177	6.346	97.11
7.4667	214.9667		1.186	6.451	101.5
7.5556	215.0556		1.194	6.557	105.7
7.6444	215.1444		1.202	6.663	109.4
7.7333	215.2333		1.211	6.771	112.8
7.8222	215.3222		1.219	6.879	115.8
7.9111	215.4111		1.227	6.987	118.4
8	215.5		1.236	7.097	120.6
8.0889	215.5889		1.244	7.207	122.6

Appendix 5 - Design Data Summary Sheet for Bioretention Basin

Table BP-3. Design Data Summary Sheet for Bioretention Planter

Designer: Sean Davis **Date:** 6/14/19

Company: RJA

Project: The Preserve

Location: Rancho Cordova, Morrison Creek

1a. Determine Design Water Quality Volume

a. Contributing drainage area	Area =	100 ac	~~ft²~~
b. Water Quality Volume	WQV =	75,360	ft³

1b. Adjust Volume Up for Hydromodification Management
(If Applicable) Based upon SAHM Modeling

a. Water Quality Volume based on SAHM modeling	V =		ft³
b. SAHM Model Demonstrates Compliance with Flow Duration Standards	(Yes or No)		

2. Design average surcharge depth (d_s)
d_s = 6-12 inches (0.5-1 foot) d_s = ft

3. Design Planter Surface Area (A_s)
$A_s = WQV/d_s$ A_s = ft²

4. Base Course Layers

a. Top Layer (6 in. minimum)	6	in
b. Bioretention Soil Media (18 in. minimum, See App I)	18	in
c. Gravel Layer (9 in. minimum)	9	in

5. Planter Type (check type used)

☐ Infiltration without underdrain ☑ Infiltration with underdrain

☐ Flow-through with impermeable liner

6. Vegetation (describe)

7. Overflow Device (check type used or describe "Other")

☐ Drop inlet ☑ Standpipe

☐ Other

Notes:

Appendix 6 - Design Data Summary Sheet for Water Quality Detention Basin

Table DB-6. Design Data Summary Sheet for Water Quality Detention Basin

Designer: Sean Davis **Date:** 10/30/18

Company: RSA

Project: The Preserve - Dry Basin

Location: Rancho Cordova, Morrison Creek

1a. Design Water Quality Volume

a. Tributary drainage area	Area =	100 ac.	~~ft²~~
b. Water Quality Volume	WQV =	75,360	ft³

1b. Adjust Volume Up for Hydromodification Management
(If Applicable) Based upon SAHM Modeling

a. Water Quality Volume based on SAHM modeling	V =	75,360	ft³
b. SAHM Model Demonstrates Compliance with Flow Duration Standards	(Yes or No)	Yes	

2. Basin Depths and Water Surface Areas **ACTUAL DESIGN**

a. For Wet and Combination Basins

Permanent pool volume (Vol_{pp})	Vol_{pp} =		acre-ft
Average depth of permanent pool (D_{avg}) (4-8 ft)	D_{avg} =		ft
Water surface area of permanent pool (A_{pp})	A_{pp} =		ft²
Water surface elevation of permanent pool ($WS\ Elev_{pp}$)	$WS\ Elev_{pp}$ =		ft

b. Forebay

Depth range = 2-4 ft	Depth =		ft
Volume range = 5-10% of WQV	Volume =		acre-ft
Water surface area range	WS Area =		ft²

3. Depth of WQV and Max WS Elevation

a. Maximum water surface area with WQV (A_{WQV})	A_{WQV} =	32,670	ft²
b. Maximum water surface elevation with WQV ($WS\ Elev_{WQV}$)	$WS\ Elev_{WQV}$ =	2.7	ft

4. For Wet and Combo Basins: Determine maximum dry season inflow to maintain permanent pond in the dry season. Use Table DB-2 and an evaporation rate of 0.45 in/day for the Sacramento area.

$Q_{inflow} = - Q_{E-P} + Q_{seepage}$

	Q_{E-P} =		acre-ft/mo
	$Q_{seepage}$ =		acre-ft/mo
	Q_{inflow} =		acre-ft/mo

5. Outlet

a. Outlet Type: orifice / Notch / Riser

b. Drawdown Time — Time = 50 Hours — See SAHM Drawdown Time Results

Design Data Summary Sheet for Water Quality Detention Basin (Page 2 of 2)

Project: The Preserve - Dry Basin

6. Basin Shape

Length-Width Ratio (2:1 minimum)	Ratio =	4:1	L:W

7. Embankment Side Slope

a. Interior Side Slope (4:1 or flatter)	Slope =	4:1	H:V
b. Exterior Side Slope (3:1 or flatter)	Slope =		H:V

8. Maintenance Access Ramp

a. Slope (10% maximum)	Slope =		%
b. Width (15 to 20 feet)	Width =		ft

9. Vegetation (describe)

Native Grasses: This vegetation is most appropriate for dry basin and no irrigation

Irrigated Turf:

Trees:

Emergent Aquatic Plants (specify type/density):

Other:

Notes: Access provided to Basin and outlet structure, but no ramp into basin provided at this time.

Appendix 7 - HEC-RAS Output for Existing Condition 10-year storm and 100-year storm

Sacramento Hydrologic C lator Report

August 2, 2005 1 ..20

Project Title: EXISTING

Comments: Onsite existing conditions and offsite existing conditions. Mining tailings have soil type A and very long flow paths.

Prepared by: SGL

Method: Sacramento County HEC-1 method

Date: 6/20/2005

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
ZDS	685.87	125	Basin "n"	-	Computed	-	Computed	-	Computed	-
DS1	111.82	140	Basin "n"	-	Computed	-	Computed	-	Computed	-
DS2	180.89	150	Basin "n"	-	Computed	-	Computed	-	Computed	-
ZUS	325.04	188	Specified	114	-	-	Specified	.28	Specified	2
US1	1522.62	249	Specified	214	-	-	Specified	.29	Specified	2
US2	1192.06	263	Specified	182	-	-	Specified	.21	Specified	2
US3	1002.77	265	Specified	181	-	-	Specified	.13	Specified	2
EZ1A	414.92	160	Specified	119	-	-	Specified	0.19	Specified	2
EZ1B	693.98	160	Specified	209	-	-	Specified	0.26	Specified	2
EM3	2235.4	280	Specified	253	-	-	Specified	.22	Specified	2
EM2	132.17	150	Specified	70	-	-	Specified	.19	Specified	2
DUMMY1	1	249	Specified	2	-	-	Specified	.29	Specified	2
DUMMY2	1	165	Specified	2	-	-	Specified	.22	Specified	2
ND1N2	216.9	225	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Met ata for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
ZDS	10176	3526	.003	Undeveloped			0													0		
				Developed			551.24													134.63		
DS1	3850	1966	.0045	Undeveloped			0													0		
				Developed			63.31													48.51		
DS2	2680	1245	.007	Undeveloped	0															0		
				Developed	14.97															165.92		
ND1N2	5810	3667	.008	Undeveloped																216.9		
				Developed																0		

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
ZDS	B			33.69													2.5		
	C			139.89													42		
	D			377.66													90.13		
DS1	B																		
	C			63.31													27.6		
	D																20.91		
DS2	B	4.99															19.11		
	C	4.99															98.3		
	D	4.99															48.51		
ND1N2	B																		
	C																203.9		
	D																13		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Ro . – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
R40	ZUS	J30	Trapezoidal	5665	0.01	10	10:1	0.06
R10	US1	J10	Trapezoidal	9210	0.002	24	10:1	0.06
R50	J50	J60	Trapezoidal	8629	0.004	24	10:1	0.06
R30	J20		Pipe	4150	.0082	4		.015
R20	J10	J20	Trapezoidal	9210	0.002	24	10:1	0.06
R60	J60	J70	Trapezoidal	8629	0.004	24	10:1	0.06

View HEC-1 output

Sacramento method results
(Project: EXISTING)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
ZDS	698.	12:40	1.07			
DS1	147.	12:25	.17			
DS2	247.	12:22	.28			
ZUS	127.	13:31	.51			
R40	127.	13:58	.51			
EZ1A	184.	13:36	.65			
J30	299.	13:47	1.16			
EZ1B	163.	14:46	1.08			
US1	329.	14:50	2.38			
R10	318.	15:55	2.38			
DUMMY1	3.1	12:02	.00			
J10	318.	15:55	2.38			
R20	307.	17:03	2.38			
J20	376.	16:56	3.47			
R30	376.	17:00	3.47			
EM3	483.	15:22	3.49			
US2	355.	14:25	1.86			
US3	361.	14:26	1.57			
ND1N2	140.	13:11	.34			
J50	787.	14:22	3.77			
R50	782.	14:59	3.77			
DUMMY2	3.2	12:02	.00			
J60	782.	14:59	3.77			
R60	777.	15:35	3.77			
J70	1256.	15:32	7.26			
EM2	89.	12:56	.21			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
ZDS	429.	12:33	1.07			
DS1	83.	12:22	.17			
DS2	128.	12:21	.28			
ZUS	56.	13:31	.51			
R40	56.	14:05	.51			
EZ1A	91.	13:36	.65			
J30	139.	13:51	1.16			
EZ1B	76.	14:47	1.08			
US1	145.	14:50	2.38			
R10	139.	16:13	2.38			
DUMMY1	1.4	12:02	.00			
J10	139.	16:13	2.38			
R20	134.	17:39	2.38			
J20	160.	17:34	3.47			
R30	160.	17:39	3.47			
EM3	237.	15:22	3.49			
US2	174.	14:26	1.86			
US3	194.	14:28	1.57			

ND1N2	76.	13:12	.34
J50	411.	14:21	3.77
R50	408.	15:04	3.77
DUMMY2	1.5	12:02	.00
J60	408.	15:04	3.77
R60	405.	15:48	3.77
J70	636.	15:42	7.26
EM2	43.	12:56	.21

(100-year, 10-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
ZDS	401.	153:17	1.07			
DS1	70.	153:06	.17			
DS2	107.	153:04	.28			
ZUS	74.	154:03	.51			
R40	74.	154:34	.51			
EZ1A	122.	154:08	.65			
J30	191.	154:19	1.16			
EZ1B	114.	155:15	1.08			
US1	217.	155:19	2.38			
R10	211.	156:30	2.38			
DUMMY1	.4	152:34	.00			
J10	211.	156:30	2.38			
R20	206.	157:44	2.38			
J20	256.	157:32	3.47			
R30	256.	157:37	3.47			
EM3	370.	155:48	3.49			
US2	257.	154:54	1.86			
US3	280.	154:53	1.57			
ND1N2	92.	153:45	.34			
J50	599.	154:47	3.77			
R50	596.	155:25	3.77			
DUMMY2	.5	152:34	.00			
J60	596.	155:25	3.77			
R60	593.	156:04	3.77			
J70	959.	155:58	7.26			
EM2	49.	153:30	.21			

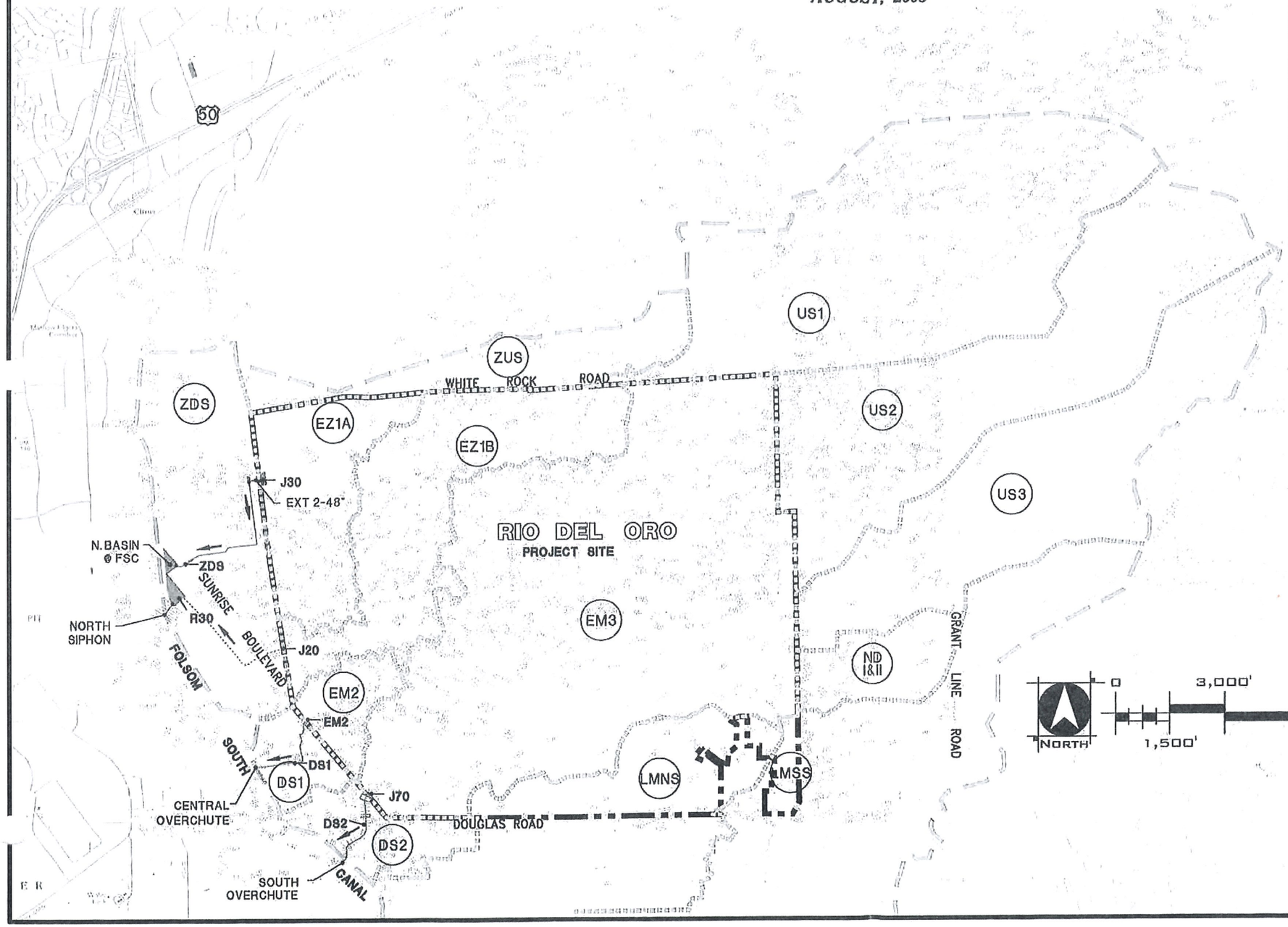
FIGURE G

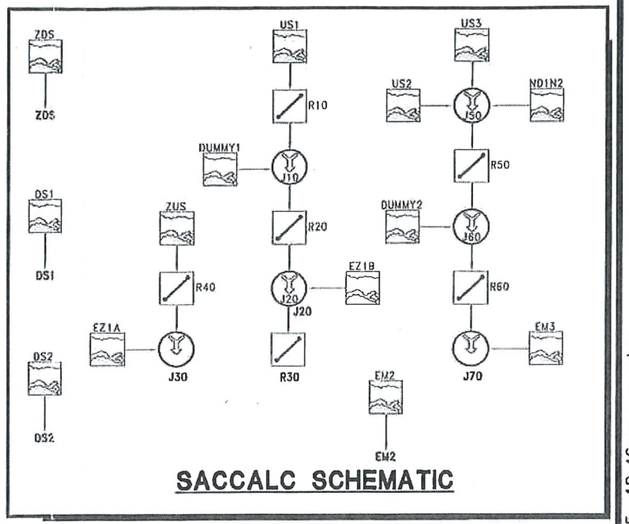
EXISTING-CONDITIONS HYDROLOGIC (SACCALC) AND HYDRAULIC (HEC-RAS) NETWORK

RIO DEL ORO

CITY OF RANCHO CORDOVA, CALIFORNIA

AUGUST, 2005





SACCALC SCHEMATIC

NOTE: JUNCTION J30 FLOWS INTO US BASIN NORTH ROUTED R30 FLOWS INTO N BASIN @ FSC SHED EM2 FLOWS INTO CHANNEL IN SHED DS1 JUNCTION J70 FLOWS INTO CHANNEL IN SHED DS2 SHEDS ZDS, DS1, DS2 FLOW INTO DOWNSTREAM CHANNELS

LEGEND

- PROPERTY BOUNDARY
- EXISTING WATERSHED BOUNDARY
- EXISTING SUB-SHED BOUNDARY
- 170 EXISTING GROUND CONTOUR
- EXISTING CONDITIONS HEC-RAS MODEL
- FLOW DIRECTION
- US3 WATERSHED I.D.
- SACCALC WATERSHED HYDROGRAPH
- SACCALC JUNCTION
- SACCALC ROUTING
- J30 LOCATION OF HYDROGRAPH INPUT

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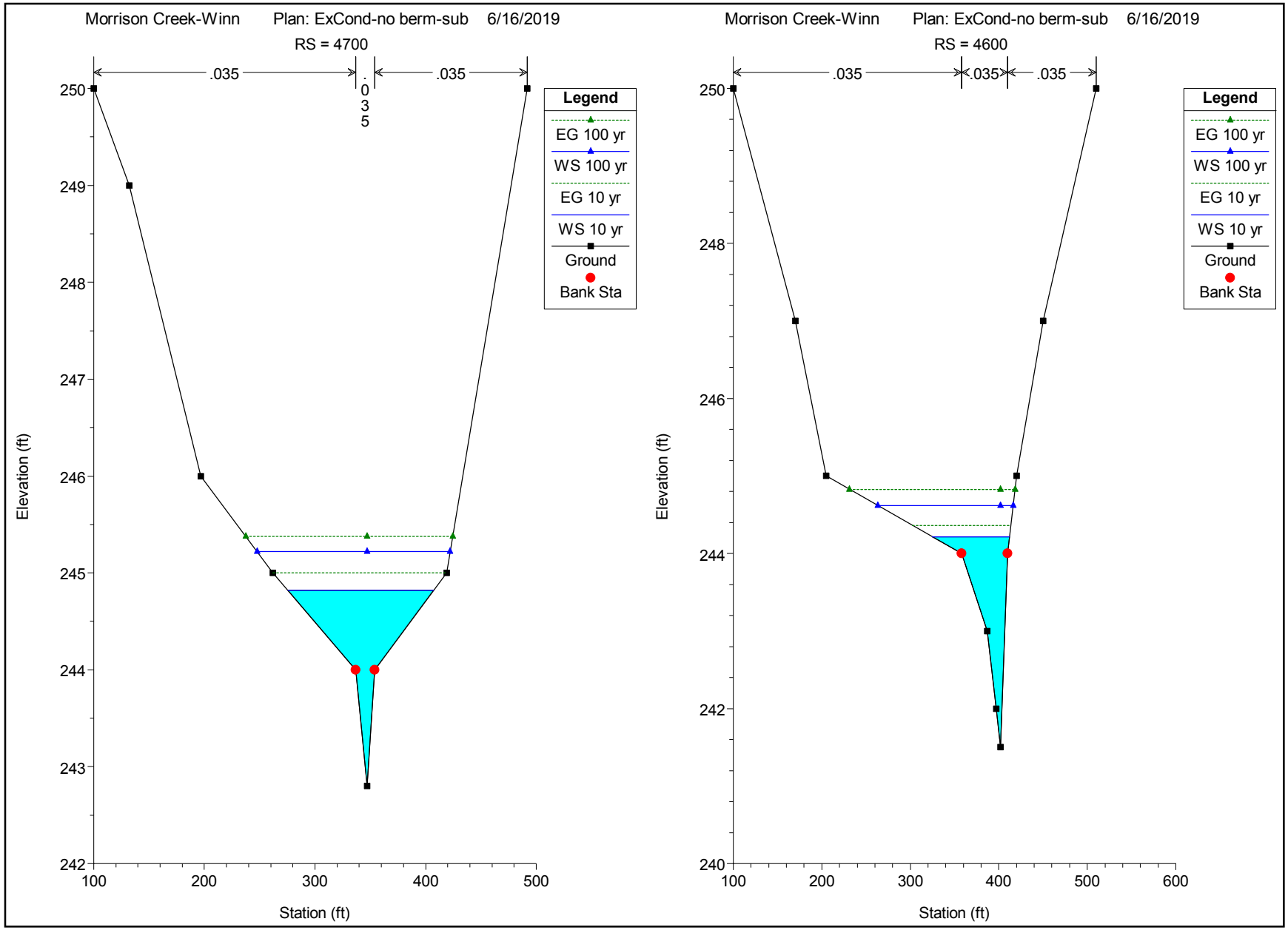
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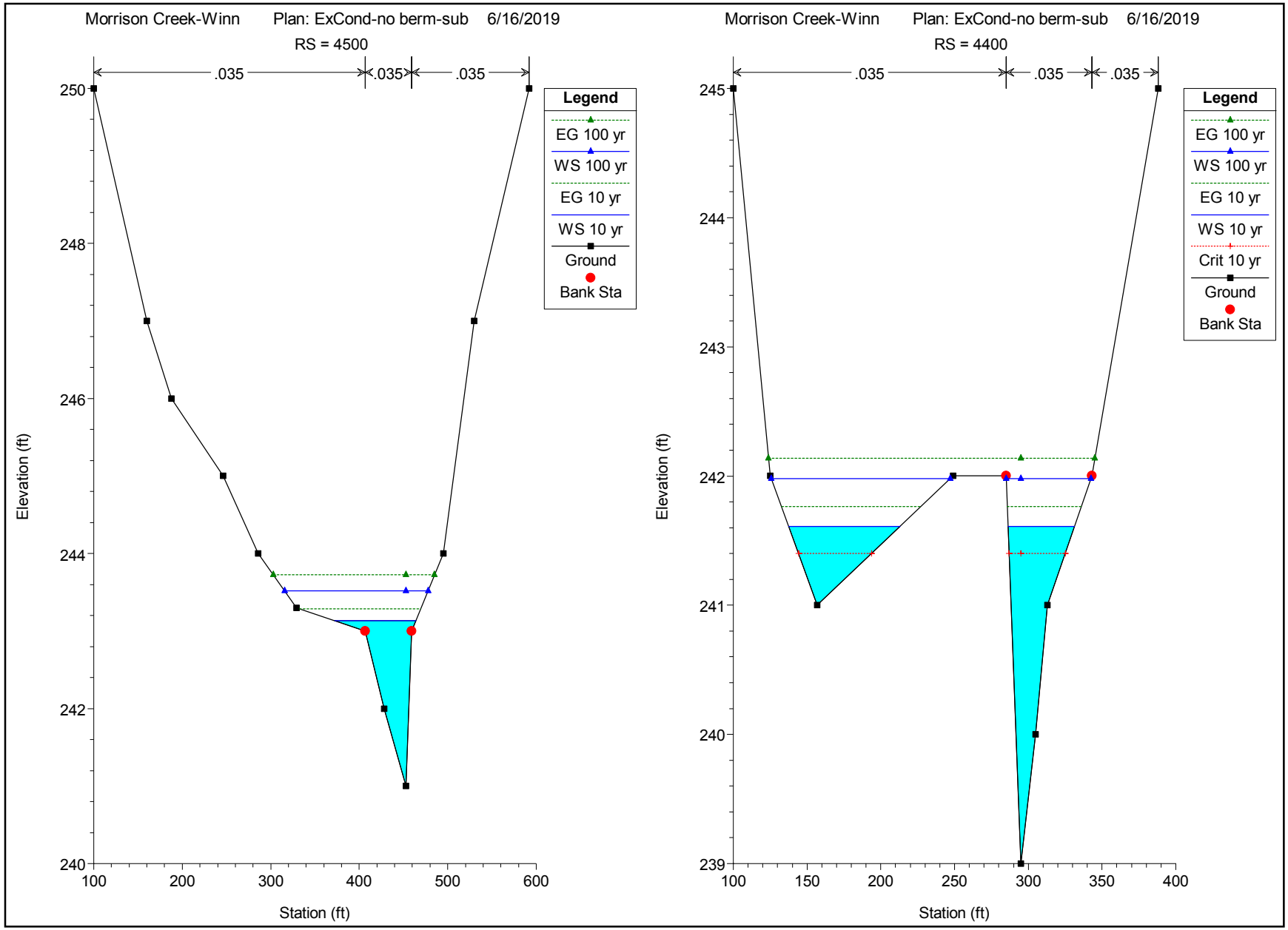
HEC-RAS Plan: no berm-sub River: Morrison Creek Reach: Winn

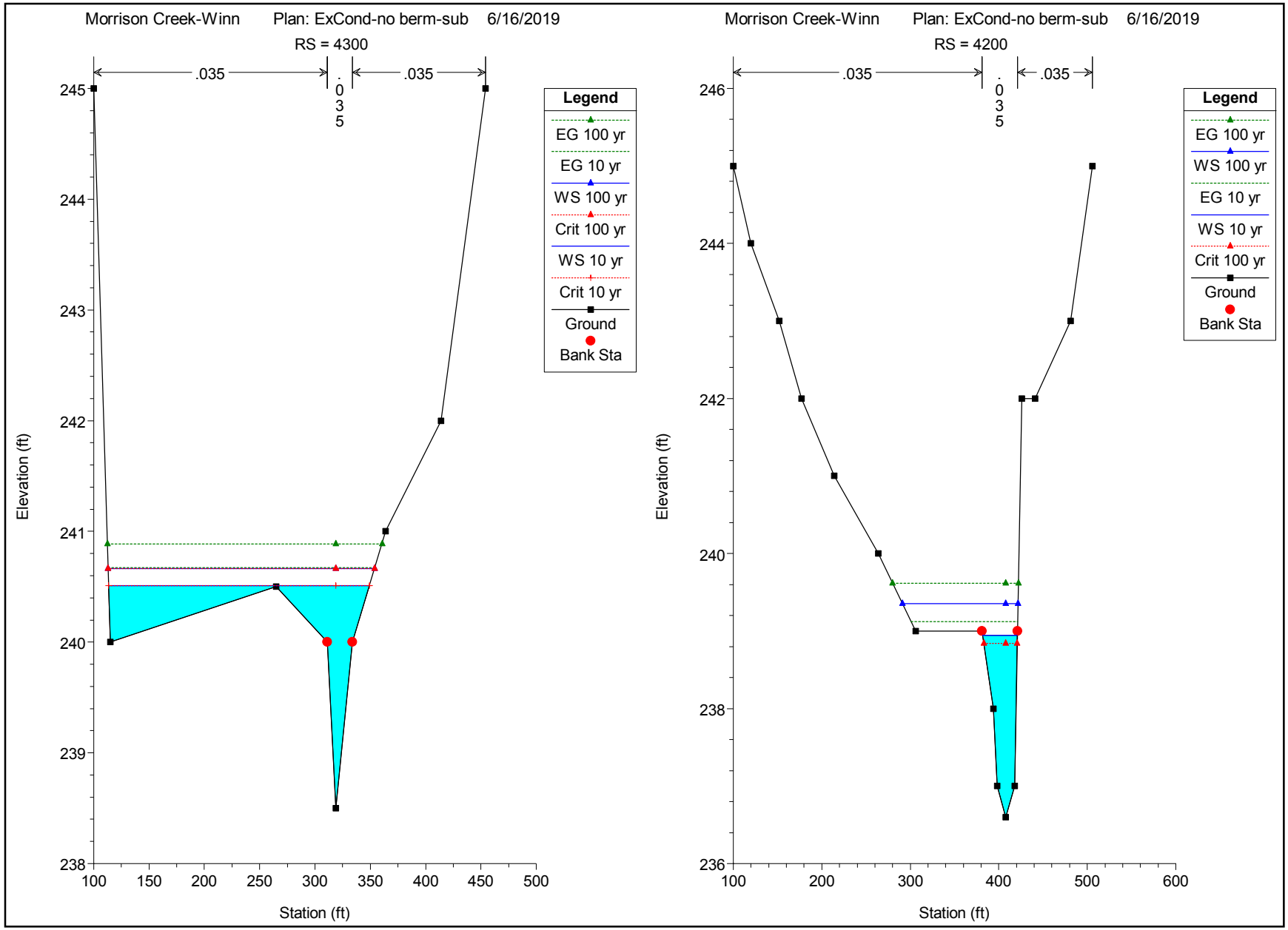
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Winn	4700	10 yr	194.00	242.80	244.82		245.00	0.006635	4.34	71.02	131.60	0.64
Winn	4700	100 yr	361.00	242.80	245.22		245.38	0.004758	4.34	133.74	174.55	0.57
Winn	4600	10 yr	194.00	241.50	244.22		244.36	0.004251	3.09	65.75	87.15	0.50
Winn	4600	100 yr	361.00	241.50	244.62		244.83	0.004475	3.86	114.41	153.16	0.54
Winn	4500	10 yr	194.00	241.00	243.13		243.29	0.004545	3.17	63.51	91.30	0.52
Winn	4500	100 yr	361.00	241.00	243.52		243.73	0.004636	3.87	116.20	162.20	0.55
Winn	4400	10 yr	194.00	239.00	241.61	241.40	241.76	0.006179	3.40	69.74	120.32	0.59
Winn	4400	100 yr	361.00	239.00	241.98		242.14	0.006118	3.62	125.36	178.82	0.60
Winn	4300	10 yr	194.00	238.50	240.51	240.51	240.67	0.006657	4.02	84.14	235.82	0.63
Winn	4300	100 yr	361.00	238.50	240.66	240.66	240.89	0.009180	5.09	120.44	240.84	0.75
Winn	4200	10 yr	194.00	236.60	238.95		239.12	0.003923	3.38	57.36	39.22	0.49
Winn	4200	100 yr	361.00	236.60	239.35	238.84	239.62	0.004816	4.36	102.53	130.32	0.57
Winn	4100	10 yr	194.00	236.20	237.81		237.93	0.006772	3.95	82.96	170.42	0.63
Winn	4100	100 yr	361.00	236.20	238.06	237.92	238.22	0.008258	4.93	132.32	246.87	0.72
Winn	4000	10 yr	194.00	235.00	236.42	236.42	236.58	0.009233	4.34	79.10	235.56	0.72
Winn	4000	100 yr	361.00	235.00	236.60	236.60	236.78	0.009896	4.92	127.05	268.66	0.76
Winn	3900	10 yr	194.00	233.80	235.48		235.53	0.003623	2.65	116.23	231.03	0.45
Winn	3900	100 yr	361.00	233.80	235.75		235.82	0.003082	2.85	180.26	234.49	0.43
Winn	3800	10 yr	194.00	232.90	234.57		234.72	0.006032	3.55	79.27	178.11	0.59
Winn	3800	100 yr	361.00	232.90	234.76	234.72	234.99	0.008654	4.71	117.46	225.83	0.73
Winn	3700	10 yr	194.00	232.70	234.15	234.08	234.22	0.006455	2.74	102.33	296.72	0.57
Winn	3700	100 yr	361.00	232.70	234.30	234.19	234.41	0.007356	3.33	149.79	307.25	0.63
Winn	3600	10 yr	194.00	230.50	232.74	232.69	232.95	0.006869	4.48	66.39	124.16	0.65
Winn	3600	100 yr	361.00	230.50	233.10		233.31	0.006080	4.88	120.11	171.83	0.64
Winn	3500	10 yr	194.00	230.10	231.84		231.95	0.006311	2.79	72.61	103.09	0.57
Winn	3500	100 yr	361.00	230.10	232.21		232.35	0.006507	3.50	128.36	189.72	0.61
Winn	3400	10 yr	194.00	226.50	228.53	228.53	228.80	0.007440	4.67	61.45	133.28	0.68
Winn	3400	100 yr	361.00	226.50	228.84	228.84	229.12	0.007508	5.33	113.26	199.07	0.71
Winn	3300	10 yr	194.00	223.00	225.11	224.70	225.17	0.003367	2.06	109.09	304.11	0.42
Winn	3300	100 yr	361.00	223.00	225.35	225.11	225.43	0.003248	2.43	182.95	312.97	0.43
Winn	3200	10 yr	194.00	222.00	223.38	223.38	223.58	0.017714	4.04	57.84	134.43	0.91
Winn	3200	100 yr	361.00	222.00	223.60	223.60	223.86	0.019004	4.47	89.09	156.25	0.96
Winn	3100	10 yr	194.00	220.40	222.47		222.53	0.002518	2.20	108.68	187.49	0.38
Winn	3100	100 yr	361.00	220.40	222.88		222.95	0.001901	2.38	200.52	257.64	0.35
Winn	3000	10 yr	194.00	219.70	221.60		221.79	0.006384	3.42	57.02	63.89	0.60
Winn	3000	100 yr	361.00	219.70	221.90	221.72	222.24	0.009807	4.75	80.44	93.45	0.76
Winn	2900	10 yr	194.00	219.00	221.26	220.91	221.34	0.002667	3.17	119.31	256.81	0.42
Winn	2900	100 yr	361.00	219.00	221.45	220.97	221.56	0.003748	4.03	170.78	283.01	0.51
Winn	2800	10 yr	194.00	217.70	219.77	219.77	220.21	0.019561	5.37	36.15	41.54	1.01
Winn	2800	100 yr	361.00	217.70	220.29	220.29	220.54	0.008714	4.46	114.79	253.35	0.71
Winn	2700	10 yr	194.00	216.60	219.04	218.51	219.08	0.001819	2.39	143.94	255.88	0.34
Winn	2700	100 yr	361.00	216.60	219.32		219.37	0.001860	2.63	217.45	267.17	0.35
Winn	2600	10 yr	194.00	216.00	217.79	217.79	218.22	0.019531	5.30	36.63	43.22	1.01
Winn	2600	100 yr	361.00	216.00	218.37	218.37	218.70	0.009397	4.93	91.68	166.93	0.76
Winn	2500	10 yr	194.00	214.60	217.94		217.95	0.000108	0.74	345.48	317.88	0.09
Winn	2500	100 yr	361.00	214.60	218.20		218.22	0.000209	1.11	430.33	331.92	0.13
Winn	2400	10 yr	194.00	215.00	217.94		217.94	0.000081	0.62	382.71	296.35	0.08
Winn	2400	100 yr	361.00	215.00	218.19		218.20	0.000167	0.97	458.71	306.56	0.11
Winn	2300	10 yr	194.00	217.20	217.76	217.76	217.92	0.026288	3.23	59.98	186.18	1.00
Winn	2300	100 yr	361.00	217.20	218.02		218.17	0.016717	3.19	113.32	256.32	0.84
Winn	2200	10 yr	194.00	215.20	217.27		217.37	0.001930	2.57	80.25	89.80	0.35

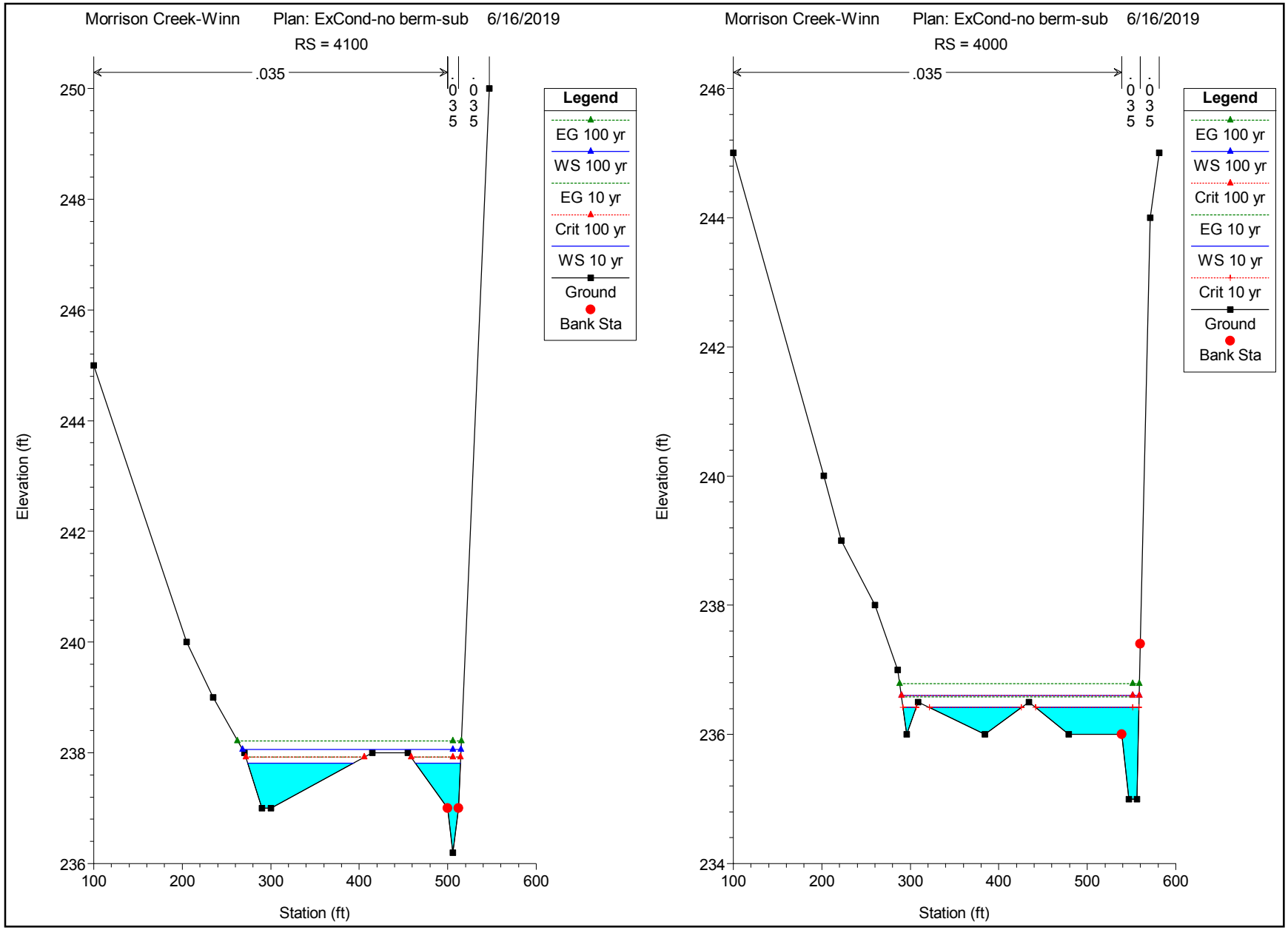
HEC-RAS Plan: no berm-sub River: Morrison Creek Reach: Winn (Continued)

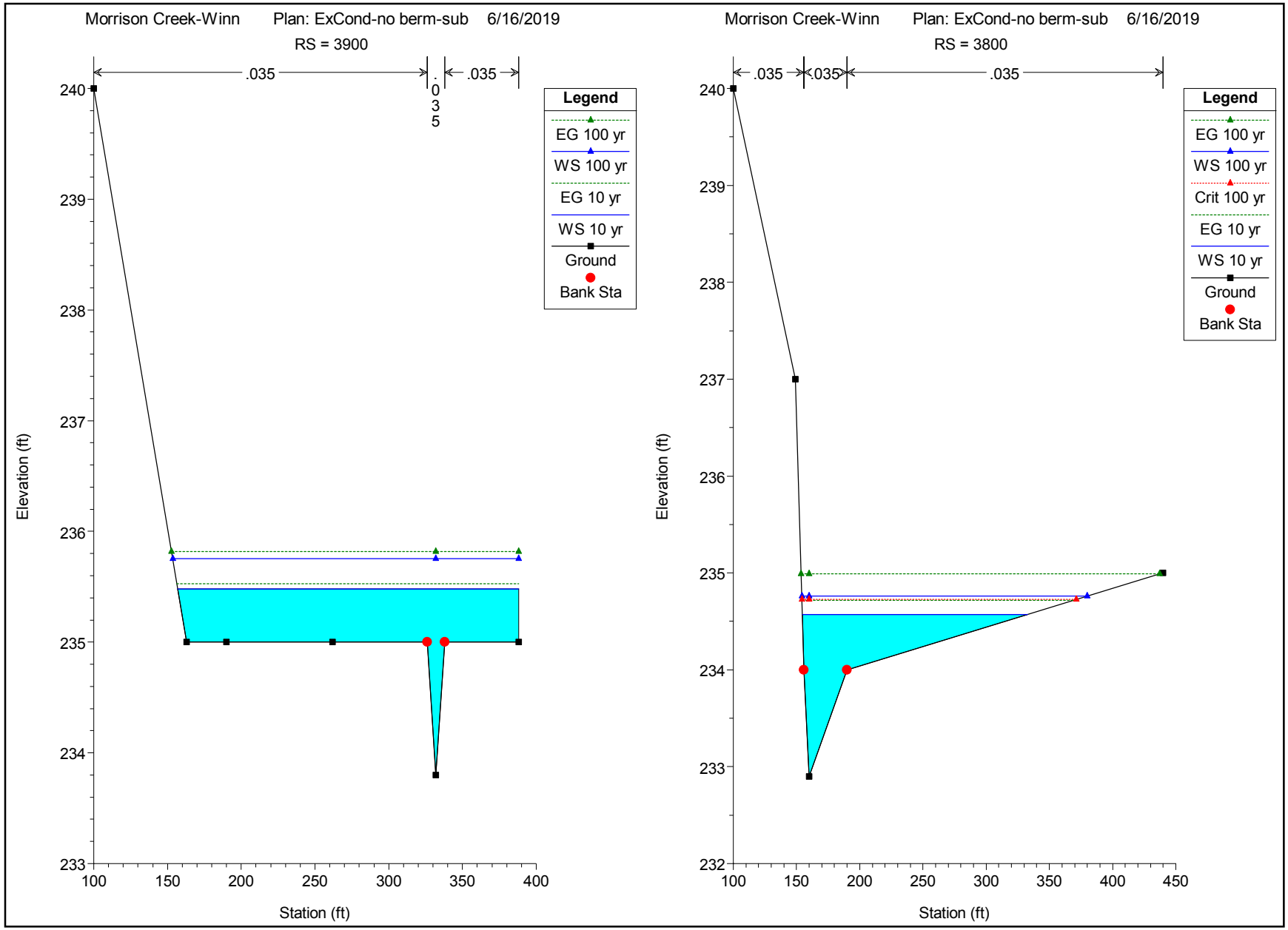
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Winn	2200	100 yr	361.00	215.20	217.71		217.86	0.002662	3.29	136.48	159.71	0.42
Winn	2100	10 yr	194.00	215.20	217.31		217.32	0.000085	0.62	325.15	243.36	0.08
Winn	2100	100 yr	361.00	215.20	217.77		217.78	0.000133	0.87	467.29	332.38	0.10
Winn	2050	10 yr	194.00	215.20	217.31		217.31	0.000054	0.48	436.49	261.28	0.06
Winn	2050	100 yr	361.00	215.20	217.77		217.78	0.000089	0.70	560.59	277.50	0.08
Winn	2025	10 yr	194.00	215.20	217.30		217.31	0.000114	0.68	287.02	157.78	0.09
Winn	2025	100 yr	361.00	215.20	217.75		217.76	0.000202	1.00	360.17	167.67	0.12
Winn	2000	10 yr	194.00	216.00	216.95	216.95	217.27	0.027881	4.54	42.76	68.10	1.01
Winn	2000	100 yr	361.00	216.00	217.30	217.30	217.71	0.025756	5.15	70.09	86.92	1.01
Winn	1950	10 yr	194.00	213.60	214.78		214.86	0.005460	2.83	91.32	172.62	0.54
Winn	1950	100 yr	361.00	213.60	215.26		215.32	0.002358	2.49	202.98	271.48	0.38
Winn	1900	10 yr	194.00	213.20	214.54	214.54	214.72	0.011302	4.23	68.31	170.21	0.78
Winn	1900	100 yr	361.00	213.20	215.24		215.28	0.001554	2.29	239.17	301.37	0.32
Winn	1800	10 yr	194.00	210.50	213.77		213.83	0.001521	1.88	103.15	84.51	0.30
Winn	1800	100 yr	361.00	210.50	215.09		215.11	0.000477	1.28	314.57	398.02	0.18
Winn	1700	10 yr	194.00	210.50	213.80		213.80	0.000058	0.63	341.65	281.15	0.07
Winn	1700	100 yr	361.00	210.50	215.10		215.10	0.000029	0.57	868.23	473.81	0.05
Winn	1600	10 yr	194.00	210.50	213.79		213.80	0.000023	0.40	489.05	179.95	0.04
Winn	1600	100 yr	361.00	210.50	215.09		215.10	0.000024	0.49	740.36	215.23	0.05
Winn	1500	10 yr	194.00	210.50	213.79		213.79	0.000016	0.34	577.59	202.82	0.04
Winn	1500	100 yr	361.00	210.50	215.09		215.09	0.000016	0.42	861.36	224.44	0.04
Winn	1400	10 yr	194.00	210.50	213.79		213.79	0.000024	0.41	477.99	174.68	0.04
Winn	1400	100 yr	361.00	210.50	215.09		215.09	0.000024	0.48	754.39	221.52	0.05
Winn	1300	10 yr	194.00	210.50	213.79		213.79	0.000024	0.40	483.62	178.20	0.04
Winn	1300	100 yr	361.00	210.50	215.09		215.09	0.000028	0.49	736.46	231.46	0.05
Winn	1200	10 yr	194.00	210.50	213.79		213.79	0.000012	0.31	622.14	204.48	0.03
Winn	1200	100 yr	361.00	210.50	215.09		215.09	0.000014	0.40	895.99	216.48	0.03
Winn	1100	10 yr	194.00	210.50	213.79		213.79	0.000020	0.38	512.91	179.15	0.04
Winn	1100	100 yr	361.00	210.50	215.09		215.09	0.000021	0.48	758.45	198.21	0.04
Winn	1000	10 yr	194.00	209.90	213.33		213.74	0.010026	5.15	37.64	17.38	0.62
Winn	1000	100 yr	361.00	209.90	214.52		215.03	0.010165	5.75	62.73	25.05	0.64
Winn	900	10 yr	194.00	209.20	212.39	212.39	213.37	0.028195	7.93	24.47	12.54	1.00
Winn	900	100 yr	361.00	209.20	213.58	213.58	214.66	0.026576	8.35	43.24	19.95	1.00
Winn	800	10 yr	194.00	205.80	209.47	208.82	209.80	0.009092	4.62	42.03	21.79	0.59
Winn	800	100 yr	361.00	205.80	210.11	209.59	210.74	0.013056	6.36	56.79	23.69	0.72
Winn	700	10 yr	194.00	206.00	207.31	207.31	207.50	0.016310	3.89	58.67	136.30	0.88
Winn	700	100 yr	361.00	206.00	207.52	207.52	207.78	0.018395	4.56	91.70	171.47	0.96
Winn	600	10 yr	194.00	204.10	206.28		206.35	0.002505	2.08	93.15	95.64	0.37
Winn	600	100 yr	361.00	204.10	206.70		206.80	0.003055	2.64	136.58	113.84	0.43
Winn	500	10 yr	194.00	203.70	205.89		205.97	0.004180	2.27	85.63	113.58	0.46
Winn	500	100 yr	361.00	203.70	206.22		206.34	0.005095	2.76	130.62	149.32	0.52
Winn	400	10 yr	194.00	203.40	205.33	205.05	205.42	0.006844	2.33	83.27	153.69	0.56
Winn	400	100 yr	361.00	203.40	205.61		205.72	0.006836	2.77	130.39	185.62	0.58
Winn	300	10 yr	194.00	203.00	204.62	204.22	204.70	0.004005	2.27	93.10	178.15	0.45
Winn	300	100 yr	361.00	203.00	204.91	204.59	205.01	0.004001	2.75	151.20	220.08	0.48

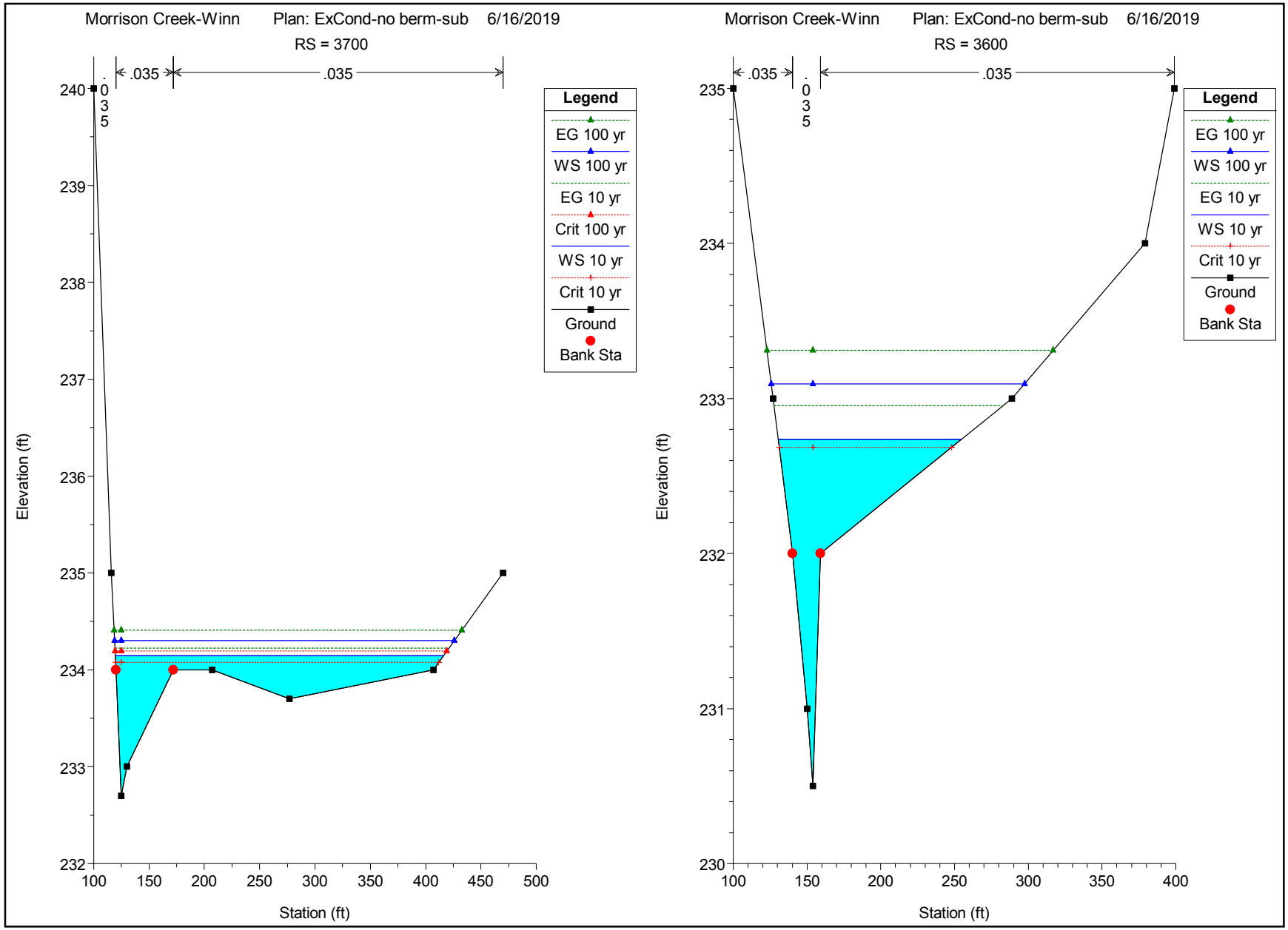

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 4700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 4600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

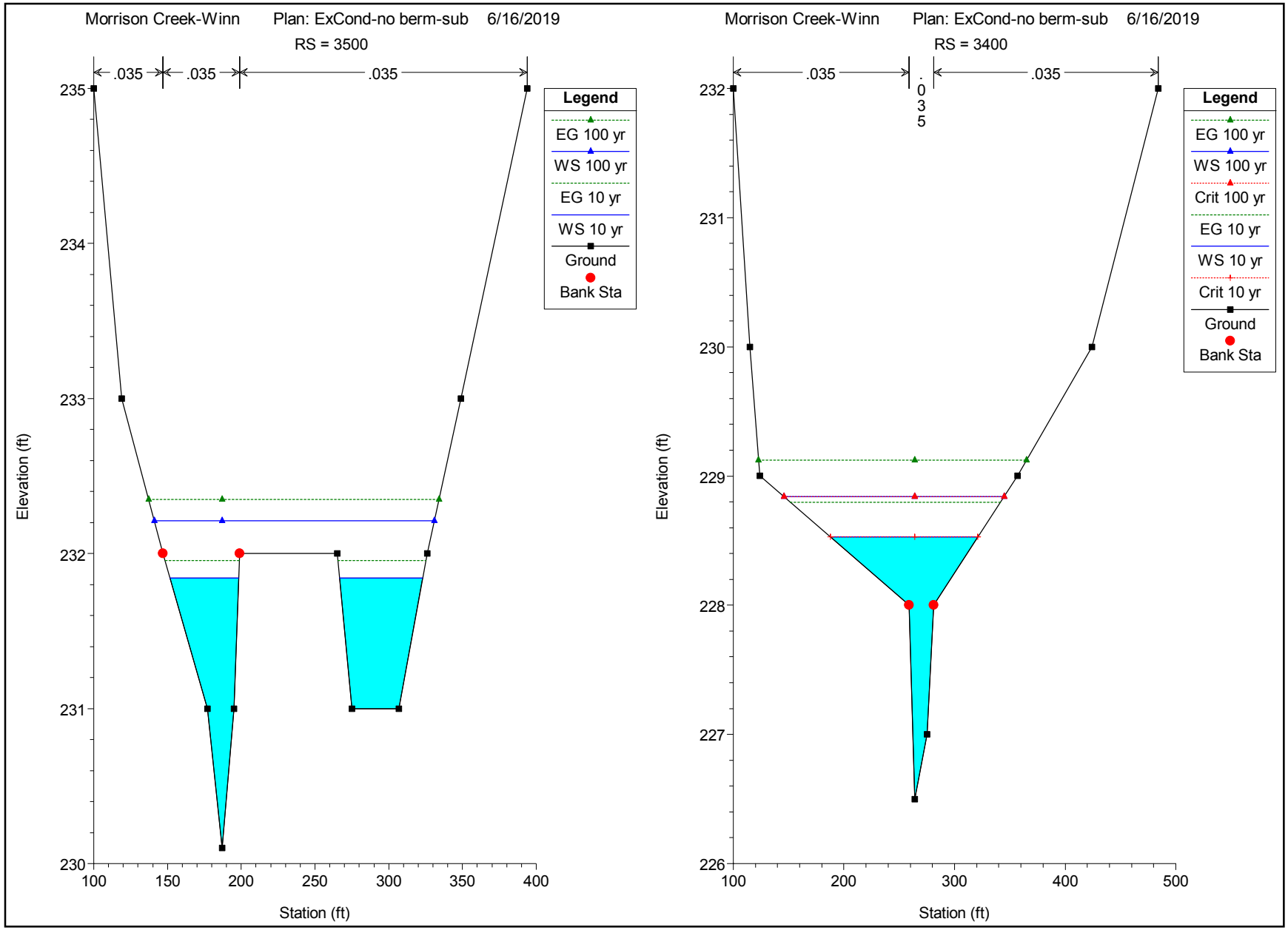

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 4500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 4400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

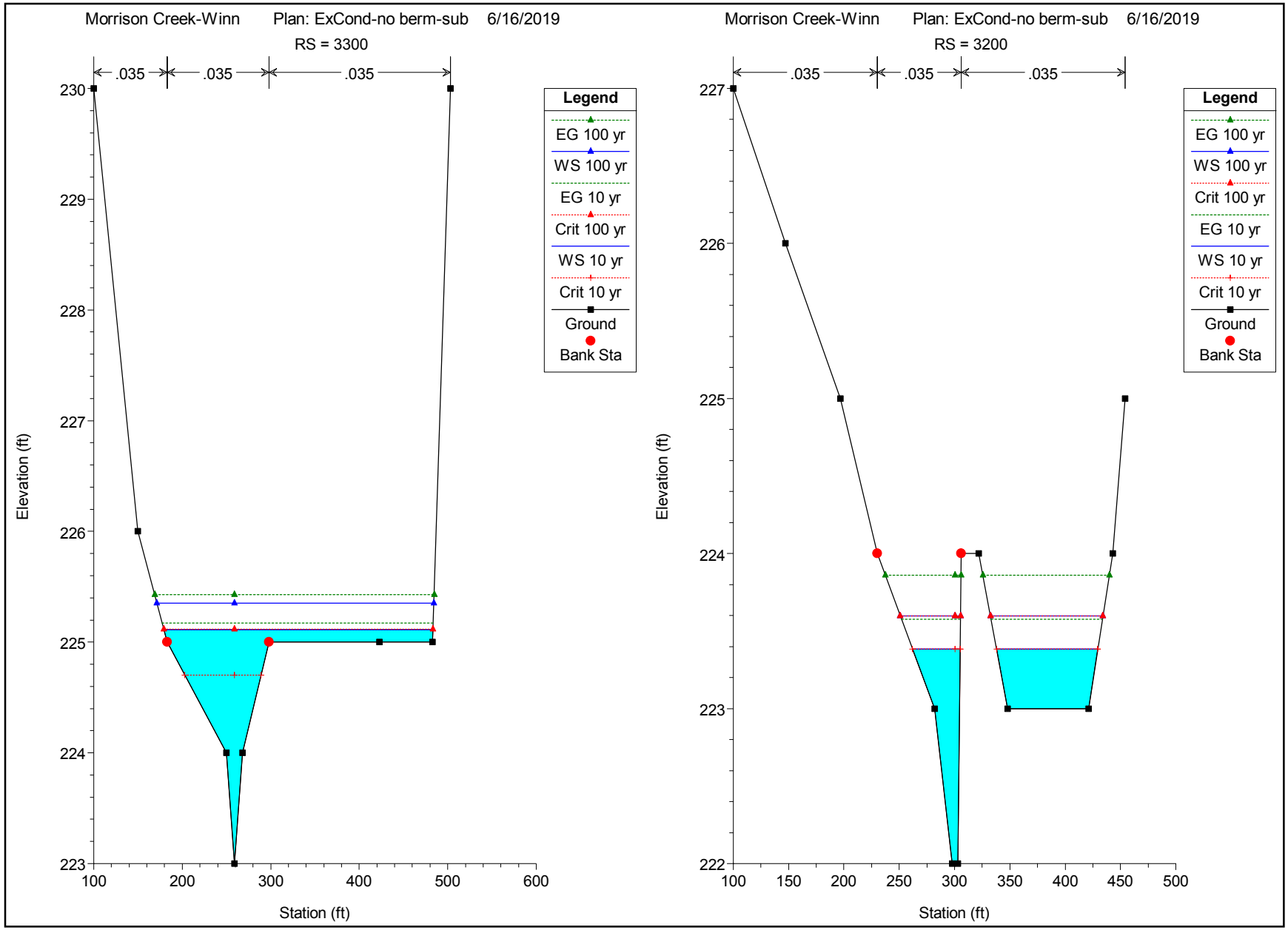

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 4300
.035
.035
.035
Legend
EG 100 yr
EG 10 yr
WS 100 yr
Crit 100 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 4200
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 100 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

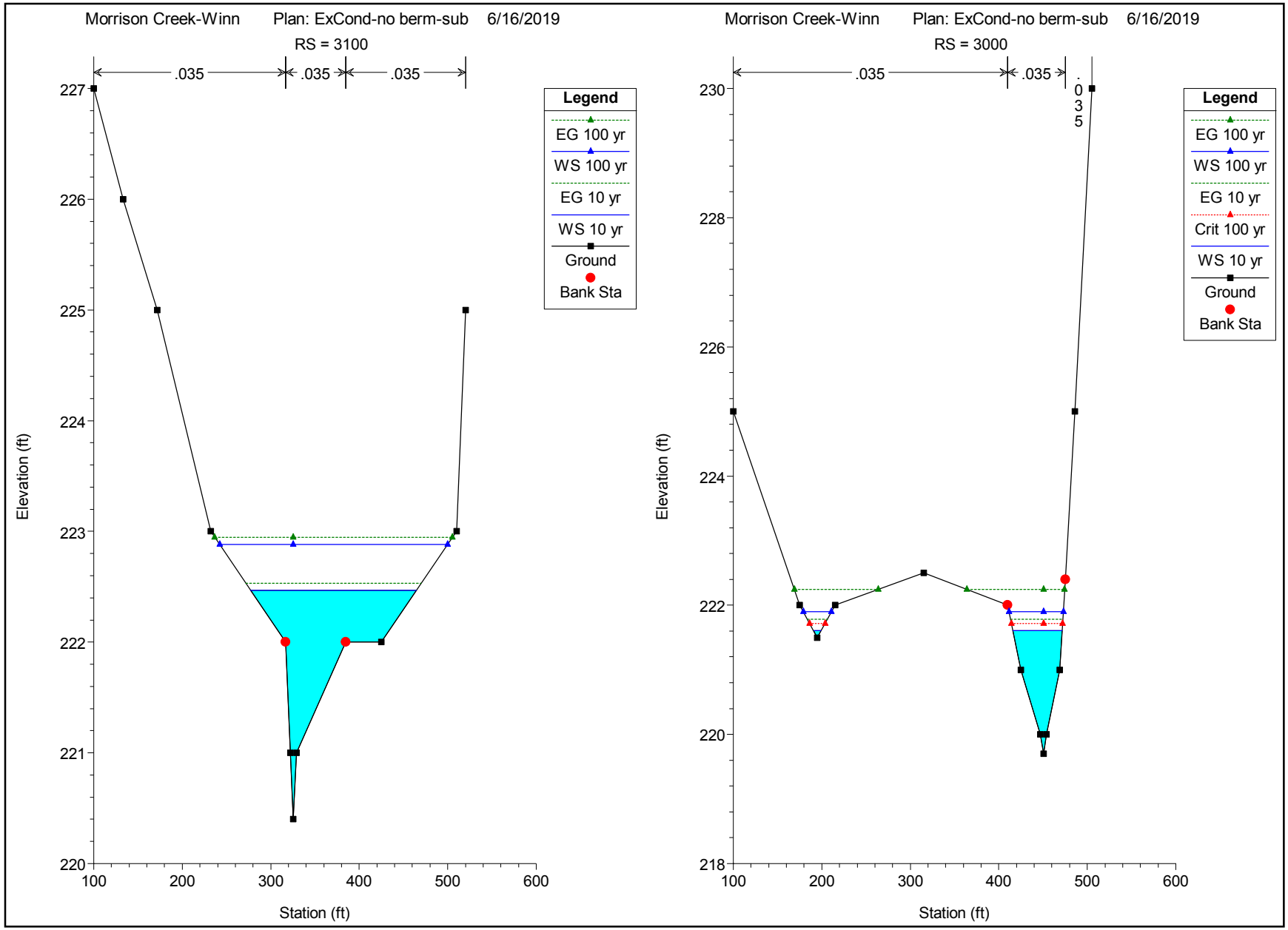

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 4100
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
250
248
246
244
242
240
238
236
100
200
300
400
500
600
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 4000
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
246
244
242
240
238
236
234
100
200
300
400
500
600

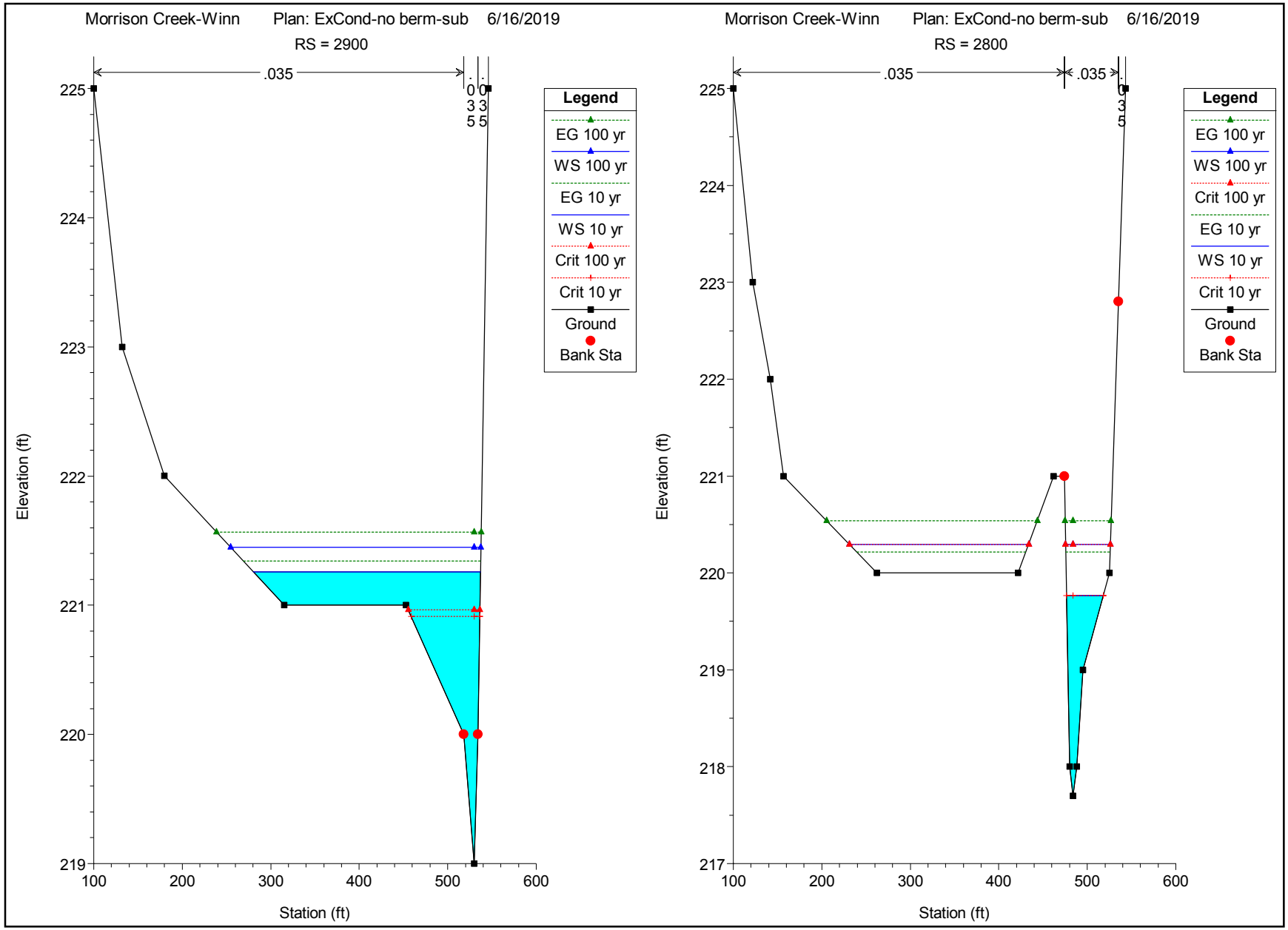

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3900
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3800
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

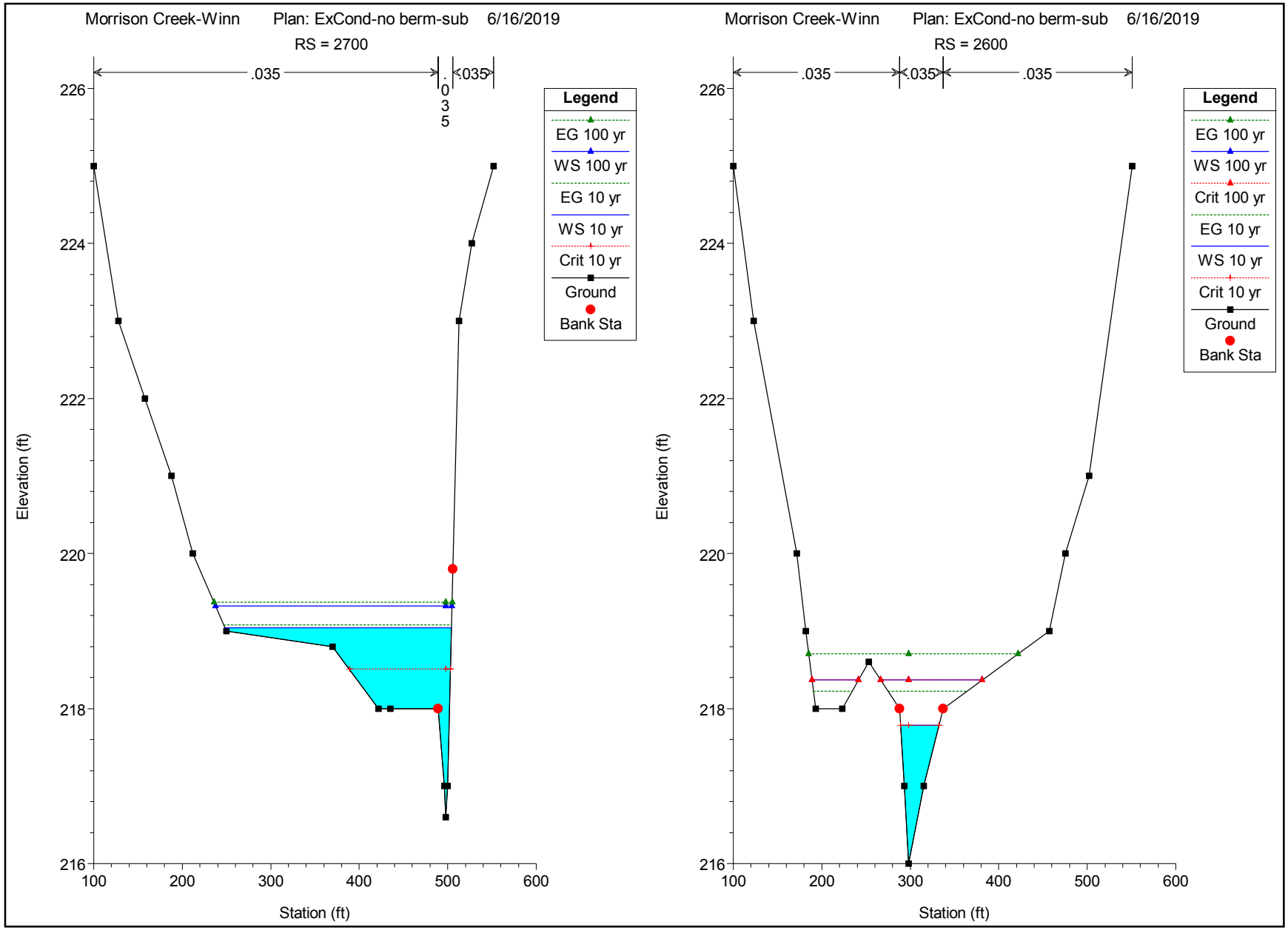

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
239
238
237
236
235
234
233
232
100
150
200
250
300
350
400
450
500
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
235
234
233
232
231
230
100
150
200
250
300
350
400

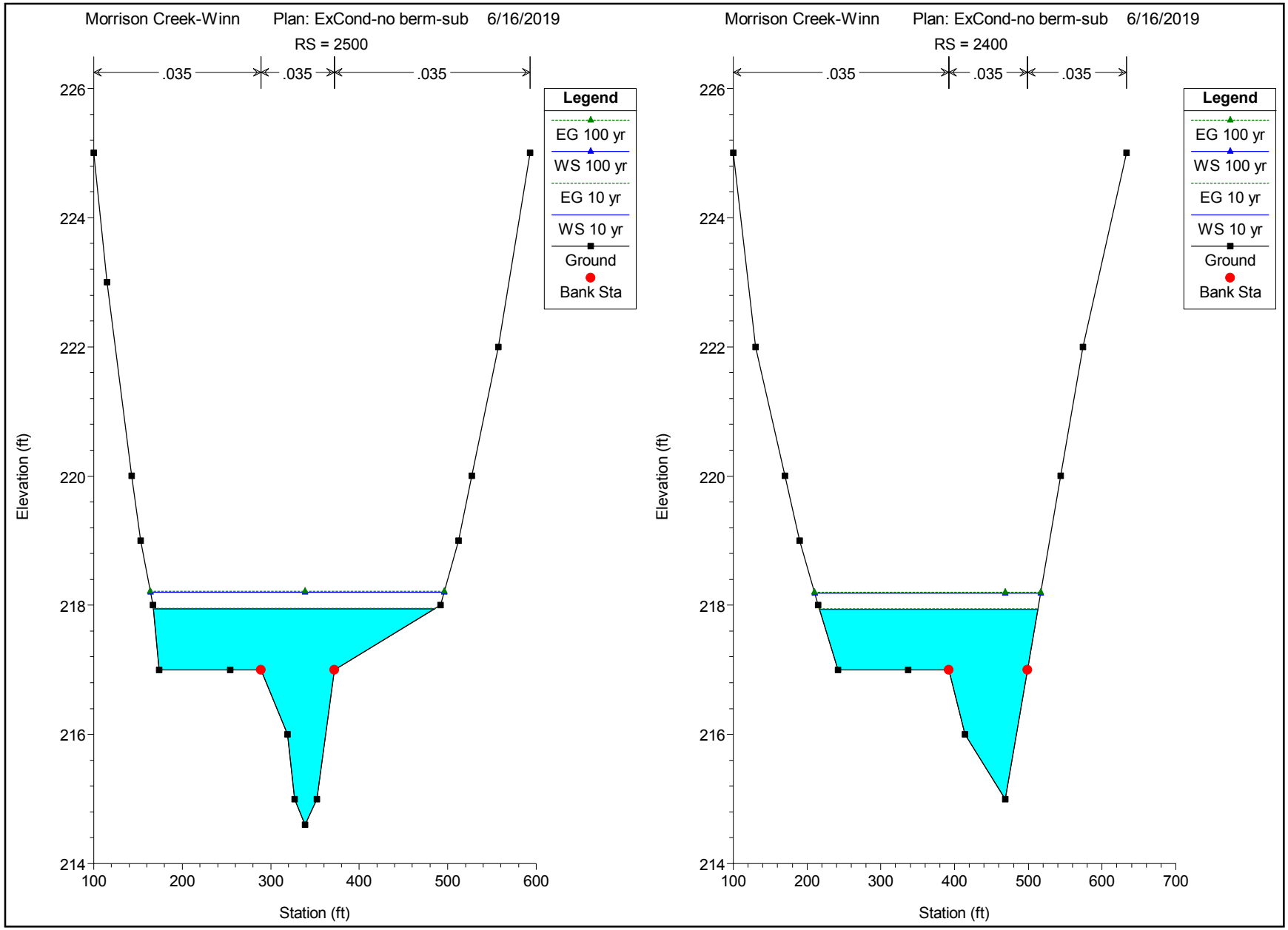

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

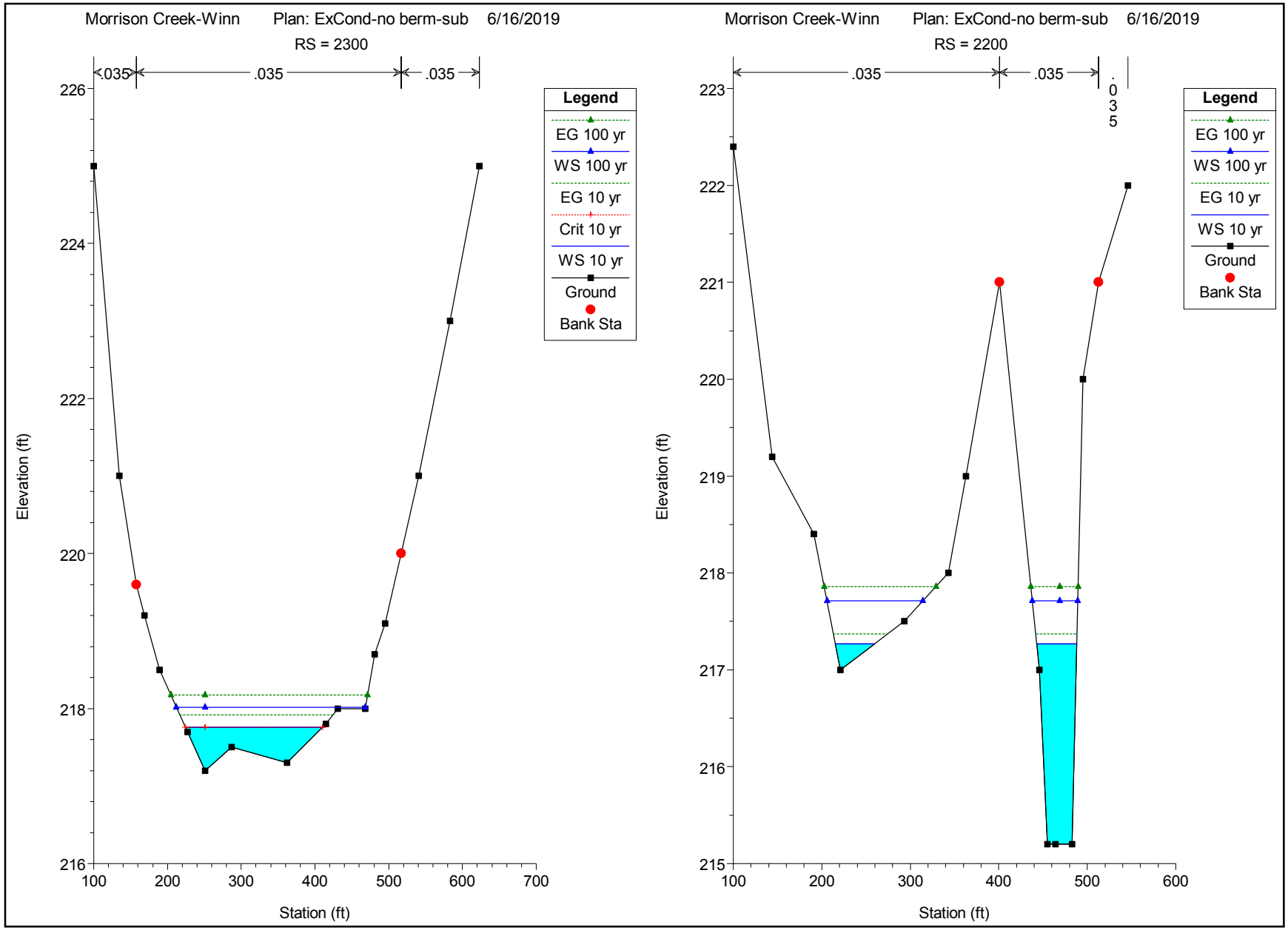

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3300
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3200
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

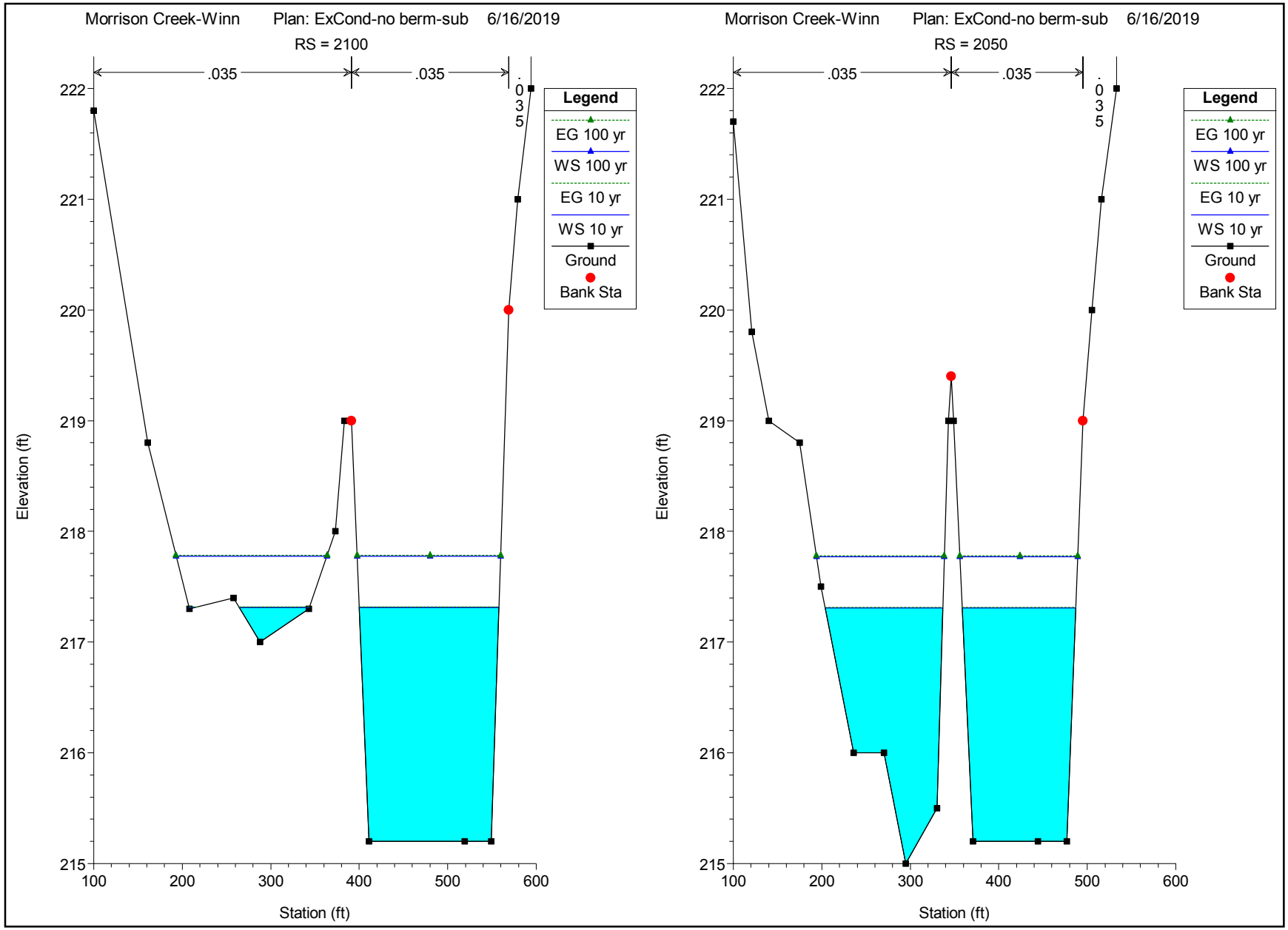

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3100
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 3000
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

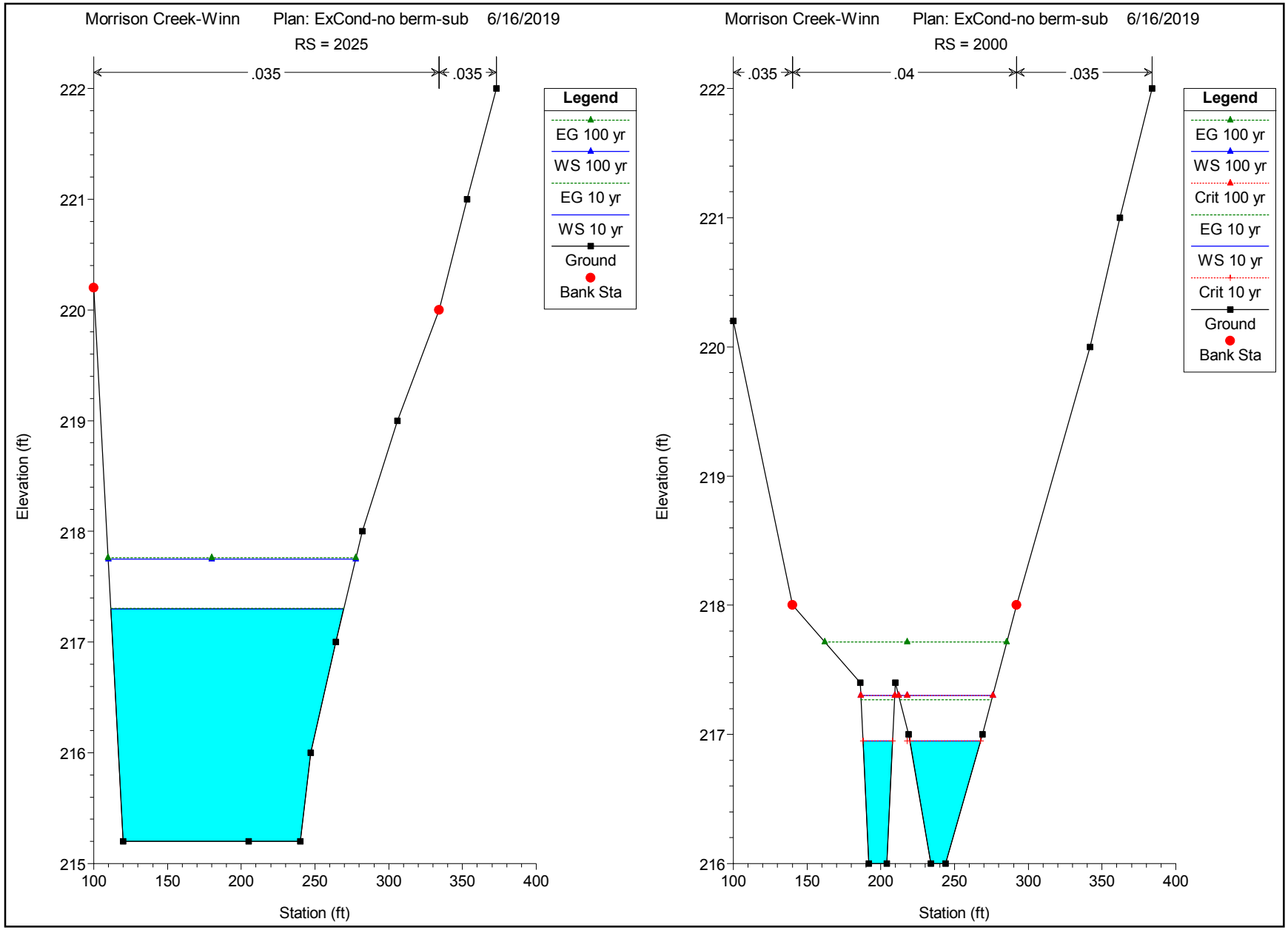

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2900
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 100 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
225
224
223
222
221
220
219
100
200
300
400
500
600
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2800
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
225
224
223
222
221
220
219
218
217
100
200
300
400
500
600

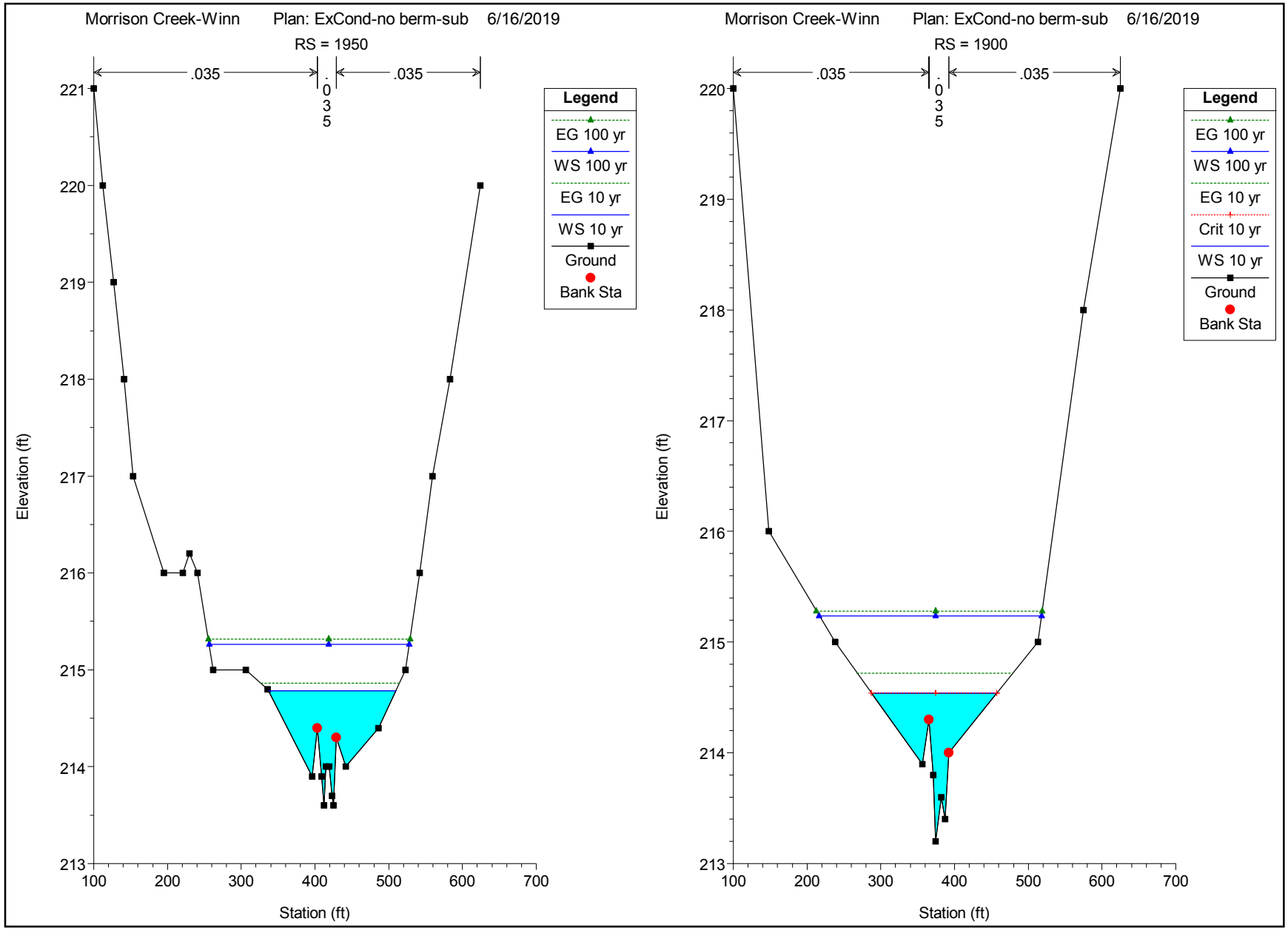

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

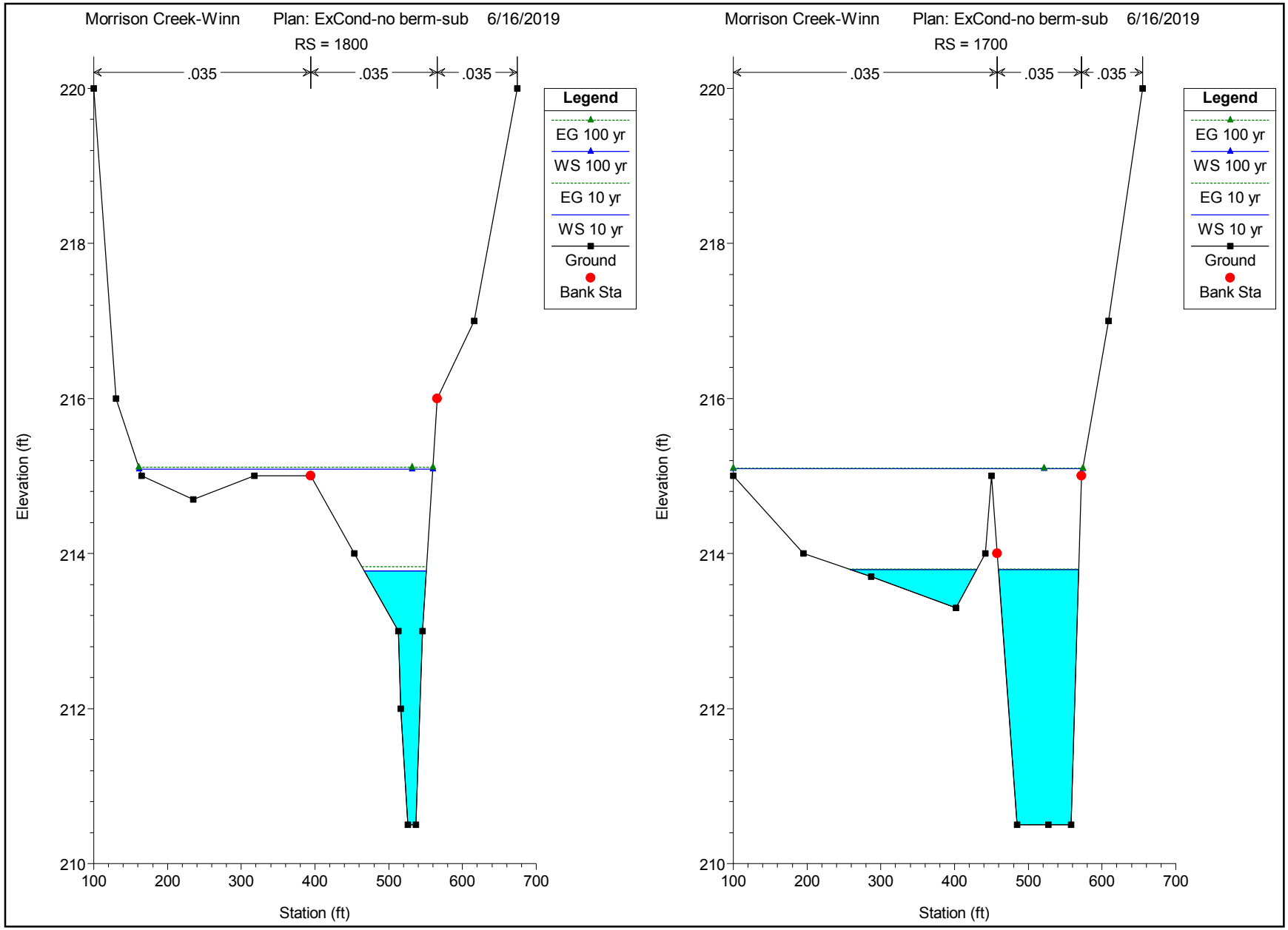

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
226
224
222
220
218
216
214
100
200
300
400
500
600
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
226
224
222
220
218
216
214
100
200
300
400
500
600
700

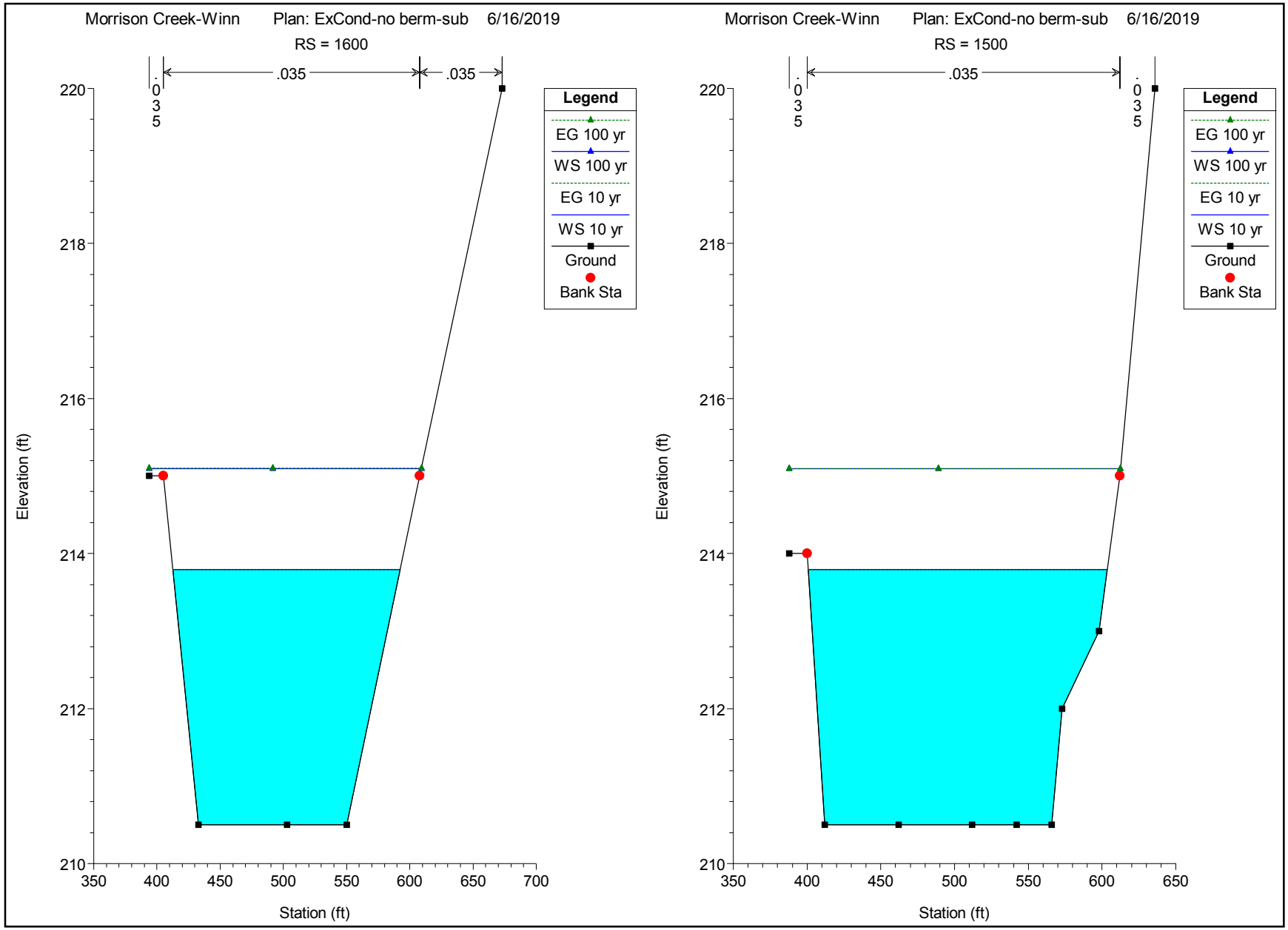

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2300
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2200
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

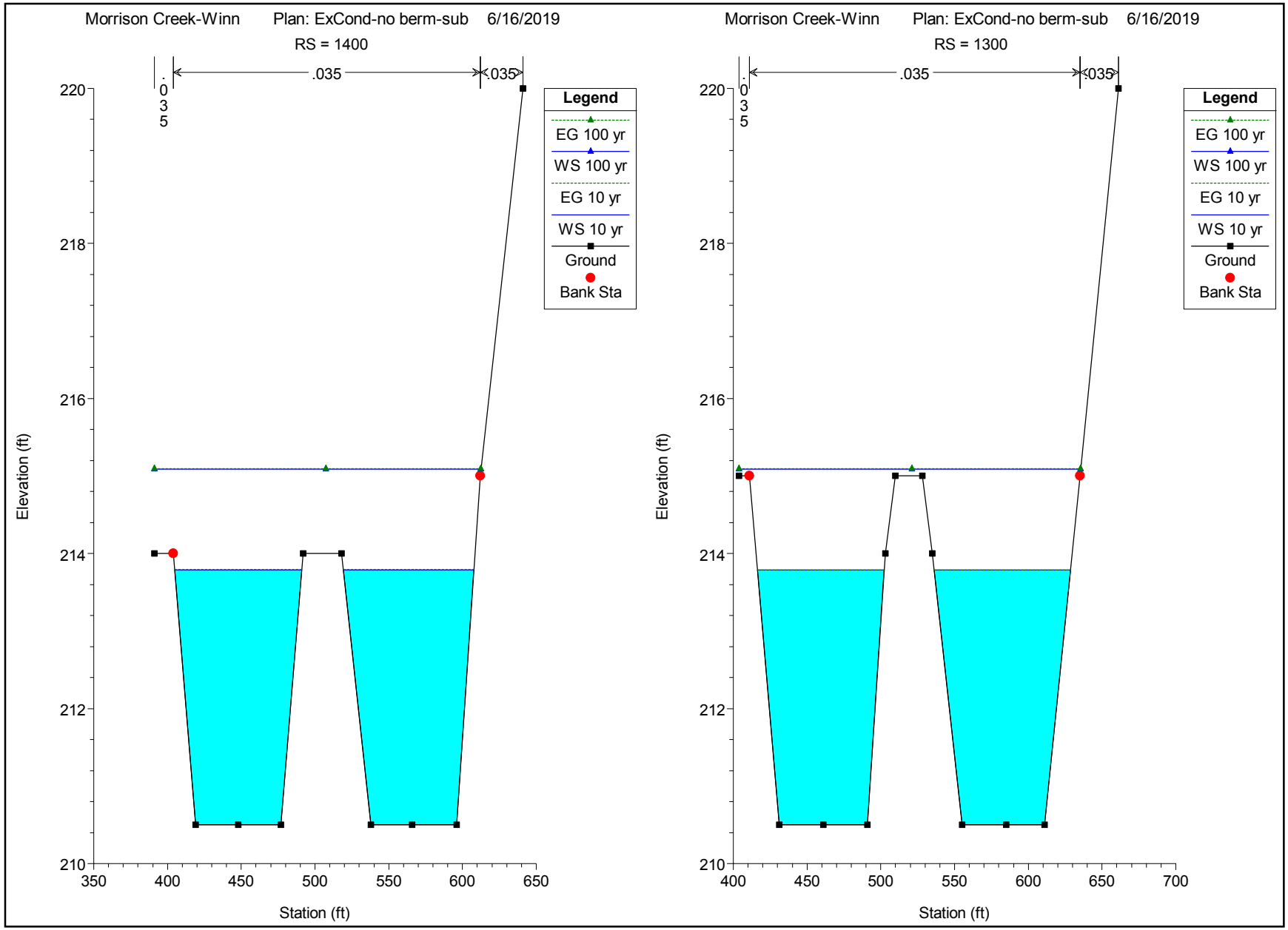

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2100
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2050
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

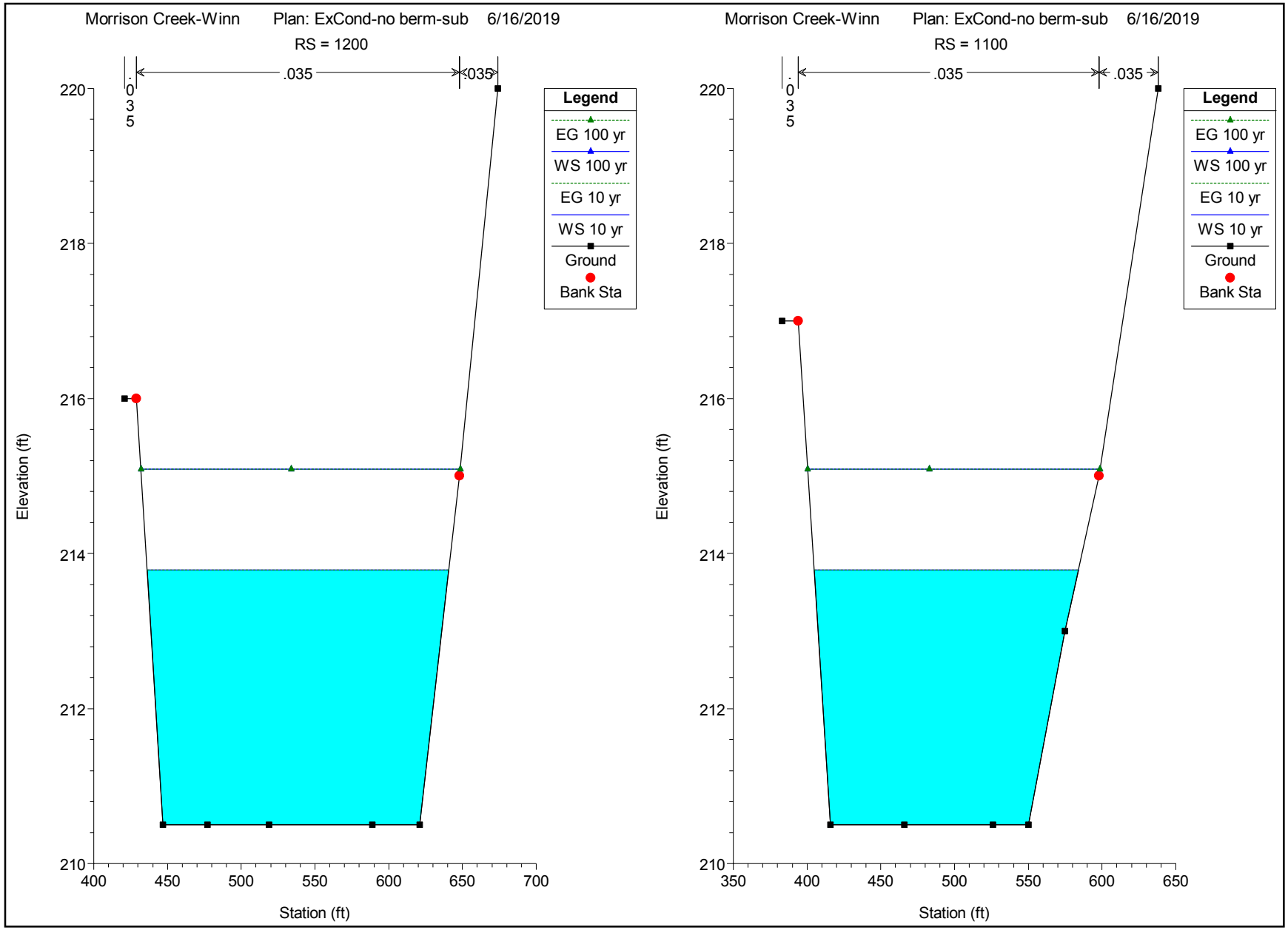

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2025
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 2000
.035
.04
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

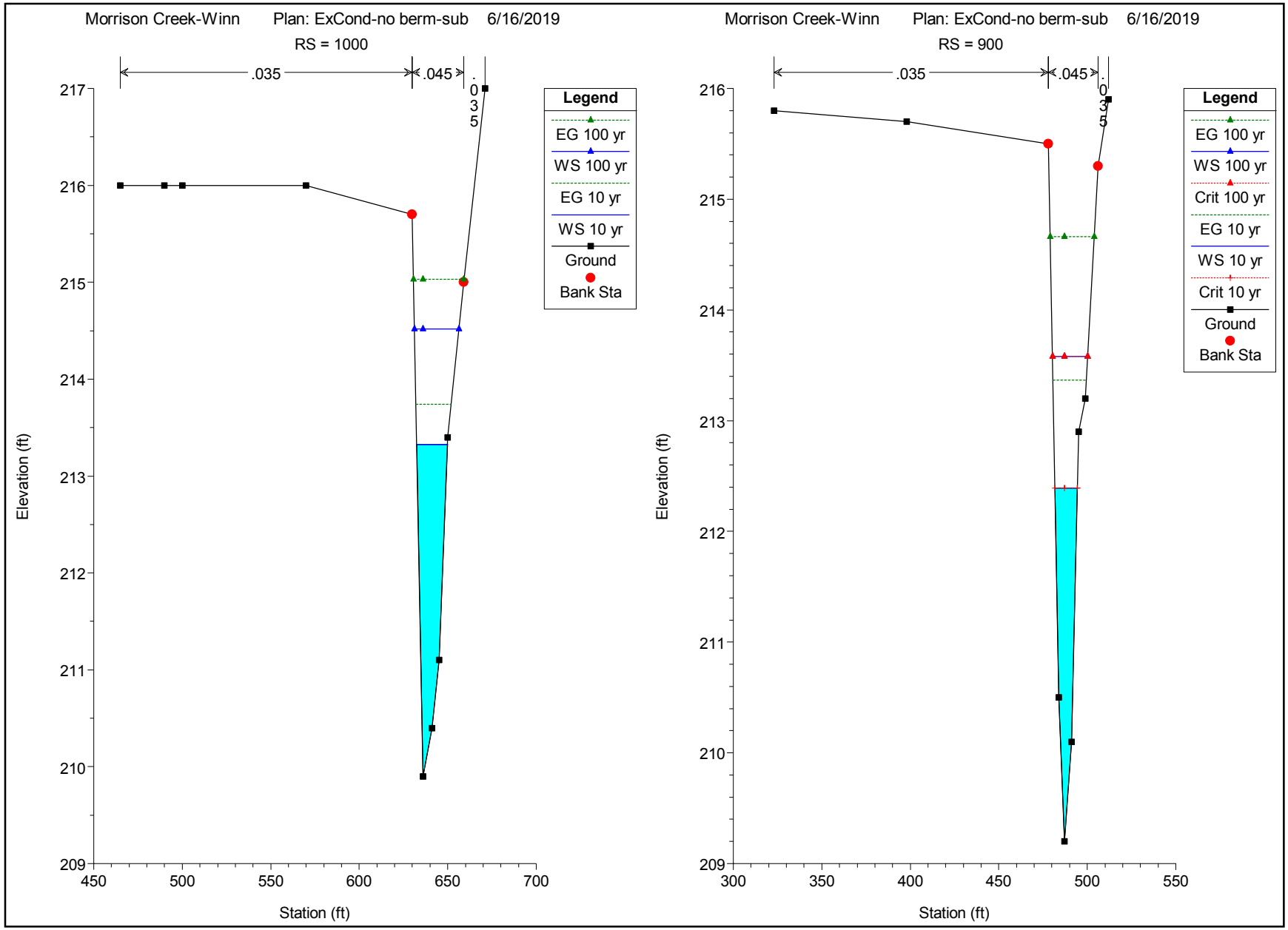

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1950
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1900
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

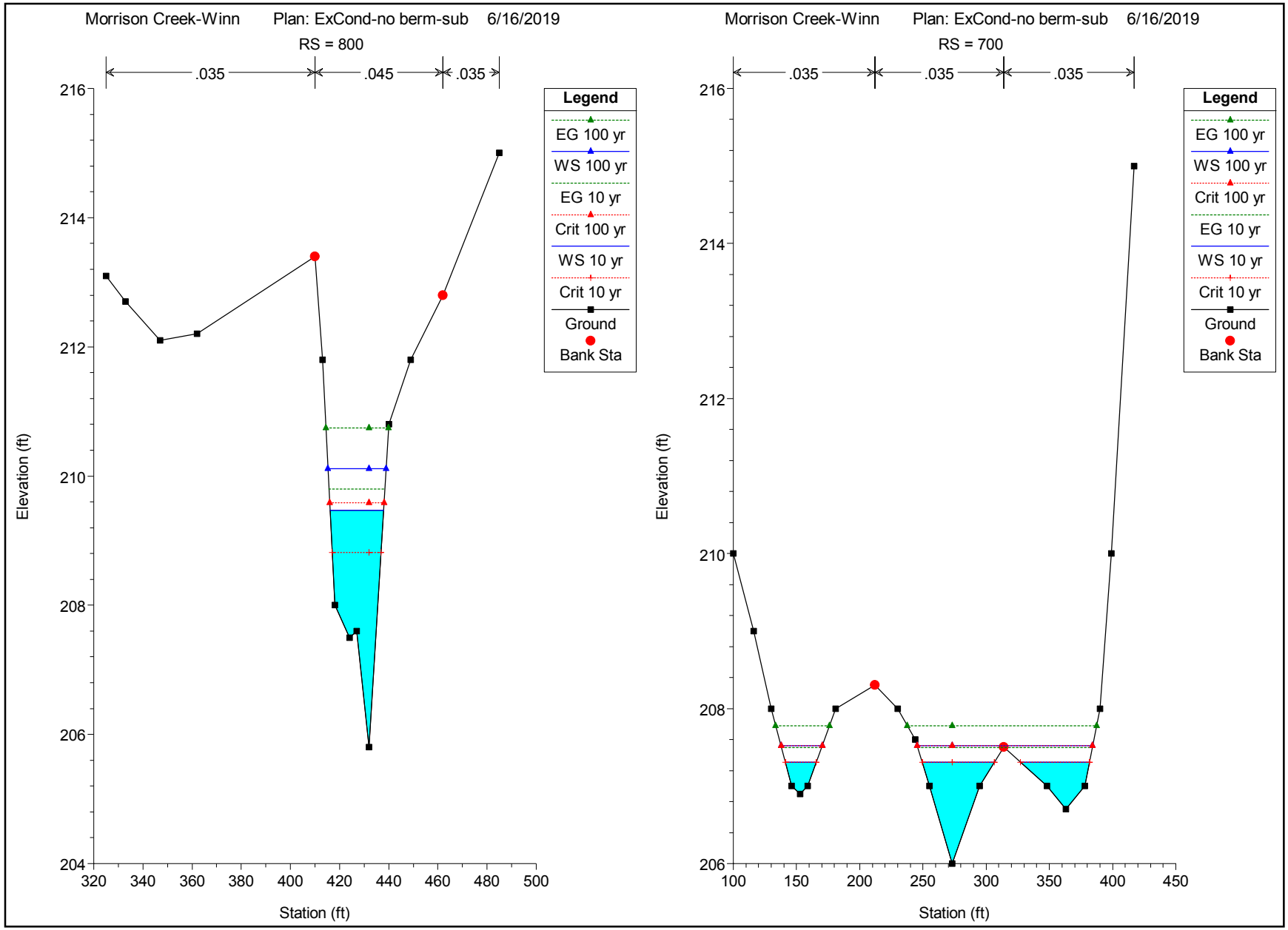

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1800
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

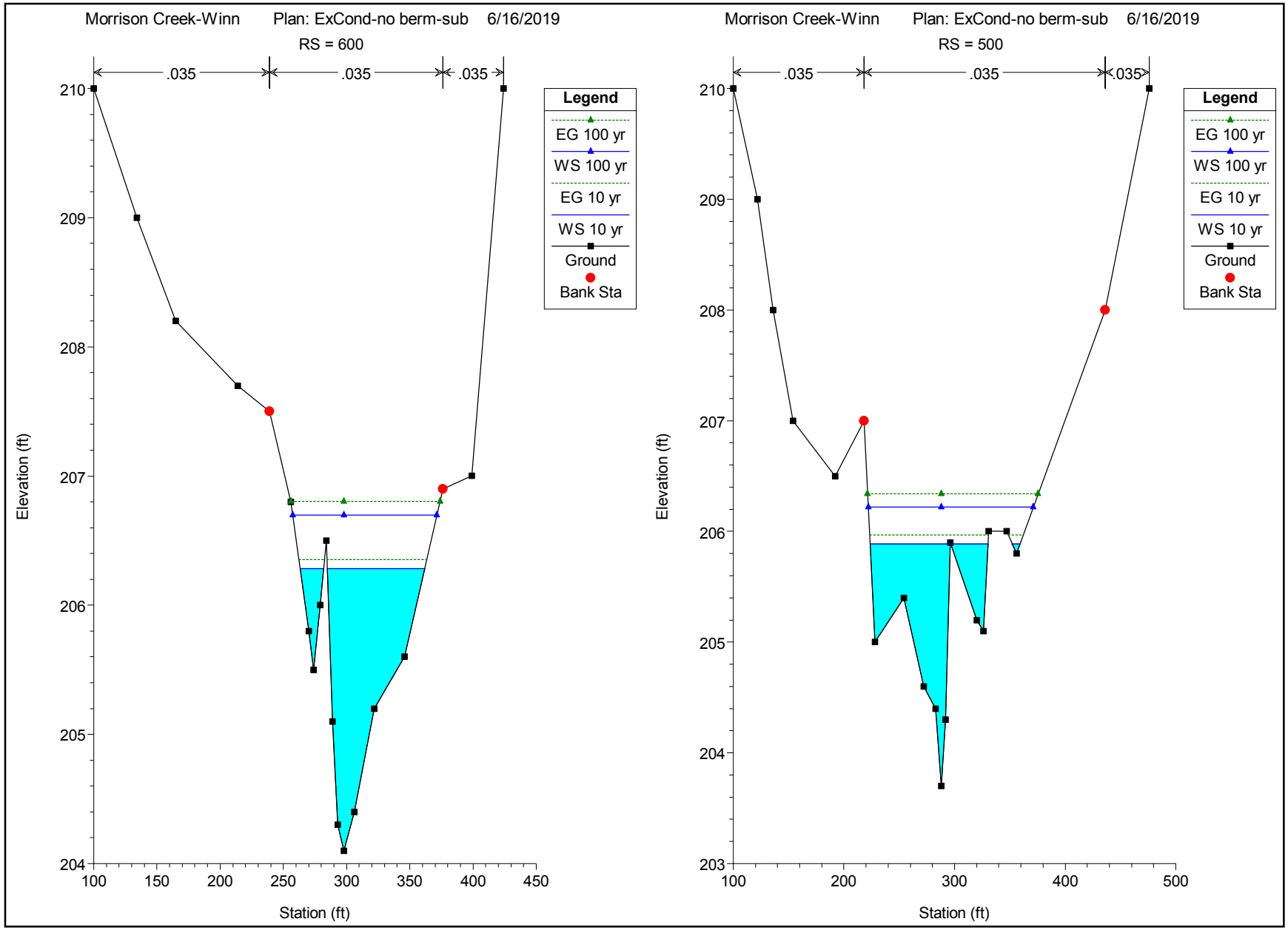

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
220
218
216
214
212
210
350
400
450
500
550
600
650
700
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
220
218
216
214
212
210
350
400
450
500
550
600
650

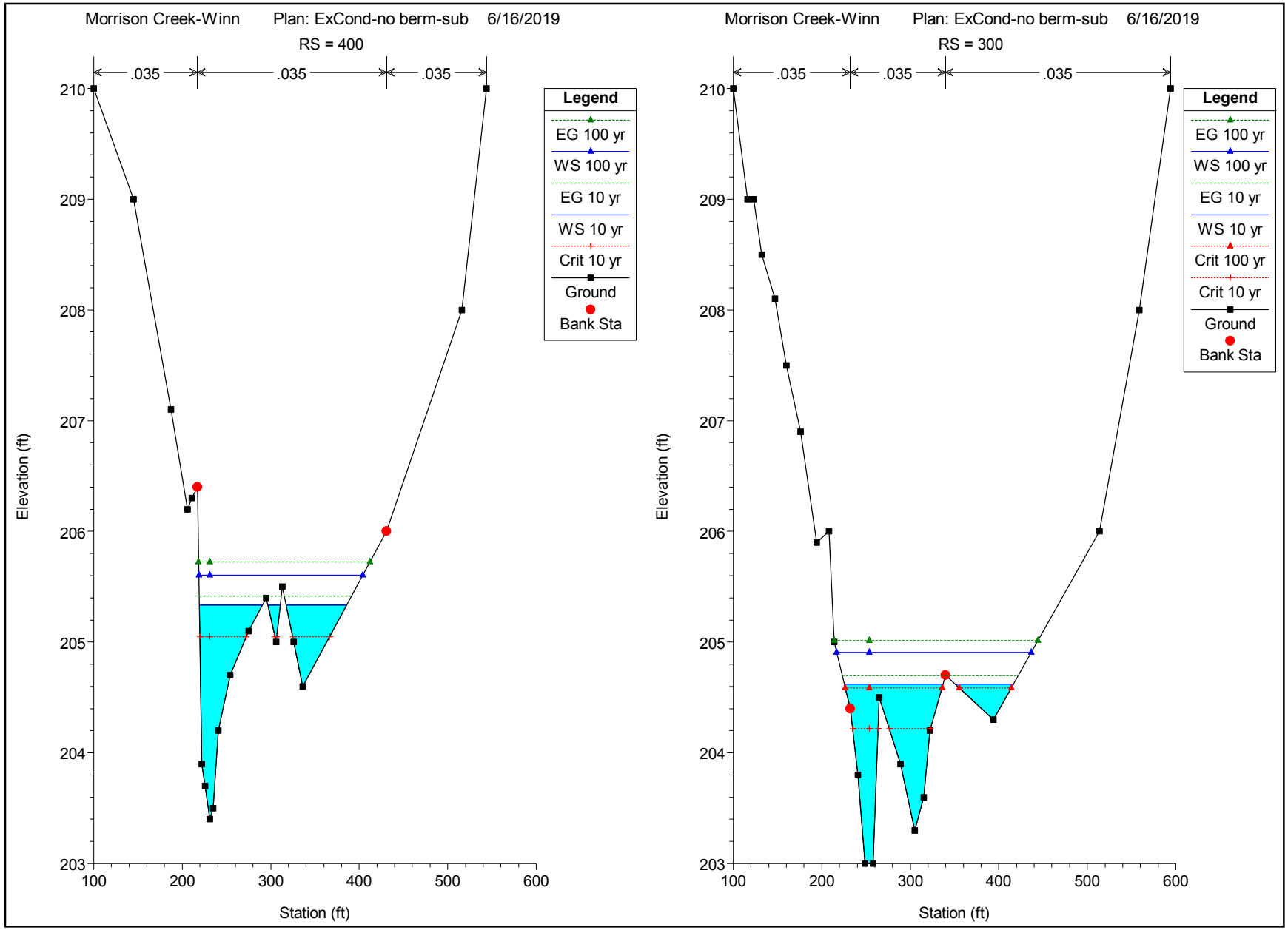

Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1300
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1200
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1100
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 1000
.035
.045
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
217
216
215
214
213
212
211
210
209
450
500
550
600
650
700
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 900
.035
.045
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
216
215
214
213
212
211
210
209
300
350
400
450
500
550


Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 800
.035
.045
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: ExCond-no berm-sub 6/16/2019
RS = 300
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 100 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

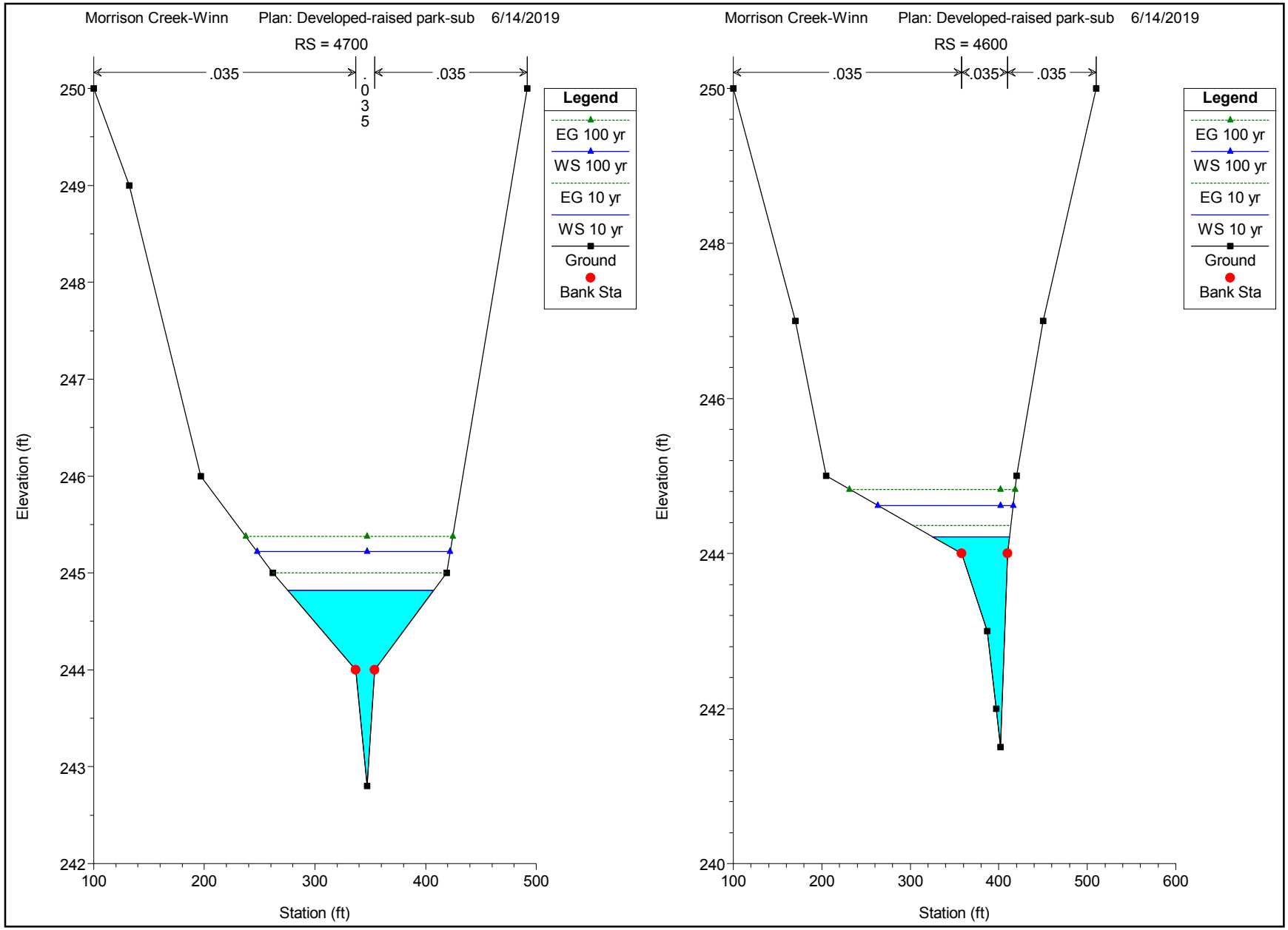
Appendix 8 - HEC-RAS Output for Developed Condition 10-year storm and 100-year storm

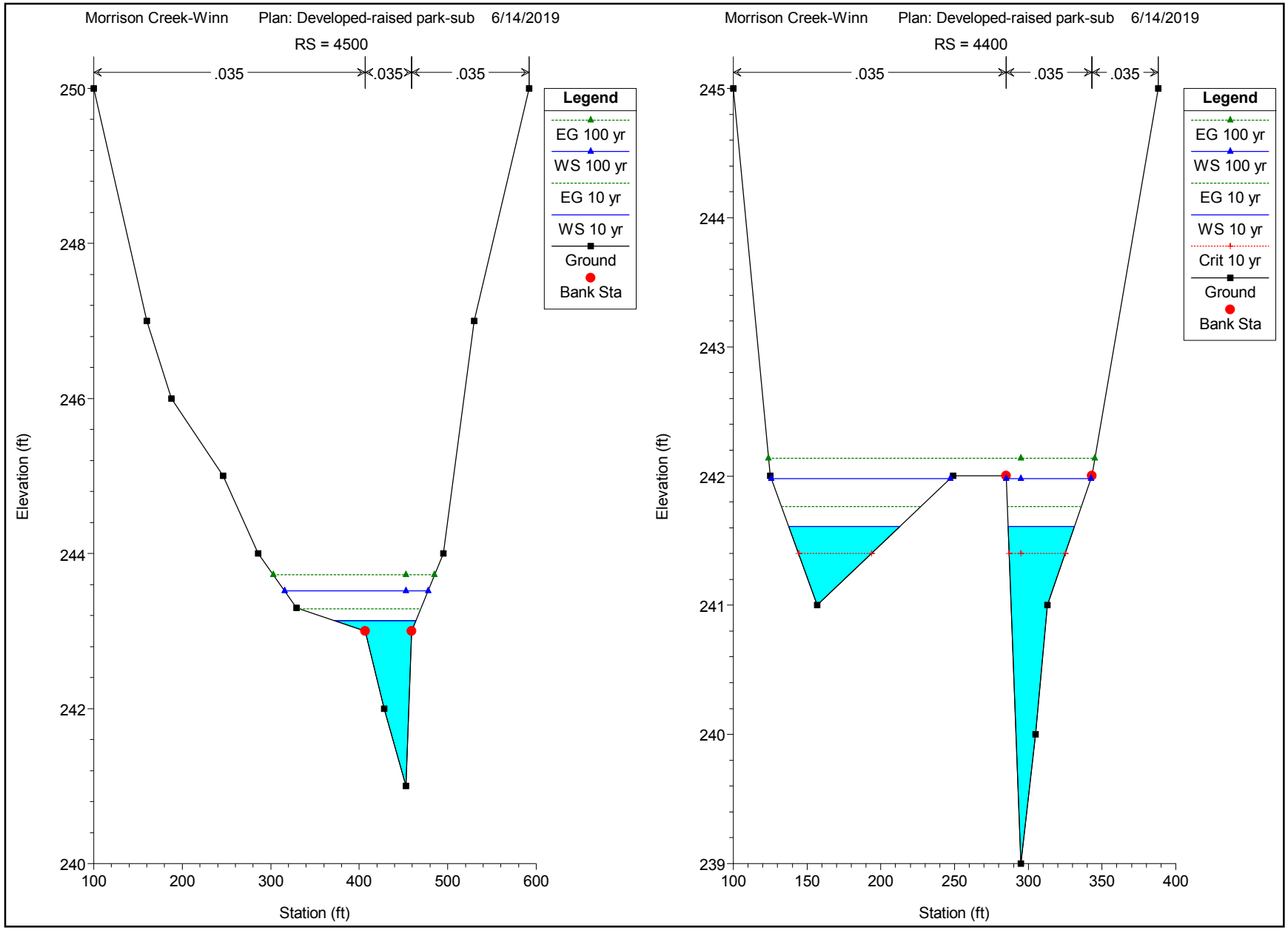
HEC-RAS Plan: park-sub River: Morrison Creek Reach: Winn

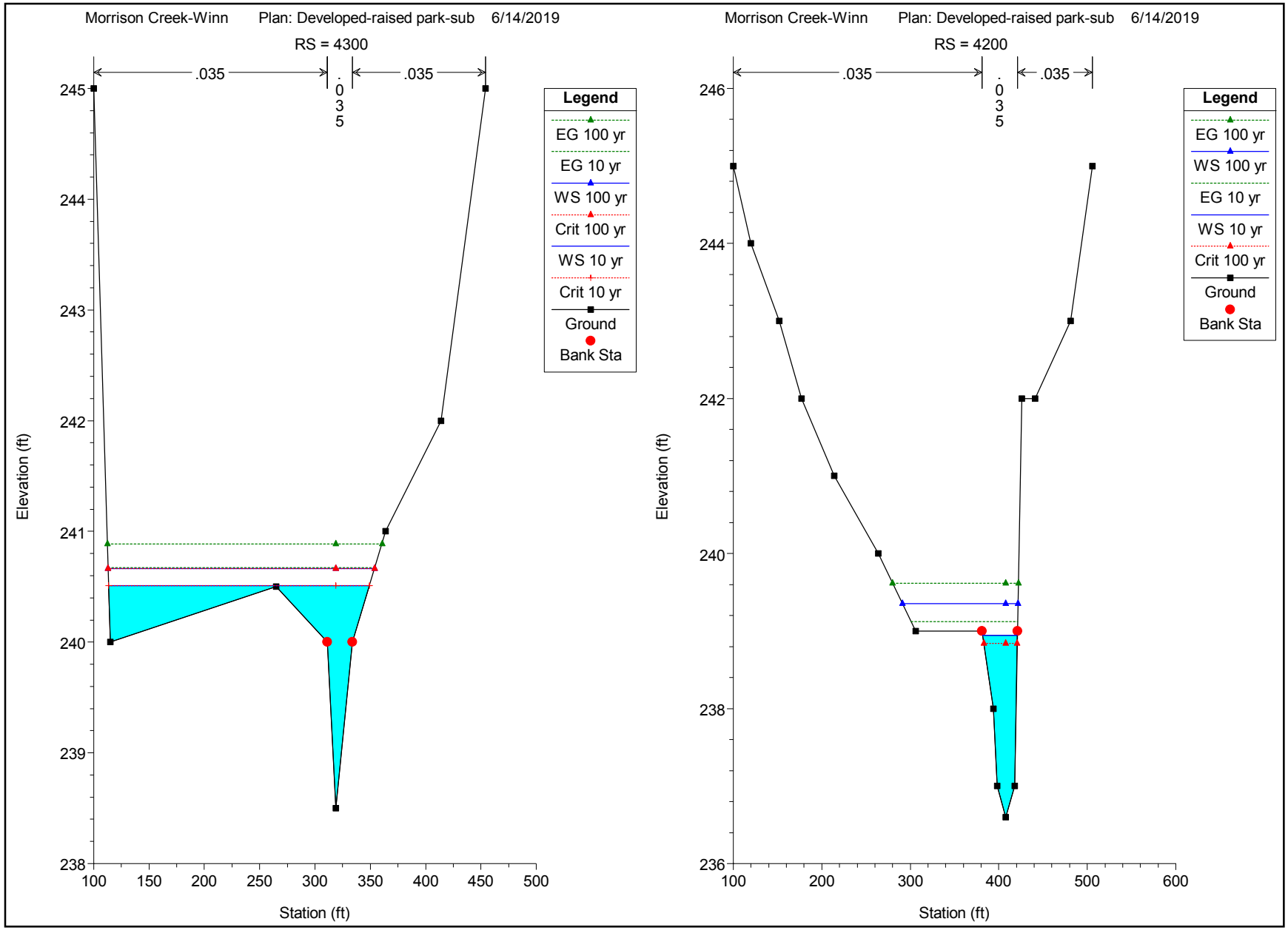
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Winn	4700	10 yr	194.00	242.80	244.82		245.00	0.006635	4.34	71.02	131.60	0.64
Winn	4700	100 yr	361.00	242.80	245.22		245.38	0.004758	4.34	133.74	174.55	0.57
Winn	4600	10 yr	194.00	241.50	244.22		244.36	0.004251	3.09	65.75	87.15	0.50
Winn	4600	100 yr	361.00	241.50	244.62		244.83	0.004475	3.86	114.41	153.16	0.54
Winn	4500	10 yr	194.00	241.00	243.13		243.29	0.004545	3.17	63.51	91.30	0.52
Winn	4500	100 yr	361.00	241.00	243.52		243.73	0.004636	3.87	116.20	162.20	0.55
Winn	4400	10 yr	194.00	239.00	241.61	241.40	241.76	0.006179	3.40	69.74	120.32	0.59
Winn	4400	100 yr	361.00	239.00	241.98		242.14	0.006118	3.62	125.36	178.82	0.60
Winn	4300	10 yr	194.00	238.50	240.51	240.51	240.67	0.006657	4.02	84.14	235.82	0.63
Winn	4300	100 yr	361.00	238.50	240.66	240.66	240.89	0.009180	5.09	120.44	240.84	0.75
Winn	4200	10 yr	194.00	236.60	238.95		239.12	0.003923	3.38	57.35	39.21	0.49
Winn	4200	100 yr	361.00	236.60	239.35	238.84	239.62	0.004815	4.36	102.53	130.32	0.57
Winn	4100	10 yr	194.00	236.20	237.81		237.93	0.006768	3.95	82.98	170.44	0.63
Winn	4100	100 yr	361.00	236.20	238.06	237.92	238.22	0.008260	4.93	132.31	246.86	0.72
Winn	4000	10 yr	194.00	235.00	236.42	236.42	236.58	0.009233	4.34	79.10	235.56	0.72
Winn	4000	100 yr	361.00	235.00	236.60	236.60	236.78	0.009896	4.92	127.05	268.66	0.76
Winn	3900	10 yr	194.00	233.80	235.48		235.53	0.003682	2.67	115.65	230.99	0.45
Winn	3900	100 yr	361.00	233.80	235.75		235.82	0.003090	2.85	180.12	234.48	0.43
Winn	3800	10 yr	194.00	232.90	234.58		234.72	0.005759	3.49	80.96	180.50	0.58
Winn	3800	100 yr	361.00	232.90	234.76	234.72	234.99	0.008609	4.70	117.73	226.12	0.72
Winn	3700	10 yr	194.00	232.70	234.13	234.08	234.22	0.007120	2.84	98.83	295.93	0.60
Winn	3700	100 yr	361.00	232.70	234.30	234.19	234.41	0.007437	3.35	149.24	307.13	0.63
Winn	3600	10 yr	194.00	230.50	232.76	232.69	232.96	0.006235	4.31	69.40	127.58	0.62
Winn	3600	100 yr	361.00	230.50	233.10		233.31	0.006000	4.86	120.75	172.22	0.63
Winn	3500	10 yr	194.00	230.10	231.79		231.92	0.007910	3.06	66.86	99.52	0.63
Winn	3500	100 yr	361.00	230.10	232.20	231.89	232.35	0.006693	3.54	127.16	189.40	0.61
Winn	3400	10 yr	194.00	226.50	228.54	228.54	228.75	0.006031	4.23	72.19	161.30	0.61
Winn	3400	100 yr	361.00	226.50	228.77	228.77	229.04	0.007675	5.25	110.48	179.03	0.71
Winn	3300	10 yr	194.00	223.00	225.11	224.70	225.17	0.003368	2.06	109.06	303.92	0.42
Winn	3300	100 yr	361.00	223.00	225.35	225.11	225.43	0.003249	2.43	182.86	312.36	0.43
Winn	3200	10 yr	194.00	222.00	223.38	223.38	223.58	0.017714	4.04	57.84	134.43	0.91
Winn	3200	100 yr	361.00	222.00	223.60	223.60	223.86	0.019004	4.47	89.09	156.25	0.96
Winn	3100	10 yr	194.00	220.40	222.47		222.53	0.002501	2.19	108.98	187.76	0.38
Winn	3100	100 yr	361.00	220.40	222.89		222.95	0.001846	2.35	202.87	259.18	0.34
Winn	3000	10 yr	194.00	219.70	221.58		221.77	0.006710	3.55	55.28	61.11	0.62
Winn	3000	100 yr	361.00	219.70	221.85	221.72	222.24	0.010877	5.05	75.76	88.31	0.81
Winn	2900	10 yr	194.00	219.00	221.27		221.33	0.002547	2.10	109.68	191.62	0.38
Winn	2900	100 yr	361.00	219.00	221.58		221.67	0.002572	2.54	169.52	195.26	0.40
Winn	2800	10 yr	194.00	217.70	219.77	219.77	220.21	0.019219	5.33	36.41	41.74	1.01
Winn	2800	100 yr	361.00	217.70	220.31	220.31	220.71	0.011644	5.28	79.34	112.62	0.83
Winn	2700	10 yr	194.00	216.60	219.06	218.44	219.10	0.001542	1.68	115.52	113.64	0.29
Winn	2700	100 yr	361.00	216.60	219.44		219.52	0.001886	2.27	159.34	116.20	0.34
Winn	2600	10 yr	194.00	216.00	217.79	217.79	218.22	0.019565	5.30	36.61	43.21	1.01
Winn	2600	100 yr	361.00	216.00	218.37	218.37	218.70	0.009400	4.92	91.80	167.17	0.76
Winn	2500	10 yr	194.00	214.60	218.02		218.03	0.000102	0.74	334.36	279.17	0.09
Winn	2500	100 yr	361.00	214.60	218.31		218.32	0.000197	1.11	415.07	285.95	0.12
Winn	2400	10 yr	194.00	215.00	218.02		218.02	0.000087	0.66	337.10	219.40	0.08
Winn	2400	100 yr	361.00	215.00	218.29		218.31	0.000183	1.04	398.81	226.74	0.12
Winn	2300	10 yr	194.00	217.30	217.81	217.81	218.00	0.025350	3.37	56.68	158.62	1.00
Winn	2300	100 yr	361.00	217.30	218.02	218.02	218.27	0.018813	3.97	92.89	212.41	0.93
Winn	2200	10 yr	194.00	215.20	217.27		217.37	0.001817	2.50	85.85	93.35	0.34

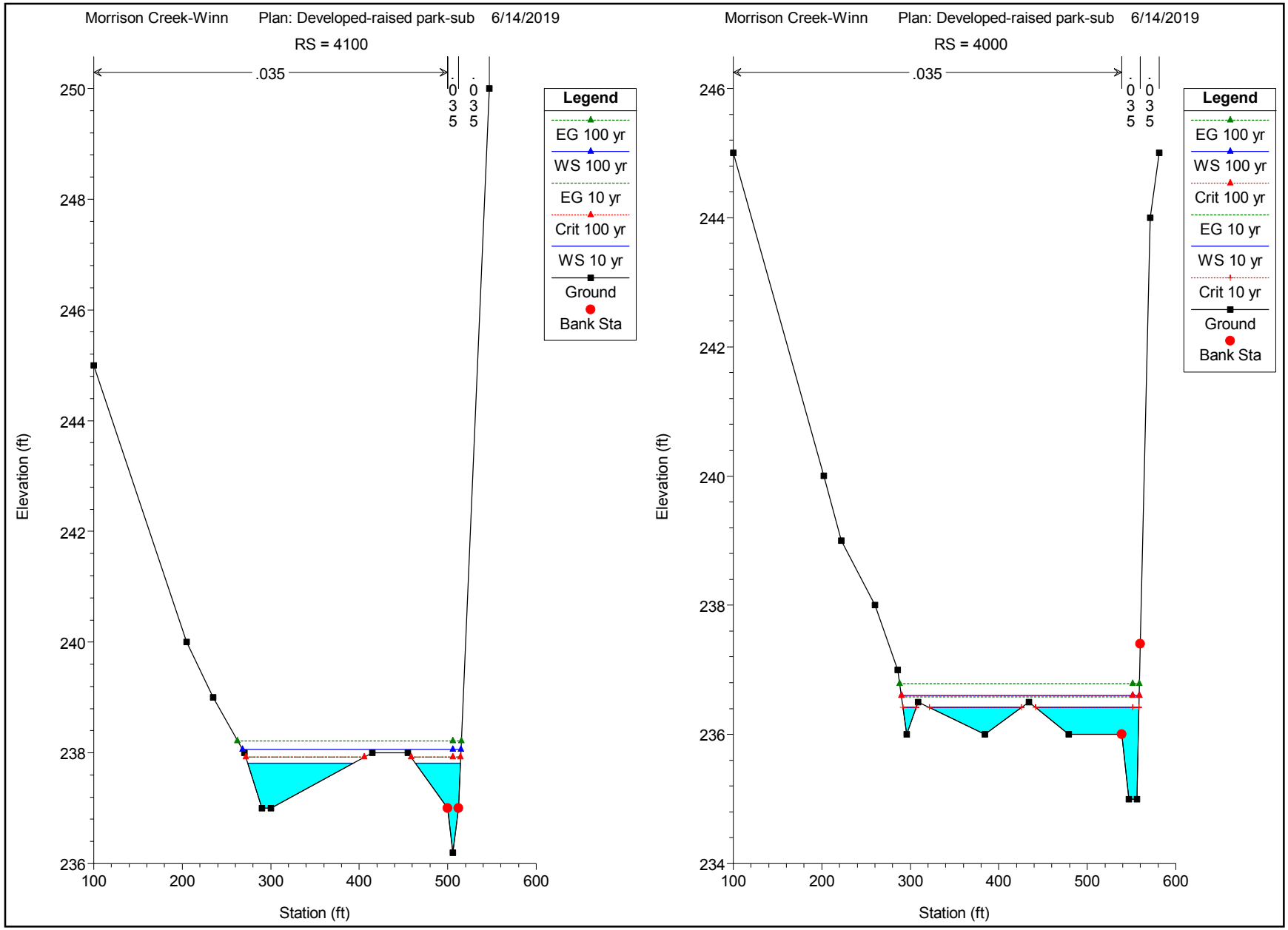
HEC-RAS Plan: park-sub River: Morrison Creek Reach: Winn (Continued)

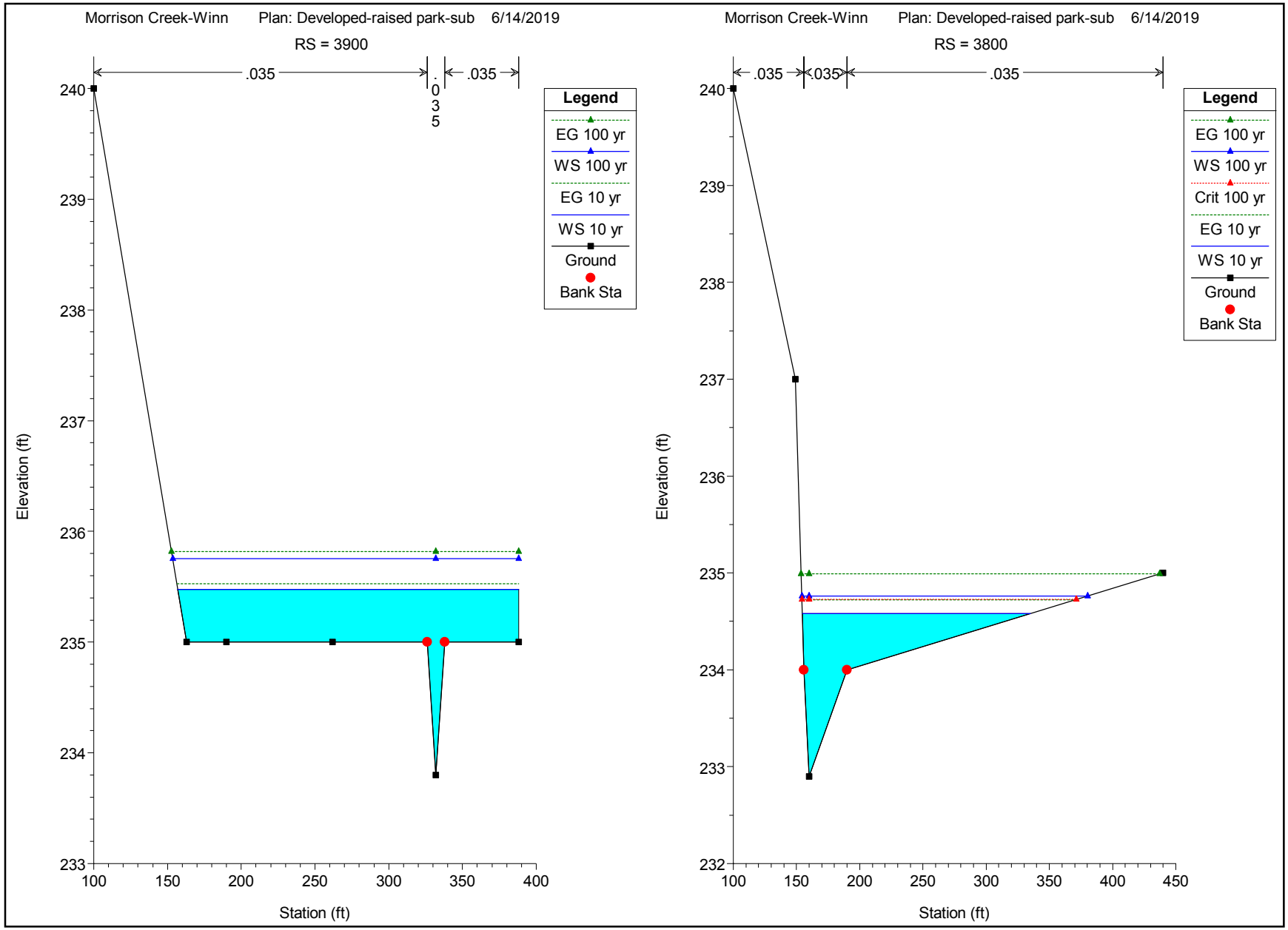
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Winn	2200	100 yr	361.00	215.20	217.72		217.86	0.002525	3.20	138.55	145.24	0.41
Winn	2100	10 yr	194.00	215.20	217.31		217.32	0.000085	0.61	329.99	268.50	0.08
Winn	2100	100 yr	361.00	215.20	217.77		217.78	0.000132	0.87	466.26	310.56	0.10
Winn	2050	10 yr	194.00	215.20	217.31		217.31	0.000052	0.47	435.01	248.61	0.06
Winn	2050	100 yr	361.00	215.20	217.77		217.78	0.000086	0.69	551.34	257.28	0.08
Winn	2025	10 yr	194.00	215.20	217.30		217.31	0.000114	0.68	287.01	157.78	0.09
Winn	2025	100 yr	361.00	215.20	217.75		217.76	0.000202	1.00	360.17	167.67	0.12
Winn	2000	10 yr	194.00	216.00	216.95	216.95	217.27	0.027857	4.54	42.78	68.11	1.01
Winn	2000	100 yr	361.00	216.00	217.30	217.30	217.71	0.025756	5.15	70.09	86.92	1.01
Winn	1950	10 yr	194.00	213.60	214.74		214.83	0.006928	3.07	83.83	166.97	0.60
Winn	1950	100 yr	361.00	213.60	215.25		215.31	0.002467	2.54	199.97	271.03	0.39
Winn	1900	10 yr	194.00	213.20	214.51	214.51	214.68	0.011150	4.11	71.64	188.11	0.77
Winn	1900	100 yr	361.00	213.20	215.23		215.27	0.001302	2.09	236.58	254.55	0.29
Winn	1800	10 yr	194.00	210.50	213.77		213.83	0.001520	1.88	103.17	84.53	0.30
Winn	1800	100 yr	361.00	210.50	215.09		215.12	0.000482	1.29	302.56	312.31	0.18
Winn	1700	10 yr	194.00	210.50	213.80		213.80	0.000059	0.64	321.75	169.29	0.07
Winn	1700	100 yr	361.00	210.50	215.10		215.10	0.000048	0.70	574.14	210.20	0.06
Winn	1600	10 yr	194.00	210.50	213.79		213.80	0.000024	0.40	480.61	174.82	0.04
Winn	1600	100 yr	361.00	210.50	215.09		215.10	0.000024	0.50	722.88	197.67	0.05
Winn	1500	10 yr	194.00	210.50	213.79		213.79	0.000016	0.34	577.59	202.82	0.04
Winn	1500	100 yr	361.00	210.50	215.09		215.09	0.000016	0.42	861.33	224.44	0.04
Winn	1400	10 yr	194.00	210.50	213.79		213.79	0.000024	0.41	477.99	174.68	0.04
Winn	1400	100 yr	361.00	210.50	215.09		215.09	0.000024	0.48	754.36	221.52	0.05
Winn	1300	10 yr	194.00	210.50	213.79		213.79	0.000024	0.40	483.62	178.20	0.04
Winn	1300	100 yr	361.00	210.50	215.09		215.09	0.000028	0.49	736.43	231.46	0.05
Winn	1200	10 yr	194.00	210.50	213.79		213.79	0.000012	0.31	622.14	204.48	0.03
Winn	1200	100 yr	361.00	210.50	215.09		215.09	0.000014	0.40	895.96	216.48	0.03
Winn	1100	10 yr	194.00	210.50	213.79		213.79	0.000020	0.38	512.91	179.15	0.04
Winn	1100	100 yr	361.00	210.50	215.09		215.09	0.000021	0.48	758.42	198.20	0.04
Winn	1000	10 yr	194.00	209.90	213.33		213.74	0.010026	5.15	37.64	17.38	0.62
Winn	1000	100 yr	361.00	209.90	214.52		215.03	0.010167	5.76	62.72	25.05	0.64
Winn	900	10 yr	194.00	209.20	212.39	212.39	213.37	0.028195	7.93	24.47	12.54	1.00
Winn	900	100 yr	361.00	209.20	213.58	213.58	214.66	0.026556	8.35	43.25	19.96	1.00
Winn	800	10 yr	194.00	205.80	209.64	208.82	209.92	0.007037	4.23	45.85	22.30	0.52
Winn	800	100 yr	361.00	205.80	210.28	209.57	210.83	0.010765	5.95	60.71	24.16	0.66
Winn	700	10 yr	194.00	206.00	207.28	207.28	207.52	0.024468	3.94	49.30	107.99	1.03
Winn	700	100 yr	361.00	206.00	207.55	207.55	207.84	0.020612	4.32	83.50	139.69	0.99
Winn	600	10 yr	194.00	204.10	206.27		206.34	0.002611	2.12	91.71	94.87	0.38
Winn	600	100 yr	361.00	204.10	206.66		206.77	0.003347	2.73	132.22	112.41	0.44
Winn	500	10 yr	194.00	203.70	205.88		205.96	0.003931	2.25	86.42	116.68	0.45
Winn	500	100 yr	361.00	203.70	206.17		206.31	0.004534	2.96	127.96	160.60	0.51
Winn	400	10 yr	194.00	203.40	205.33	205.05	205.42	0.006844	2.33	83.27	153.69	0.56
Winn	400	100 yr	361.00	203.40	205.61		205.72	0.006836	2.77	130.39	185.62	0.58
Winn	300	10 yr	194.00	203.00	204.62	204.22	204.70	0.004005	2.27	93.10	178.15	0.45
Winn	300	100 yr	361.00	203.00	204.91	204.59	205.01	0.004001	2.75	151.20	220.08	0.48

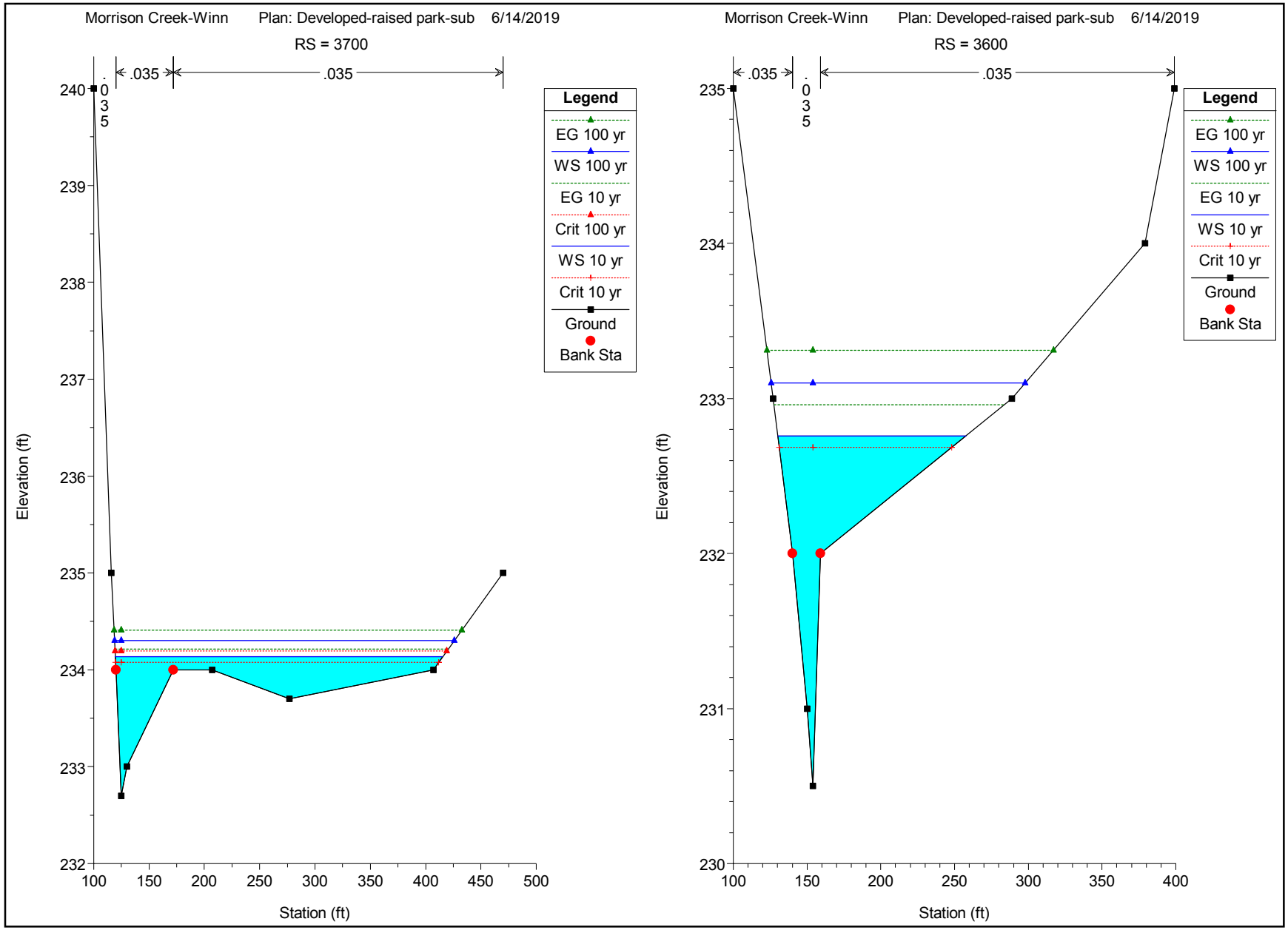

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 4700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 4600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

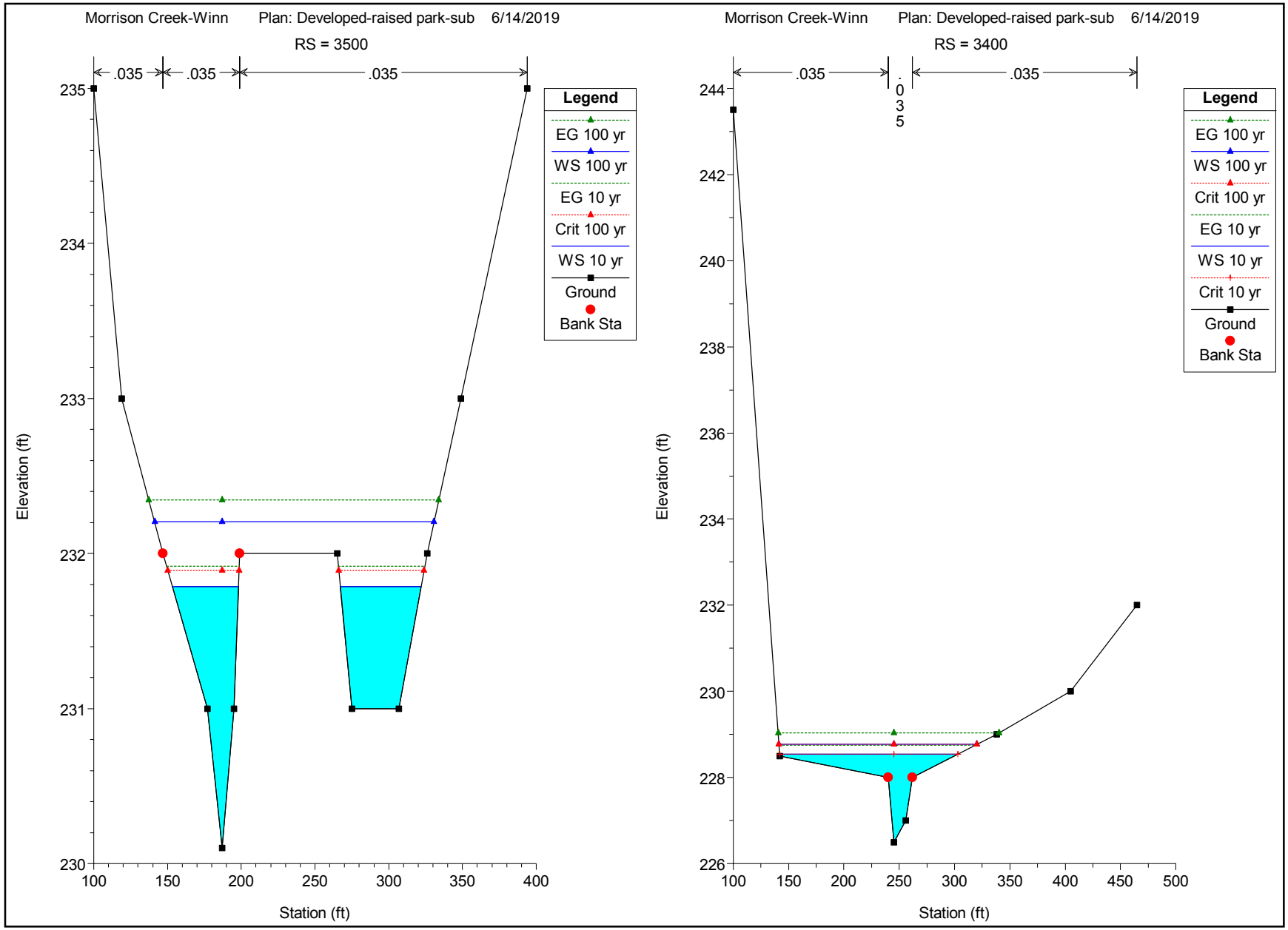

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 4500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 4400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

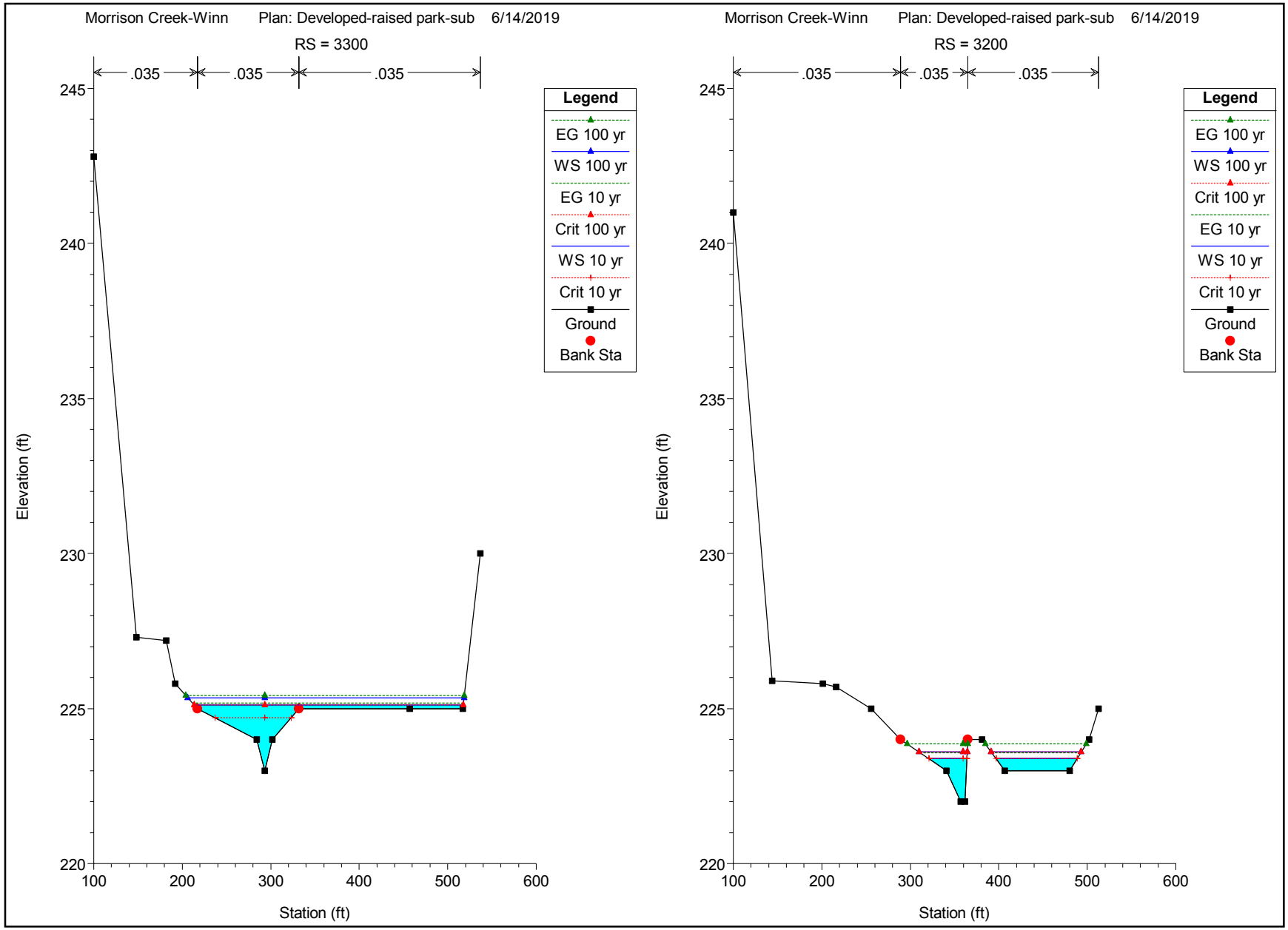

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 4300
.035
.035
.035
Legend
EG 100 yr
EG 10 yr
WS 100 yr
Crit 100 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 4200
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 100 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

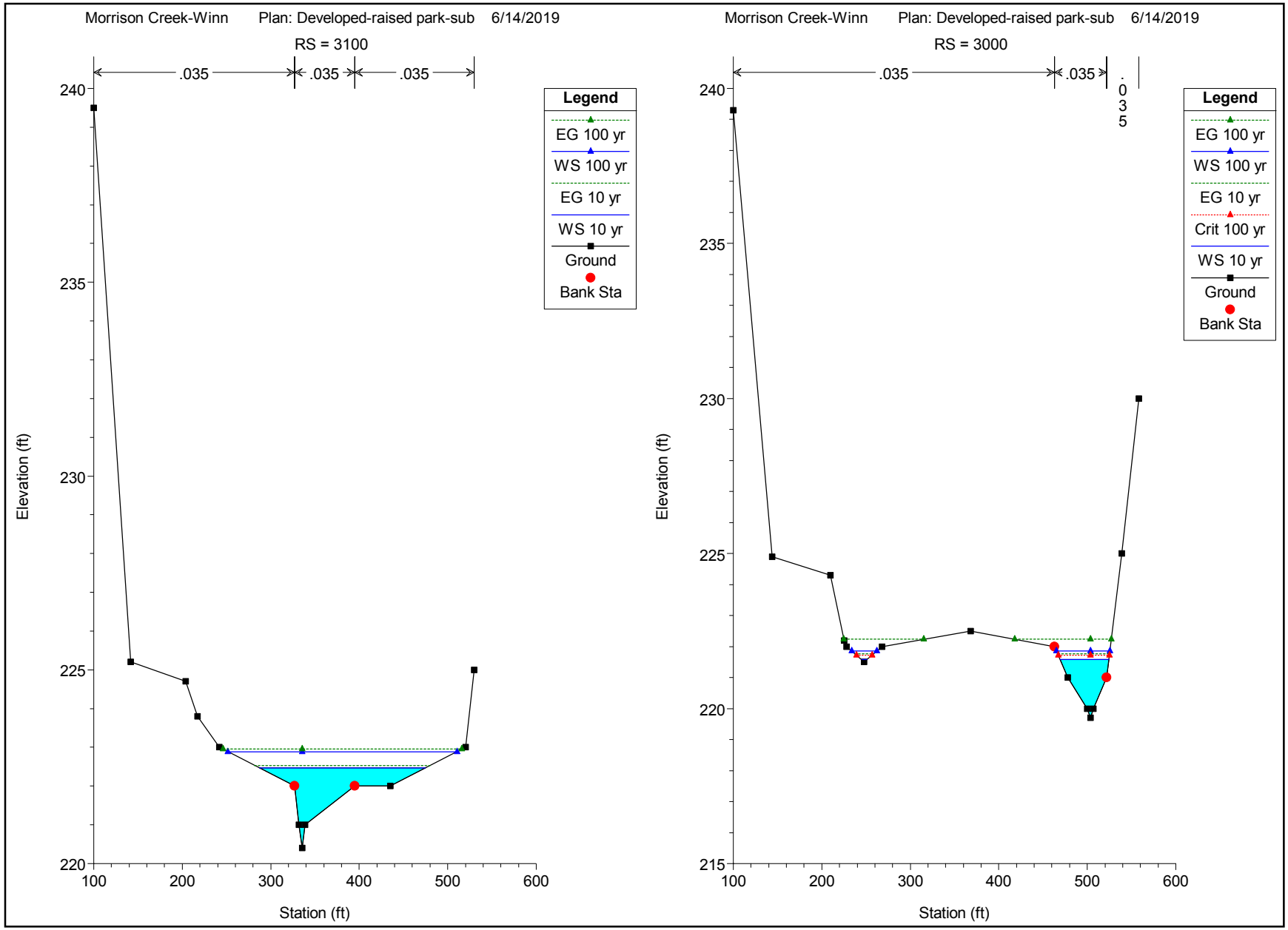

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 4100
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
250
248
246
244
242
240
238
236
100
200
300
400
500
600
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 4000
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
246
244
242
240
238
236
234
100
200
300
400
500
600

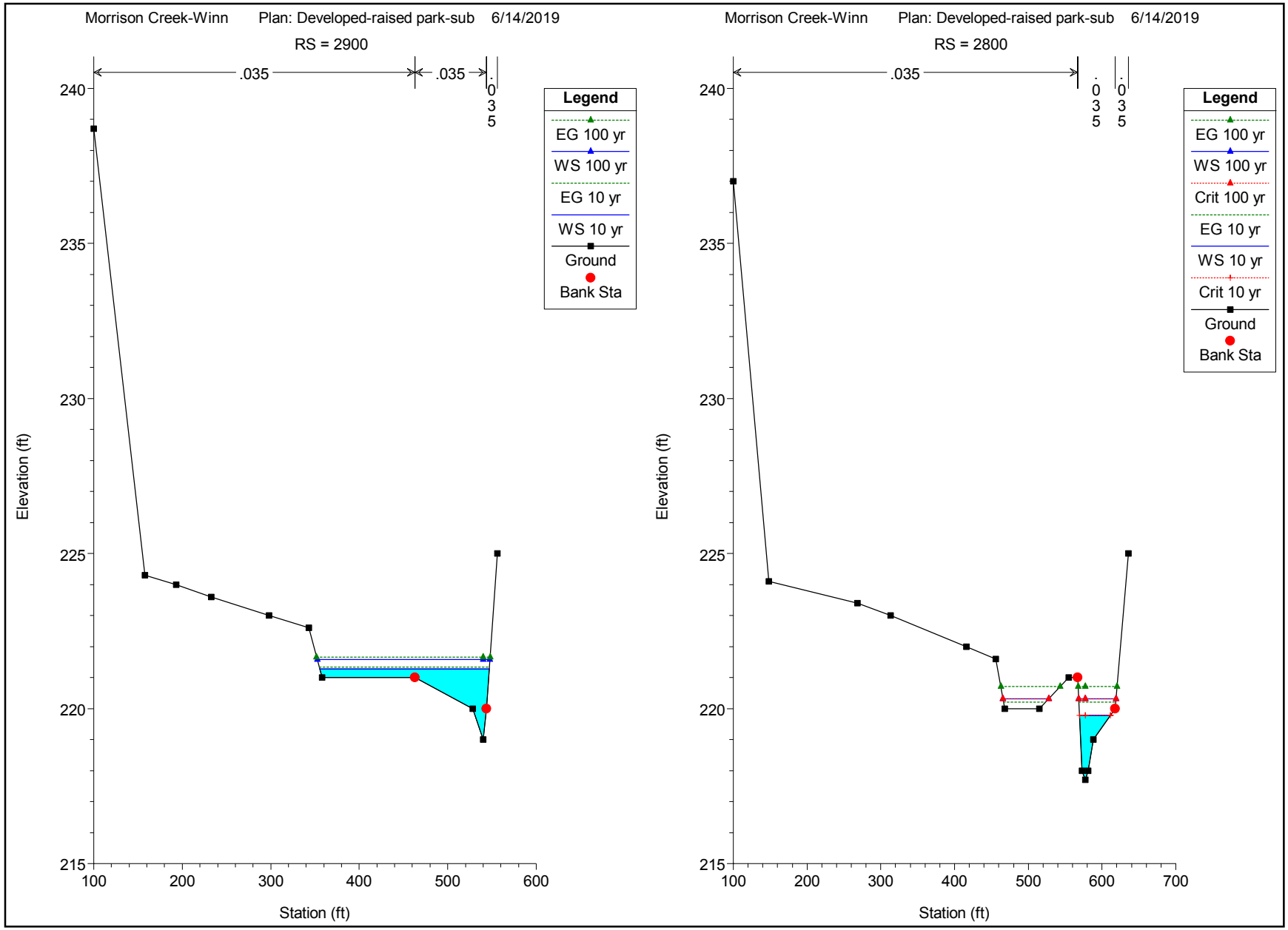

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3900
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
239
238
237
236
235
234
233
100
150
200
250
300
350
400
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3800
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
239
238
237
236
235
234
233
232
100
150
200
250
300
350
400
450

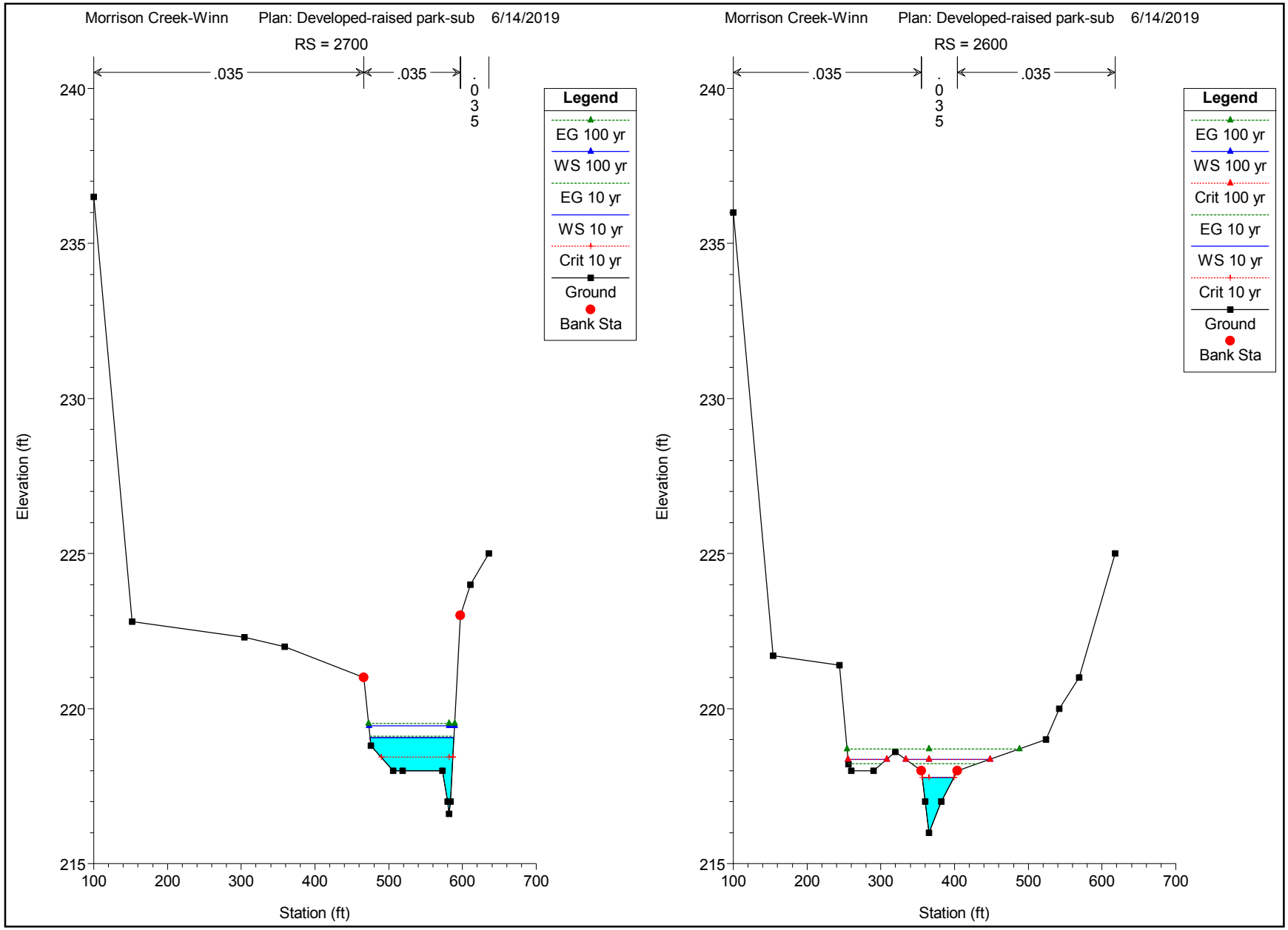

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
239
238
237
236
235
234
233
232
100
150
200
250
300
350
400
450
500
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
235
234
233
232
231
230
100
150
200
250
300
350
400

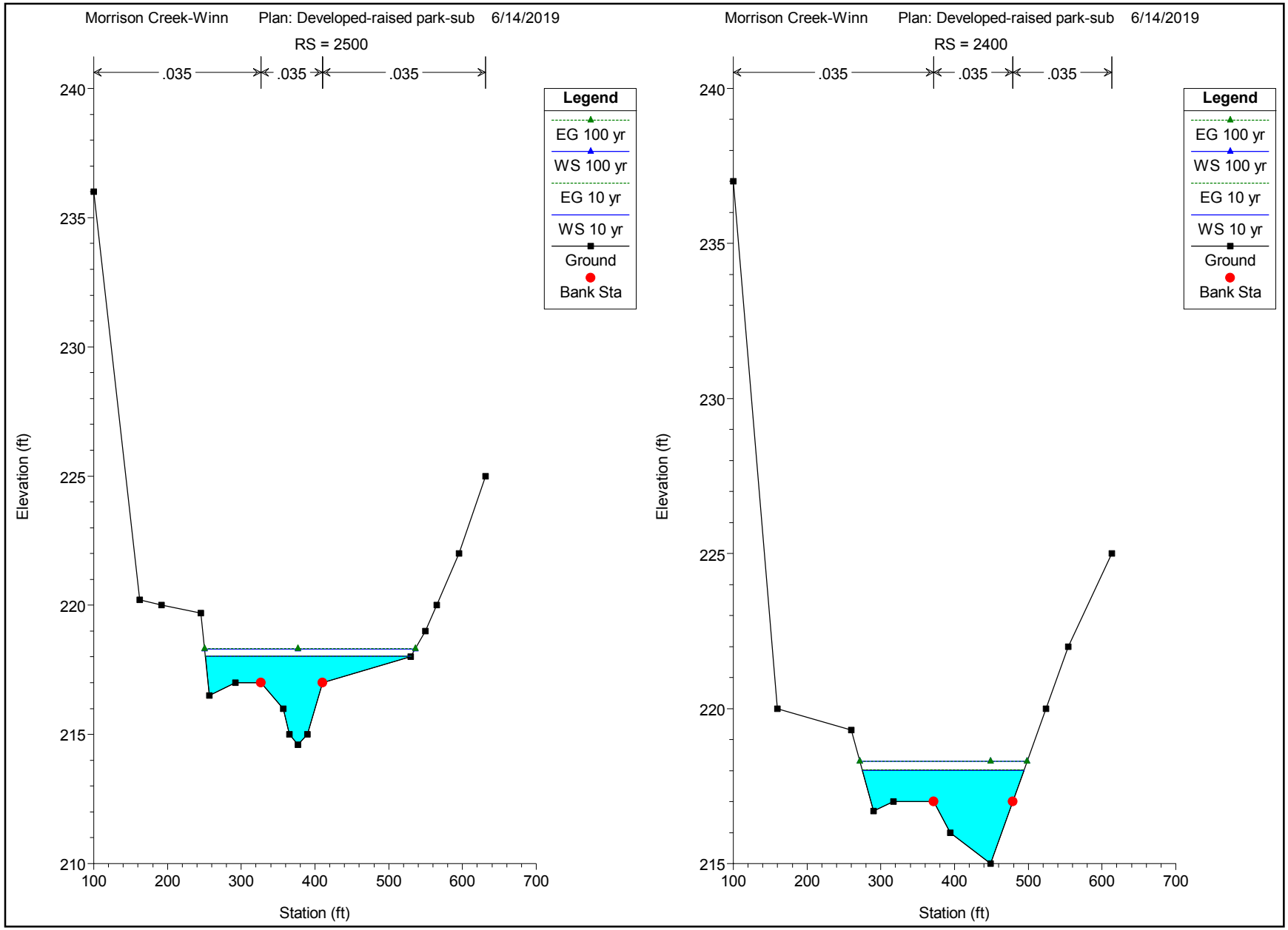

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3400
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

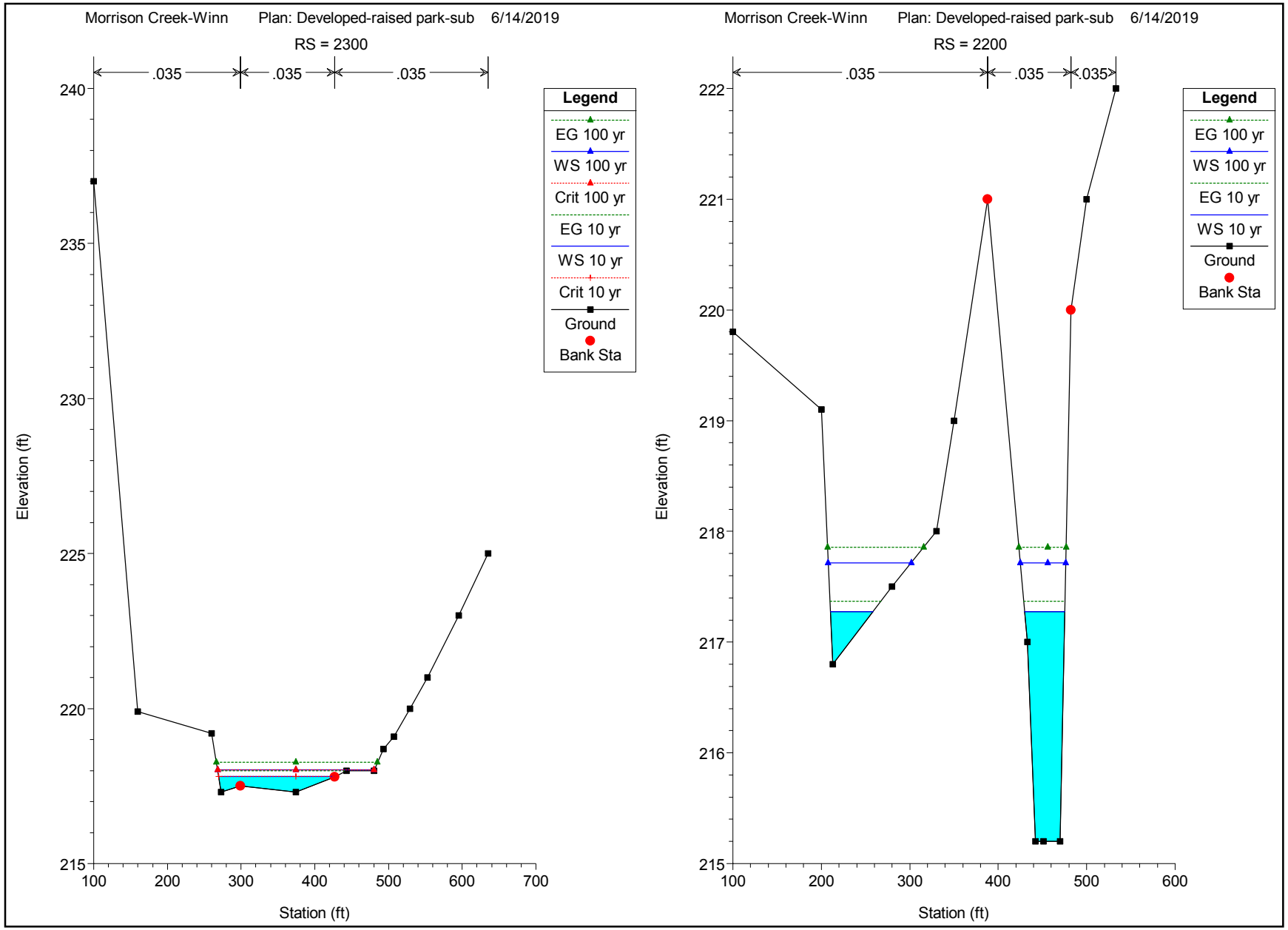

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3300
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
245
240
235
230
225
220
100
200
300
400
500
600
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3200
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

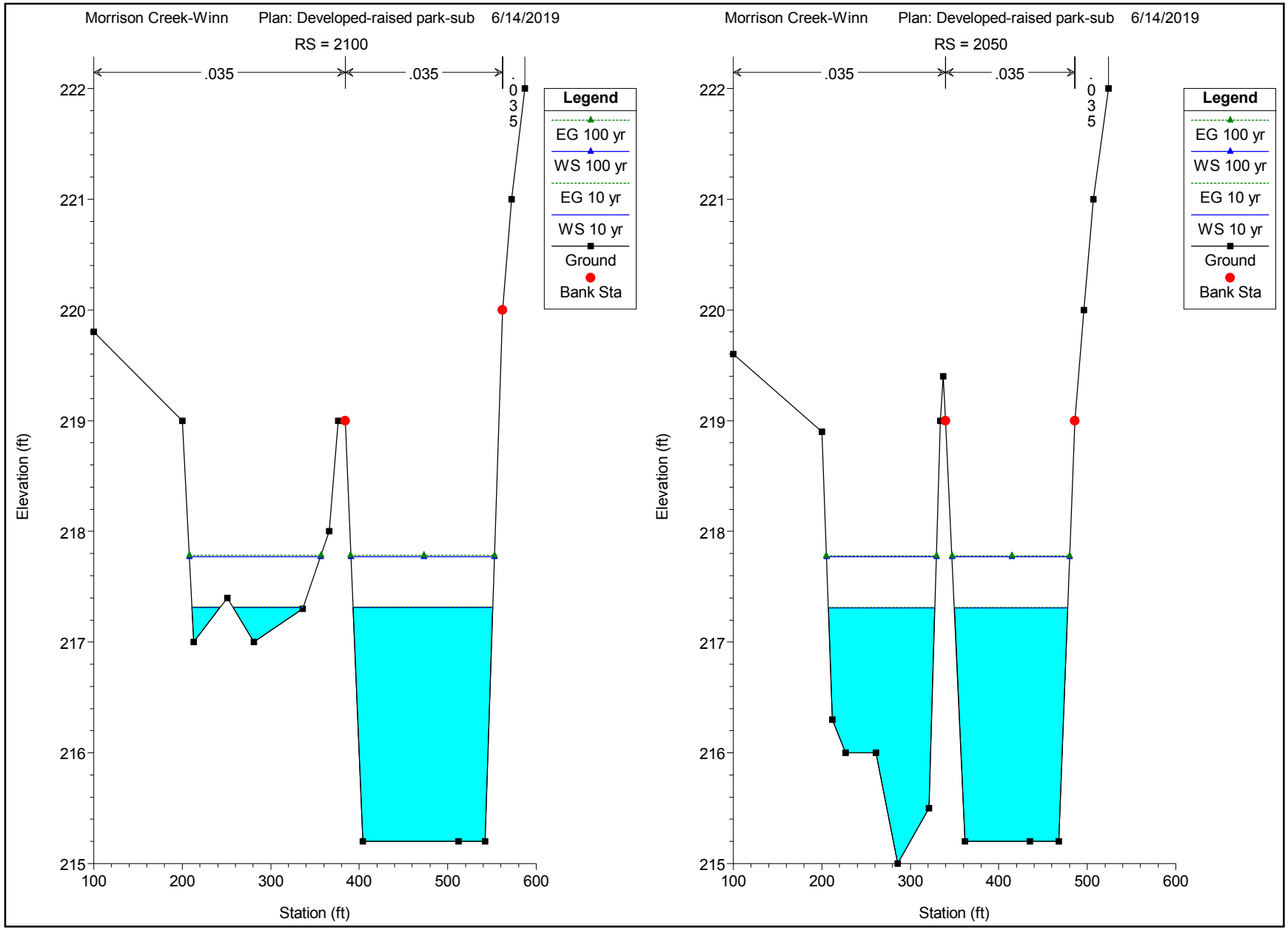

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3100
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 3000
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 100 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

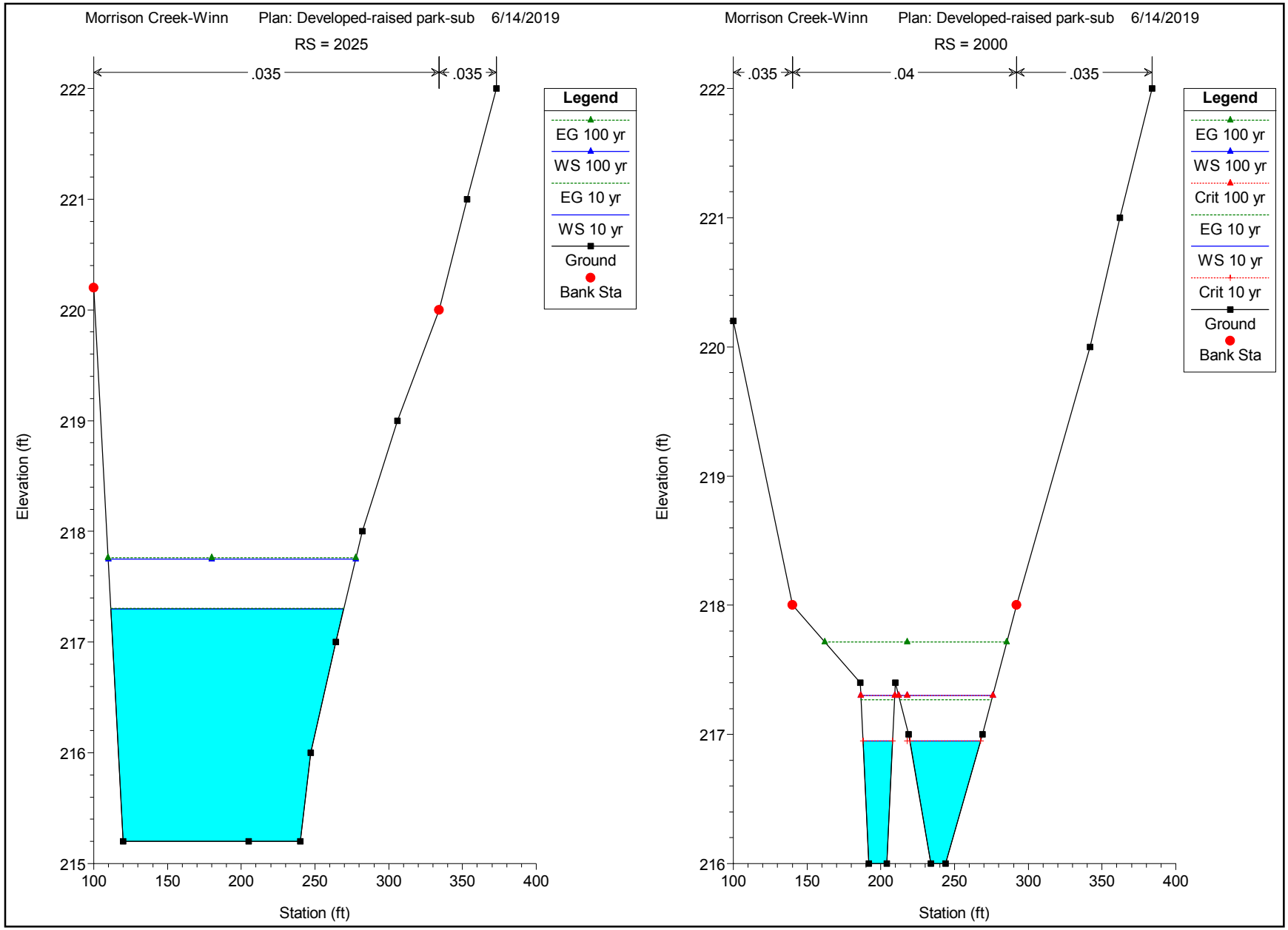

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2900
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
235
230
225
220
215
100
200
300
400
500
600
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2800
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
235
230
225
220
215
100
200
300
400
500
600
700

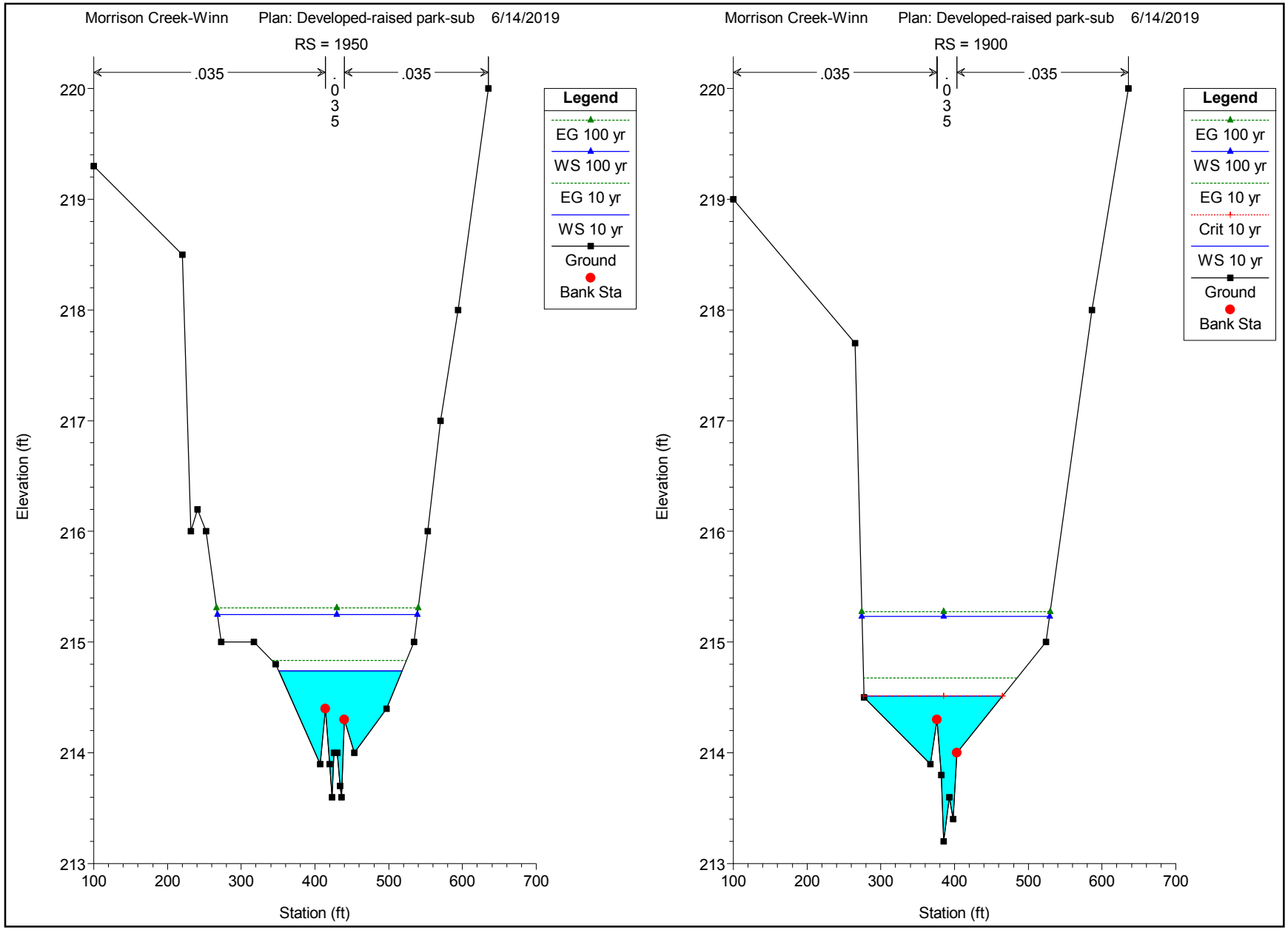

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
235
230
225
220
215
100
200
300
400
500
600
700
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

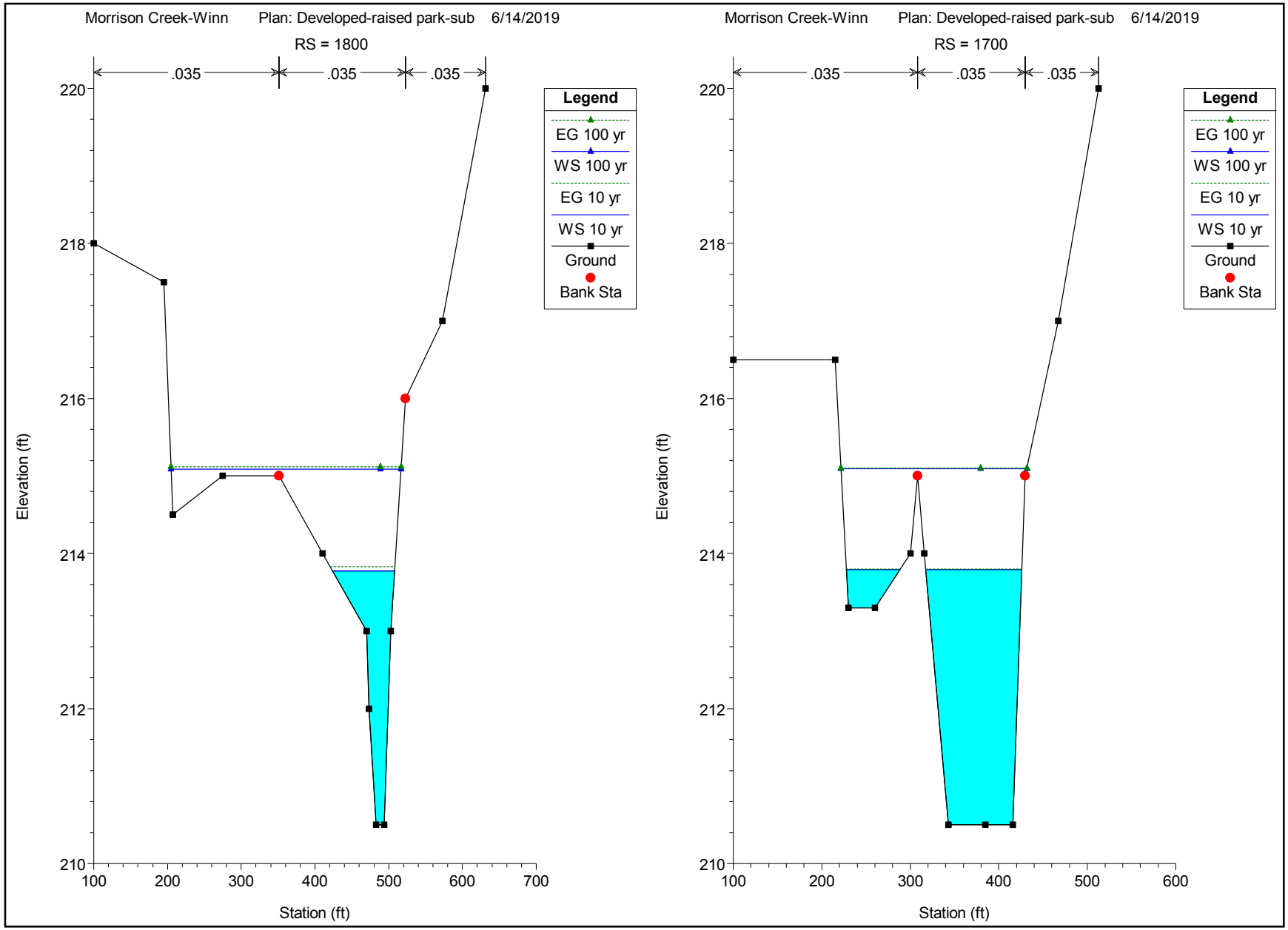

Morrison Creek-Winn
Plan: Developed-raised park-sub
6/14/2019
RS = 2500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
235
230
225
220
215
210
100
200
300
400
500
600
700
Morrison Creek-Winn
Plan: Developed-raised park-sub
6/14/2019
RS = 2400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
235
230
225
220
215
100
200
300
400
500
600
700

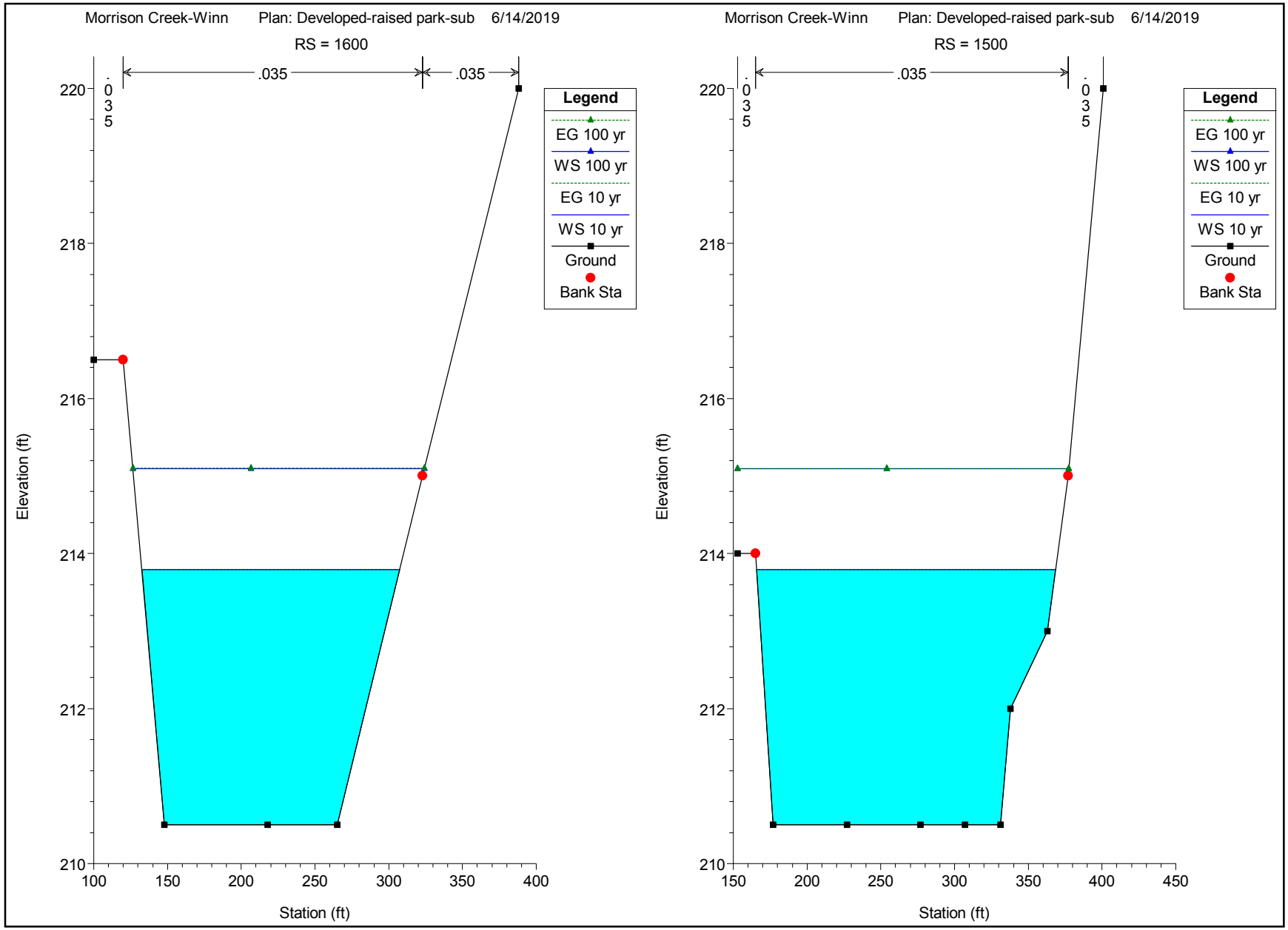

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2300
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
240
235
230
225
220
215
100
200
300
400
500
600
700
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2200
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
222
221
220
219
218
217
216
215
100
200
300
400
500
600

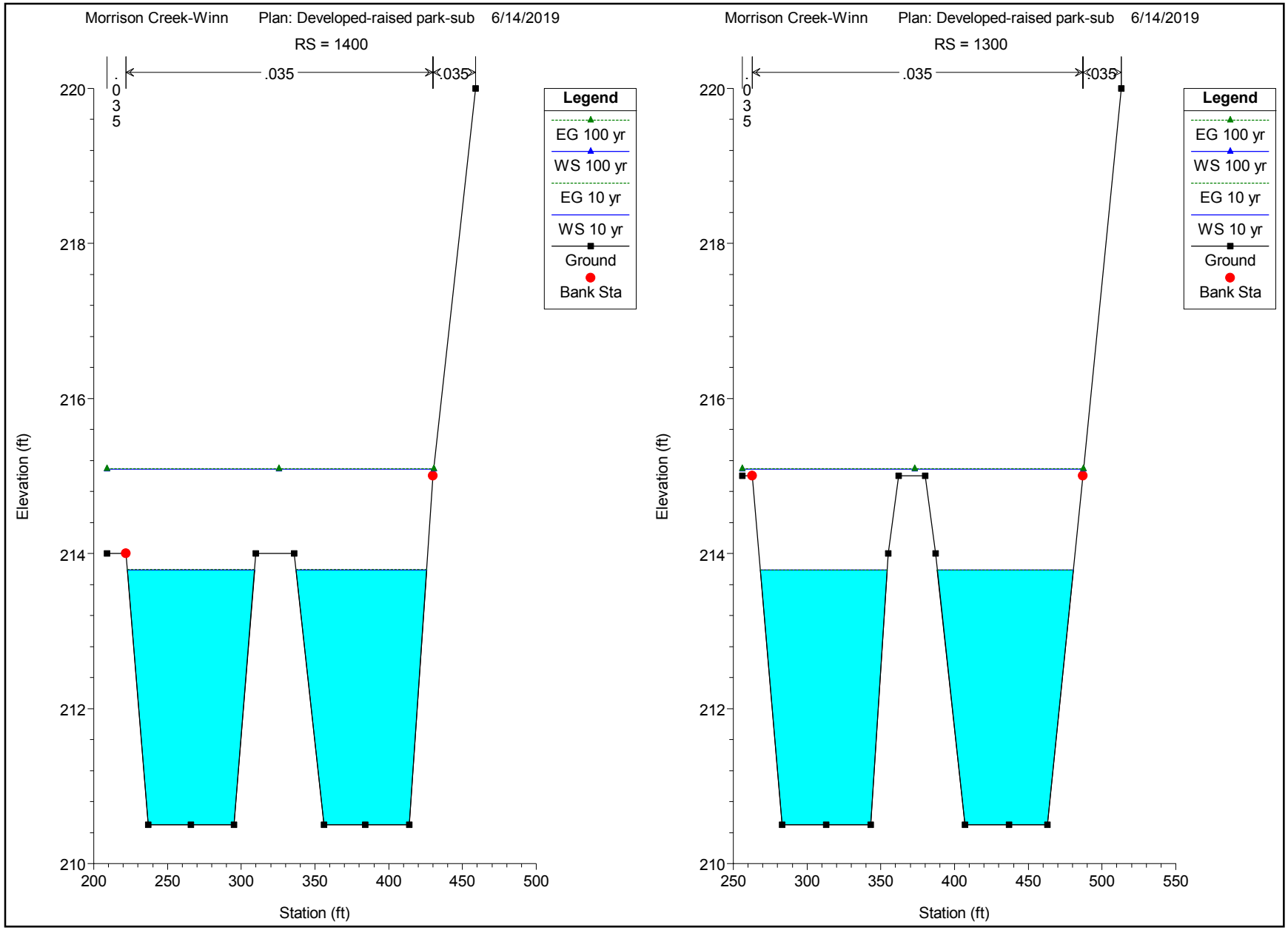

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2100
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
222
221
220
219
218
217
216
215
100
200
300
400
500
600
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2050
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

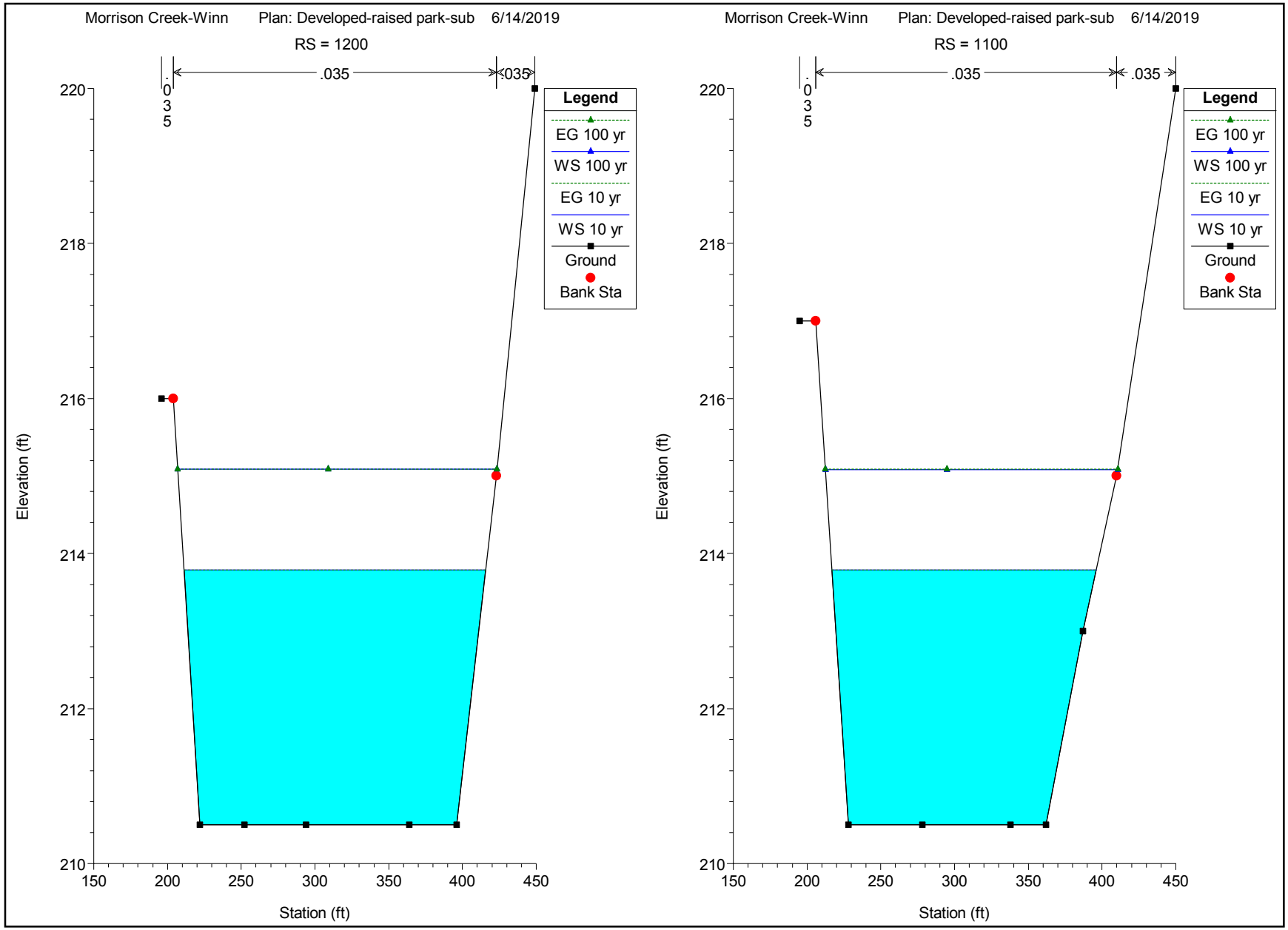

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2025
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 2000
.035
.04
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

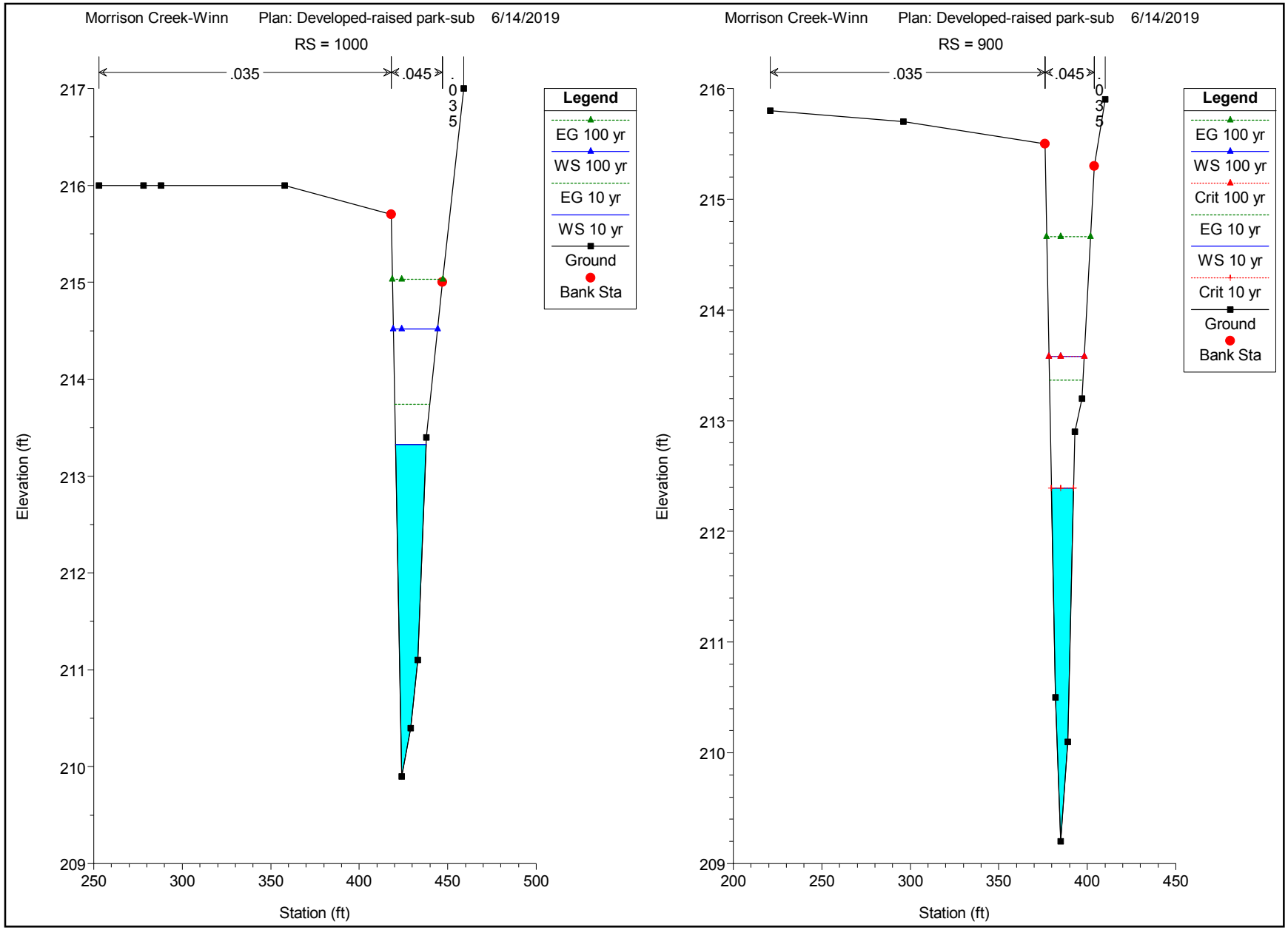

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 1950
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 1900
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
Crit 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

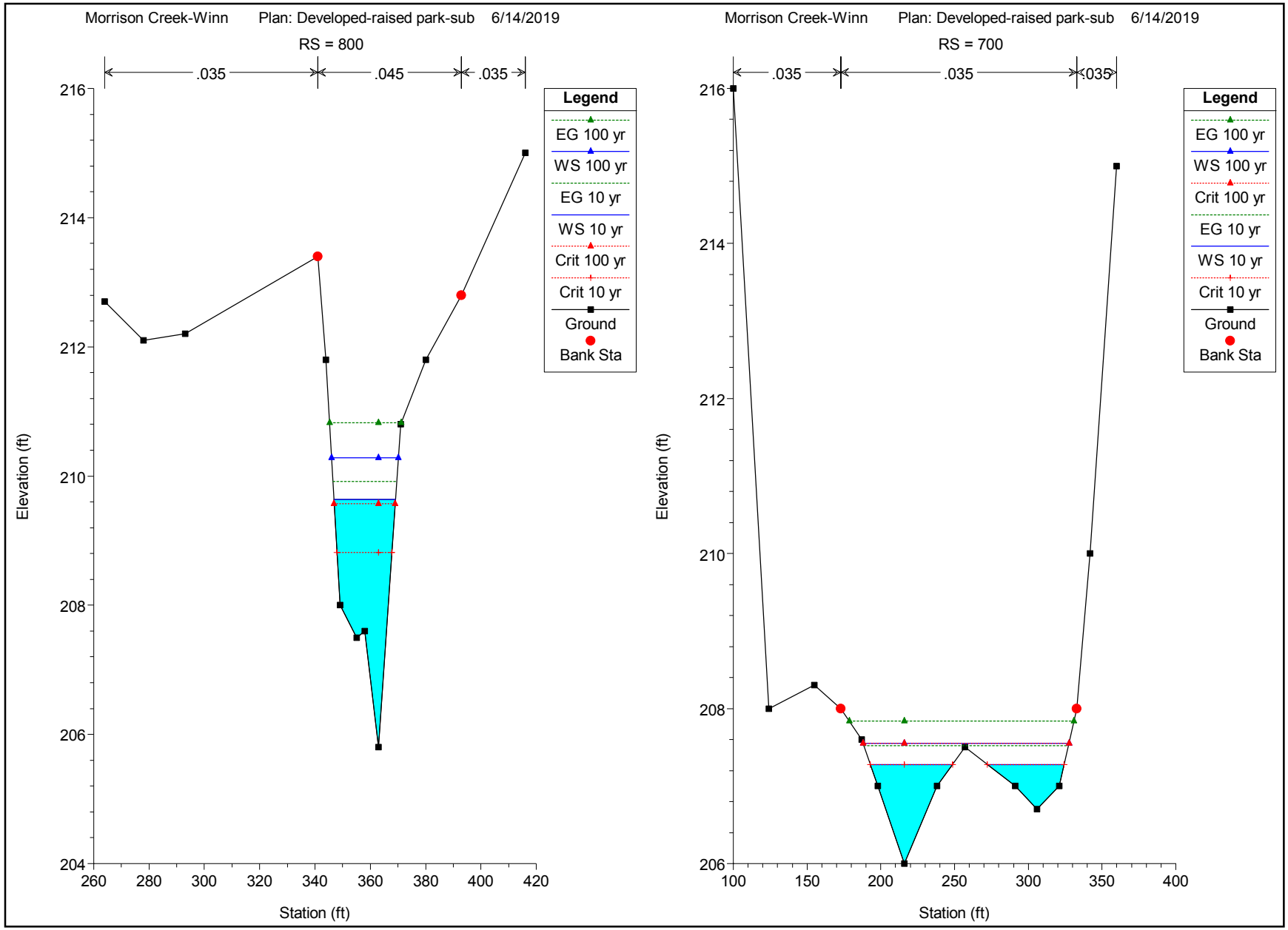

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 1800
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 1700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

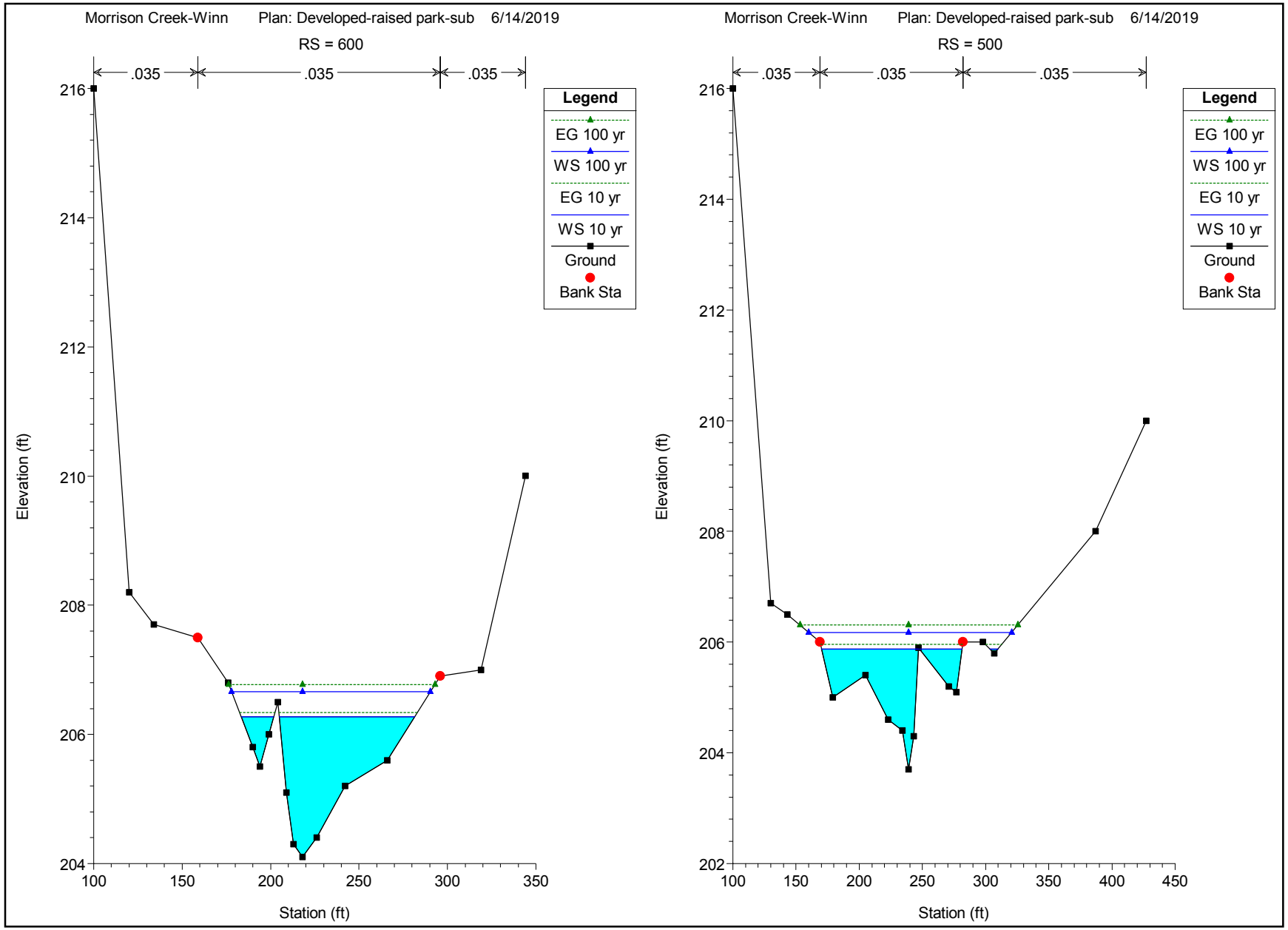

Morrison Creek-Winn
Plan: Developed-raised park-sub
6/14/2019
RS = 1600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
220
218
216
214
212
210
100
150
200
250
300
350
400
Morrison Creek-Winn
Plan: Developed-raised park-sub
6/14/2019
RS = 1500
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
220
218
216
214
212
210
150
200
250
300
350
400
450

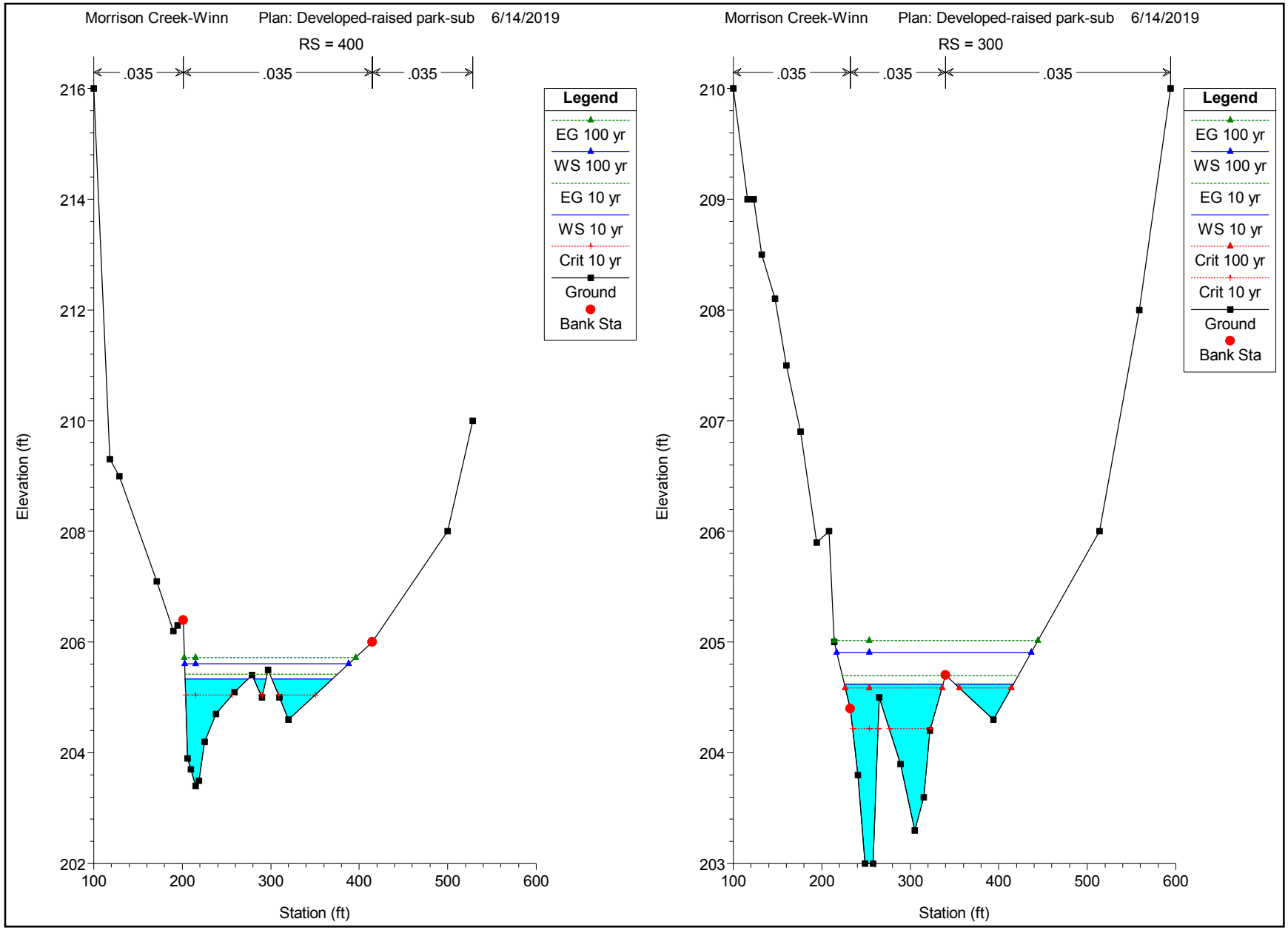

Morrison Creek-Winn
Plan: Developed-raised park-sub
6/14/2019
RS = 1400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
220
218
216
214
212
210
200
250
300
350
400
450
500
Morrison Creek-Winn
Plan: Developed-raised park-sub
6/14/2019
RS = 1300
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
220
218
216
214
212
210
250
300
350
400
450
500
550


Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 1200
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
220
218
216
214
212
210
150
200
250
300
350
400
450
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 1100
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 1000
.035
.045
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
217
216
215
214
213
212
211
210
209
250
300
350
400
450
500
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 900
.035
.045
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
216
215
214
213
212
211
210
209
200
250
300
350
400
450


Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 800
.035
.045
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 100 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 700
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
Crit 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 600
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 500
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

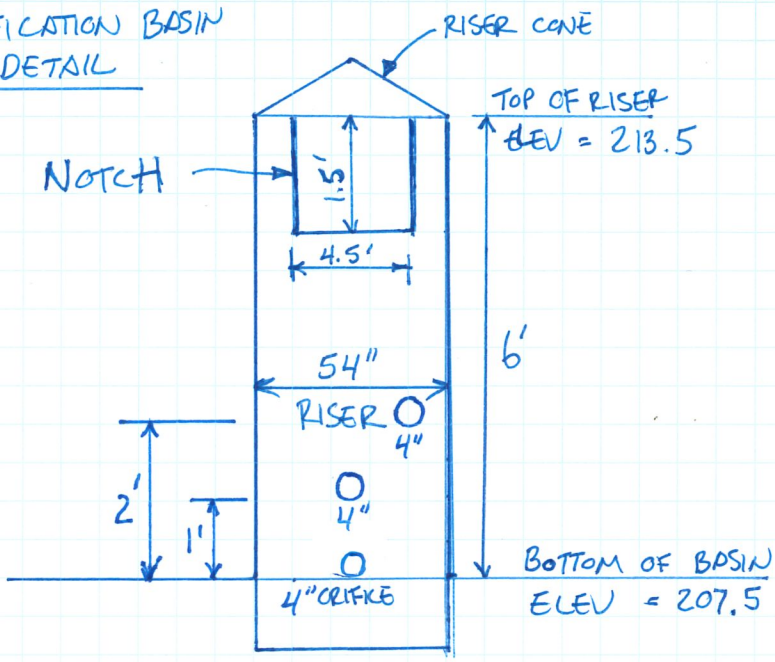

Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 400
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
Morrison Creek-Winn Plan: Developed-raised park-sub 6/14/2019
RS = 300
.035
.035
.035
Legend
EG 100 yr
WS 100 yr
EG 10 yr
WS 10 yr
Crit 100 yr
Crit 10 yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

Appendix 9 - Bioretention Basin and Hydromodification Basin Outlet Details

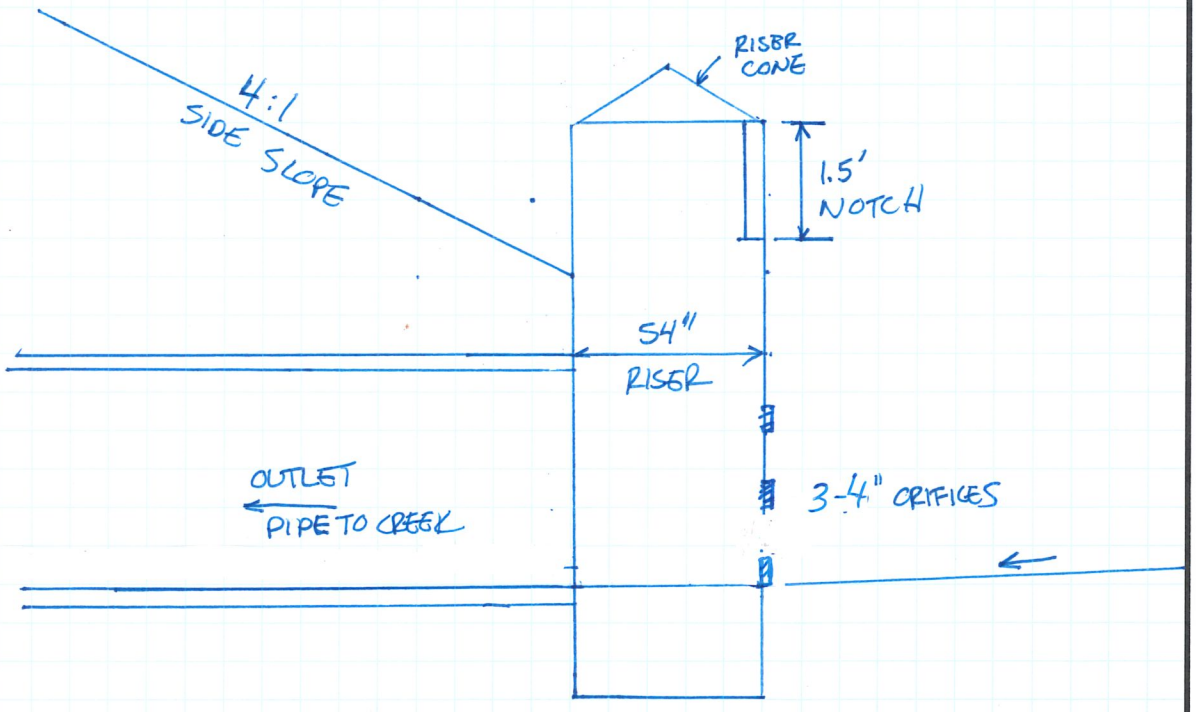
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS

JOB NO: The Preserve - 165018
JOB NAME:
DATE: 10/14/19
PREPARED BY:
SHEET NO. OF

HYDROMODIFICATION BASIN OUTLET DETAIL



RISER ELEVATION
NTS



RISER SECTION
NTS

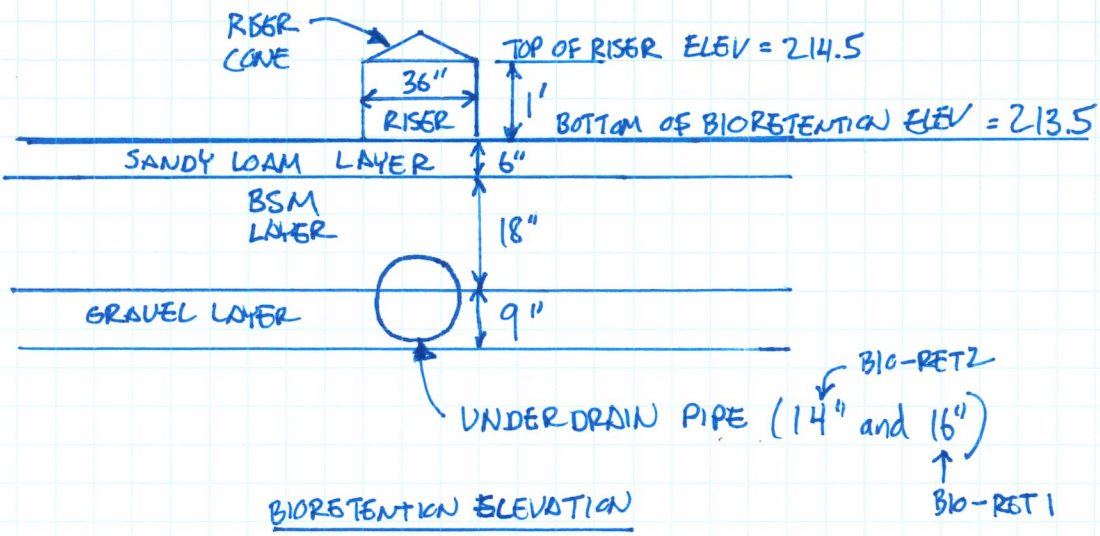
☐ Gilroy
Phone (408) 848-0300
FAX (408) 848-0302

☐ Pleasanton
Phone (925) 227-9100
FAX (925) 227-9300

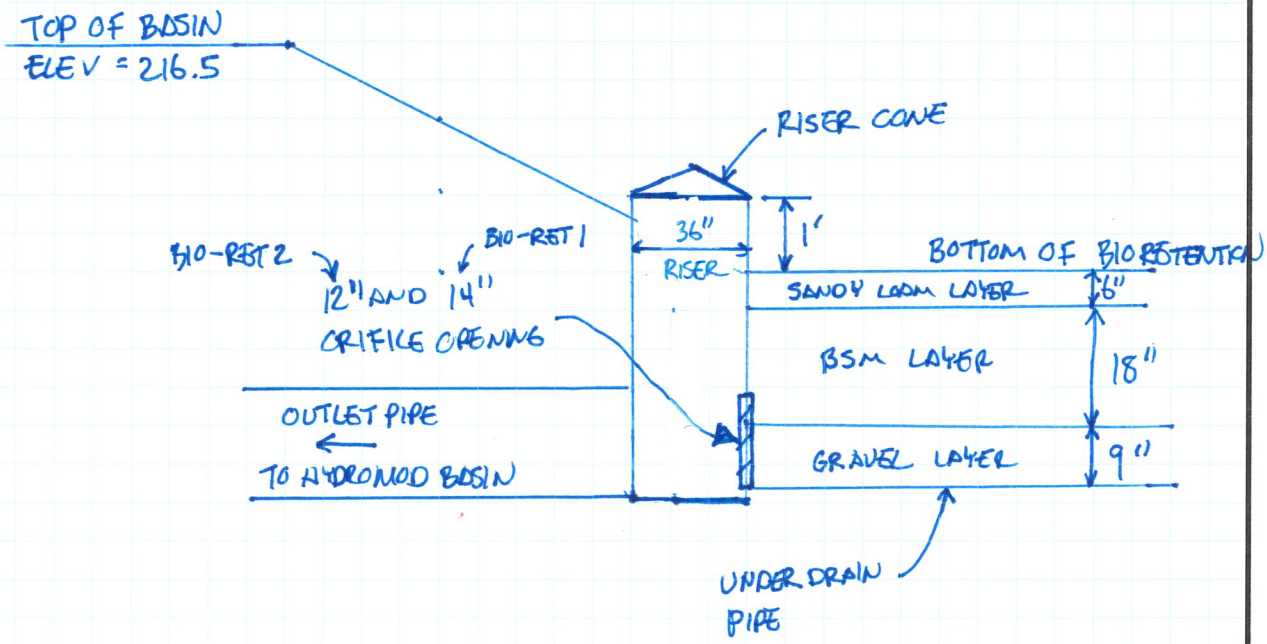
☐ Rocklin
Phone (916) 630-8900
FAX (916) 630-8909

RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS

JOB NO: The Reserve - 165018
JOB NAME:
DATE: 10/18/19
PREPARED BY:
SHEET NO. OF



BIORETENTION ELEVATION
NTS



BIORETENTION SECTION
NTS

☐ Gilroy
Phone (408) 848-0300
FAX (408) 848-0302

☐ Pleasanton
Phone (925) 227-9100
FAX (925) 227-9300

☐ Rocklin
Phone (916) 630-8900
FAX (916) 630-8909

Appendix 10 - Drawdown Calculations

Water Quality

Drawdown Time Results

Pond: Water Quality Basin 1

Days	Stage(feet)	Percent of Total Run Time
1	0.950	6.9747
2	4.662	0.4361
3	8.000	N/A
4	8.000	N/A
5	8.000	N/A

Maximum Stage: 8.000 Drawdown Time: 02 01:41:30

Appendix 11 - Preliminary Grading Plan included with Tentative Map package

SEE SHEET 9

PARCEL N
±0.14 AC

PARCEL H
±8.26 AC

PARCEL I
±0.12 AC

PARCEL J
±0.03 AC

PARCEL M
±0.06 AC

BIORETENTION AREA

LIMIT OF GRADING (TYP)

DIVERSION STRUCTURE

TREE INFORMATION (TYP). SEE NOTE 3 FOR MORE INFORMATION.

1.4' RETAINING WALL

1' WALL

STREET 'A'

STREET 'B'

STREET 'C'

STREET 'D'

STREET 'E'

STREET 'F'

STREET 'G'

EDINGTON DRIVE - EXTENSION

EDINGTON DRIVE

THORNBERG WAY

SEE SHEET 10

0 50 100 150

1 inch = 50 ft.

NOTES:

1. ALL STORM DRAIN PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON DESIGN OF IMPROVEMENT PLANS
2. ALL INLETS SHALL BE 12" DIAMETER PIPES UNLESS OTHERWISE NOTED.
3. ALL EXISTING TREES WITHIN LIMIT OF GRADING WILL BE REMOVED. ALL EXISTING TREES OUTSIDE OF LIMIT OF GRADING SHALL BE PROTECTED. PLEASE REFER TO ARBORIST SURVEY REPORT FOR MORE INFORMATION ON TREE SURVEY DATA.
4. PROJECT IS NOT WITHIN 100-YEAR FLOODPLAIN.

THE PRESERVE

GRADING PLAN - G.1

CITY OF RANCHO CORDOVA, CALIFORNIA

RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

N

0 50 100 150

1 inch = 50 ft.

NOTES:
1. ALL STORM DRAIN PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON DESIGN OF IMPROVEMENT PLANS
2. ALL INLETS SHALL BE 12" DIAMETER PIPES UNLESS OTHERWISE NOTED.
3. ALL EXISTING TREES WITHIN LIMIT OF GRADING WILL BE REMOVED. ALL EXISTING TREES OUTSIDE OF LIMIT OF GRADING SHALL BE PROTECTED. PLEASE REFER TO ARBORIST SURVEY REPORT FOR MORE INFORMATION ON TREE SURVEY DATA.
4. PROJECT IS NOT WITHIN 100-YEAR FLOODPLAIN.

PARCEL 4
29 PM 28
±42.68 AC

PARCEL B
±8.61 AC

PARCEL C
±5.74 AC

PARCEL G
±2.05 AC

PARCEL H
±8.26 AC

PARCEL N
±0.14 AC

PARCEL I
±0.12 AC

CRPD NEIGHBORHOOD PARK 2
PARCEL F
±5.80 AC

EXISTING POND (EX-1)

EXISTING POND (EX-2)

100-YEAR WATER SURFACE Q=361 cfs.

CREEK CENTERLINE MORRISON CREEK

MORRISON CREEK TRAIL

100' CREEK SETBACK

LIMIT OF GRADING (TYP)

PROVIDE STUB FOR FUTURE PARK STORM DRAIN CONNECTION

BIORETENTION AREA

HYDROMODIFICATION AREA

OUTLET STRUCTURE

OUTLET INV 207.0

100-YEAR WSEL = 207.0

DIVERSION STRUCTURE

STREET 'A'

STREET 'E'

STREET 'F'

STREET 'H'

STREET 'P'

EDINGTON DRIVE -EXTENSION

SEE SHEET 12

SEE SHEET 11

SEE SHEET 8

THE PRESERVE

GRADING PLAN - G.2

CITY OF RANCHO CORDOVA, CALIFORNIA

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

SEE SHEET 11

SEE SHEET 8

STREET 'I'

STREET 'J'

STREET 'D'

STREET 'G'

STREET 'M'

RAYMER WAY

EVANSTON WAY

BARKSDALE WAY

REINHEIMER TRUST

PROVIDE STUB FOR FUTURE PARK STORM DRAIN CONNECTION

PARCEL K
±0.76 AC

PARCEL L
±0.11 AC

N

0 50 100 150

1 inch = 50 ft.

NOTES:
1. ALL STORM DRAIN PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON DESIGN OF IMPROVEMENT PLANS
2. ALL INLETS SHALL BE 12" DIAMETER PIPES UNLESS OTHERWISE NOTED.
3. ALL EXISTING TREES WITHIN LIMIT OF GRADING WILL BE REMOVED. ALL EXISTING TREES OUTSIDE OF LIMIT OF GRADING SHALL BE PROTECTED. PLEASE REFER TO ARBORIST SURVEY REPORT FOR MORE INFORMATION ON TREE SURVEY DATA.
4. PROJECT IS NOT WITHIN 100-YEAR FLOODPLAIN.

THE PRESERVE

GRADING PLAN - G.3

CITY OF RANCHO CORDOVA, CALIFORNIA

RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

SEE SHEET 12

SEE SHEET 9

SEE SHEET 8

SEE SHEET 10

PARCEL B
±8.61 AC

PARK 2
PARCEL F
±5.80 AC

PARCEL E
±3.84 AC

PARK 1
PARCEL D
±5.43 AC

REINHEIMER TRUST

100 YEAR WATER SURFACE ELEVATION Q=361 cfs.

CREEK CENTERLINE
MORRISON CREEK

100' CREEK SETBACK

MORRISON CREEK TRAIL

LIMIT OF GRADING (TYP)

PROVIDE STUB FOR FUTURE PARK STORM DRAIN CONNECTION

STREET 'I'

STREET 'J'

STREET 'H'

STREET 'A'

STREET 'G'

STREET 'W'

RAYMER WAY

TREE INFORMATION (TYP). SEE NOTE 3 FOR MORE INFORMATION.

NOTES:
1. ALL STORM DRAIN PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON DESIGN OF IMPROVEMENT PLANS
2. ALL INLETS SHALL BE 12" DIAMETER PIPES UNLESS OTHERWISE NOTED.
3. ALL EXISTING TREES WITHIN LIMIT OF GRADING WILL BE REMOVED. ALL EXISTING TREES OUTSIDE OF LIMIT OF GRADING SHALL BE PROTECTED. PLEASE REFER TO ARBORIST SURVEY REPORT FOR MORE INFORMATION ON TREE SURVEY DATA.
4. PROJECT IS NOT WITHIN 100-YEAR FLOODPLAIN.

THE PRESERVE

GRADING PLAN - G.4

CITY OF RANCHO CORDOVA, CALIFORNIA

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

SHEET 11 OF 20
JOB NO. 165018
OCTOBER 22, 2019

N

0 50 100 150

1 inch = 50 ft.

PARCEL A
±83.47 AC

PARCEL 5
29 PM 28
±40.19 AC

PARCEL B
±8.61 AC

PARCEL E
±3.84 AC

PARK 1
PARCEL D
±5.43 AC

REINHEIMER TRUST

100 YEAR WATER SURFACE ELEVATION Q=361 cfs.

CREEK CENTERLINE MORRISON CREEK

100' CREEK SETBACK

LIMIT OF GRADING (TYP)

MORRISON CREEK TRAIL

PROVIDE STUB FOR FUTURE PARK STORM DRAIN CONNECTION

STREET "K"

STREET "L"

STREET "M"

SEE SHEET 9

SEE SHEET 11

N

0 50 100 150

1 inch = 50 ft.

NOTES:
1. ALL STORM DRAIN PIPE SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON DESIGN OF IMPROVEMENT PLANS
2. ALL INLETS SHALL BE 12" DIAMETER PIPES UNLESS OTHERWISE NOTED.
3. ALL EXISTING TREES WITHIN LIMIT OF GRADING WILL BE REMOVED. ALL EXISTING TREES OUTSIDE OF LIMIT OF GRADING SHALL BE PROTECTED. PLEASE REFER TO ARBORIST SURVEY REPORT FOR MORE INFORMATION ON TREE SURVEY DATA.
4. PROJECT IS NOT WITHIN 100-YEAR FLOODPLAIN.

THE PRESERVE

GRADING PLAN -G .5

CITY OF RANCHO CORDOVA, CALIFORNIA

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

Appendix 12 - Existing Conditions Plan included with Tentative Map package

1-1/2" BRASS CAMP STAMPED "AG-CORP LS 2547"(3)(4)(9) SFNF

5/8" REBAR (4) SFNF

5/8" REBAR (4)

N89°05'58"E 956.39'

1-1/2" BRASS CAMP STAMPED "AG-CORP LS 2457"(3)(4)(9)

5/8" REBAR & CAP LS 3680 (9)

N89°03'01"E 2352.30'

SACRAMENTO COUNTY
CITY LIMITS RANCHO CORDOVA

1-1/2" BRASS CAMP STAMPED "AG-CORP LS 2457"

HELD RECORD ANGLE OF 60°27'30" PER (2)(3)

GRANT LINE ROAD

N28°35'31"E 696.04'

EX CATTLE FENCE (TYP)

SMUD
10' X 10' POLE BARRIER EASEMENT
20170725-1091

1-1/4" IP W/PLUG, LEANING (NR)
N12°38'38"W 0.78' M-COR

HELD RECORD ANGLE OF 150°39'49" PER (3)

N00°44'40"W 40.81' HELD RECORD DISTANCE PER (1)(3)(5)

1-1/2" BRASS CAMP STAMPED "AG-CORP LS 2457"(3) SFNF

EX BUILDING

PARCEL 5
29 PM 28

EX DIRT ROAD (TYP)

N00°55'15"W 1341.90'

N00°56'16"W 1821.79'

TDW ENTERPRISES LP
20121214-0851
APNS 073-0010-010 AND 073-0010-011
PORTION OF TRACT 3
12 RS 27

PARCEL 4
29 PM 28

R=500.00'
Δ=34°06'21"
L=297.63'

EX CATTLE FENCE (TYP)

EX DIRT ROAD (TYP)

5/8" REBAR, NO TAG(4)

COUNTY OF SACRAMENTO 40' WIDE DRAINAGE EASEMENT TO CITY OF RANCHO CORDOVA (20150122-0971)

5/8" REBAR, NO TAG(4)
S38°28'53"W 0.56'
PL-ESMT INTX TO REBAR

N89°03'49"E 1043.02'

5' WIDE PRIVATE UTILITY EASEMENT
IN FAVOR OF BRADLEY ET AL
770630-1450

5/8" REBAR, NO TAG(4)

EX BUILDING (TYP)

5/8" REBAR, NO TAG(4)

MORRISON CREEK

EX MAN MADE POND

WELL

5/8" REBAR, NO TAG(4)

N89°04'28"E 1129.58'

15' WIDE PT&T EASEMENT
771107-874

5/8" REBAR, NO TAG(4)

IOD
COUNTY OF SCARAMENTO
60' WIDE PUBLIC RIGHT OF WAY
761215-632
ROAD MAINTENANCE CONDITIONS AND RESTRICTIONS
770630-1446

30'

30'

EX DIRT ROAD (TYP)

SEPTIC

WELL

EX DIRT ROAD (TYP)

N00°55'35"W 1592.94'

WHITLOW AND DHILLON
APN 072-0300-005
PARCEL 3
29 PM 28

N00°55'15"W 1319.28'

EX DIRT ROAD (TYP)

EX BUILDING (TYP)
(TO BE DEMOLISHED)

WELL

EX CATTLE FENCE (TYP)

SEPTIC

DAVID AND ALAINA FAMILY
1985 REVOCABLE TRUST
APN 072-0300-002
PARCEL 6
29 PM 28

EX BUILDING (TYP)
(TO BE DEMOLISHED)

N00°55'13"W 1599.82'

30' WIDE PT&T EASEMENT
780222-958

EX MISCELLANEOUS STRUCTURE

MORRISON CREEK

N28°36'41"E 4174.92'

RAYMER WAY

CITY LIMITS
RANCHO CORDOVA
SACRAMENTO COUNTY

GRANT LINE ROAD

ENVIRONMENTAL/BIOLOGICAL

- VERNAL POOL
- SWALE
- STREAM/CREEK
- OPEN WATER

NOTES:
1. NO OAK TREES ARE LOCATED IN LIMITS OF DEVELOPED AREA. PLEASE REFER TO ARBORIST SURVEY REPORT FOR MORE INFORMATION ON TREE SURVEY DATA.
2. ALL BIOLOGICAL RESOURCE INFORMATION SOUTH OF MORRISON CREEK IS PER AQUATIC RESOURCES DELINEATION EXHIBITS PREPARED BY ECORP CONSULTING, INC. DATED 10-18-2018.
3. ALL BIOLOGICAL RESOURCE INFORMATION NORTH OF MORRISON CREEK IS PER FOOTHILL ASSOCIATES, DATED 06-24-2014.

N

0 150 300 450

1 inch = 150 ft.

TENTATIVE MAP REFERENCE SHEETS

FIRM MAP

FIRM: 06067C0240H
ZONE X
EFFECTIVE DATE
AUGUST 16, 2012

THE PRESERVE

EXISTING CONDITIONS PLAN

CITY OF RANCHO CORDOVA, CALIFORNIA

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

SEE SHEET 19

SEE SHEET 18

15' WIDE PT&T EASEMENT
771107-874

5/8" REBAR, NO TAG (4)

30'

30'

IOD
COUNTY OF SCARAMENTO
60' WIDE PUBLIC RIGHT OF WAY
761215-632
ROAD MAINTENANCE CONDITIONS AND RESTRICTIONS
770630-1446

EX DIRT ROAD (TYP)

SEPTIC

WELL

EX DIRT ROAD (TYP)

EX DIRT ROAD (TYP)

EX BUILDING (TYP)
(TO BE DEMOLISHED)

WHITLOW AND DHILLON
APN 072-0300-005
PARCEL 3
29 PM 28

N00°55'35"W 1598.94'

N00°55'15"W 1319.29'

N00°55'13"W 1599.82'

EX DIRT ROAD (TYP)

EX BUILDING (TYP)
(TO BE DEMOLISHED)

WELL

EX CATTLE FENCE (TYP)

SEPTIC

DAVID AND ALAINA FAMILY
1985 REVOCABLE TRUST
APN 072-0300-002
PARCEL 6
29 PM 28

30' WIDE PT&T EASEMENT
780222-958

N89°04'52"E 1128.90'

TDW ENTERPRISES LP
20121214-0851
APNS 073-0010-010 AND 073-0010-011
PORTION OF TRACT 3
12 RS 27

N28°36'41"E 4114.92'

GRANT LINE ROAD

RAYMER WAY

N00°55'35"W 1598.94'

RANCHO CORDOVA
DRAINAGE EASEMENT
(20051213-585)

N00°55'48"W 498.05'

140.00'(5)(6)'

EX CATTLE
FENCE (TYP)

N00°56'05"W 769.24'

5/8" REBAR & CAP LS 7944 (NR)

N89°05'59"E 1129.50'

SACRAMENTO COUNTY

NORTH DOUGLAS VILLAGE 2
(351 M 4)

EVANSTON WAY

EDINGTON DRIVE

BARKSDALE WAY

RAYMAR WAY

MANZANOLA WAY

NORTH DOUGLAS VILLAGE 1
(351 M 3)

THORNBERG WAY

SOLSBERRY WAY

ROCKDALE DRIVE

BOLDEN BOURNE

CITY OF RANCHO CORDOVA
EASEMENT FOR RIGHT-OF-WAY
20060427-2218 & 20060811-0433

5/8" REBAR & CAP LS 6815 (NR)

N00°56'01"W 640.00'

N28°37'03"E 1005.44'

3/4" IP WITH PLUG LS 7944
S39°09'34"E 0.21' M-TL

PARCEL 2
29 PM 28

ENVIRONMENTAL/BIOLOGICAL

- VERNAL POOL
- SWALE
- STREAM/CREEK
- OPEN WATER

NOTES:
1. NO OAK TREES ARE LOCATED IN LIMITS OF DEVELOPED AREA. PLEASE REFER TO ARBORIST SURVEY REPORT FOR MORE INFORMATION ON TREE SURVEY DATA.
2. ALL BIOLOGICAL RESOURCE INFORMATION SOUTH OF MORRISON CREEK IS PER AQUATIC RESOURCES DELINEATION EXHIBITS PREPARED BY ECORP CONSULTING, INC. DATED 10-18-2018.
3. ALL BIOLOGICAL RESOURCE INFORMATION NORTH OF MORRISON CREEK IS PER FOOTHILL ASSOCIATES, DATED 06-24-2014.

N

FIRM MAP

FIRM: 06067C0240H
ZONE X
EFFECTIVE DATE
AUGUST 16, 2012

0 150 300 450

TENTATIVE MAP REFERENCE SHEETS

THE PRESERVE

EXISTING CONDITIONS PLAN

CITY OF RANCHO CORDOVA, CALIFORNIA

RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

Appendix I

Environmental Noise & Vibration Assessment

The Preserve Residential Development

Rancho Cordova, California

BAC Job # 2019-085

Prepared For:

Raney Planning & Management, Inc.

Attn: Rod Stinson
1501 Sports Drive, Suite A
Sacramento, CA 95834

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Senior Consultant

September 3, 2020

BOLLARD
Acoustical Consultants

Introduction

The proposed The Preserve Residential Development (project) is located north of Douglas Road, in between Security Park Drive and Raymer Way in Rancho Cordova, California. The project proposes the development of 434 single-family residential lots, public parks, and preserve area on a currently undeveloped 284-acre parcel. The proposed development is located within the Sunrise Douglas Community Plan. Existing land uses in the project vicinity include residential to the south, undeveloped residential to the west, and agricultural to the north and east. The project site location and site plan are shown on Figures 1 and 2, respectively.

The purposes of this assessment are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide quantitative and qualitative analyses of impacts associated with the project. Specifically, impacts are identified if project-related activities would cause a substantial increase in ambient noise or vibration levels at existing sensitive uses in the project vicinity, or if traffic or project generated noise or vibration levels would exceed applicable Rancho Cordova standards at existing or proposed sensitive uses within the project vicinity.

Noise and Vibration Fundamentals

Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 3.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day-night average noise descriptor, DNL (or L_{dn}), and shows very good correlation with community response to noise.

The day-night average sound level (DNL) is based on the average noise level over a 24-hour day, with a +10-decibel weighting applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because DNL represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Vibration

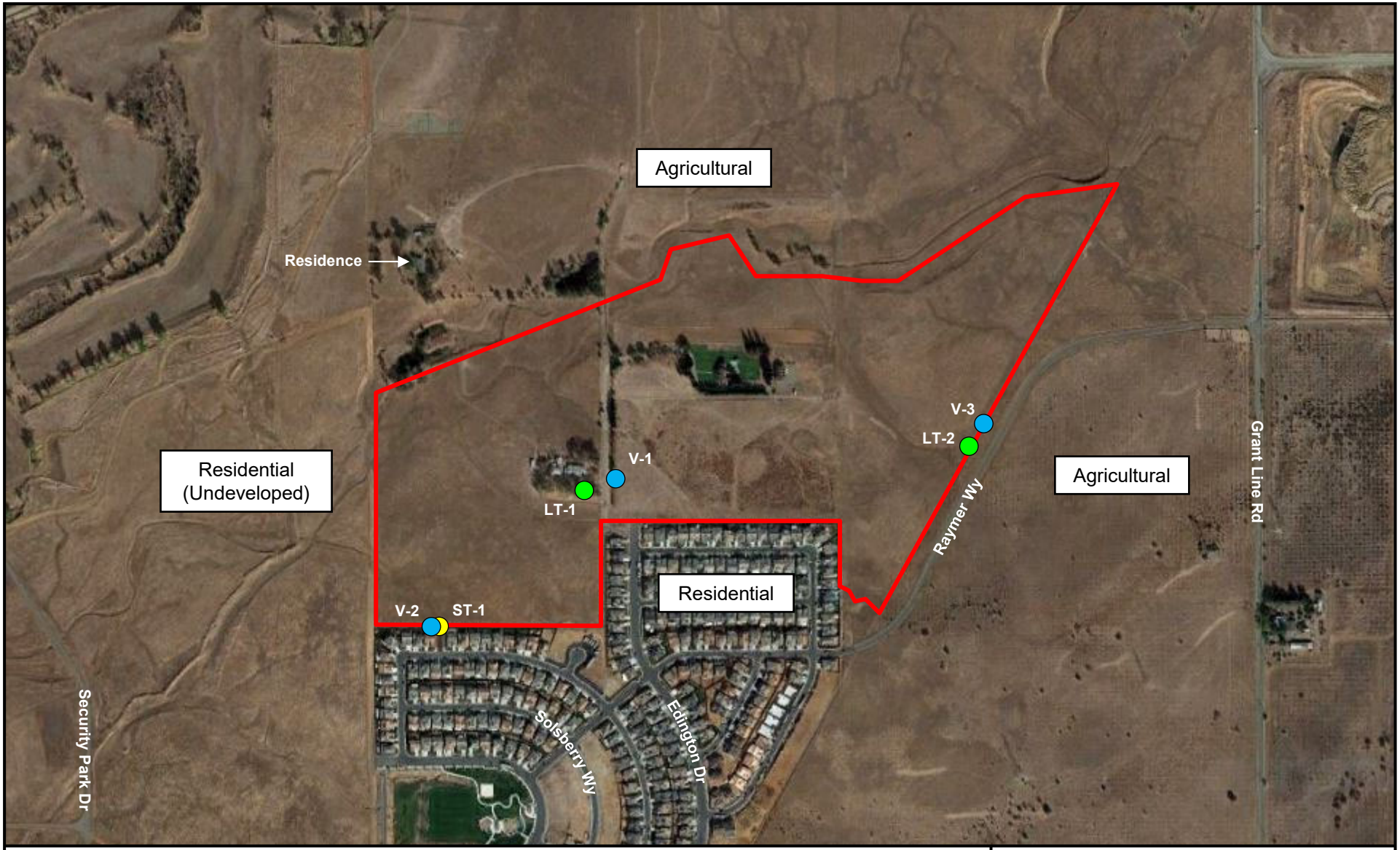
Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance. The maximum rate, or velocity of particle movement, is the commonly accepted descriptor of the vibration "strength".

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, June 2004), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.



Legend

- Project Boundary (Approximate)
- Long-Term Noise Survey Locations
- Short-Term Noise Survey Location
- Vibration Survey Locations

N

Scale (Feet)

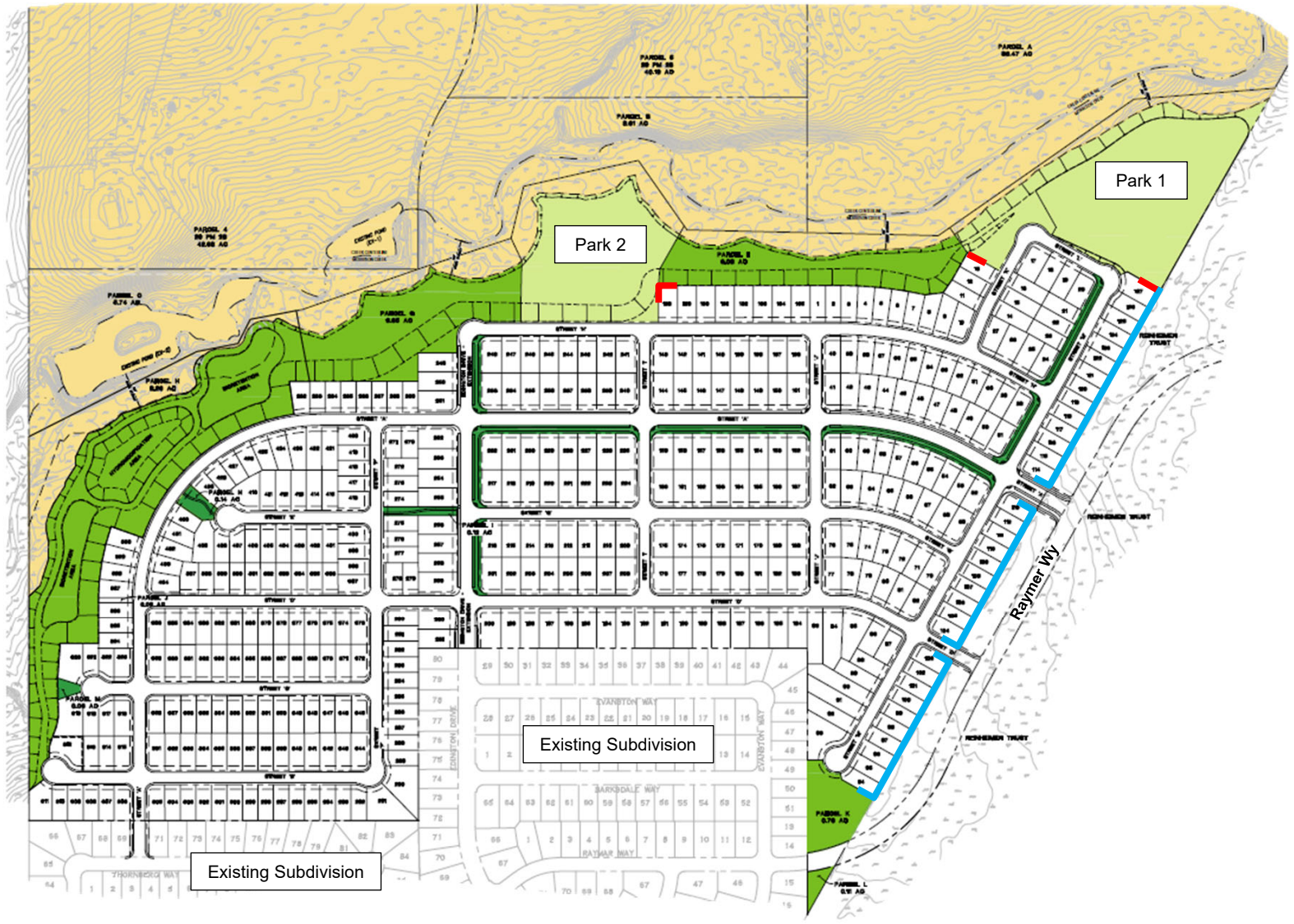
0 400 800

The Preserve Residential Development
Rancho Cordova, California

Project Area

Figure 1

BOLLARD Acoustical Consultants



Legend

- Proposed Public Park Areas
- Proposed Open Space Preserve Areas
- Proposed Community Space and Bioretention and Hydromodification Areas
- Recommended 6' Solid Noise Barriers (Mitigation Measure MM 6: Traffic Noise)
- Recommended 6' Solid Noise Barriers (Mitigation Measure MM 8: Park Noise)

N

Scale (Feet)

0 300 600

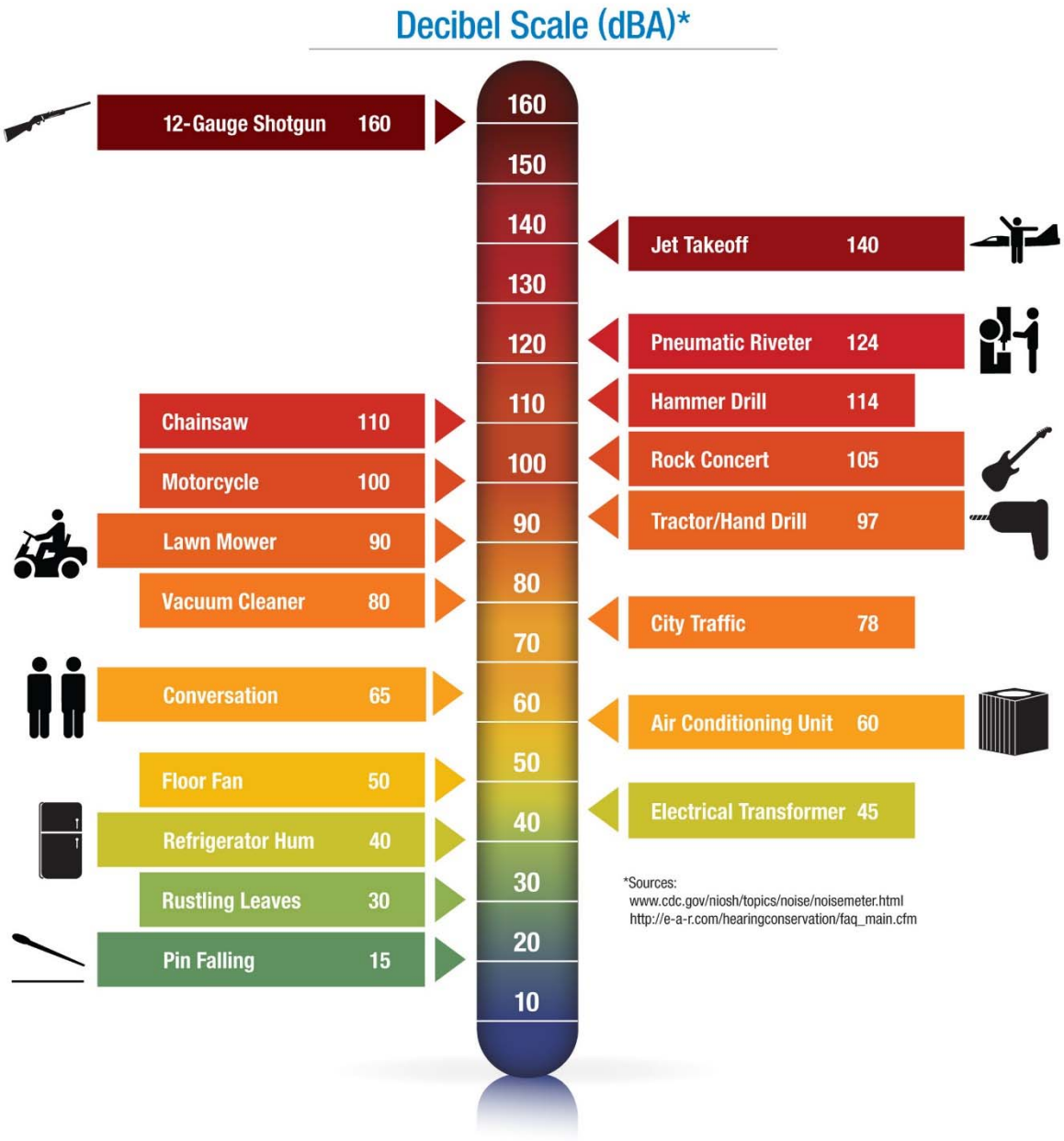
The Preserve Residential Development
Rancho Cordova, California

Project Site Plan – Parks Exhibit

Figure 2

BOLLARD Acoustical Consultants

Figure 3
Noise Levels Associated with Common Noise Sources



Environmental Setting – Existing Ambient Noise and Vibration Environment

Existing Noise-Sensitive Land Uses in the Project Vicinity

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities.

The existing noise-sensitive land uses which would potentially be affected by the project consist of residential uses. Specifically, existing single-family residential land uses are located to the south the proposed development (within a subdivision). In addition, existing residences are sparsely located on agriculturally zoned properties north of the project. Although agricultural uses are typically not considered to be noise-sensitive, residences located on agricultural lands would be. The project area and surrounding land uses are shown on Figure 1.

Existing Traffic Noise Levels along Project Area Roadway Network

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to develop existing noise contours expressed in terms of DNL for major roadways within the project study area. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Traffic data in the form of AM and PM peak hour movements for existing conditions were obtained from the client prepared by Kimley-Horn & Associates, Inc. Average daily traffic volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions. Using these data and the FHWA Model, traffic noise levels were calculated. The traffic noise level at 100 feet from the roadway centerline and distances from the centerlines of selected roadways to the 60 dB, 65 dB, and 70 dB DNL contours are summarized in Table 1.

In many cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA Model. Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. It is also recognized that existing sensitive land uses within the project vicinity are located varying distances from the centerlines of the local roadway network. The 100-foot reference distance is utilized in this assessment to provide a reference position at which changes in existing and future traffic noise levels resulting from the project can be evaluated. Appendix B contains the FWHA Model inputs for existing conditions.

Table 1
Existing (2019) Traffic Noise Modeling Results

Seg.	Intersection	Direction	DNL 100 Feet from Roadway	Distance to Contour (feet) 70 dB DNL	65 dB DNL	60 dB DNL
1	1-Mather Field Rd / US 50 WB Ramp	North	68	70	150	323
2		South	69	84	180	388
3		East	70	102	220	475
4		West	64	37	81	174
5	2-Mather Field Rd / US 50 EB Ramp	North	69	83	180	387
6		South	70	96	207	446
7		East	65	47	101	217
8		West	70	97	210	452
9	3-Mather Field Rd / International Dr	North				
10		South	60	23	49	106
11		East	67	61	132	284
12		West	68	78	168	362
13	4-Zinfandel Dr / US 50 WB Ramp	North	68	79	170	367
14		South	70	100	215	463
15		East	71	119	256	552
16		West	64	42	91	196
17	5-Zinfandel Dr / US 50 EB Ramp	North	70	101	218	471
18		South	70	104	225	484
19		East	70	93	200	430
20		West	71	117	252	542
21	6-Zinfandel Dr / White Rock Rd	North	70	104	225	484
22		South	68	73	157	339
23		East	65	48	104	223
24		West	65	45	97	209
25	7-Zinfandel Dr / International Dr	North	67	63	135	291
26		South	67	60	128	277
27		East	65	46	99	214
28		West	66	52	112	242
29	8-Sunrise Blvd / Zinfandel Dr	North	71	124	268	577
30		South	72	127	274	590
31		East	53	7	15	32
32		West	60	20	44	95
33	9-Sunrise Blvd / US 50 WB Ramp	North	72	128	275	594
34		South	71	113	244	525
35		East	68	79	170	366
36		West	69	88	189	407
37	10-Sunrise Blvd / US 50 EB Ramp	North	71	113	244	527
38		South	70	103	223	480
39		East	64	42	90	195
40		West	71	114	246	530
41	11-Sunrise Blvd / Folsom Blvd	North	70	103	221	476
42		South	70	95	205	442
43		East	65	48	104	224
44		West	65	47	102	219
45	12-Sunrise Blvd / White Rock Rd	North	69	80	173	372

Table 1
Existing (2019) Traffic Noise Modeling Results

Seg.	Intersection	Direction	DNL 100 Feet from Roadway	Distance to Contour (feet) 70 dB DNL	65 dB DNL	60 dB DNL
46		South	68	79	171	368
47		East	65	50	107	231
48		West	66	52	112	240
49	13-Zinfandel Dr / Douglas Rd	North	65	49	105	227
50		South	59	18	38	83
51		East	65	49	105	225
52		West	64	38	82	177
53	14-Sunrise Blvd / Douglas Rd	North	68	77	165	356
54		South	70	93	200	432
55		East	64	41	88	190
56		West	65	49	105	227
57	15-Americanos Blvd / Douglas Rd	North	53	8	17	36
58		South				
59		East	60	22	46	100
60		West	61	26	56	121
61	16-Sunrise Blvd / Jackson Rd/SR 16	North	69	83	179	385
62		South	68	69	149	321
63		East	66	57	123	265
64		West	65	46	99	212
65	17-Grant Line Rd / Jackson Rd/SR 16	North	65	46	98	212
66		South	64	41	89	191
67		East	67	59	126	272
68		West	66	58	125	269
69	18-Grant Line Rd / Keifer Blvd	North	66	52	113	244
70		South	65	46	99	213
71		East	58	15	32	68
72		West	37	1	1	3
73	19-Grant Line Rd / Douglas Rd	North	66	57	124	267
74		South	66	51	111	238
75		East				
76		West	60	22	47	102
77	20-Grant Line Rd / Raymer Wy	North	68	69	150	322
78		South	67	60	130	281
79		East				
80		West	56	12	26	55
81	21-Grant Line Rd / White Rock Rd	North	68	78	168	363
82		South	67	63	136	294
83		East				
84		West	61	26	57	122
85	22-Prairie City Rd / White Rock Rd	North	66	51	109	235
86		South				
87		East	65	43	94	202
88		West	66	57	122	263

Note: Blank entries are roadway segments for which no traffic data was provided.
Sources: FHWA-RD-77-108 and Kimley Horn & Associates

Existing Overall Ambient Noise Environment within the Project Area

The existing ambient noise environment within the project area is defined primarily by noise from traffic on Grant Line Road and Raymer Way. To generally quantify existing ambient noise levels within the project area, two long-term (48-hour) ambient noise surveys were conducted from July 10-12, 2019 and one short-term (15-minute) ambient noise survey was conducted on July 10, 2019. The ambient noise measurement locations are shown on Figure 1. Photographs of the noise survey locations are provided in Appendix C.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used to complete the noise level measurement surveys. The meters were calibrated before use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4).

The long-term ambient noise survey results are summarized in Table 2. The detailed results of the long-term noise survey are contained in Appendix D in tabular format and graphically in Appendix E. A summary of the short-term noise measurement results is provided in Table 3.

Table 2
Long-Term Noise Level Measurement Results – July 10-12, 2019[1]

				Average Measured Hourly Noise Levels, dB			
				Daytime[3]		Nighttime[4]	
Site[2]	Description	Date	DNL	L_{eq}	L_{max}	L_{eq}	L_{max}
LT-1	Centrally located on project site, near terminus of Edington Drive	7/10-7/11	47	45	62	40	51
		7/11-7/12	47	45	60	39	53
LT-2	Eastern end of project site, approximately 90 feet from centerline of Raymer Way	7/10-7/11	55	50	69	49	65
		7/11-7/12	55	51	72	48	65

[1] Detailed summaries of the noise monitoring results are provided in Appendices D and E.
[2] Ambient noise monitoring locations are identified on Figure 1.
[3] Daytime hours: 7:00 a.m. to 10:00 p.m.
[4] Nighttime hours: 10:00 p.m. to 7:00 a.m.
Source: Bollard Acoustical Consultants, Inc. (2019)

Table 3
Short-Term Noise Level Measurement Results – July 10, 2019

			Measured Noise Levels, dB[3]	
Site[1]	Description	Time of Day	L_{eq}	L_{max}
ST-1	Southwestern end of the project site	12:23 PM	42	58

[1] Ambient noise monitoring location is identified on Figure 1.
Source: Bollard Acoustical Consultants, Inc. (2019)

The Table 2 data indicate that existing ambient noise levels at the project site were satisfactory relative to the Rancho Cordova General Plan normally acceptable and conditionally acceptable exterior traffic noise level standards of 60 and 65 dB DNL for new residential land uses, respectively. Results from the short-term noise survey indicate that the measured average and maximum noise levels at site ST-1 were 42 dB L_{eq} and 58 dB L_{max}, respectively (Table 3).

Existing Ambient Vibration Environment

During a site visit on July 10, 2019, vibration levels were below the threshold of perception at the project site. Nonetheless, to quantify existing vibration levels at the project site, BAC conducted short-term (15-minute) vibration measurements at the project site on July 10, 2019. The vibration measurement sites are shown on Figure 1. Photographs of the vibration measurement sites are shown in Appendix C.

A Larson-Davis Laboratories Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the measurements. The results are summarized below in Table 4.

Table 4
Ambient Vibration Monitoring Results – July 10, 2019

Site[2]	Description	Time	Average Measured Vibration Level, PPV (in. sec)[1]
V-1	Eastern end of the project site	11:36 AM	<0.001
V-2	Centrally located on the project site	12:23 PM	<0.001
V-3	Southwestern end of the project site	12:58 PM	<0.001

[1] PPV = Peak Particle Velocity (inches/second)
Source: Bollard Acoustical Consultants, Inc. (2019)

The Table 4 data indicate that measured average vibration levels within the project area were less than 0.001 in/sec PPV.

Regulatory Setting: Criteria for Acceptable Noise and Vibration Exposure

Federal

The City of Rancho Cordova General Plan establishes criteria for assessing noise impacts associated with increases in ambient noise levels from new roadway projects. However, the City does not currently have criteria for assessing noise impacts associated with increases in ambient noise levels from project-generated traffic within the project vicinity. As a result, the following federal noise criteria established by the Federal Interagency Commission on Noise (FICON) was applied to the project.

Federal Interagency Commission on Noise (FICON)

The Federal Interagency Commission on Noise (FICON) has developed a graduated scale for use in the assessment of project-related noise level increases. The criteria shown in Table 5 was developed by FICON as a means of developing thresholds for impact identification for project-related noise level increases. The FICON standards have been used extensively in recent years by the authors of this section in the preparation of the noise sections of Environmental Impact Reports that have been certified in many California cities and counties.

The use of the FICON standards are considered conservative relative to thresholds used by other agencies in the State of California. For example, the California Department of Transportation (Caltrans) requires a project-related traffic noise level increase of 12 dB for a finding of significance, and the California Energy Commission (CEC) considers project-related noise level increases between 5 to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for finding of significant noise impacts as low as 1.5 dB, provides a very conservative approach to impact assessment for this project.

Table 5
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Without Project (L_{dn} or CNEL)	Change in Ambient Noise Level Due to Project
<60 dB	+5.0 dB or more
60 to 65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more
Source: Federal Interagency Committee on Noise (FICON)	

Based on the FICON research, as shown in Table 5, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB. Where pre-project ambient conditions are between 60 and 65 dB, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB, a 1.5 dB increase is considered by FICON as the threshold of significance.

State of California

California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

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 other applicable standards of other agencies?

B. Generation of excessive groundborne vibration or groundborne 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?

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered significant according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

California Department of Transportation (Caltrans)

The City of Rancho Cordova does not currently have adopted standards for groundborne vibration. As a result, the vibration impact criteria developed by the California Department of Transportation (Caltrans) was applied to the project. The Caltrans criteria applicable to damage and annoyance from transient and continuous vibration typically associated with construction activities are presented in Tables 6 and 7. Equipment or activities typical of continuous vibration include: excavation equipment, static compaction equipment, tracked vehicles, traffic on a highway, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment. Equipment or activities typical of single-impact (transient) or low-rate repeated impact vibration include impact pile drivers, blasting, drop balls, "pogo stick" compactors, and crack-and-seat equipment (California Department of Transportation 2013).

Table 6
Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (inches/second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = Peak Particle Velocity

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2013).

Table 7
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (inches/second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.40	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = Peak Particle Velocity

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2013).

Local

Rancho Cordova General Plan

The Noise Element of the Rancho Cordova General Plan contains the County's noise-related goals, policies, and actions. The specific noise-related criteria which are generally applicable to this project are reproduced below:

GOAL N.1 Ensure that all new development will be free of noise disturbances.

Policy N.1.1 Establish standards and policies consistent with those in Tables 7 and 8 (General Plan Tables N-1 and N-2) to govern maximum sound levels in new development.

Action N.1.1.1: Adopt a noise ordinance with noise level performance standards, including maximum allowable noise exposure, ambient versus nuisance noise, method of measuring noise, and enforcement procedures.

Policy N.1.2 Ensure that the indoor and outdoor areas of new projects will be located, constructed, and/or shielded from noise sources in compliance with the City's noise standards to the maximum extent feasible.

Action N.1.2.1: Require new development of noise-creating uses to conform to the City's maximum noise levels.

Action N.1.2.2: Require an acoustical analysis as part of the environmental review process when noise-sensitive land uses are proposed in areas where current or projected exterior noise levels exceed the City's standards.

Action N.1.2.3: Require any potential noise impacts identified during the acoustical analysis to be mitigated in the project design to the maximum extent feasible.

Policy N.1.4 Mitigate noise created by proposed non-transportation noise sources to comply with the City's noise standards to the maximum extent feasible.

Action N.1.4.1: Limit construction activity to the hours of 7:00 AM to 7:00 PM weekdays and 8:00 AM to 6:00 PM weekends when construction is conducted in proximity to residential uses.

Action N.1.4.3: Require stationary construction equipment and construction staging areas to be set back from existing noise-sensitive land uses.

Policy N.1.5 Mitigate noise created by the construction of new transportation noise sources (such as roadways or new light rail service) to the maximum extent feasible to comply with the City's standards.

Policy N.1.7 To the extent feasible and appropriate, the City shall require the use of temporary construction noise control measures for public and private projects that may include the use of temporary noise barriers, temporary relocation of noise-sensitive land uses or other appropriate measures.

Table 8
Noise Level Performance Standards for New Projects
Affected by or Including Non-Transportation Noise Sources[1]

Stationary Noise Source	Noise Level Descriptor	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Typical	Hourly L_{eq}, dB	55	45
Tonal, impulsive, repetitive, or consist primarily of speech or music	Hourly L_{eq}, dB	50	40

[1] The City may impose noise level standards which are more or less restrictive than those specified above based upon determination of existing low or high ambient noise levels.

Source: Rancho Cordova General Plan, Noise Element, Table N-1

Table 9
Maximum Transportation Noise Exposure

Land Use	Outdoor Activity Areas[2] L_{dn}/CNEL, dB	Interior Spaces L_{dn}/CNEL, dB	Interior Spaces L_{eq}, dB[2]
Residential	60[3]	45	--
Residential subject to noise from railroad tracks, aircraft overflights, or similar noise sources which produce clearly identifiable, discrete noise events (e.g., the passing of a single train)	60[3]	40[5]	--
Transient lodging	60[4]	45	--
Hospitals, nursing homes	60[4]	45	--
Theatres, auditoriums, music halls	--	--	35
Churches, meeting halls	60[3]	--	40
Office buildings	--	--	45
Schools, libraries, museums	--	--	45
Playgrounds, neighborhood parks	70	--	--

[1] Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.

[2] As determined for a typical worst-case hour during periods of use.

[3] Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

[4] In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.

[5] The intent of this noise standard is to provide increased protection against sleep disturbance for residences located near railroad tracks.

Source: Rancho Cordova General Plan Noise Element, Table N-2

Rancho Cordova Municipal Code (Noise Ordinance)

Section 6.68.070 of the Rancho Cordova Noise Ordinance contains criteria that would be applicable to the project. The code sections which are generally applicable to this project are reproduced below.

6.68.070 Exterior noise standards.

A. The following noise standards, unless otherwise specifically indicated in this chapter, shall apply to all properties within a designated noise area:

Table 10

Noise Area	City Zoning Districts	Time Period	Exterior Noise Standard
1	RE-1, RD-1, RE-2, RD-2, RE-3, RD-3, RD-4, R-1-A, RD-5, R-2, RD-10, R-2A, RD-20, R-3, RD-30, RD-40, RM-1, RM-2, A-1-B, AR-1, A-2, AR-2, AR-5	7:00 a.m. – 10:00 p.m.	55 dBA
		10:00 p.m. – 7:00 a.m.	50 dBA
Source: Rancho Cordova Municipal Code, Chapter 6.68, Code Section 6.68.070(A)			

B. It is unlawful for any person at any location within the city to create any noise which causes the noise levels on an affected property, when measured in the designated noise area, to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by:

Table 11

Cumulative Duration of the Intrusive Sound	Allowable Decibels
1. Cumulative period of 30 minutes per hour	0
2. Cumulative period of 15 minutes per hour	+5
3. Cumulative period of 5 minutes per hour	+10
4. Cumulative period of 1 minute per hour	+15
5. Level no to be exceeded for any time per hour	+20
Source: Rancho Cordova Municipal Code, Chapter 6.68, Code Section 6.68.070(B)	

C. Each of the noise limits specified in subsection (B) of this section shall be reduced by 5 dBA for impulsive or simple tone noises, or for noises consisting of speech or music.

D. If the ambient noise level exceeds that permitted by any of the first four noise-limit categories specified in subsection (B) of this section, the allowable noise limit shall be increased in 5 dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

6.68.090 Exemptions.

The following activities shall be exempted from the provisions of this chapter:

E. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place 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, Saturdays commencing at 8:00 p.m. through and including 7:00 a.m. on the next following Sunday, and on each Sunday after the hour of 8:00 p.m.; provided, however when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to

continue work after 8:00 p.m., and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner.

It should be noted that although not specifically identified in the Rancho Cordova Municipal Code, the Noise Element of the Rancho Cordova General Plan states that activities conducted on public parks are generally considered to be exempt from the noise standards established in the City's Noise Ordinance.

Impacts and Mitigation Measures

Thresholds of Significance

For the purposes of this report, a noise and vibration impact is considered significant if the project would result in:

- 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 other applicable standards of other agencies; or

- Generation of excessive groundborne vibration or groundborne noise levels; or

- 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 project site is not within the vicinity of a private airstrip, an airport land use plan, or within two miles of a public airport. Therefore, the last threshold listed above is not discussed further.

The following criteria based on standards established by the Federal Interagency Commission on Noise (FICON), California Department of Transportation (Caltrans), Rancho Cordova General Plan and Rancho Cordova Municipal Code were used to evaluate the significance of environmental noise and vibration resulting from the project:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the Rancho Cordova General Plan or Rancho Cordova Municipal Code.

- A significant impact would be identified if off-site traffic noise exposure or on-site activities generated by the project would substantially increase noise levels at existing sensitive receptors in the vicinity. A substantial increase would be identified relative to the FICON standards provided in Table 5.

- A significant impact would be identified if project construction activities or proposed on-site operations would expose noise-sensitive receptors to excessive groundborne

vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to these sources would exceed the Caltrans vibration impact criteria.

Noise Impacts Associated with Project-Generated Increases in Off-Site Traffic

With development of the project, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing uses located along those roadways. The FHWA Model was used with traffic input data from the traffic impact analysis (prepared by Kimley-Horn & Associates, Inc.) to predict project traffic noise level increases relative to Existing (2019) and Cumulative (2035) conditions.

Impact 1: Increases in Existing Traffic Noise Levels due to the Project

Traffic data in the form of AM and PM peak hour movements for Existing and Existing Plus Project conditions in the project area roadway network were obtained from the project transportation impact analysis completed by Kimley-Horn & Associates, Inc. Average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.

Existing versus Existing Plus Project traffic noise levels on the local roadway network are shown in Table 12. The following section includes an assessment of predicted traffic noise levels relative to the FICON increase significance noise criteria identified in Table 5. The Table 12 data are provided in terms of DNL (L_{dn}) at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FWHA Model inputs.

Table 12
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Existing vs. Existing Plus Project Conditions

			Traffic Noise Level at 100 feet, dB (DNL)			Substantial
Segment	Intersection	Direction	E	E+P	Increase	Increase?
1	1-Mather Field Rd / US 50 WB Ramp	North	67.6	67.6	0.0	No
2		South	68.8	68.8	0.0	No
3		East	70.1	70.1	0.0	No
4		West	63.6	63.6	0.0	No
5	2-Mather Field Rd / US 50 EB Ramp	North	68.8	68.8	0.0	No
6		South	69.7	69.7	0.0	No
7		East	65.0	65.0	0.0	No
8		West	69.8	69.8	0.0	No
9	3-Mather Field Rd / International Dr	North	--	--	--	--
10		South	60.4	63.0	2.6	No
11		East	66.8	66.8	0.0	No
12		West	68.4	69.7	1.3	No
13	4-Zinfandel Dr / US 50 WB Ramp	North	68.5	68.5	0.0	No
14		South	70.0	70.0	0.0	No
15		East	71.1	71.2	0.1	No
16		West	64.4	64.4	0.0	No
17	5-Zinfandel Dr / US 50 EB Ramp	North	70.1	70.1	0.0	No
18		South	70.3	70.3	0.0	No

Table 12
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Existing vs. Existing Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (DNL)			Substantial Increase?
			E	E+P	Increase	
19		East	69.5	69.5	0.0	No
20		West	71.0	71.0	0.0	No
21	6-Zinfandel Dr / White Rock Rd	North	70.3	70.3	0.0	No
22		South	67.9	67.9	0.0	No
23		East	65.2	65.4	0.2	No
24		West	64.8	64.8	0.0	No
25	7-Zinfandel Dr / International Dr	North	67.0	67.0	0.0	No
26		South	66.6	66.6	0.0	No
27		East	65.0	65.0	0.0	No
28		West	65.8	65.8	0.0	No
29	8-Sunrise Blvd / Zinfandel Dr	North	71.4	71.5	0.1	No
30		South	71.6	71.6	0.0	No
31		East	52.6	52.6	0.0	No
32		West	59.6	59.6	0.0	No
33	9-Sunrise Blvd / US 50 WB Ramp	North	71.6	71.6	0.0	No
34		South	70.8	70.8	0.0	No
35		East	68.5	68.5	0.0	No
36		West	69.1	69.1	0.0	No
37	10-Sunrise Blvd / US 50 EB Ramp	North	70.8	70.9	0.1	No
38		South	70.2	70.3	0.1	No
39		East	64.3	64.3	0.0	No
40		West	70.9	70.9	0.0	No
41	11-Sunrise Blvd / Folsom Blvd	North	70.2	70.2	0.0	No
42		South	69.7	69.7	0.0	No
43		East	65.2	65.3	0.1	No
44		West	65.1	65.1	0.0	No
45	12-Sunrise Blvd / White Rock Rd	North	68.6	68.6	0.0	No
46		South	68.5	68.5	0.0	No
47		East	65.5	65.8	0.3	No
48		West	65.7	65.9	0.2	No
49	13-Zinfandel Dr / Douglas Rd	North	65.3	65.3	0.0	No
50		South	58.8	58.8	0.0	No
51		East	65.3	65.3	0.0	No
52		West	63.7	63.7	0.0	No
53	14-Sunrise Blvd / Douglas Rd	North	68.3	68.2	-0.1	No
54		South	69.5	69.5	0.0	No
55		East	64.2	64.2	0.0	No
56		West	65.3	65.3	0.0	No
57	15-Americanos Blvd / Douglas Rd	North	53.4	54.2	0.8	No
58		South	--	--	--	--
59		East	60.0	60.0	0.0	No
60		West	61.3	61.5	0.2	No
61	16-Sunrise Blvd / Jackson Rd/SR 16	North	68.8	68.8	0.0	No
62		South	67.6	67.6	0.0	No
63		East	66.4	66.4	0.0	No

Table 12
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Existing vs. Existing Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (DNL)			Substantial Increase?
			E	E+P	Increase	
64		West	64.9	64.9	0.0	No
65	17-Grant Line Rd / Jackson Rd/SR 16	North	64.9	65.2	0.3	No
66		South	64.2	64.5	0.3	No
67		East	66.5	66.5	0.0	No
68		West	66.5	66.5	0.0	No
69	18-Grant Line Rd / Keifer Blvd	North	65.8	66.1	0.3	No
70		South	64.9	65.2	0.3	No
71		East	57.5	57.9	0.4	No
72		West	37.5	37.5	0.0	No
73	19-Grant Line Rd / Douglas Rd	North	66.4	66.7	0.3	No
74		South	65.7	66.0	0.3	No
75		East	--	--	--	--
76		West	60.1	60.1	0.0	No
77	20-Grant Line Rd / Raymer Wy	North	67.6	67.8	0.2	No
78		South	66.7	67.0	0.3	No
79		East	--	--	--	--
80		West	56.1	57.7	1.6	No
81	21-Grant Line Rd / White Rock Rd	North	68.4	68.7	0.3	No
82		South	67.0	67.8	0.8	No
83		East	--	--	--	--
84		West	61.3	62.2	0.9	No
85	22-Prairie City Rd / White Rock Rd	North	65.6	66.0	0.4	No
56		South	--	--	--	--
87		East	64.6	64.8	0.2	No
88		West	66.3	66.6	0.3	No

Blank cell = no traffic data was provided

Source: FHWA-RD-77-108 with inputs from Kimley-Horn. Appendix B contains the FHWA Model inputs.

As indicated in Table 12, project-generated traffic would not result in a substantial increase of traffic noise levels on the local roadway network relative to the FICON significance criteria identified in Table 5. As a result, off-site traffic noise impacts related to increases in traffic resulting from the implementation of the project (Existing vs. Existing Plus Project conditions) are identified as being ***less than significant***.

Impact 2: Increases in Cumulative Traffic Noise Levels due to the Project

Traffic data in the form of AM and PM peak hour movements for Cumulative and Cumulative Plus Project conditions in the project area roadway network were obtained from the project transportation impact analysis completed by Kimley-Horn & Associates, Inc. Average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.

Cumulative versus Cumulative Plus Project traffic noise levels on the local roadway network are shown in Table 13. The following section includes an assessment of predicted traffic noise levels relative to the FICON increase significance noise criteria identified in Table 5. The Table 13 data are provided in terms of DNL (L_{dn}) at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FWHA Model inputs.

Table 13
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Cumulative vs. Cumulative Plus Project Conditions

			Traffic Noise Level at 100 feet, dB (DNL)			
Segment	**Intersection**	**Direction**	**C**	**C+P**	**Increase**	**Substantial Increase?**
1	1-Mather Field Rd / US 50 WB Ramp	North	69.5	69.5	0.0	No
2		South	70.8	70.8	0.0	No
3		East	72.0	72.0	0.0	No
4		West	65.9	65.9	0.0	No
5	2-Mather Field Rd / US 50 EB Ramp	North	70.4	70.4	0.0	No
6		South	71.2	71.2	0.0	No
7		East	66.0	66.0	0.0	No
8		West	70.5	70.5	0.0	No
9	3-Mather Field Rd / International Dr	North	--	--	--	--
10		South	62.0	62.0	0.0	No
11		East	70.6	70.6	0.0	No
12		West	71.4	71.4	0.0	No
13	4-Zinfandel Dr / US 50 WB Ramp	North	69.5	69.5	0.0	No
14		South	71.1	71.1	0.0	No
15		East	72.5	72.5	0.0	No
16		West	64.8	64.8	0.0	No
17	5-Zinfandel Dr / US 50 EB Ramp	North	70.8	70.8	0.0	No
18		South	71.0	71.0	0.0	No
19		East	69.9	69.9	0.0	No
20		West	71.9	72.0	0.1	No
21	6-Zinfandel Dr / White Rock Rd	North	71.4	71.4	0.0	No
22		South	69.3	69.3	0.0	No
23		East	66.7	66.8	0.1	No
24		West	65.8	65.8	0.0	No
25	7-Zinfandel Dr / International Dr	North	69.8	69.8	0.0	No
26		South	70.9	70.9	0.0	No
27		East	69.7	69.7	0.0	No
28		West	70.7	70.7	0.0	No
29	8-Sunrise Blvd / Zinfandel Dr	North	72.3	72.3	0.0	No
30		South	72.4	72.5	0.1	No
31		East	53.2	53.2	0.0	No
32		West	60.1	60.1	0.0	No
33	9-Sunrise Blvd / US 50 WB Ramp	North	72.4	72.4	0.0	No
34		South	71.8	71.7	-0.1	No
35		East	69.5	69.0	-0.5	No
36		West	69.6	69.6	0.0	No
37	10-Sunrise Blvd / US 50 EB Ramp	North	71.7	71.7	0.0	No
38		South	71.3	71.3	0.0	No
39		East	65.2	65.2	0.0	No

Table 13
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Cumulative vs. Cumulative Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (DNL)			Substantial Increase?
			C	C+P	Increase	
40		West	71.0	71.0	0.0	No
41	11-Sunrise Blvd / Folsom Blvd	North	70.7	70.7	0.0	No
42		South	70.3	70.3	0.0	No
43		East	66.3	66.3	0.0	No
44		West	66.4	66.4	0.0	No
45	12-Sunrise Blvd / White Rock Rd	North	69.5	69.5	0.0	No
46		South	69.4	69.4	0.0	No
47		East	68.6	68.7	0.1	No
48		West	68.2	68.3	0.1	No
49	13-Zinfandel Dr / Douglas Rd	North	69.6	69.6	0.0	No
50		South	65.6	65.6	0.0	No
51		East	69.3	69.3	0.0	No
52		West	66.7	66.7	0.0	No
53	14-Sunrise Blvd / Douglas Rd	North	70.8	70.8	0.0	No
54		South	71.8	71.8	0.0	No
55		East	68.3	68.3	0.0	No
56		West	69.2	69.2	0.0	No
57	15-Americanos Blvd / Douglas Rd	North	61.5	61.8	0.3	No
58		South	60.2	60.2	0.0	No
59		East	65.2	65.2	0.0	No
60		West	65.8	66.0	0.2	No
61	16-Sunrise Blvd / Jackson Rd/SR 16	North	72.1	72.1	0.0	No
62		South	71.0	71.0	0.0	No
63		East	69.0	69.0	0.0	No
64		West	69.0	69.0	0.0	No
65	17-Grant Line Rd / Jackson Rd/SR 16	North	70.2	70.3	0.1	No
66		South	68.7	68.7	0.0	No
67		East	68.8	68.8	0.0	No
68		West	69.0	69.0	0.0	No
69	18-Grant Line Rd / Keifer Blvd	North	70.1	70.1	0.0	No
70		South	69.7	69.8	0.1	No
71		East	59.1	59.1	0.0	No
72		West	58.2	58.3	0.1	No
73	19-Grant Line Rd / Douglas Rd	North	71.0	71.2	0.2	No
74		South	70.7	70.8	0.1	No
75		East	59.4	59.7	0.3	No
76		West	65.3	65.3	0.0	No
77	20-Grant Line Rd / Raymer Wy	North	72.2	72.4	0.2	No
78		South	71.4	71.6	0.2	No
79		East	60.6	60.6	0.0	No
80		West	61.0	62.3	1.3	No
81	21-Grant Line Rd / White Rock Rd	North	73.4	73.4	0.0	No
82		South	72.2	72.4	0.2	No
83		East	--	--	--	--
84		West	68.1	68.3	0.2	No

Table 13
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Cumulative vs. Cumulative Plus Project Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB (DNL)			Substantial Increase?
			C	C+P	Increase	
85	22-Prairie City Rd / White Rock Rd	North	69.7	69.7	0.0	No
56		South	--	--	--	--
87		East	70.2	70.3	0.1	No
88		West	71.3	71.4	0.1	No

Blank cell = no traffic data was provided

Source: FHWA-RD-77-108 with inputs from Kimley-Horn. Appendix B contains the FHWA Model inputs.

The Table 13 data indicate that project-generated traffic would not result in a substantial increase of traffic noise levels on the local roadway network relative to the FICON significance criteria identified in Table 5. As a result, off-site traffic noise impacts related to increases in traffic resulting from the implementation of the project (Cumulative vs. Cumulative Plus Project conditions) are identified as being ***less than significant***.

Noise Impacts Associated with Proposed Uses of the Development

The project proposes the development of approximately 434 single-family lots, public parks, and preserve area. Specifically, the proposed project would preserve approximately 180 acres of open space that would be deeded to a third-party conservation entity, as well as for include the creation of approximately 23 acres of public parks north of the proposed residences. The locations of the proposed park and preserve areas are shown on Figure 2. The primary noise sources associated with proposed uses of the development have been identified as public park activities. An assessment of project-related park activity noise levels at the nearest existing noise-sensitive uses follows. The nearest existing noise-sensitive uses to the development have been identified as a single-family residence located on an agriculturally zoned parcel to the northwest, and single-family residences located within a subdivision to the south (shown on Figure 1).

As noted previously, the Rancho Cordova General Plan Noise Element states that activities conducted on public parks are generally considered to be exempt from the noise standards established in the City's Municipal Code (Noise Ordinance). As a result, the following assessment of project-related public park activity noise level exposure at the nearest existing noise-sensitive uses focuses on compliance with applicable Rancho Cordova General Plan noise level criteria only.

Impact 3: Public Park Noise at Existing Noise-Sensitive Uses

According to the project site plans (Parks Exhibit, dated December 11, 2018), the project proposes two large parks at the north and northeast ends of the development. Figure 2 shows the locations of the proposed parks, identified as Parks 1 and 2. Noise generated by public parks vary depending on whether the parks are intended for passive or active use. Passive use includes picnic and sitting areas whereas active use incudes playing fields and play structures. Although the project site plans illustrate the locations of the proposed public parks, the specific park use

types are unknown at the time of writing this report. To provide a conservative estimate of project park noise exposure at existing noise-sensitive uses, it was assumed for the purposes of this analysis that the proposed public parks would have active uses. According to BAC file data, parks consisting of active uses (playing fields) have noise levels of approximately 50 dB L_{eq} and 70 dB L_{max} at a distance of 100 feet (Appendix F).

Based on the reference noise levels presented above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), park activity noise exposure at the nearest existing noise-sensitive uses (single-family residences) was calculated. The results of those calculations are provided in Table 14.

Because park activities would likely consist of human speech (i.e., shouting and cheering during activities), noise associated with park activities would be subject to the Rancho Cordova General Plan's more restrictive daytime and nighttime hourly average noise level standards of 50 and 40 dB L_{eq} (respectively) shown in Table 8. However, it is reasonable to assume that public park hours would be restricted to daytime hours only (7:00 a.m. to 10:00 p.m.). Therefore, project park noise exposure at the nearest existing noise-sensitive uses was assessed relative to the General Plan daytime hourly average noise level standard of 50 dB L_{eq}.

Table 14
Predicted Public Park Activity Noise Levels at Nearest Existing Noise-Sensitive Uses

Noise-Sensitive Receptor[1]	Nearest Park[2]	Distance (ft)[3]	Predicted Noise Levels, L_{eq} (dB)[4]	General Plan Daytime Noise Standard, L_{eq} (dB)
Residences in Subdivision – South	Park 2	1,000	<20	**50**
Residence on Ag. Property – Northwest	Park 2	1,300	28	

[1] Locations of existing noise-sensitive receptors are shown on Figure 1.
[2] Locations of proposed park areas are shown on Figure 2.
[3] Distances measured from center of nearest park area to receptors.
[4] Predicted park activity noise levels at the nearest residences in the subdivision to the south of the project take into consideration the shielding that would be provided by proposed intervening structures of the development (residences), have been conservatively adjusted by -15 dB to account for this screening.

Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Table 14, project park noise level exposure is predicted to satisfy the applicable Rancho Cordova General Plan daytime noise level standard at the nearest existing noise-sensitive uses (single family residential uses to the south and northwest of the project site). Because project park activity noise level exposure is predicted to satisfy the applicable Rancho Cordova General Plan noise level criterion, this impact is identified as being ***less than significant.***

Noise Impacts Associated with Project Construction Activities

Impact 4: Project Construction Noise Levels at Existing Noise-Sensitive Uses

During project construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained.

Noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point. The nearest existing noise-sensitive uses (single-family residential within the subdivision to the south) are located approximately 25 feet from where construction activities would occur within the development.

Table 15 includes the range of maximum noise levels for equipment commonly used in general construction projects at full-power operation at a distance of 50 feet. Not all of these construction activities would be required of this project. The Table 15 data also include predicted maximum equipment noise levels at the nearest existing residential uses located approximately 25 feet away, which assume a standard spherical spreading loss of 6 dB per doubling of distance.

Table 15
Construction Equipment Reference Noise Levels and Predicted Noise Levels at 25 Feet

Equipment Description	Maximum Noise Level at 50 Feet (dBA)	Predicted Maximum Noise Levels at 25 Feet (dBA)
Air compressor	80	86
Backhoe	80	86
Ballast equalizer	82	88
Ballast tamper	83	89
Compactor	82	88
Concrete mixer	85	91
Concrete pump	82	88
Concrete vibrator	76	82
Crane, mobile	83	89
Dozer	85	91
Excavator	85	91
Generator	82	88
Grader	85	91
Impact wrench	85	91
Loader	80	86
Paver	85	91
Pneumatic tool	85	91
Pump	77	83
Saw	76	82
Scarifier	83	89
Scraper	85	91
Shovel	82	88
Spike driver	77	83
Tie cutter	84	90
Tie handler	80	86
Tie inserter	85	91
Truck	84	90

Source: Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1 (2018)

Based on the equipment noise levels in Table 15, worst-case on-site project construction equipment noise levels at the nearest existing residential uses located 25 feet away are expected to range from approximately 82 to 91 dB. Thus, it is possible that a portion of the project construction equipment could result in substantial short-term increases over ambient maximum noise levels at the nearest existing noise-sensitive uses. Furthermore, it is possible that those

noise levels could exceed the applicable Rancho Cordova General Plan and Municipal Code noise level limits.

As noted in the Regulatory Setting Section of this report, Section 6.68.090 of the Rancho Cordova Municipal Code exempts noise sources associated with construction provided such activities do not take place between specific hours. However, if construction activities are proposed during the hours not exempted by Municipal Code Section 6.68.090, noise levels generated by construction activities would likely exceed the maximum noise level standards identified in Table 15 at the nearest existing residential uses.

Because project construction equipment noise levels could potentially exceed the applicable Rancho Cordova General Plan and Municipal Code noise level standards at the closest existing noise-sensitive uses, noise impacts associated with construction activities are identified as being **potentially significant**.

Mitigation Impact 4:

In order to comply with applicable Rancho Cordova Municipal Code noise level standards, and in order to reduce to potential for an exceedance of applicable Rancho Cordova General Plan noise level criteria, the following measures should be incorporated into project construction operations:

MM 4: To the maximum extent practical, the following measures should be incorporated into the project construction operations:

- Noise-generating construction activities shall occur within the hours and days identified in Section 6.68.090 of the Rancho Cordova Municipal Code and Policy N.1.4 of the Rancho Cordova General Plan.
- Project construction operations shall comply with the construction related noise abatement measures contained Policies N.1.4, N.1.5, and N.1.7 of the Rancho Cordova General Plan.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Project area and site access road speed limits shall be established and enforced during the construction period.

- Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.

Significance of Impact 4 after Mitigation: *Less than Significant*

Vibration Impacts Associated with Project Activities

Impact 5: Vibration Generated by Project Construction and On-Site Operations

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest existing sensitive structures (residences) are located approximately 30 feet from construction activities which would occur within the project site.

Table 16 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. The Table 16 data also include predicted equipment vibration levels at the nearest existing residences to the project site located approximately 30 feet away.

Table 16
Vibration Source Levels for Construction Equipment and Predicted Levels at 30 Feet

Equipment	Maximum PPV (inches/second)[1]	
	Maximum PPV at 25 Feet[2]	Predicted PPV at 30 Feet
Large bulldozer	0.089	0.068
Hoe ram	0.089	0.068
Caisson drilling	0.089	0.068
Loaded trucks	0.076	0.058
Backhoe	0.051	0.039
Excavator	0.051	0.039
Grader	0.051	0.039
Loader	0.051	0.039
Jackhammer	0.035	0.027
Small bulldozer	0.003	0.002

[1] PPV = Peak Particle Velocity
[2] Reference vibration level obtained from the Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (2018).

As indicated in Table 16, vibration levels generated from on-site construction activities at the nearest existing residence located approximately 30 feet away are predicted to be well below the strictest Caltrans thresholds for damage to residential structures of 0.30 in/sec PPV shown in Table 6. Further, the predicted vibration levels in Table 16 are well below the threshold for a severe human response as defined by Caltrans in Table 7. Therefore, on-site construction within the project area is not expected to result in excessive groundborne vibration levels at nearby existing residential uses.

Results from the ambient vibration level monitoring at the project site (Table 4) indicate that measured average vibration levels were well below the strictest Caltrans thresholds for damage

to structures and thresholds for annoyance. Therefore, it is expected that the project would not result in the exposure of persons to excessive groundborne vibration levels at proposed uses of the project.

The project proposes residential and park uses within the development. It is the experience of BAC that residential and park uses do not typically have equipment that generates appreciable vibration. Further, it is our understanding that the residential and park components of the project do not propose equipment that will produce appreciable vibration.

Because vibration levels due to and upon the proposed project are expected to satisfy the applicable Caltrans groundborne impact vibration criteria, this impact is considered to be ***less than significant***.

Noise Impacts Upon the Development

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users or residents. Nevertheless, the City of Rancho Cordova has policies that address existing/future conditions affecting the proposed project, which are discussed in the following section.

On-Site Traffic Noise Impacts

Impact 6: Future Exterior Traffic Noise Levels at Proposed Uses

The FHWA Model was used with future traffic data to predict future exterior traffic noise levels at the proposed residential and park uses of the development. The future (Cumulative Plus Project) average daily traffic (ADT) volumes for Grant Line Road and Raymer Way were calculated using data provided in the project traffic impact analysis prepared by Kimley-Horn & Associates, Inc. Specifically, future average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions. The predicted future Grant Line Road and Raymer Way traffic noise levels at the nearest proposed residential and park uses to the roadways are summarized in Table 17. Detailed FHWA Model inputs and results are provided in Appendix G.

Table 17
Predicted Future Exterior Traffic Noise Levels at Proposed Uses[1]

Roadway[2]	Location	Distance from Centerline (ft)[3]	Future Exterior DNL (dB)[4]
Grant Line Road	Nearest park (Park 1)	1,080	57
	Nearest residential backyards	1,050	57
	Nearest first-floor residential facades	1,060	57
	Nearest upper-floor residential facades	1,060	59
Raymer Way	Nearest park (Park 1)	450	53
	Nearest residential backyards	110	63
	Nearest first-floor residential facades	120	62
	Nearest upper-floor residential facades	120	64
Combined Roadways	Nearest park (Park 1)	--	59
	Nearest residential backyards	--	64
	Nearest first-floor residential facades	--	63
	Nearest upper-floor residential facades	--	65

[1] A complete listing of FHWA Model inputs and results are provided in Appendix G.
[2] Locations of proposed uses are shown on Figure 2.
[3] Distances measured from said locations to the roadway centerline.
[4] A +2 dB offset was applied to upper-floor facades for reduced ground absorption of sound at elevated locations.
Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Table 17, predicted future combined Grant Line Road and Raymer Way traffic noise level exposure at the nearest proposed park use of the development (Park 1) would satisfy the applicable Ranch Cordova General Plan exterior noise level standard of 70 dB DNL for playgrounds and neighborhood park uses. However, at the nearest residential backyards, future combined traffic noise level exposure is predicted to exceed the General Plan exterior noise level standard of 60 dB DNL for residential uses. As a result, this impact is identified as being **potentially significant**.

Mitigation Impact 6:

In order to reduce future Grant Line Road and Raymer Way traffic noise level exposure to a state of compliance with the Rancho Cordova General Plan 60 dB DNL exterior noise level standard at the nearest backyards to the roadways, the following noise mitigation measure should be implemented:

MM 6: Solid traffic noise barriers measuring a minimum of 6-feet in height (relative to backyard elevation) should be constructed at the locations illustrated on Figure 2. The traffic noise barriers could take the form of masonry wall, earthen berm, or a combination of the two. Other materials may be acceptable but should be reviewed by an acoustical consultant prior to use.

Table 18 shows the predicted mitigated future combined Grant Line Road and Raymer Way traffic noise levels at the nearest backyards to the roadways. As

shown in Table 18, mitigated future combined traffic noise level exposure is predicted to satisfy the applicable Rancho Cordova General Plan 60 dB DNL exterior noise level standard at the backyards proposed nearest to the roadways.

Table 18
Predicted Future Exterior Traffic Noise Levels – Mitigated[1]

Roadway[2]	Location	Predicted Mitigated Noise Level, DNL (dB)[4]
Combined Roadways	Nearest backyards	58

[1] Predicted mitigated noise levels include consideration of the shielding provided by a 6-foot solid noise barrier at the locations illustrated on Figure 2.

Source: Bollard Acoustical Consultants, Inc. (2020)

Significance of Impact 6 after Mitigation: *Less than Significant*

Impact 7: Future Interior Traffic Noise Levels at Proposed Residential Uses

After implementation of Mitigation Measure 6 (construction of 6-foot-tall traffic noise barriers), future combined exterior traffic noise levels from Grant Line Road and Raymer Way are predicted to be approximately 58 dB DNL at the first-floor facades of the residences constructed nearest to the roadways. Due to reduced ground absorption at elevated positions and lack of shielding by the noise barriers identified in Mitigation Measure 6, future combined traffic noise levels at the upper-floor facades of those residences are predicted to be approximately 65 dB DNL. In order to satisfy the Rancho Cordova General Plan 45 dB DNL interior noise level standard, minimum noise reductions of 13 dB and 20 dB would be required of the first- and upper-floor building facades (respectively) of the residences constructed adjacent to the roadway.

Standard building construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. This level of noise reduction would be adequate to reduce future Grant Line Road and Raymer Way traffic noise levels within all residences in this development to 45 dB DNL or less. As a result, no consideration of additional building facade construction improvements would be required for residences of the proposed development provided mechanical ventilation (air conditioning) is included to allow occupants to close doors and windows as desired for additional acoustical isolation. As a result, this impact is considered to be ***less than significant***.

Impact 8: Public Park Noise at Proposed Residential Uses

According to the project site plan illustrated on Figure 2, public parks are proposed to be located adjacent to residential uses at the north end of the development. Public park activities have been identified as a primary noise source that could impact nearby residential uses proposed within the development.

As noted previously, the Rancho Cordova General Plan Noise Element states that activities conducted on public parks are generally considered to be exempt from the noise standards

established in the City's Municipal Code (Noise Ordinance). Because noise associated with parks is not exempted by the Rancho Cordova General Plan, project public park noise level exposure would be subject to General Plan noise criteria. Because park activities would likely consist of human speech (i.e., shouting and cheering during activities), noise associated with park activities would be subject to the General Plan's more restrictive daytime and nighttime hourly average noise level standards of 50 and 40 dB L_{eq} (respectively) shown in Table 8. However, it is reasonable to assume that public park hours would be restricted to daytime hours only (7:00 a.m. to 10:00 p.m.). Based on the above information, project park noise exposure at the nearest proposed uses was assessed relative to the Rancho Cordova General Plan daytime hourly average noise level standard of 50 dB L_{eq}.

An analysis of predicted public park noise exposure at existing noise-sensitive uses (residential uses) was presented in **Impact 3**. BAC file data referenced in that analysis indicate that parks consisting of active uses have noise levels of up to 50 dB L_{eq} and 70 dB L_{max} at a distance of 100 feet. The nearest proposed residential uses to a public park maintain a separation of approximately 70 feet from the center of the park. Based on the reference noise level presented above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), park activity noise exposure at the nearest proposed residential uses located 70 feet away was calculated to be 53 dB L_{eq}. The predicted park activity noise level of 53 dB L_{eq} at the nearest residential uses would exceed the applicable Rancho Cordova General Plan daytime hourly average noise level standard of 50 dB L_{eq}. As a result, this impact is identified as being **potentially significant**.

Mitigation Impact 8:

In order to reduce to reduce the potential for an exceedance of the Rancho Cordova General Plan daytime hourly average noise level standard of 50 dB L_{eq} at adjacent proposed residential uses, the following public park noise mitigation measure should be implemented:

MM 8: Solid noise barriers measuring a minimum of 6-feet in height (relative to backyard elevation) should be constructed at the locations illustrated on Figure 2. The recommended noise barrier extension could take the form of a solid masonry wall or wood fence. Should the construction of a wood fence be selected as a barrier, the fence slats should overlap by a minimum of two inches and be screwed to the framing rather than nailed. The purpose of the overlapping slats and using screws rather than nails is to ensure that prolonged exposure to the elements does not result in visible gaps through the slats which would result in reduced noise barrier effectiveness. The final barrier design should be reviewed by an acoustical consultant prior to installation.

The construction of 6-foot tall noise barriers at the locations illustrated on Figure 2 would reduce predicted park noise level levels to 48 dB L_{eq} or less at the nearest residential uses, and would satisfy the Rancho Cordova General Plan hourly average daytime noise level standard of 50 dB L_{eq}.

Significance of Impact 8 after Mitigation: ***Less than Significant***

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

Appendix B-1
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 01 Existing
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	(1) Mather Field Rd / US 50 WB Ramp	North	22,840	80	20	2	2	45	100
2		South	30,105	80	20	2	2	45	100
3		East	16,940	80	20	2	2	65	100
4		West	3,745	80	20	2	2	65	100
5	(2) Mather Field Rd / US 50 EB Ramp	North	30,040	80	20	2	2	45	100
6		South	37,100	80	20	2	2	45	100
7		East	5,240	80	20	2	2	65	100
8		West	15,760	80	20	2	2	65	100
9	(3) Mather Field Rd / International Dr	North							
10		South	11,650	80	20	2	2	25	100
11		East	18,810	80	20	2	2	45	100
12		West	27,150	80	20	2	2	45	100
13	(4) Zinfandel Dr / US 50 WB Ramp	North	27,655	80	20	2	2	45	100
14		South	39,220	80	20	2	2	45	100
15		East	21,270	80	20	2	2	65	100
16		West	4,485	80	20	2	2	65	100
17	(5) Zinfandel Dr / US 50 EB Ramp	North	40,205	80	20	2	2	45	100
18		South	41,950	80	20	2	2	45	100
19		East	14,630	80	20	2	2	65	100
20		West	20,675	80	20	2	2	65	100
21	(6) Zinfandel Dr / White Rock Rd	North	42,000	80	20	2	2	45	100
22		South	24,540	80	20	2	2	45	100
23		East	13,140	80	20	2	2	45	100
24		West	11,870	80	20	2	2	45	100
25	(7) Zinfandel Dr / International Dr	North	19,585	80	20	2	2	45	100
26		South	18,130	80	20	2	2	45	100
27		East	12,335	80	20	2	2	45	100
28		West	14,840	80	20	2	2	45	100
29	(8) Sunrise Blvd / Zinfandel Dr	North	54,655	80	20	2	2	45	100
30		South	56,455	80	20	2	2	45	100
31		East	1,960	80	20	2	2	25	100
32		West	7,240	80	20	2	2	30	100
33	(9) Sunrise Blvd / US 50 WB Ramp	North	56,945	80	20	2	2	45	100
34		South	47,435	80	20	2	2	45	100

Appendix B-1
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 01 Existing
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	11,475	80	20	2	2	65	100
36		West	13,465	80	20	2	2	65	100
37	(10) Sunrise Blvd / US 50 EB Ramp	North	47,610	80	20	2	2	45	100
38		South	41,355	80	20	2	2	45	100
39		East	4,455	80	20	2	2	65	100
40		West	19,990	80	20	2	2	65	100
41	(11) Sunrise Blvd / Folsom Blvd	North	40,875	80	20	2	2	45	100
42		South	36,650	80	20	2	2	45	100
43		East	13,170	80	20	2	2	45	100
44		West	12,775	80	20	2	2	45	100
45	(12) Sunrise Blvd / White Rock Rd	North	28,255	80	20	2	2	45	100
46		South	27,780	80	20	2	2	45	100
47		East	13,845	80	20	2	2	45	100
48		West	14,670	80	20	2	2	45	100
49	(13) Zinfandel Dr / Douglas Rd	North	13,445	80	20	2	2	45	100
50		South	2,960	80	20	2	2	45	100
51		East	13,325	80	20	2	2	45	100
52		West	9,290	80	20	2	2	45	100
53	(14) Sunrise Blvd / Douglas Rd	North	26,425	80	20	2	2	45	100
54		South	27,715	80	20	2	2	50	100
55		East	10,325	80	20	2	2	45	100
56		West	13,475	80	20	2	2	45	100
57	(15) Americanos Blvd / Douglas Rd	North	1,480	80	20	2	2	35	100
58		South							
59		East	3,945	80	20	2	2	45	100
60		West	5,265	80	20	2	2	45	100
61	(16) Sunrise Blvd / Jackson Rd/SR 16	North	18,650	80	20	2	2	55	100
62		South	14,165	80	20	2	2	55	100
63		East	10,655	80	20	2	2	55	100
64		West	7,630	80	20	2	2	55	100
65	(17) Grant Line Rd / Jackson Rd/SR 16	North	7,610	80	20	2	2	55	100
66		South	6,520	80	20	2	2	55	100
67		East	11,090	80	20	2	2	55	100
68		West	10,900	80	20	2	2	55	100

Appendix B-1
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 01 Existing
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	(18) Grant Line Rd / Keifer Blvd	North	9,385	80	20	2	2	55	100
70		South	7,645	80	20	2	2	55	100
71		East	2,230	80	20	2	2	45	100
72		West	60	80	20	2	2	25	100
73	(19) Grant Line Rd / Douglas Rd	North	10,755	80	20	2	2	55	100
74		South	9,075	80	20	2	2	55	100
75		East							
76		West	4,050	80	20	2	2	45	100
77	(20) Grant Line Rd / Raymer Wy	North	14,285	80	20	2	2	55	100
78		South	11,605	80	20	2	2	55	100
79		East							
80		West	2,780	80	20	2	2	35	100
81	(21) Grant Line Rd / White Rock Rd	North	17,045	80	20	2	2	55	100
82		South	12,440	80	20	2	2	55	100
83		East							
84		West	5,295	80	20	2	2	45	100
85	(22) Prarie City / White Rock Rd	North	8,900	80	20	2	2	55	100
86		South							
87		East	11,290	80	20	2	2	45	100
88		West	16,790	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-2
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 02 Existing+Project
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	(1) Mather Field Rd / US 50 WB Ramp	North	22,840	80	20	2	2	45	100
2		South	30,105	80	20	2	2	45	100
3		East	16,940	80	20	2	2	65	100
4		West	3,745	80	20	2	2	65	100
5	(2) Mather Field Rd / US 50 EB Ramp	North	30,040	80	20	2	2	45	100
6		South	37,100	80	20	2	2	45	100
7		East	5,240	80	20	2	2	65	100
8		West	15,760	80	20	2	2	65	100
9	(3) Mather Field Rd / International Dr	North							
10		South	21,600	80	20	2	2	25	100
11		East	18,810	80	20	2	2	45	100
12		West	37,100	80	20	2	2	45	100
13	(4) Zinfandel Dr / US 50 WB Ramp	North	27,765	80	20	2	2	45	100
14		South	39,525	80	20	2	2	45	100
15		East	21,465	80	20	2	2	65	100
16		West	4,485	80	20	2	2	65	100
17	(5) Zinfandel Dr / US 50 EB Ramp	North	40,510	80	20	2	2	45	100
18		South	42,425	80	20	2	2	45	100
19		East	14,630	80	20	2	2	65	100
20		West	20,845	80	20	2	2	65	100
21	(6) Zinfandel Dr / White Rock Rd	North	42,475	80	20	2	2	45	100
22		South	24,540	80	20	2	2	45	100
23		East	13,615	80	20	2	2	45	100
24		West	11,870	80	20	2	2	45	100
25	(7) Zinfandel Dr / International Dr	North	19,585	80	20	2	2	45	100
26		South	18,130	80	20	2	2	45	100
27		East	12,335	80	20	2	2	45	100
28		West	14,840	80	20	2	2	45	100
29	(8) Sunrise Blvd / Zinfandel Dr	North	55,060	80	20	2	2	45	100
30		South	56,860	80	20	2	2	45	100
31		East	1,960	80	20	2	2	25	100
32		West	7,240	80	20	2	2	30	100
33	(9) Sunrise Blvd / US 50 WB Ramp	North	57,350	80	20	2	2	45	100
34		South	47,840	80	20	2	2	45	100

Appendix B-2
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 02 Existing+Project
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	11,475	80	20	2	2	65	100
36		West	13,465	80	20	2	2	65	100
37	(10) Sunrise Blvd / US 50 EB Ramp	North	48,015	80	20	2	2	45	100
38		South	41,760	80	20	2	2	45	100
39		East	4,455	80	20	2	2	65	100
40		West	19,990	80	20	2	2	65	100
41	(11) Sunrise Blvd / Folsom Blvd	North	40,825	80	20	2	2	45	100
42		South	36,675	80	20	2	2	45	100
43		East	13,245	80	20	2	2	45	100
44		West	12,775	80	20	2	2	45	100
45	(12) Sunrise Blvd / White Rock Rd	North	28,800	80	20	2	2	45	100
46		South	27,780	80	20	2	2	45	100
47		East	15,010	80	20	2	2	45	100
48		West	15,290	80	20	2	2	45	100
49	(13) Zinfandel Dr / Douglas Rd	North	13,445	80	20	2	2	45	100
50		South	2,995	80	20	2	2	45	100
51		East	13,400	80	20	2	2	45	100
52		West	9,330	80	20	2	2	45	100
53	(14) Sunrise Blvd / Douglas Rd	North	26,310	80	20	2	2	45	100
54		South	27,755	80	20	2	2	50	100
55		East	10,475	80	20	2	2	45	100
56		West	13,400	80	20	2	2	45	100
57	(15) Americanos Blvd / Douglas Rd	North	1,770	80	20	2	2	35	100
58		South							
59		East	3,945	80	20	2	2	45	100
60		West	5,555	80	20	2	2	45	100
61	(16) Sunrise Blvd / Jackson Rd/SR 16	North	18,650	80	20	2	2	55	100
62		South	14,275	80	20	2	2	55	100
63		East	10,840	80	20	2	2	55	100
64		West	7,705	80	20	2	2	55	100
65	(17) Grant Line Rd / Jackson Rd/SR 16	North	8,195	80	20	2	2	55	100
66		South	6,920	80	20	2	2	55	100
67		East	11,090	80	20	2	2	55	100
68		West	11,085	80	20	2	2	55	100

Appendix B-2
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 02 Existing+Project
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	(18) Grant Line Rd / Keifer Blvd	North	10,145	80	20	2	2	55	100
70		South	8,230	80	20	2	2	55	100
71		East	2,405	80	20	2	2	45	100
72		West	60	80	20	2	2	25	100
73	(19) Grant Line Rd / Douglas Rd	North	11,515	80	20	2	2	55	100
74		South	9,835	80	20	2	2	55	100
75		East							
76		West	4,050	80	20	2	2	45	100
77	(20) Grant Line Rd / Raymer Wy	North	14,700	80	20	2	2	55	100
78		South	12,365	80	20	2	2	55	100
79		East							
80		West	3,955	80	20	2	2	35	100
81	(21) Grant Line Rd / White Rock Rd	North	18,405	80	20	2	2	55	100
82		South	15,035	80	20	2	2	55	100
83		East							
84		West	6,530	80	20	2	2	45	100
85	(22) Prarie City / White Rock Rd	North	9,715	80	20	2	2	55	100
86		South							
87		East	11,835	80	20	2	2	45	100
88		West	18,150	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-3
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 03 Cumulative
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	(1) Mather Field Rd / US 50 WB Ramp	North	35,050	80	20	2	2	45	100
2		South	47,050	80	20	2	2	45	100
3		East	26,250	80	20	2	2	65	100
4		West	6,350	80	20	2	2	65	100
5	(2) Mather Field Rd / US 50 EB Ramp	North	43,600	80	20	2	2	45	100
6		South	51,750	80	20	2	2	45	100
7		East	6,550	80	20	2	2	65	100
8		West	18,300	80	20	2	2	65	100
9	(3) Mather Field Rd / International Dr	North							
10		South	17,050	80	20	2	2	25	100
11		East	45,350	80	20	2	2	45	100
12		West	54,400	80	20	2	2	45	100
13	(4) Zinfandel Dr / US 50 WB Ramp	North	35,200	80	20	2	2	45	100
14		South	50,950	80	20	2	2	45	100
15		East	28,850	80	20	2	2	65	100
16		West	4,900	80	20	2	2	65	100
17	(5) Zinfandel Dr / US 50 EB Ramp	North	47,200	80	20	2	2	45	100
18		South	49,800	80	20	2	2	45	100
19		East	15,950	80	20	2	2	65	100
20		West	25,650	80	20	2	2	65	100
21	(6) Zinfandel Dr / White Rock Rd	North	53,750	80	20	2	2	45	100
22		South	33,550	80	20	2	2	45	100
23		East	18,500	80	20	2	2	45	100
24		West	14,900	80	20	2	2	45	100
25	(7) Zinfandel Dr / International Dr	North	37,600	80	20	2	2	45	100
26		South	47,950	80	20	2	2	45	100
27		East	36,750	80	20	2	2	45	100
28		West	46,600	80	20	2	2	45	100
29	(8) Sunrise Blvd / Zinfandel Dr	North	67,000	80	20	2	2	45	100
30		South	69,150	80	20	2	2	45	100
31		East	2,250	80	20	2	2	25	100
32		West	8,100	80	20	2	2	30	100
33	(9) Sunrise Blvd / US 50 WB Ramp	North	68,450	80	20	2	2	45	100
34		South	59,000	80	20	2	2	45	100

Appendix B-3
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 03 Cumulative
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	14,500	80	20	2	2	65	100
36		West	14,950	80	20	2	2	65	100
37	(10) Sunrise Blvd / US 50 EB Ramp	North	58,600	80	20	2	2	45	100
38		South	52,700	80	20	2	2	45	100
39		East	5,400	80	20	2	2	65	100
40		West	20,600	80	20	2	2	65	100
41	(11) Sunrise Blvd / Folsom Blvd	North	46,450	80	20	2	2	45	100
42		South	42,500	80	20	2	2	45	100
43		East	16,900	80	20	2	2	45	100
44		West	17,050	80	20	2	2	45	100
45	(12) Sunrise Blvd / White Rock Rd	North	35,150	80	20	2	2	45	100
46		South	34,550	80	20	2	2	45	100
47		East	28,500	80	20	2	2	45	100
48		West	26,000	80	20	2	2	45	100
49	(13) Zinfandel Dr / Douglas Rd	North	36,200	80	20	2	2	45	100
50		South	14,200	80	20	2	2	45	100
51		East	33,450	80	20	2	2	45	100
52		West	18,550	80	20	2	2	45	100
53	(14) Sunrise Blvd / Douglas Rd	North	47,200	80	20	2	2	45	100
54		South	46,650	80	20	2	2	50	100
55		East	26,600	80	20	2	2	45	100
56		West	32,750	80	20	2	2	45	100
57	(15) Americanos Blvd / Douglas Rd	North	9,600	80	20	2	2	35	100
58		South	7,050	80	20	2	2	35	100
59		East	12,900	80	20	2	2	45	100
60		West	15,050	80	20	2	2	45	100
61	(16) Sunrise Blvd / Jackson Rd/SR 16	North	39,600	80	20	2	2	55	100
62		South	31,000	80	20	2	2	55	100
63		East	19,600	80	20	2	2	55	100
64		West	19,500	80	20	2	2	55	100
65	(17) Grant Line Rd / Jackson Rd/SR 16	North	25,950	80	20	2	2	55	100
66		South	18,300	80	20	2	2	55	100
67		East	18,700	80	20	2	2	55	100
68		West	19,450	80	20	2	2	55	100

Appendix B-3
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 03 Cumulative
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	(18) Grant Line Rd / Keifer Blvd	North	25,100	80	20	2	2	55	100
70		South	23,250	80	20	2	2	55	100
71		East	3,200	80	20	2	2	45	100
72		West	7,150	80	20	2	2	25	100
73	(19) Grant Line Rd / Douglas Rd	North	31,250	80	20	2	2	55	100
74		South	28,850	80	20	2	2	55	100
75		East	5,900	80	20	2	2	35	100
76		West	13,400	80	20	2	2	45	100
77	(20) Grant Line Rd / Raymer Wy	North	40,650	80	20	2	2	55	100
78		South	34,350	80	20	2	2	55	100
79		East	7,750	80	20	2	2	35	100
80		West	8,450	80	20	2	2	35	100
81	(21) Grant Line Rd / White Rock Rd	North	53,500	80	20	2	2	55	100
82		South	41,050	80	20	2	2	55	100
83		East							
84		West	25,550	80	20	2	2	45	100
85	(22) Prarie City / White Rock Rd	North	22,900	80	20	2	2	55	100
86		South							
87		East	41,400	80	20	2	2	45	100
88		West	53,100	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-4
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 04 Cumulative+Project
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	(1) Mather Field Rd / US 50 WB Ramp	North	35,050	80	20	2	2	45	100
2		South	47,050	80	20	2	2	45	100
3		East	26,250	80	20	2	2	65	100
4		West	6,350	80	20	2	2	65	100
5	(2) Mather Field Rd / US 50 EB Ramp	North	43,600	80	20	2	2	45	100
6		South	51,750	80	20	2	2	45	100
7		East	6,550	80	20	2	2	65	100
8		West	18,300	80	20	2	2	65	100
9	(3) Mather Field Rd / International Dr	North							
10		South	17,050	80	20	2	2	25	100
11		East	45,350	80	20	2	2	45	100
12		West	54,400	80	20	2	2	45	100
13	(4) Zinfandel Dr / US 50 WB Ramp	North	35,240	80	20	2	2	45	100
14		South	51,145	80	20	2	2	45	100
15		East	29,005	80	20	2	2	65	100
16		West	4,900	80	20	2	2	65	100
17	(5) Zinfandel Dr / US 50 EB Ramp	North	47,395	80	20	2	2	45	100
18		South	50,130	80	20	2	2	45	100
19		East	15,950	80	20	2	2	65	100
20		West	25,785	80	20	2	2	65	100
21	(6) Zinfandel Dr / White Rock Rd	North	54,080	80	20	2	2	45	100
22		South	33,550	80	20	2	2	45	100
23		East	18,830	80	20	2	2	45	100
24		West	14,900	80	20	2	2	45	100
25	(7) Zinfandel Dr / International Dr	North	37,600	80	20	2	2	45	100
26		South	47,950	80	20	2	2	45	100
27		East	36,750	80	20	2	2	45	100
28		West	46,600	80	20	2	2	45	100
29	(8) Sunrise Blvd / Zinfandel Dr	North	67,140	80	20	2	2	45	100
30		South	69,290	80	20	2	2	45	100
31		East	2,250	80	20	2	2	25	100
32		West	8,100	80	20	2	2	30	100
33	(9) Sunrise Blvd / US 50 WB Ramp	North	68,590	80	20	2	2	45	100
34		South	57,640	80	20	2	2	45	100

Appendix B-4
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 04 Cumulative+Project
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	13,000	80	20	2	2	65	100
36		West	14,950	80	20	2	2	65	100
37	(10) Sunrise Blvd / US 50 EB Ramp	North	58,840	80	20	2	2	45	100
38		South	52,840	80	20	2	2	45	100
39		East	5,400	80	20	2	2	65	100
40		West	20,700	80	20	2	2	65	100
41	(11) Sunrise Blvd / Folsom Blvd	North	46,590	80	20	2	2	45	100
42		South	42,640	80	20	2	2	45	100
43		East	16,900	80	20	2	2	45	100
44		West	17,050	80	20	2	2	45	100
45	(12) Sunrise Blvd / White Rock Rd	North	35,290	80	20	2	2	45	100
46		South	34,550	80	20	2	2	45	100
47		East	29,005	80	20	2	2	45	100
48		West	26,365	80	20	2	2	45	100
49	(13) Zinfandel Dr / Douglas Rd	North	36,200	80	20	2	2	45	100
50		South	14,235	80	20	2	2	45	100
51		East	33,525	80	20	2	2	45	100
52		West	18,590	80	20	2	2	45	100
53	(14) Sunrise Blvd / Douglas Rd	North	47,200	80	20	2	2	45	100
54		South	46,650	80	20	2	2	50	100
55		East	26,745	80	20	2	2	45	100
56		West	32,895	80	20	2	2	45	100
57	(15) Americanos Blvd / Douglas Rd	North	10,220	80	20	2	2	35	100
58		South	7,050	80	20	2	2	35	100
59		East	12,900	80	20	2	2	45	100
60		West	15,670	80	20	2	2	45	100
61	(16) Sunrise Blvd / Jackson Rd/SR 16	North	39,600	80	20	2	2	55	100
62		South	31,075	80	20	2	2	55	100
63		East	19,745	80	20	2	2	55	100
64		West	19,570	80	20	2	2	55	100
65	(17) Grant Line Rd / Jackson Rd/SR 16	North	26,280	80	20	2	2	55	100
66		South	18,445	80	20	2	2	55	100
67		East	18,740	80	20	2	2	55	100
68		West	19,595	80	20	2	2	55	100

Appendix B-4
FHWA Highway Traffic Noise Prediction Model Data Inputs
The Preserve Residential Development
File Name: 2019-085 04 Cumulative+Project
Model Run Date: 9/1/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	(18) Grant Line Rd / Keifer Blvd	North	25,505	80	20	2	2	55	100
70		South	23,580	80	20	2	2	55	100
71		East	3,200	80	20	2	2	45	100
72		West	7,225	80	20	2	2	25	100
73	(19) Grant Line Rd / Douglas Rd	North	32,195	80	20	2	2	55	100
74		South	29,395	80	20	2	2	55	100
75		East	6,300	80	20	2	2	35	100
76		West	13,400	80	20	2	2	45	100
77	(20) Grant Line Rd / Raymer Wy	North	42,730	80	20	2	2	55	100
78		South	35,295	80	20	2	2	55	100
79		East	7,750	80	20	2	2	35	100
80		West	11,475	80	20	2	2	35	100
81	(21) Grant Line Rd / White Rock Rd	North	54,340	80	20	2	2	55	100
82		South	43,130	80	20	2	2	55	100
83		East							
84		West	26,790	80	20	2	2	45	100
85	(22) Prarie City / White Rock Rd	North	23,225	80	20	2	2	55	100
86		South							
87		East	41,915	80	20	2	2	45	100
88		West	53,940	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.



Legend

A: LT-1: Centrally located on project site, looking south towards existing residential development (38°34'25.26" N, 121°11'55.21" W)
B: LT-1: Centrally located on project site, looking north towards existing residence (38°34'25.26" N, 121°11'55.21" W)
C: LT-2: Eastern end of project area, looking east towards Raymer Way (38°34'27.30" N, 121°11'31.97" W)
D: LT-2: Eastern end of project area, looking south along Raymer Way (38°34'27.30" N, 121°11'31.97" W)

The Preserve Residential Development
Rancho Cordova, California

Photographs of Survey Locations

Appendix C-1

BOLLARD Acoustical Consultants









Legend

A: V-1: Looking east towards center of project area (38°34'26.00" N, 121°11'53.99" W)
B: ST-1 & V-2: Off Thornberg Way, looking north towards project site (38°34'18.77" N, 121°12'04.71" W)
C: V-3: Eastern end of project area, looking south along Raymer Way (38°34'28.08" N, 121°11'31.07" W)
D: V-3: Eastern end of project area, looking west towards center of project area (38°34'28.08" N, 121°11'31.07" W)

The Preserve Residential Development
Rancho Cordova, California

Photographs of Survey Locations

Appendix C-2

BOLLARD Acoustical Consultants

Appendix D-1
Ambient Noise Monitoring Results - Site LT-1
The Preserve Residential Development - Rancho Cordova, California
July 10-11, 2019

Hour	Leq	Lmax	L50	L90
12:00 PM	49	75	39	36
1:00 PM	41	56	38	35
2:00 PM	44	68	38	35
3:00 PM	50	74	38	34
4:00 PM	41	55	38	35
5:00 PM	42	55	41	35
6:00 PM	43	57	40	36
7:00 PM	47	61	45	41
8:00 PM	46	65	42	37
9:00 PM	38	56	37	35
10:00 PM	38	56	36	34
11:00 PM	37	58	36	34
12:00 AM	34	40	33	31
1:00 AM	33	42	32	31
2:00 AM	31	38	31	30
3:00 AM	35	50	34	32
4:00 AM	39	57	37	33
5:00 AM	43	56	42	38
6:00 AM	46	64	44	41
7:00 AM	43	59	42	40
8:00 AM	45	67	40	38
9:00 AM	48	70	40	37
10:00 AM	41	60	38	35
11:00 AM	41	57	37	34

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	50	38	45	46	31	40
Lmax (Maximum)	75	55	62	64	38	51
L50 (Median)	45	37	40	44	31	36
L90 (Background)	41	34	36	41	30	34

Computed DNL, dB	47
% Daytime Energy	85%
% Nighttime Energy	15%

GPS Coordinates	38°34'25.26"N
	121°11'55.21"W

Notes	Monitoring site centrally located, near terminus of Edington Drive.

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Appendix D-2
Ambient Noise Monitoring Results - Site LT-1
The Preserve Residential Development - Rancho Cordova, California
July 11-12, 2019

Hour	Leq	Lmax	L50	L90
12:00 PM	41	57	38	34
1:00 PM	41	59	37	34
2:00 PM	41	56	38	34
3:00 PM	42	55	38	34
4:00 PM	44	55	41	36
5:00 PM	44	59	42	35
6:00 PM	47	61	46	42
7:00 PM	47	60	45	42
8:00 PM	45	67	41	36
9:00 PM	39	54	38	36
10:00 PM	40	55	39	38
11:00 PM	37	57	36	34
12:00 AM	36	52	34	32
1:00 AM	34	50	33	31
2:00 AM	34	56	32	30
3:00 AM	35	46	34	32
4:00 AM	36	57	33	31
5:00 AM	43	52	41	36
6:00 AM	43	53	42	40
7:00 AM	43	58	43	41
8:00 AM	43	59	41	39
9:00 AM	52	81	38	36
10:00 AM	43	69	38	36
11:00 AM	41	57	37	34

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	52	39	45	43	34	39
Lmax (Maximum)	81	54	60	57	46	53
L50 (Median)	46	37	40	42	32	36
L90 (Background)	42	34	37	40	30	34

Computed DNL, dB	47
% Daytime Energy	86%
% Nighttime Energy	14%

GPS Coordinates	38°34'25.26"N
	121°11'55.21"W

Notes	Monitoring site centrally located, near terminus of Edington Drive.

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Appendix D-3
Ambient Noise Monitoring Results - Site LT-2
The Preserve Residential Development - Rancho Cordova, California
July 10-11, 2019

Hour	Leq	Lmax	L50	L90
1:00 PM	50	75	37	33
2:00 PM	49	75	38	34
3:00 PM	50	71	40	35
4:00 PM	49	69	40	36
5:00 PM	51	69	41	36
6:00 PM	50	71	39	33
7:00 PM	51	73	40	36
8:00 PM	50	68	41	36
9:00 PM	49	63	46	44
10:00 PM	50	69	46	44
11:00 PM	46	62	44	42
12:00 AM	44	60	43	41
1:00 AM	43	60	42	40
2:00 AM	43	63	40	39
3:00 AM	42	59	41	39
4:00 AM	47	63	44	40
5:00 AM	50	64	49	45
6:00 AM	55	80	52	48
7:00 AM	52	69	46	42
8:00 AM	50	68	43	39
9:00 AM	49	68	41	38
10:00 AM	47	65	39	36
11:00 AM	48	68	39	35
12:00 PM	49	70	39	34

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	52	47	50	55	42	49
Lmax (Maximum)	75	63	69	80	59	65
L50 (Median)	46	37	41	52	40	44
L90 (Background)	44	33	37	48	39	42

Computed DNL, dB	55
% Daytime Energy	68%
% Nighttime Energy	32%

GPS Coordinates	38°34'27.30"N
	121°11'31.97"W

Notes	Monitoring site located on the eastern end of the project area, approximately 90 feet from centerline of Raymer Way.

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Appendix D-4
Ambient Noise Monitoring Results - Site LT-2
The Preserve Residential Development - Rancho Cordova, California
July 11-12, 2019

Hour	Leq	Lmax	L50	L90
1:00 PM	50	77	39	34
2:00 PM	47	66	38	33
3:00 PM	48	74	39	35
4:00 PM	49	66	41	35
5:00 PM	49	66	40	34
6:00 PM	50	73	43	36
7:00 PM	52	74	47	39
8:00 PM	50	73	42	37
9:00 PM	50	67	46	44
10:00 PM	49	65	46	44
11:00 PM	48	64	46	45
12:00 AM	46	62	44	41
1:00 AM	51	80	43	41
2:00 AM	43	62	42	39
3:00 AM	43	53	42	40
4:00 AM	43	62	41	38
5:00 AM	48	64	45	42
6:00 AM	51	76	46	43
7:00 AM	53	73	43	42
8:00 AM	51	72	42	40
9:00 AM	57	83	41	38
10:00 AM	51	71	39	37
11:00 AM	50	73	38	35
12:00 PM	50	73	39	35

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	57	47	51	51	43	48
Lmax (Maximum)	83	66	72	80	53	65
L50 (Median)	47	38	41	46	41	44
L90 (Background)	44	33	37	45	38	42

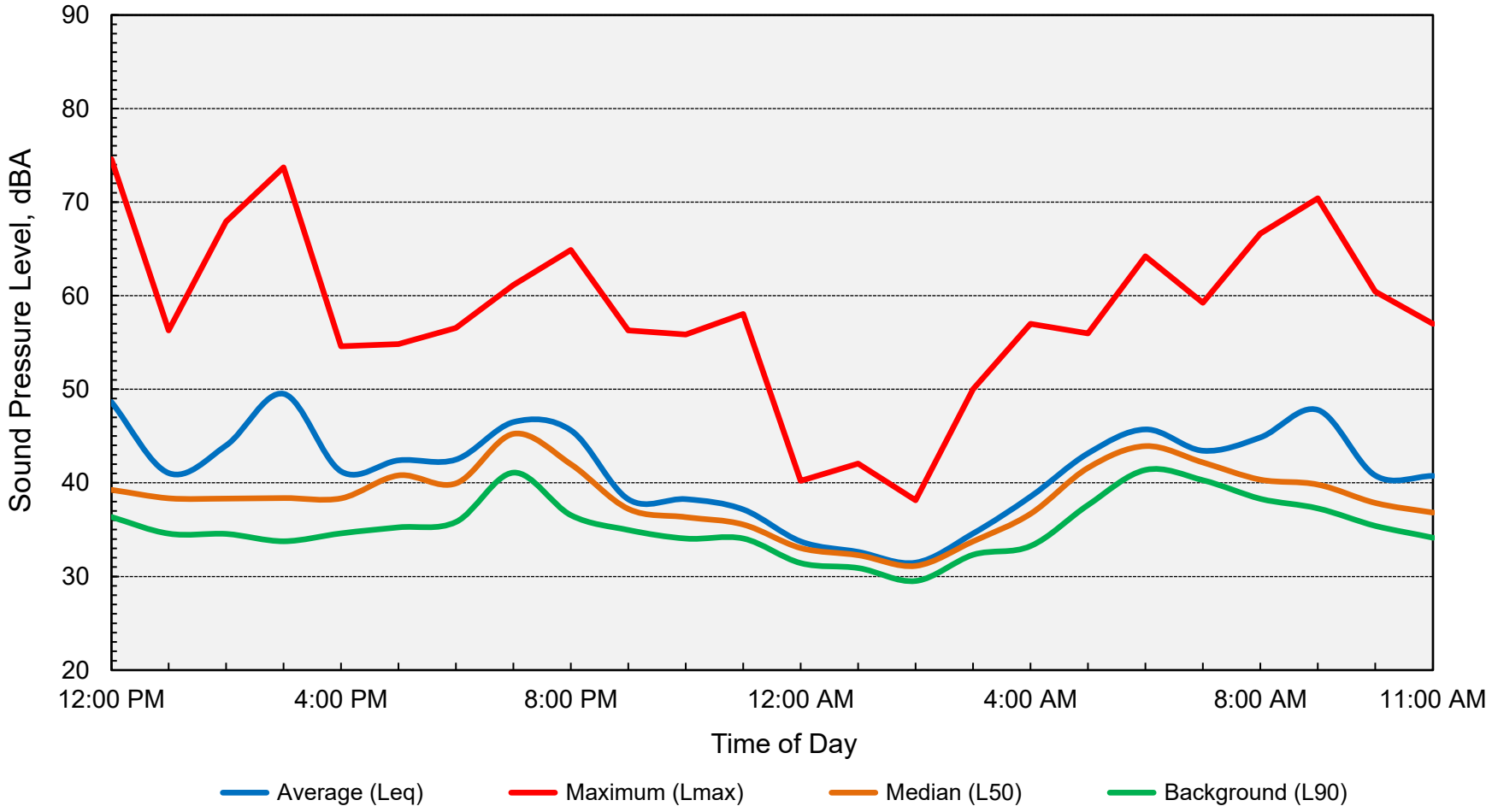
Computed DNL, dB	55
% Daytime Energy	78%
% Nighttime Energy	22%

GPS Coordinates	38°34'27.30"N
	121°11'31.97"W

Notes	Monitoring site located on the eastern end of the project area, approximately 90 feet from centerline of Raymer Way.

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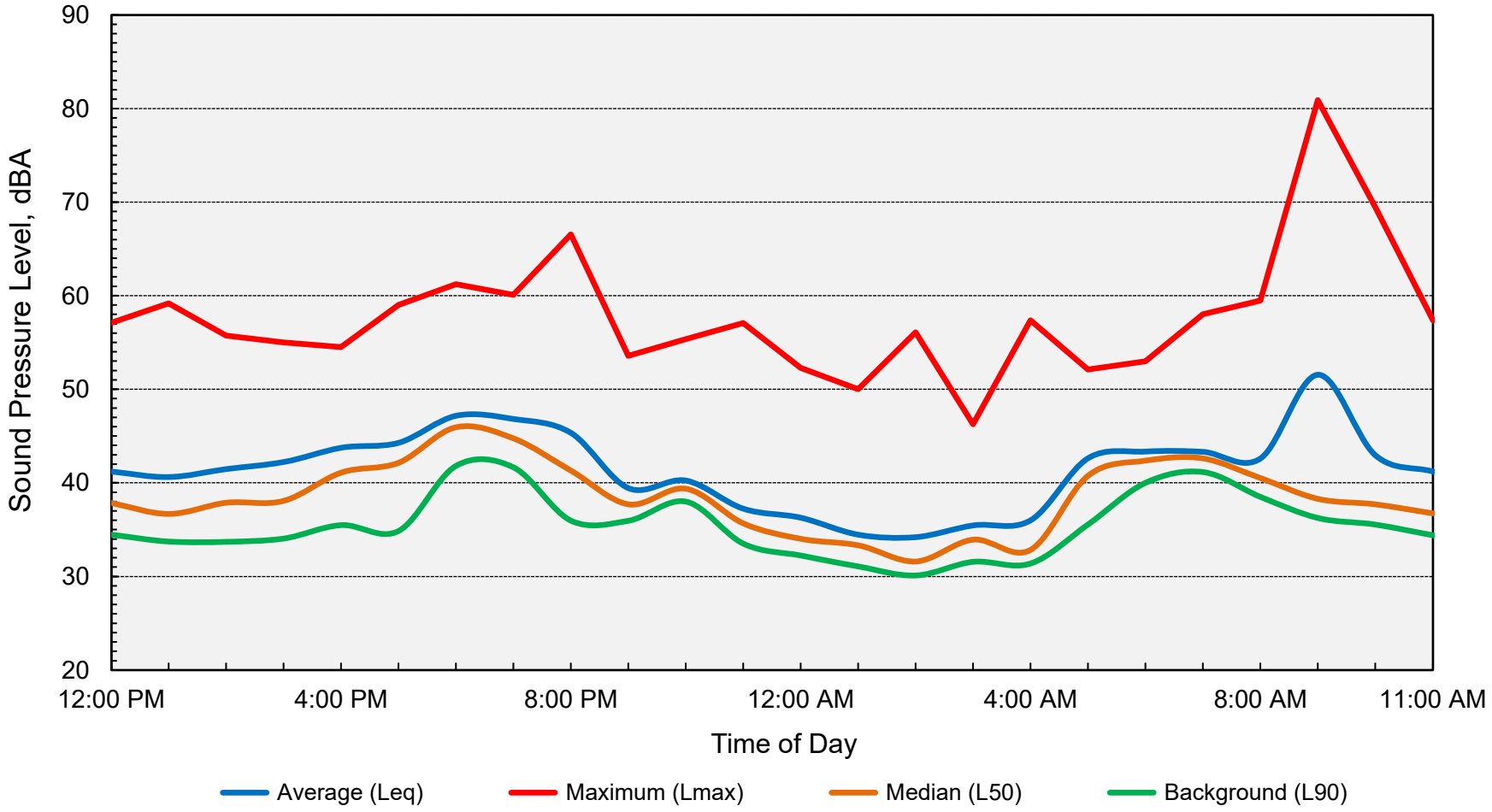
Appendix E-1
Ambient Noise Monitoring Results - Site LT-1
The Preserve Residential Development - Rancho Cordova, California
July 10-11, 2019



Computed DNL = 47 dB

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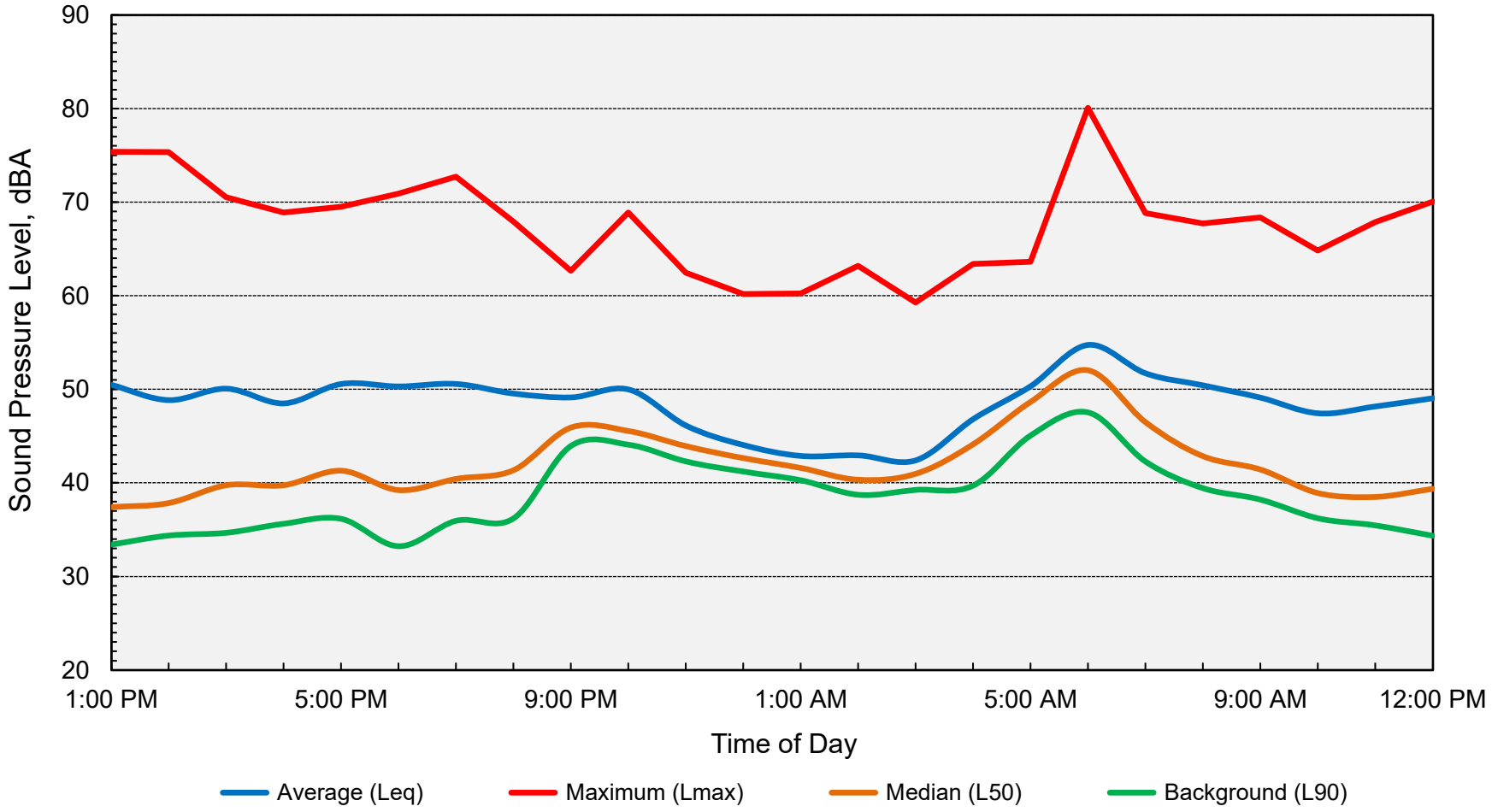
Appendix E-2
Ambient Noise Monitoring Results - Site LT-1
The Preserve Residential Development - Rancho Cordova, California
July 11-12, 2019



Computed DNL = 47 dB

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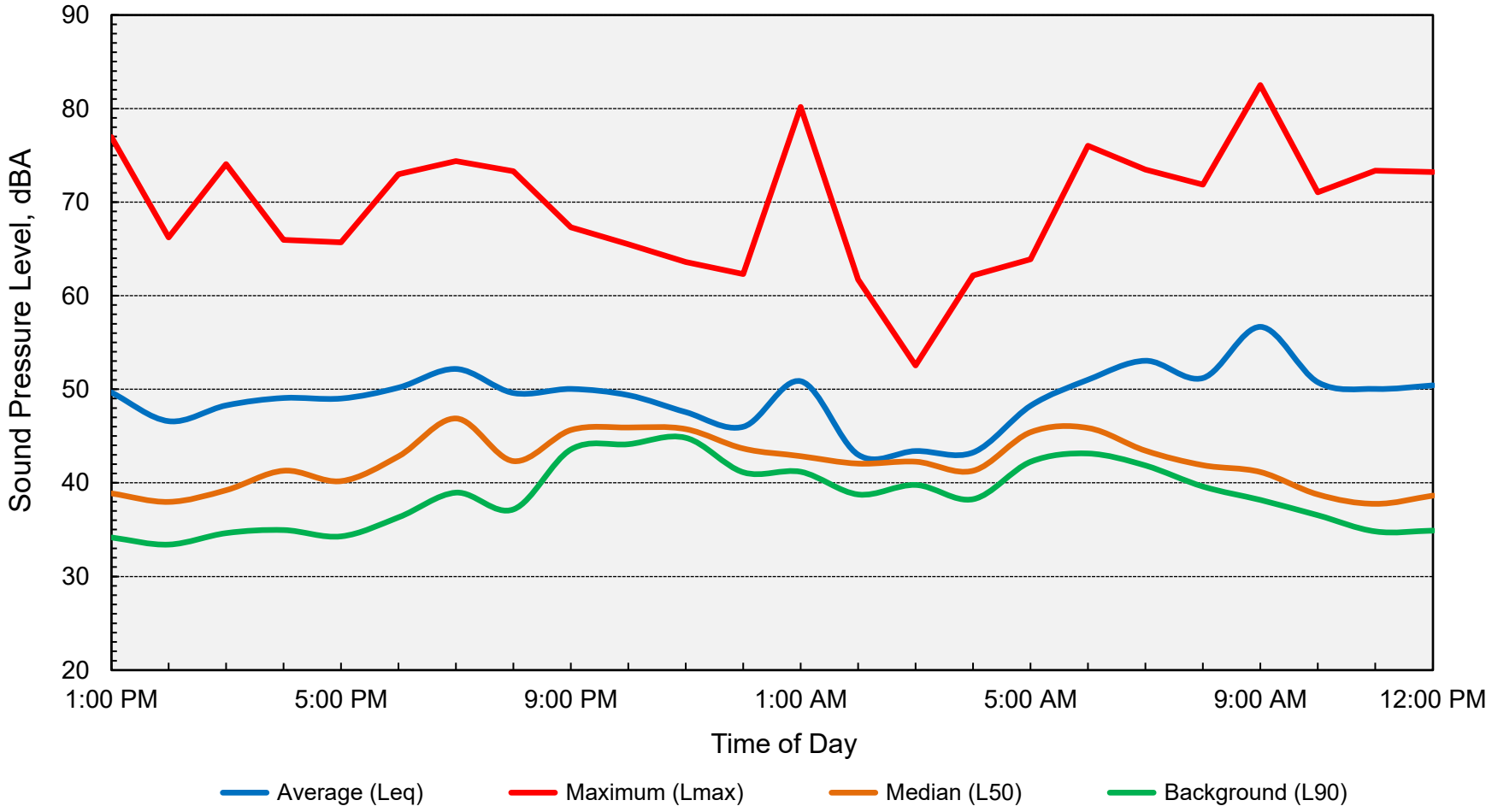
Appendix E-3
Ambient Noise Monitoring Results - Site LT-2
The Preserve Residential Development - Rancho Cordova, California
July 10-11, 2019



Computed DNL = 55 dB

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Appendix E-4
Ambient Noise Monitoring Results - Site LT-2
The Preserve Residential Development - Rancho Cordova, California
July 11-12, 2019



Computed DNL = 55 dB

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Appendix F
BAC File Data
Park Playing Fields

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Test Date: 4/6/2016
Location: Rasmussen Community Park - Cameron Park, CA

			Measured Noise Levels, dB	
File #	Time	Duration	Leq	Lmax
1	5:40 PM	1 minute	45	55
2	5:41 PM	1 minute	48	53
3	5:42 PM	1 minute	47	58
4	5:43 PM	1 minute	54	66
5	5:44 PM	1 minute	50	59
6	5:45 PM	1 minute	52	57
7	5:46 PM	1 minute	53	70
8	5:47 PM	1 minute	50	58
9	5:48 PM	1 minute	47	54
10	5:49 PM	1 minute	49	59
11	5:50 PM	1 minute	53	62
12	5:51 PM	1 minute	46	52
13	5:52 PM	1 minute	50	61
14	5:53 PM	1 minute	51	63
15	5:54 PM	1 minute	51	64
16	5:55 PM	1 minute	51	63
17	5:56 PM	1 minute	52	67
18	5:57 PM	1 minute	53	66
19	5:58 PM	1 minute	50	59
20	5:59 PM	1 minute	49	59
21	6:00 PM	1 minute	51	59
22	6:01 PM	1 minute	52	62
23	6:02 PM	1 minute	52	59
24	6:03 PM	1 minute	51	58
25	6:04 PM	1 minute	50	58
26	6:05 PM	1 minute	50	60
27	6:06 PM	1 minute	52	65
28	6:07 PM	1 minute	45	51
29	6:08 PM	1 minute	53	61
30	6:09 PM	1 minute	52	61
31	6:10 PM	1 minute	50	58
32	6:11 PM	1 minute	53	64
33	6:12 PM	1 minute	49	54
34	6:13 PM	1 minute	53	69
35	6:14 PM	1 minute	52	66
36	6:15 PM	1 minute	47	58
37	6:16 PM	1 minute	47	53
38	6:17 PM	1 minute	52	64
39	6:18 PM	1 minute	51	59
40	6:19 PM	1 minute	52	58
41	6:20 PM	1 minute	53	62
			50	70
			Average	Max

Notes:
Measurements taken at a distance of 100 feet from a well attended little league baseball game

Appendix G-1
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2019-085
Project Name: The Preserve Residential Development
Roadway Name: Grant Line Road

Traffic Data:

Year: Future
Average Daily Traffic Volume: 35,295
Percent Daytime Traffic: 73
Percent Nighttime Traffic: 27
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 2
Assumed Vehicle Speed (mph): 55
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL, dB			
Location	Description	Distance	Offset (dB)	Autos	Medium Trucks	Heavy Trucks	Total
Park	Nearest Park (Park 1)	1,080	0	56	46	50	57
Residential	Nearest Backyards	1,050	0	56	46	50	57
Residential	Nearest First-Floor Facades	1,060	0	56	46	50	57
Residential	Nearest Upper-Floor Facades	1,060	2	58	48	52	59

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	67
70	145
65	313
60	675

Notes:
1. Future (Cumulative Plus Project conditions) average daily traffic volume for Grant Line Road was obtained using data provided in the traffic impact study conducted for the project by Kimley-Horn & Associates, Inc.
2. Offset of +2 dB offset was applied at upper-level building facades to account for reduced ground absorption of sound at elevated positions.



Appendix G-2
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2019-085
Project Name: The Preserve Residential Development
Roadway Name: Raymer Way

Traffic Data:

Year: Future
Average Daily Traffic Volume: 11,475
Percent Daytime Traffic: 73
Percent Nighttime Traffic: 27
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 2
Assumed Vehicle Speed (mph): 35
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL, dB			
Location	Description	Distance	Offset (dB)	Autos	Medium Trucks	Heavy Trucks	Total
Park	Nearest Park (Park 1)	450	0	51	44	49	53
Residential	Nearest Backyards	110	0	60	53	58	63
Residential	Nearest First-Floor Facades	120	0	59	52	57	62
Residential	Nearest Upper-Floor Facades	120	2	61	54	59	64

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	16
70	35
65	76
60	163

Notes: 1. Future (Cumulative Plus Project conditions) average daily traffic volume for Raymer Way was obtained using data provided in the traffic impact study conducted for the project by Kimley-Horn & Associates, Inc.
2. Offset of +2 dB offset was applied at upper-level building facades to account for reduced ground absorption of sound at elevated positions.



January 5, 2021

Rod Stinson
Raney Planning & Management, Inc.
1501 Sports Drive Suite A
Sacramento, CA 95834

Transmitted via email: rods@raneymanagement.com

Subject: Changes in noise levels associated with the addition of six (6) units for the proposed Preserve Residential Development in Rancho Cordova, California.

Dear Rod,

Bollard Acoustical Consultants, Inc. (BAC) previously prepared a noise and vibration assessment for the Preserve Residential Development project in Rancho Cordova, California (dated September 3, 2020). On January 4, 2021, it was brought to the attention of BAC that the project had been revised to include six (6) additional units. According to the revised traffic impact analysis prepared by the project traffic consultant (Kimley-Horn & Associates, Inc.) dated November 4, 2020, the project proposes a total of approximately 434 single-family residential units. After a review of the revised traffic impact analysis, specifically the revised peak-hour turning movements contained in that report, it was determined that the changes in noise levels associated with the additional units would not be appreciable and would not change the conclusions presented in the noise and vibration assessment previously prepared by BAC. As a result, a revision to the noise and vibration study prepared by BAC dated September 3, 2020 would not be warranted.

Please contact me at (916) 663-0500 or dariog@bacnoise.com if you have any questions or require additional information.

Sincerely,

Dario Gotchet

Dario Gotchet
Senior Consultant

Appendix J

WATER STUDY

FOR

THE PRESERVE

City of Rancho Cordova, California

September 2018

Prepared For:

Winn Properties

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

RECEIVED
DEC 13 2018
RANCHO CORDOVA
PLANNING

Technical Memorandum

To:	John Zellmer – Ruggeri-Jensen-Azar & Associates Rich Radoycis – Ruggeri-Jensen-Azar & Associates Steve Bowman – Ruggeri-Jensen-Azar & Associates
From:	Christian Kesler – Coleman Engineering Chad Coleman – Coleman Engineering
Date:	September 17, 2018
Project:	Winn Community Development
Subject:	Distribution Pipeline Sizing

PURPOSE

The purpose of this technical memorandum is to detail recommended pipe sizes and connection points for the proposed potable water distribution system for the Winn Communities development in Rancho Cordova, CA. Water modeling has demonstrated that the system is sized appropriately and that the resulting flows and pressures will be provided in accordance with Sacramento County Water Agency (SCWA/County) Operating Goals.

SITE

The Winn Communities Development is located on the east side of the City of Rancho Cordova and is planned to include 434 lots of single family residential housing. The development is located just north of Douglas Road and slightly west of Grant Line Road. Drinking water is to be supplied by Sacramento County Water Agency.

WATER SYSTEM DESIGN CRITERIA

Water system design criteria was determined using the criteria detailed in the *Zone 40 Water System Infrastructure Plan Update* (WSIP) dated February 2018. The criteria itemized in this section include:

- Water demands
- Peaking factors
- Water system materials and sizes
- Water system performance criteria

Water Demands

The system was designed using criteria detailed in the WSIP. Table 3-13 of the WSIP lists the Average Daily Demand per Single Family Residence as 490 gpd/connection. There are 434 lots on the developments which equates to an Average Daily Demand of 212,688 gpd or 148 gpm.

- 490 gpd/connection * 434 lots = 212,688 gpd
- 212,688 gpd /24 hours /60 min = 148 gpm

The demand was split up and applied throughout the nodes in the model as the Average Day Demand (ADD).

Table 6 of the WSIP lists the required fire flow for single family residences less than 3,600 square feet as 1,500 gpm. All residential homes in the proposed Winn development are assumed to be less than 3,600 square feet.

Peaking Factors
Table 5-15 of the WSIP lists the peaking factors that are shown in Table 1 below:

Table 1 – Water System Peaking Factors

Demand	Peaking Factor
Maximum Day Demand (MDD)	2.0 ADD
Peak Hour Demand (PHD)	2.0 MDD

Water System Materials and Sizes
According to the *Sacramento County Water Agency's 2018 Improvement Standards*, the specified pipe material for distribution pipes is cement-lined pipe, polyvinyl chloride pipe, or ductile iron pipe and a Hazen-Williams "C" value of 125 should be used for all three pipe types.

Table 5-14 of the WSIP indicates that the minimum size for all distribution pipes is 8-inches in diameter.

Water System Performance Criteria
The County dictates required performance for water distribution system pipes. Table 2 below lists the applicable operating goals for SCWA water systems, as dictated by Table 5-14 of the WSIP.

Table 2 – Water System Performance Criteria

Operating Goal	Requirement
PHD Minimum Pressure	35 psi
PHD Maximum Pressure	65 psi
ADD Maximum Velocity	5 fps
PHD Maximum Velocity	7 fps
PHD Maximum Unit Headloss	3 ft/1,000 ft
MDD+FF Minimum Pressure	20 psi

Operating Goal	Requirement
MDD+FF Maximum Velocity	10 fps

MODEL

After laying out the water distribution pipe network, Coleman Engineering modeled the system using Bentley WaterCAD v8i to verify conformance with County design and operating criteria. The planned street layout and elevations were detailed by Ruggeri-Jensen-Azar (RJA). Pipe materials, pipe diameters, water demands, etc. were selected by Coleman Engineering. Model elevations were taken from the *Preliminary Grading Plan* prepared by RJA and were verified on Google Earth.

The locations and alignments of existing public water transmission and distribution system pipes were provided by the County. See Figure 2 attached to this memo. Existing County pipes that were modeled to be connected to the new system include:

- 12-inch distribution main in Edington Way
- 8-inch distribution main in Thornberg Way
- 12-inch to 10-inch distribution main in Raymer Way.

According to Table 5-14 of the WSIP, the minimum allowable pressure in a Zone 40 transmission main at peak hour flow conditions is 40 psi. The supply water pressure in the model assumes 40 psi in the 24-inch transmission main in Edington Way. That transmission main supplies all other pipes in the modeled system.

Water system pressures in the development were modeled at ground level. Building heights were not considered in the model since Building MEP's and Fire Sprinkler designers will calculate losses interior to the buildings.

To verify water system performance versus County criteria, the following modeling runs were calculated:

- ADD
- MDD
- PHD
- MDD + Fire Flow
- Redundancy Check #1 - MDD + Fire Flow with the connection at Edington Way out of service
- Redundancy Check #2 - MDD + Fire Flow with the connection at Thornberg Way out of service
- Redundancy Check #3 – MDD + Fire Flow with the connection at Raymer Way out of service

RESULTS

Model result tables are attached as Figure 3. Table 3 below shows the summary of results from the model runs compared to the applicable County operating goals.

Table 3 – Modeling Results vs. Water System Performance Criteria

Operating Goal	Operating Goal	Modeled Minimum	Modeled Maximum	Meets Goal?
PHD Minimum Pressure (psi)	35	36	-	Yes
PHD Maximum Pressure (psi)	65	-	43	Yes
ADD Maximum Velocity (fps)	5	-	0.3	Yes
PHD Maximum Velocity (fps)	7	-	1.2	Yes
PHD Maximum Unit Headloss (ft/1,000 ft)	3	-	0.9	Yes
MDD+FF Minimum Pressure (psi)	20	25	-	Yes
MDD+FF Maximum Velocity (fps)	10	-	9.7	Yes
MDD+FF Minimum Pressure – Redundancy Check #1 Edington Way Out of Service (psi)	20	21	-	Yes
MDD+FF Maximum Velocity – Redundancy Check #1 Edington Way Out of Service (psi)	10	-	9.7	Yes
MDD+FF Minimum Pressure – Redundancy Check #2 Thornberg Way Out of Service (psi)	20	24	-	Yes
MDD+FF Maximum Velocity – Redundancy Check #2 Thornberg Way Out of Service (psi)	10	-	9.7	Yes
MDD+FF Minimum Pressure – Redundancy Check #3 Raymer Way Out of Service (psi)	20	25	-	Yes
MDD+FF Maximum Velocity – Redundancy Check #3 Raymer Way Out of Service (psi)	10	-	9.7	Yes

All of the County operating goals stated in the WSIP were met as shown in Table 3 above. 8-inch diameter pipe throughout the system is calculated to be able to deliver water under all of the conditions that were tested in the model.

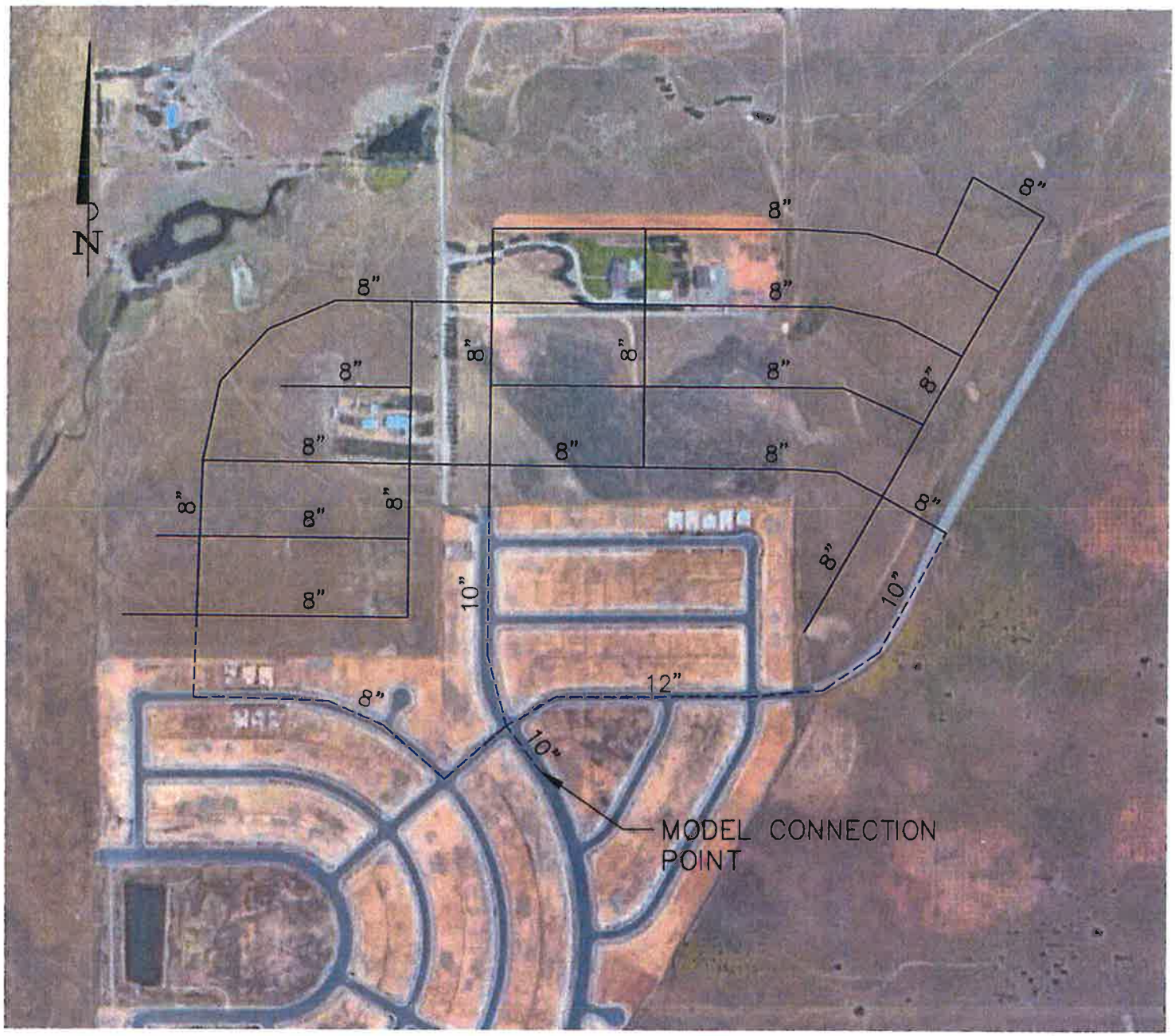
During fire flow conditions, the lowest pressures and highest velocities occurred at dead ends, but the criteria were still met at these locations. The modeling results attached as Figure 3 summarize results of the water modeling runs.

The modeling results show that the water distribution pipe networks shown in the attached Figure 1 is calculated to be able to deliver sufficient water to the development. To summarize, the new water system is modeled to include the following features:

- Connections to the 12-inch main in Edington Drive, the 8-inch main in Thornberg Way, and the 10-inch main in Raymer Way
- 8-inch pipes for all distribution mains in the Winn Development

ATTACHMENTS

- Figure 1 – Water System Layout
- Figure 2 – County Water Map
- Figure 3 – Water Modeling Results



LEGEND

PROPOSED PIPE ——————

EXISTING PIPE - - - - - -

500 0 500 1000

SCALE OF FEET

COLEMAN ENGINEERING

FIGURE 1

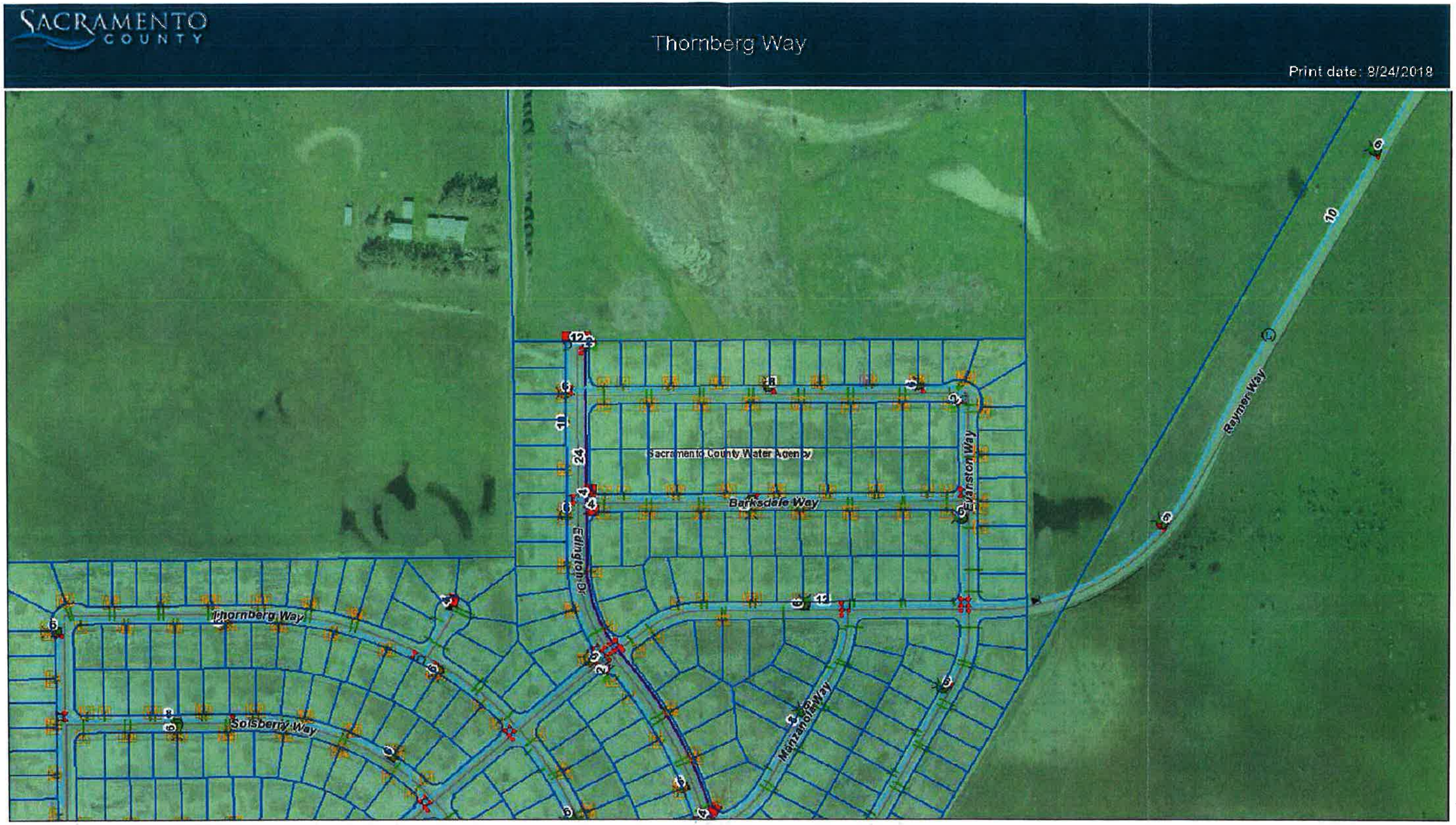
WINN DEVELOPMENT WATER SYSTEM LAYOUT

CITY OF RANCHO CORDOVA

COLEMAN ENGINEERING
1358 Blue Oaks Boulevard, Suite 200, Roseville California (916) 791-1188

DATE: 9-17-18
DRN: CPK
CKD: CRC
SCALE: 1"=500'
JN: RJAA18-003

Figure 2



1" = 200'

N

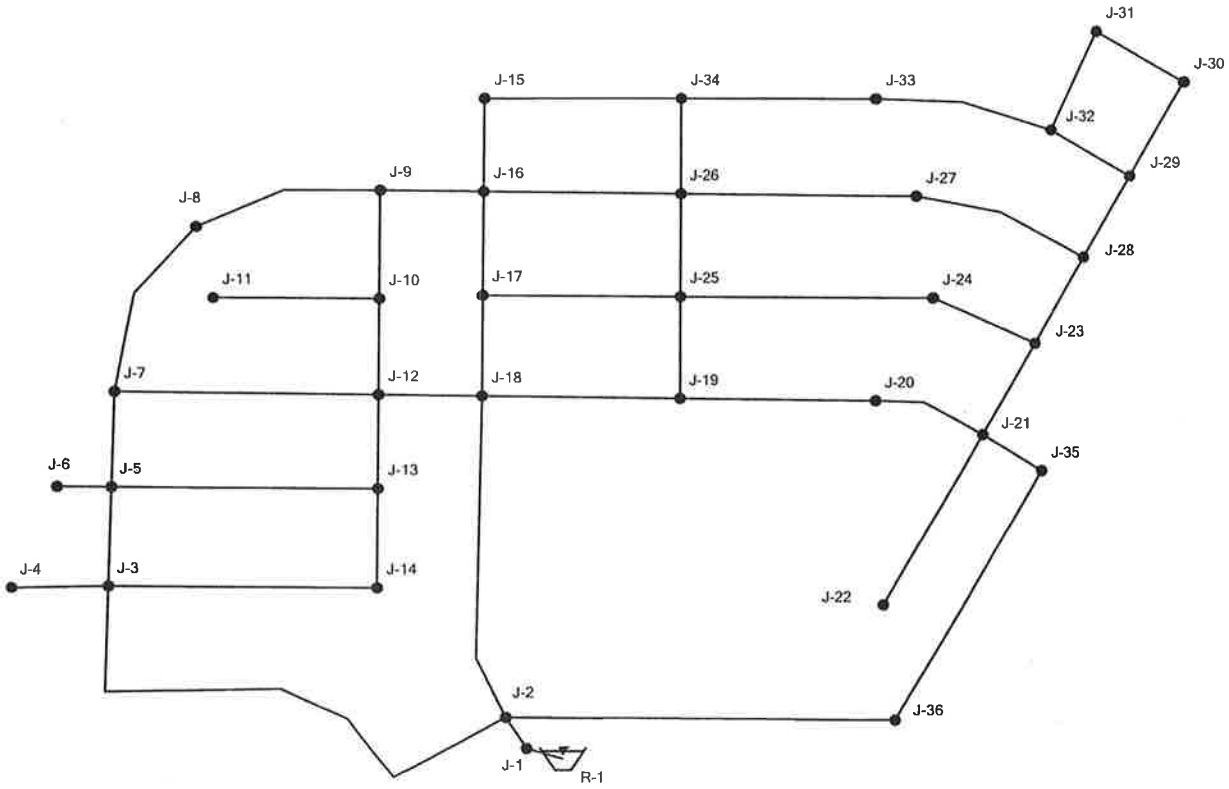
Independent verification of all data contained on this map product should be obtained by any user thereof. The County of Sacramento does not warrant the accuracy or completeness of this map product and therefore disclaims all liability for its fitness of use.

Figure 3

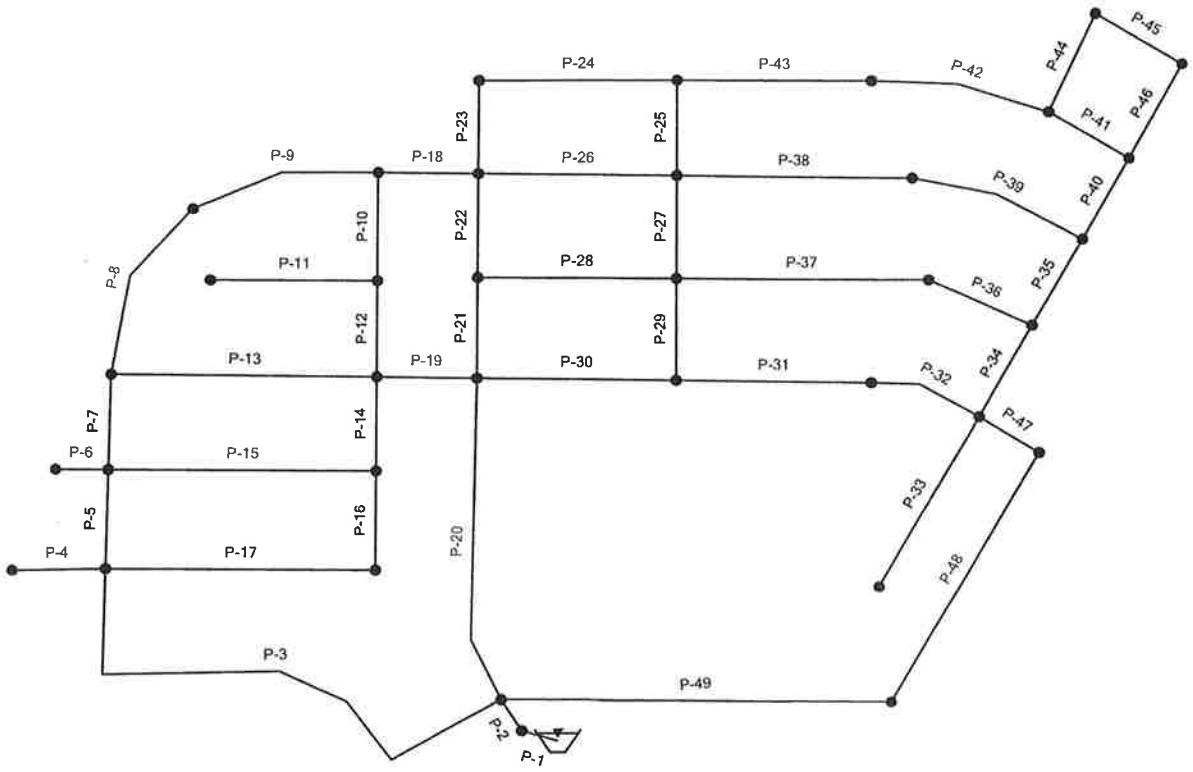
(pages 1-15)

Model: Winn Development

Node Labels



Model: Winn Development
Pipe Labels



Model: Winn Development
Active Scenario: ADD
Node Results

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
J-1	236.20	0	40
J-2	236.20	0	40
J-3	233.50	4	41
J-4	229.60	3	43
J-5	232.90	4	41
J-6	232.50	2	42
J-7	232.00	7	42
J-8	231.00	2	42
J-9	233.70	5	41
J-10	233.60	3	41
J-11	231.90	5	42
J-12	233.70	6	41
J-13	237.60	7	39
J-14	236.10	7	40
J-15	236.10	2	40
J-16	235.00	5	40
J-17	234.60	5	41
J-18	236.30	5	40
J-19	236.80	7	40
J-20	238.80	4	39
J-21	240.60	5	38
J-22	242.40	4	37
J-23	240.90	4	38
J-24	238.90	5	39
J-25	236.60	5	40
J-26	237.50	6	39
J-27	239.70	7	38
J-28	241.80	4	38
J-29	242.70	3	37
J-30	243.60	7	37
J-31	244.00	3	37
J-32	242.90	5	37
J-33	238.90	4	39
J-34	237.40	2	39
J-35	241.50	0	38
J-36	237.00	0	40

Model: Winn Development
Active Scenario: ADD
Pipe Results

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Flow (Absolute) (gpm)	Velocity (ft/s)
P-1	99.0	125.0	95	148	0.01
P-2	99.0	125.0	96	148	0.01
P-3	8.0	125.0	1,433	31	0.20
P-4	8.0	125.0	247	3	0.02
P-5	8.0	125.0	258	15	0.09
P-6	8.0	125.0	138	2	0.02
P-7	8.0	125.0	248	7	0.05
P-8	8.0	125.0	496	5	0.03
P-9	8.0	125.0	499	3	0.02
P-10	8.0	125.0	282	3	0.02
P-11	8.0	125.0	433	5	0.03
P-12	8.0	125.0	250	11	0.07
P-13	8.0	125.0	685	5	0.03
P-14	8.0	125.0	245	4	0.03
P-15	8.0	125.0	690	1	0.00
P-16	8.0	125.0	258	2	0.01
P-17	8.0	125.0	696	9	0.05
P-18	8.0	125.0	262	1	0.00
P-19	8.0	125.0	261	27	0.17
P-20	10.0	125.0	853	69	0.28
P-21	8.0	125.0	262	25	0.16
P-22	8.0	125.0	271	15	0.10
P-23	8.0	125.0	243	7	0.04
P-24	8.0	125.0	504	4	0.03
P-25	8.0	125.0	249	7	0.04
P-26	8.0	125.0	505	4	0.02
P-27	8.0	125.0	268	15	0.09
P-28	8.0	125.0	506	4	0.03
P-29	8.0	125.0	265	16	0.10
P-30	8.0	125.0	507	13	0.08
P-31	8.0	125.0	506	10	0.06
P-32	8.0	125.0	297	13	0.08
P-33	8.0	125.0	511	4	0.02
P-34	8.0	125.0	275	26	0.16
P-35	8.0	125.0	259	18	0.11
P-36	8.0	125.0	290	4	0.02
P-37	8.0	125.0	651	1	0.01
P-38	8.0	125.0	608	5	0.03
P-39	8.0	125.0	469	1	0.01
P-40	8.0	125.0	244	13	0.08
P-41	8.0	125.0	242	4	0.03
P-42	8.0	125.0	463	4	0.03
P-43	8.0	125.0	504	9	0.06
P-44	8.0	125.0	284	4	0.02
P-45	8.0	125.0	264	1	0.01
P-46	8.0	125.0	283	6	0.04

Model: Winn Development
Active Scenario: ADD
Pipe Results

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Flow (Absolute) (gpm)	Velocity (ft/s)
P-47	8.0	125.0	181	47	0.30
P-48	10.0	125.0	751	47	0.19
P-49	12.0	125.0	1,003	47	0.13

Model: Winn Development
Active Scenario: MDD
Node Results

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
J-1	236.20	0	40
J-2	236.20	0	40
J-3	233.50	9	41
J-4	229.60	6	43
J-5	232.90	9	41
J-6	232.50	5	42
J-7	232.00	5	42
J-8	231.00	14	42
J-9	233.70	5	41
J-10	233.60	11	41
J-11	231.90	5	42
J-12	233.70	10	41
J-13	237.60	12	39
J-14	236.10	14	40
J-15	236.10	13	40
J-16	235.00	5	40
J-17	234.60	10	41
J-18	236.30	10	40
J-19	236.80	10	40
J-20	238.80	10	39
J-21	240.60	13	38
J-22	242.40	12	37
J-23	240.90	7	38
J-24	238.90	10	39
J-25	236.60	13	40
J-26	237.50	7	39
J-27	239.70	8	38
J-28	241.80	7	37
J-29	242.70	13	37
J-30	243.60	9	37
J-31	244.00	10	37
J-32	242.90	5	37
J-33	238.90	7	39
J-34	237.40	10	39
J-35	241.50	0	38
J-36	237.00	0	40

Model: Winn Development
Active Scenario: MDD
Pipe Results

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Flow (Absolute) (gpm)	Velocity (ft/s)
P-1	99.0	125.0	95	295	0.01
P-2	99.0	125.0	96	295	0.01
P-3	8.0	125.0	1,433	61	0.39
P-4	8.0	125.0	247	6	0.04
P-5	8.0	125.0	258	29	0.18
P-6	8.0	125.0	138	5	0.03
P-7	8.0	125.0	248	13	0.08
P-8	8.0	125.0	496	16	0.10
P-9	8.0	125.0	499	2	0.01
P-10	8.0	125.0	282	9	0.06
P-11	8.0	125.0	433	5	0.03
P-12	8.0	125.0	250	25	0.16
P-13	8.0	125.0	685	8	0.05
P-14	8.0	125.0	245	7	0.04
P-15	8.0	125.0	690	3	0.02
P-16	8.0	125.0	258	3	0.02
P-17	8.0	125.0	696	17	0.11
P-18	8.0	125.0	262	6	0.04
P-19	8.0	125.0	261	50	0.32
P-20	10.0	125.0	853	138	0.56
P-21	8.0	125.0	262	50	0.32
P-22	8.0	125.0	271	28	0.18
P-23	8.0	125.0	243	20	0.13
P-24	8.0	125.0	504	7	0.05
P-25	8.0	125.0	249	18	0.12
P-26	8.0	125.0	505	9	0.06
P-27	8.0	125.0	268	27	0.17
P-28	8.0	125.0	506	11	0.07
P-29	8.0	125.0	265	32	0.21
P-30	8.0	125.0	507	28	0.18
P-31	8.0	125.0	506	15	0.09
P-32	8.0	125.0	297	24	0.15
P-33	8.0	125.0	511	12	0.08
P-34	8.0	125.0	275	47	0.30
P-35	8.0	125.0	259	33	0.21
P-36	8.0	125.0	290	7	0.04
P-37	8.0	125.0	651	4	0.02
P-38	8.0	125.0	608	10	0.06
P-39	8.0	125.0	469	2	0.01
P-40	8.0	125.0	244	28	0.18
P-41	8.0	125.0	242	5	0.03
P-42	8.0	125.0	463	9	0.06
P-43	8.0	125.0	504	16	0.10
P-44	8.0	125.0	284	8	0.05
P-45	8.0	125.0	264	1	0.01
P-46	8.0	125.0	283	10	0.06

Model: Winn Development
Active Scenario: MDD
Pipe Results

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Flow (Absolute) (gpm)	Velocity (ft/s)
P-47	8.0	125.0	181	96	0.61
P-48	10.0	125.0	751	96	0.39
P-49	12.0	125.0	1,003	96	0.27

Model: Winn Development
Active Scenario: PHD
Node Results

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
J-1	236.20	0	40
J-2	236.20	0	40
J-3	233.50	18	41
J-4	229.60	12	43
J-5	232.90	18	41
J-6	232.50	10	41
J-7	232.00	29	42
J-8	231.00	10	42
J-9	233.70	22	41
J-10	233.60	11	41
J-11	231.90	20	42
J-12	233.70	25	41
J-13	237.60	29	39
J-14	236.10	26	40
J-15	236.10	10	40
J-16	235.00	20	40
J-17	234.60	20	40
J-18	236.30	20	40
J-19	236.80	26	39
J-20	238.80	15	39
J-21	240.60	19	38
J-22	242.40	15	37
J-23	240.90	16	38
J-24	238.90	20	39
J-25	236.60	19	40
J-26	237.50	25	39
J-27	239.70	26	38
J-28	241.80	15	37
J-29	242.70	14	37
J-30	243.60	26	36
J-31	244.00	11	36
J-32	242.90	19	37
J-33	238.90	18	39
J-34	237.40	10	39
J-35	241.50	0	38
J-36	237.00	0	40

Model: Winn Development
Active Scenario: PHD
Pipe Results

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Flow (Absolute) (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	99.0	125.0	95	591	0.02	0.00
P-2	99.0	125.0	96	591	0.02	0.00
P-3	8.0	125.0	1,433	123	0.79	0.41
P-4	8.0	125.0	247	12	0.08	0.01
P-5	8.0	125.0	258	59	0.38	0.10
P-6	8.0	125.0	138	10	0.06	0.00
P-7	8.0	125.0	248	29	0.18	0.03
P-8	8.0	125.0	496	20	0.13	0.01
P-9	8.0	125.0	499	10	0.06	0.00
P-10	8.0	125.0	282	14	0.09	0.01
P-11	8.0	125.0	433	20	0.13	0.01
P-12	8.0	125.0	250	45	0.29	0.06
P-13	8.0	125.0	685	19	0.12	0.01
P-14	8.0	125.0	245	17	0.11	0.01
P-15	8.0	125.0	690	3	0.02	0.00
P-16	8.0	125.0	258	8	0.05	0.00
P-17	8.0	125.0	696	34	0.22	0.04
P-18	8.0	125.0	262	2	0.01	0.00
P-19	8.0	125.0	261	106	0.68	0.31
P-20	10.0	125.0	853	278	1.13	0.62
P-21	8.0	125.0	262	98	0.63	0.27
P-22	8.0	125.0	271	60	0.38	0.11
P-23	8.0	125.0	243	26	0.17	0.02
P-24	8.0	125.0	504	17	0.11	0.01
P-25	8.0	125.0	249	28	0.18	0.03
P-26	8.0	125.0	505	15	0.10	0.01
P-27	8.0	125.0	268	58	0.37	0.10
P-28	8.0	125.0	506	18	0.11	0.01
P-29	8.0	125.0	265	65	0.41	0.12
P-30	8.0	125.0	507	53	0.34	0.08
P-31	8.0	125.0	506	38	0.24	0.05
P-32	8.0	125.0	297	53	0.34	0.09
P-33	8.0	125.0	511	15	0.10	0.01
P-34	8.0	125.0	275	103	0.66	0.29
P-35	8.0	125.0	259	71	0.46	0.15
P-36	8.0	125.0	290	15	0.10	0.01
P-37	8.0	125.0	651	5	0.03	0.00
P-38	8.0	125.0	608	21	0.14	0.02
P-39	8.0	125.0	469	4	0.03	0.00
P-40	8.0	125.0	244	52	0.33	0.08
P-41	8.0	125.0	242	16	0.10	0.01
P-42	8.0	125.0	463	18	0.11	0.01
P-43	8.0	125.0	504	35	0.22	0.04
P-44	8.0	125.0	284	15	0.09	0.01
P-45	8.0	125.0	264	4	0.02	0.00

Model: Winn Development
Active Scenario: PHD
Pipe Results

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Flow (Absolute) (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-46	8.0	125.0	283	22	0.14	0.02
P-47	8.0	125.0	181	190	1.21	0.91
P-48	10.0	125.0	751	190	0.78	0.31
P-49	12.0	125.0	1,003	190	0.54	0.13

Model: Winn Development
Active Scenario: MDD + Fire Flow
Fire Flow Analysis

Label	Satisfies Fire Flow Constraints?	Flow (Total Needed) (gpm)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Velocity of Maximum Pipe (ft/s)
J-1	True	1,500	40	0.61
J-2	True	1,500	40	0.61
J-3	True	1,509	37	3.94
J-4	True	1,506	34	9.62
J-5	True	1,509	37	4.09
J-6	True	1,505	35	9.61
J-7	True	1,505	38	4.09
J-8	True	1,514	37	5.00
J-9	True	1,505	37	4.57
J-10	True	1,511	37	5.21
J-11	True	1,505	30	9.62
J-12	True	1,510	38	4.63
J-13	True	1,512	35	5.06
J-14	True	1,514	34	5.86
J-15	True	1,513	35	6.02
J-16	True	1,505	37	3.71
J-17	True	1,510	38	4.24
J-18	True	1,510	38	3.74
J-19	True	1,510	37	3.96
J-20	True	1,509	35	5.49
J-21	True	1,513	35	4.82
J-22	True	1,512	25	9.66
J-23	True	1,507	34	4.61
J-24	True	1,510	34	5.53
J-25	True	1,513	37	3.93
J-26	True	1,507	36	3.88
J-27	True	1,508	33	4.87
J-28	True	1,507	33	5.01
J-29	True	1,513	31	6.36
J-30	True	1,509	29	6.24
J-31	True	1,509	29	6.16
J-32	True	1,505	31	5.95
J-33	True	1,507	32	5.40
J-34	True	1,509	35	4.78
J-35	True	1,500	35	3.85
J-36	True	1,500	38	3.28

Model: Winn Development

Active Scenario: MDD + Fire Flow - Redundancy Check #1 Edington Way Out of Service

Fire Flow Analysis

Label	Satisfies Fire Flow Constraints?	Flow (Total Needed) (gpm)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Velocity of Maximum Pipe (ft/s)
J-1	True	1,500	40	1.15
J-2	True	1,500	40	1.15
J-3	True	1,509	33	6.37
J-4	True	1,506	30	9.62
J-5	True	1,509	33	6.57
J-6	True	1,505	31	9.61
J-7	True	1,505	33	6.69
J-8	True	1,514	32	6.77
J-9	True	1,505	32	6.87
J-10	True	1,511	32	6.82
J-11	True	1,505	25	9.62
J-12	True	1,510	33	6.78
J-13	True	1,512	31	6.64
J-14	True	1,514	30	6.56
J-15	True	1,513	30	7.01
J-16	True	1,505	32	6.97
J-17	True	1,510	32	6.98
J-18	True	1,510	32	6.94
J-19	True	1,510	32	7.09
J-20	True	1,509	30	7.33
J-21	True	1,513	32	7.44
J-22	True	1,512	21	9.66
J-23	True	1,507	30	7.23
J-24	True	1,510	29	7.16
J-25	True	1,513	32	7.05
J-26	True	1,507	31	7.05
J-27	True	1,508	28	7.10
J-28	True	1,507	29	7.13
J-29	True	1,513	27	7.11
J-30	True	1,509	24	7.11
J-31	True	1,509	24	7.11
J-32	True	1,505	26	7.11
J-33	True	1,507	27	7.08
J-34	True	1,509	30	7.05
J-35	True	1,500	33	5.10
J-36	True	1,500	37	4.05

Model: Winn Development

Active Scenario: MDD + Fire Flow - Redundancy Check #2 Thornberg Way Out of Service

Fire Flow Analysis

Label	Satisfies Fire Flow Constraints?	Flow (Total Needed) (gpm)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Velocity of Maximum Pipe (ft/s)
J-1	True	1,500	40	0.76
J-2	True	1,500	40	0.76
J-3	True	1,509	32	6.23
J-4	True	1,506	29	9.62
J-5	True	1,509	34	5.90
J-6	True	1,505	32	9.61
J-7	True	1,505	35	5.78
J-8	True	1,514	35	5.55
J-9	True	1,505	36	5.34
J-10	True	1,511	35	5.59
J-11	True	1,505	28	9.62
J-12	True	1,510	36	6.16
J-13	True	1,512	32	6.22
J-14	True	1,514	31	6.44
J-15	True	1,513	34	5.98
J-16	True	1,505	36	4.52
J-17	True	1,510	37	4.49
J-18	True	1,510	37	4.61
J-19	True	1,510	36	4.68
J-20	True	1,509	34	5.59
J-21	True	1,513	35	5.37
J-22	True	1,512	24	9.66
J-23	True	1,507	34	4.93
J-24	True	1,510	33	5.57
J-25	True	1,513	36	4.65
J-26	True	1,507	35	4.63
J-27	True	1,508	32	4.91
J-28	True	1,507	32	5.12
J-29	True	1,513	30	6.39
J-30	True	1,509	28	6.28
J-31	True	1,509	28	6.20
J-32	True	1,505	30	5.99
J-33	True	1,507	31	5.37
J-34	True	1,509	34	4.81
J-35	True	1,500	35	3.95
J-36	True	1,500	38	3.43

Model: Winn Development

Active Scenario: MDD + Fire Flow - Redundancy Check #3 Raymer Way Out of Service

Fire Flow Analysis

Label	Satisfies Fire Flow Constraints?	Flow (Total Needed) (gpm)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Velocity of Maximum Pipe (ft/s)
J-1	True	1,500	40	0.61
J-2	True	1,500	40	0.61
J-3	True	1,509	37	3.94
J-4	True	1,506	34	9.62
J-5	True	1,509	37	4.09
J-6	True	1,505	35	9.61
J-7	True	1,505	38	4.09
J-8	True	1,514	37	5.00
J-9	True	1,505	37	4.57
J-10	True	1,511	37	5.21
J-11	True	1,505	30	9.62
J-12	True	1,510	38	4.63
J-13	True	1,512	35	5.06
J-14	True	1,514	34	5.86
J-15	True	1,513	35	6.02
J-16	True	1,505	37	3.71
J-17	True	1,510	38	4.24
J-18	True	1,510	38	3.74
J-19	True	1,510	37	3.96
J-20	True	1,509	35	5.49
J-21	True	1,513	35	4.82
J-22	True	1,512	25	9.66
J-23	True	1,507	34	4.61
J-24	True	1,510	34	5.53
J-25	True	1,513	37	3.93
J-26	True	1,507	36	3.88
J-27	True	1,508	33	4.87
J-28	True	1,507	33	5.01
J-29	True	1,513	31	6.36
J-30	True	1,509	29	6.24
J-31	True	1,509	29	6.16
J-32	True	1,505	31	5.95
J-33	True	1,507	32	5.40
J-34	True	1,509	35	4.78
J-35	True	1,500	35	3.85
J-36	True	1,500	38	3.28

SEWER STUDY

FOR

THE PRESERVE

City of Rancho Cordova, California

June 2020

Prepared For:

Winn Properties

Prepared By:

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

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Section 4: Sewer Alignments and Facilities …… 6

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Exhibits

Exhibit A: Project Location Map

Exhibit B: Sewer Study (11x17 & Insert)

Exhibit C: Sewer Flow Calculations

Exhibit D: Land Use Plan

Exhibit E: Grading Plan

Attachments

Attachment A: Proposed Sewer Shed Shift Report

Executive Summary

This report has been prepared to present onsite and offsite sewer conveyance facilities to gravity serve the study area as well as identifying off-site contributing areas and downstream impacted areas. It addresses the viability of sewering the project, as well as consistency with the existing interceptor and trunk sewer master plans.

The Preserve is a proposed single family development (**See Exhibit D**). The Preserve is in the eastern part of Sacramento County, approximately 4,500 feet north of the intersection of Douglas Road and Americanos Boulevard. (**See Exhibit A**).

The Preserve encompasses a total of 279± acres, of which 184 acres are designated to be open space. Based on land use, with a minimum of 6 equivalent single-family dwelling (ESD's) per acre (RD-6), the remaining 95 acres will be 440 single family homes and approximately 20± acres of public park and open space. The project proposes two points of connection to the existing system and the 440.0 ESD's have Peak Wet Weather Flows (PWWF) of 0.210 MGD and 0.155 MGD. The flows leave the site at Node WP/MH-1 and Node WP-6/MH-26A.

There are no upstream areas that will contribute flow to the project sewer shed.

The Preserve is part of the BR East Rancho Area 1 Trunk Shed area per the SFEMP and would receive ultimate service from the Aerojet Interceptor Section 2S.

There are no required pump stations or force mains. This project proposes a permanent shed shift of 75± acres of The Preserve to the BR East Rancho Area 2. The designated open space north of Morrison Creek (184 Ac) is not part of the proposed shift (See Attachment A). The offsite facilities that are required to develop The Preserve have been constructed with the North Douglas development.

Section 1: Introduction

This study has been prepared at a Subdivision Plan level. At this level, it serves as a design guide for the creation of the subsequent improvement plans.

The Preserve covers 279± acres. The ground ranges in elevation from 205 feet on the west side to 245 feet above sea level on the east side. The 184 acres north of Morrison Creek are currently in the South Sacramento Habitat Conservation Plan (SSHCP) as a preserve. This property is currently in negotiation to be sold to the SSHCP. As open space, the area is not included in the flow calculations. The proposed open space areas will not be developed and will be set aside for conservation purposes only.

There are no offsite upstream areas that will contribute to the flows produced by The Preserve. The flow created from the project will utilize the existing North Douglas subdivision sewer system.

The Preserve will ultimately be serviced by the Aerojet Interceptor.

Section 2: Design

This study has been prepared in accordance with the current master plans.

Assumptions

Future upstream areas will not be served through The Preserve. It is anticipated that undeveloped areas within the (BR East Rancho Area 1) will be served according to the SFEMP, and will not be served to the south, through The Preserve and North Douglas developments.

Per the approved North Douglas Sewer Study, there are 1390 acres and 8522 ESD's at Node DR-4 in Douglas Road, producing 5.442 MGD. This study proposes to increase Node DR-4 to 1462.5 acres and 8969.6 ESD's producing 5.927 MGD. From Node DR-4, flows travel west in a 24" sewer pipe at a slope of 0.0021. A 24" sewer pipe at s= 0.0021 has a capacity of 6.697 MGD.

High ground water tables typically don't exist in this area of Sacramento County.

Approach: Mater Plan Design Procedures

The following general procedures are used in the development of this Sewer Master Plan:

- Major sewer sheds defined.
- A detailed collection system established.
- Major sheds divided into sub-sheds in order to define the areas, which contribute flows to certain points (nodes) on the collection system.
- Equivalent Single-Family Dwellings (ESDs) should be determined by lot count or by using 6 Equivalent Single-Family Dwellings (ESDs/acre), whichever is greater

The methodology for estimating sewage flows in collectors and trunk lines in the Plan area sewer system is defined in the Sacramento Area Sewer District Standards and Specifications dated March 2019. The primary design criteria used in our analysis are listed in Table 1 below.

Table 1

Category	Conditions	Modifiers
Development Density	Planned Development Density	Minimum Plan Density shall be RD-5
Flow Generation	310 gpd/ESD	I/I-new 1400 gpd/ac < 5 Years 1600 gpd/ac > 5 Years
Peaking Factor	$PF=3.5 - 1.8Q_a^{0.05}$ (local sewers) Where: Q_a = ADWF	
Velocity Criteria	Min. 2 fps at Peak Wet Weather Flow	
Hydraulic Grade Line	Maximum HGL at crown of pipe Peak Wet Weather Flow	
Friction Factor	N=0.013	
Minimum Depth	6.3' at periphery of plan. 6.3' min depth @ last line manhole	8" sewer from periphery to collection point
Minimum Slope	Slope = 0.007 Minimum	Main to last line manhole

Peak Dry Weather Flows are computed based on 310 gallons per day (gpd) per Equivalent Single Family Dwelling Unit (ESD) entering each trunk pipe system. ESD values used in Sewer Master Plans assumed a minimum plan density of 6 ESD's per acre.

Regional San and SASD

Sanitary sewer service in the project area is provided by the Sacramento Regional County Sanitation District (Regional San) and the Sacramento Area Sewer District (SASD).

Regional San is responsible for the interceptor collection (sanitary sewers which are designed to carry flows in excess of 10 million gallons per day) and treatment of wastewater.

SASD is responsible for the local collection facilities (up to 1 MGD) and trunk sewers with capacity of 1 million to 10 million gallons per day.

Regional San and SASD own, operate and are responsible for the public collection, trunk and interceptor sewer systems throughout Sacramento County as well as the Regional Wastewater Treatment Plant located south of Freeport.

Section 3: Sewer Flow Information

Currently there are no existing sewer facilities within The Preserve. When the 75 acres develops, it will produce 440.0 ESD's and have a combined Peak Wet Weather Flow (PWWF) of 0.365 mgd. These flows leave the site at nodes MH-1 and MH-26A, and enter the North Douglas development. We are reducing the Peak Wet Weather Flow (PWWF) at node 2623-EN01 and increasing the Peak Wet Weather Flow (PWWF) at node 2875-EN01. See the approved Sewer Master Study for North Douglas 1, dated March 2004, and prepared by Wood Rodgers, Inc. for reference.

Section 4: Sewer Alignments and Facilities

The most feasible way to serve this project is by gravity through the North Douglas development down to Douglas Road. This is a permanent shed shift. At this time, there are no other alternatives to sewer The Preserve.

Section 5: Conclusion

This study was prepared with the intent of providing support documentation for use in the development of The Preserve improvement plans. As configured, all of the project flows will sewer south through the North Douglas project, and eventually into the Aerojet Interceptor. No offsite upstream sewer flows through The Preserve, thus this study has only accounted for flows originated onsite. This project's 75 developable acres account for approximately 440.0 ESD's and produces a combined Peak Wet Weather Flow of 0.365 MGD's. The Preserve does not adversely affect the downstream system.

Exhibits

Exhibit A: Project Location Map

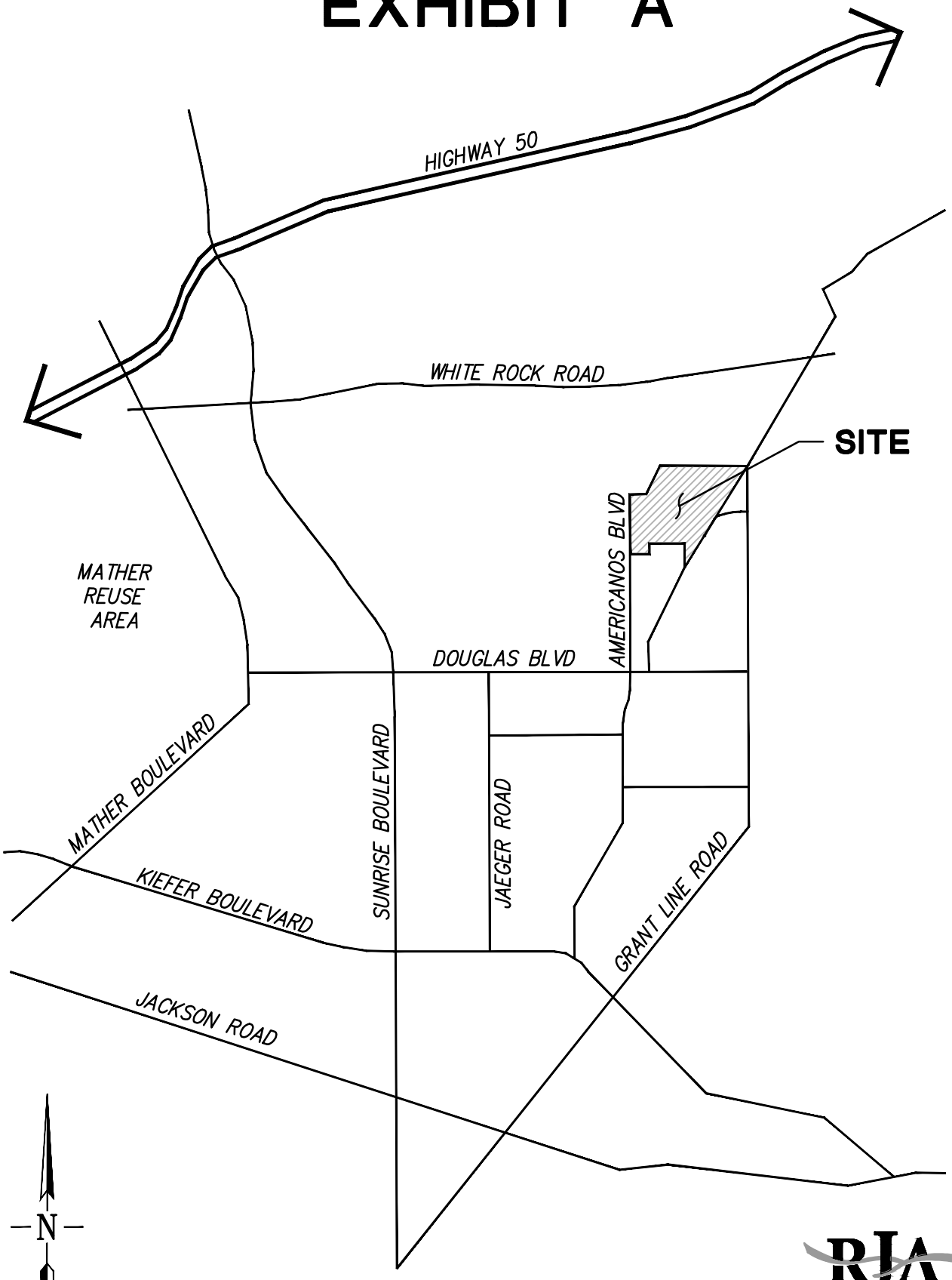
Exhibit B: Sewer Study (11x17 & Insert)

Exhibit C: Sewer Flow Calculations

Exhibit D: Land Use Plan

Exhibit E: Grading Plan

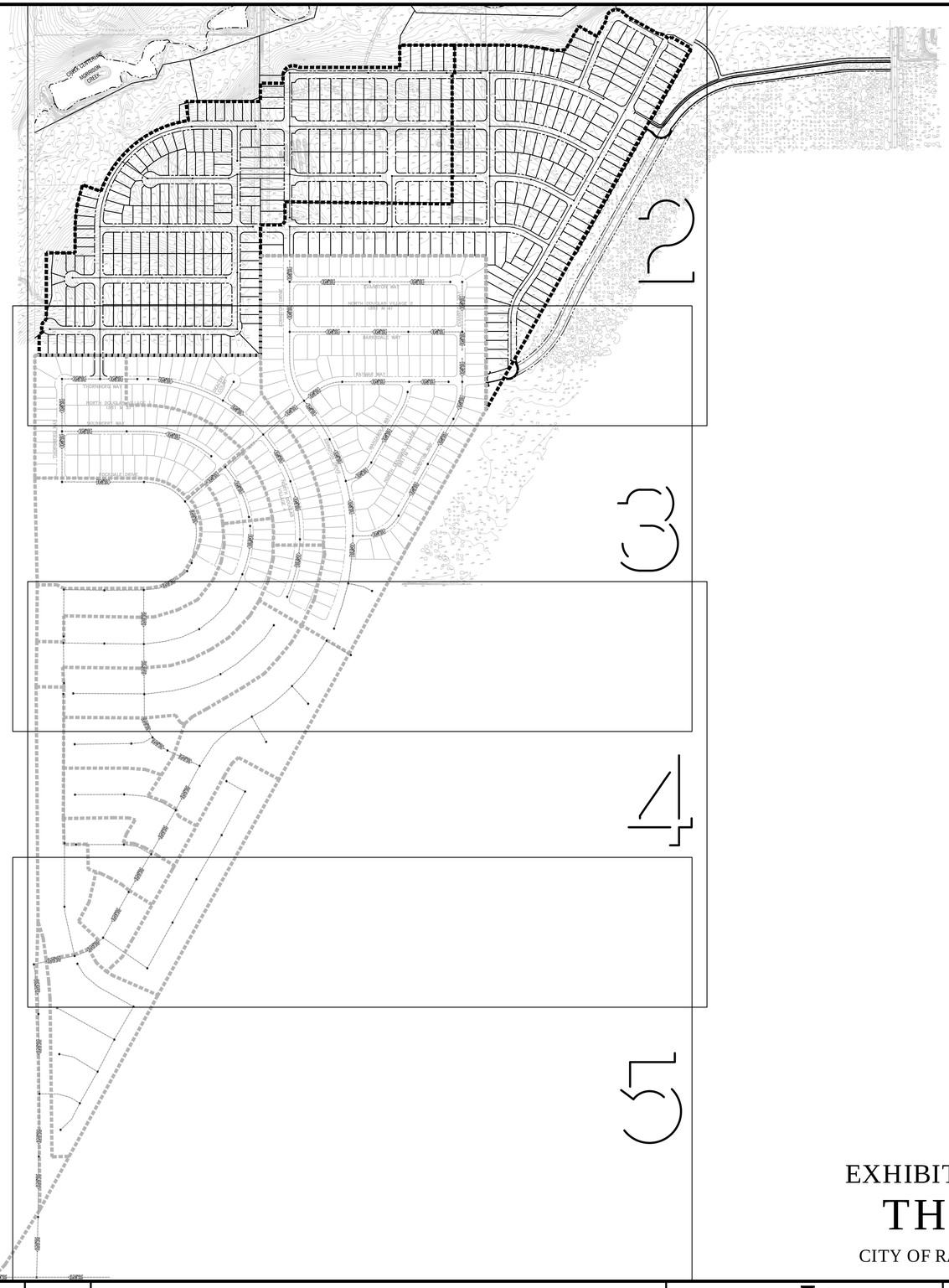
PROJECT LOCATION
EXHIBIT A

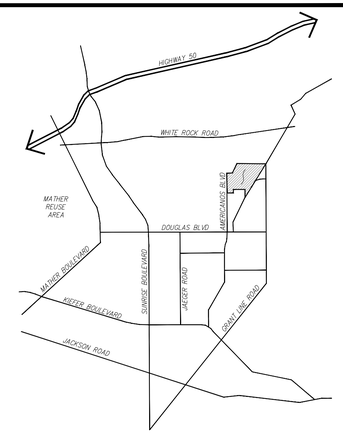


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RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

DATE: 6-23-2020 JOB NO. 165018





VICINITY MAP
NTS

0 300 600 900
1 inch = 300 ft.

LEGEND

D.C.	DROP CONNECTION
P.S.	PARALLEL SERVICE
200'	PIPE LENGTH
XX"SS	PROPOSED SEWER PIPE (INCHES)
S=0.0018	PIPE SLOPE
INV=150.00	PIPE INVERT (FEET)
RIM=50.0	MANHOLE RIM ELEVATION (FEET)
D=10.0	DEPTH (FEET)
200' EXX"SS S=0.0018	PIPE INFORMATION PER APPROVED NORTH DOUGLAS 1 & 2 SEWER STUDY BY WOOD RODGERS, INC. DATED MARCH 2004.
INV=150.00 RIM=50.0 D=10.0	MANHOLE INFORMATION PER APPROVED NORTH DOUGLAS 1 & 2 SEWER STUDY BY WOOD RODGERS, INC. DATED MARCH 2004.
	PROPOSED SEWER MANHOLE
	SEWER MANHOLE PER NORTH DOUGLAS
	MAJOR SHED BOUNDARY
	INDIVIDUAL SHED BOUNDARY
	PROJECT BOUNDARY
	NODE NUMBER POINT ACREAGE CUMULATIVE ACREAGE POINT ESD CUMULATIVE ESD PEAK WET WEATHER FLOW (MGD)
1 A= 00.0 ac. ΣA= 10.0 ac. ESD= 0.0 ΣESD= 10.0 Q_{PWWF}=0.10 mgd	NODE INFORMATION PER APPROVED NORTH DOUGLAS 1 & 2 SEWER STUDY BY WOOD RODGERS, INC. DATED MARCH 2004.

EXHIBIT B SEWER STUDY FOR

THE PRESERVE

CITY OF RANCHO CORDOVA, CALIFORNIA

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RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

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MORRISON CREEK TRAIL

CREEK CENTERLINE
MORRISON CREEK

STREET 'A'
STREET 'B'
STREET 'C'
STREET 'D'
STREET 'E'
STREET 'F'
STREET 'G'
STREET 'H'
STREET 'I'
STREET 'J'
STREET 'K'
STREET 'L'
STREET 'M'
STREET 'N'
STREET 'O'
STREET 'P'

EDINGTON DRIVE
EVANSTON WAY
RAYMER WAY
DEACON COURT
THORNBERG WAY
SOISBERRY WAY

NORTH DOUGLAS VILLAGE 1
(351 M 5)

NORTH DOUGLAS VILLAGE 2
(351 M 4)

BARKSDALE WAY

SUMMIT MANHOLE
RIM 236.63
INV 228.06 8" OUT (N)
INV 224.44 8" OUT (W)

0 100 200 300
1 inch = 100 ft.

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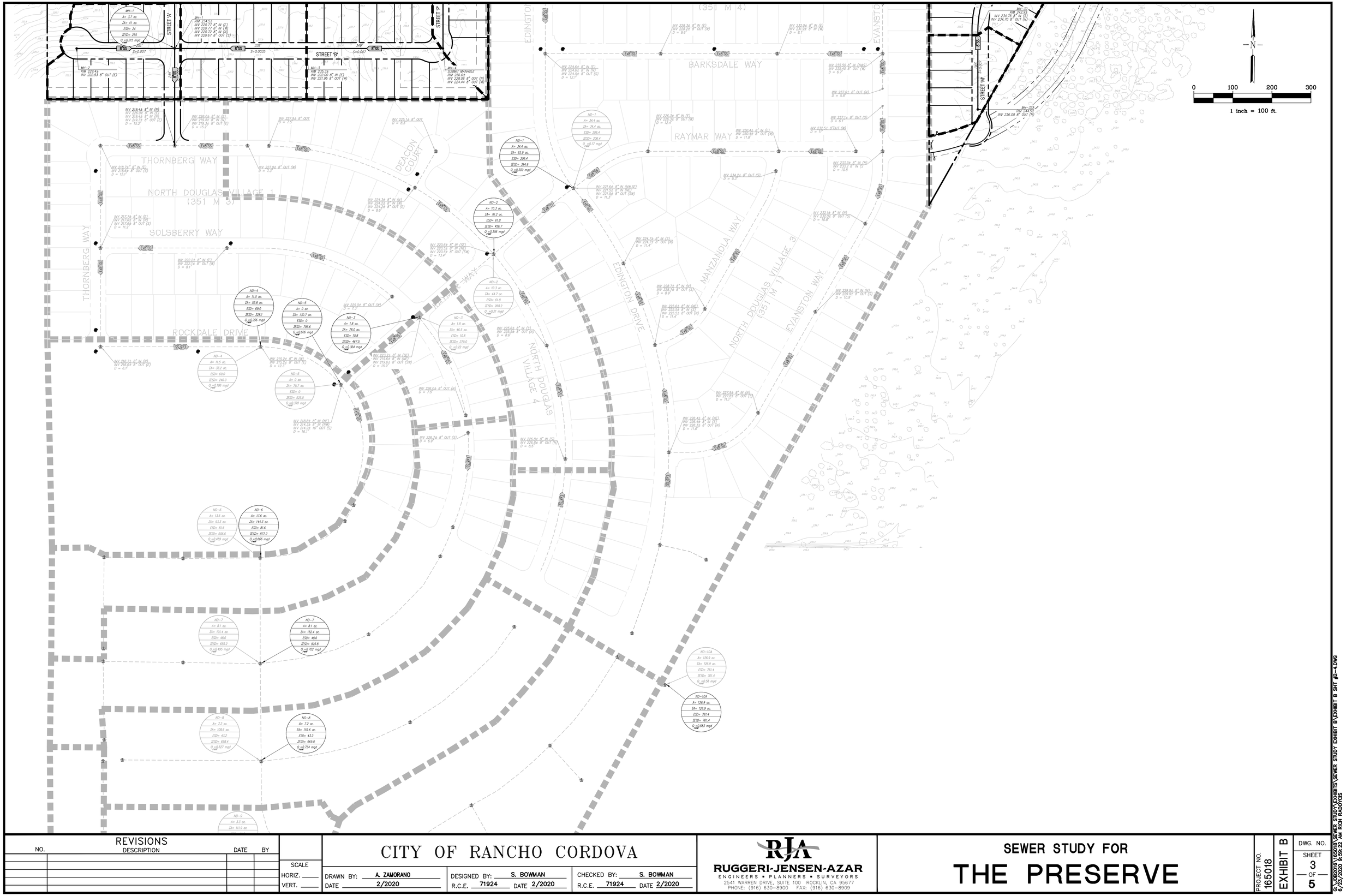
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RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

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RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

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ND-7
A= 8.1 ac.
ΣA= 101.4 ac.
ΣSD= 48.6
ΣΣSD= 655.2
Q =0.485 mgd

ND-7
A= 8.1 ac.
ΣA= 152.4 ac.
ΣSD= 48.6
ΣΣSD= 925.8
Q =0.702 mgd

ND-8
A= 7.2 ac.
ΣA= 108.6 ac.
ΣSD= 43.2
ΣΣSD= 698.4
Q =0.527 mgd

ND-8
A= 7.2 ac.
ΣA= 159.6 ac.
ΣSD= 43.2
ΣΣSD= 969.0
Q =0.734 mgd

ND-9
A= 3.3 ac.
ΣA= 111.9 ac.
ΣSD= 19.8
ΣΣSD= 718.2
Q =0.542 mgd

ND-9
A= 3.3 ac.
ΣA= 162.9 ac.
ΣSD= 19.8
ΣΣSD= 988.8
Q =0.748 mgd

ND-10
A= 8.9 ac.
ΣA= 298.7 ac.
ΣSD= 53.4
ΣΣSD= 1803.6
Q =1.278 mgd

ND-10
A= 8.9 ac.
ΣA= 247.7 ac.
ΣSD= 53.4
ΣΣSD= 1533.0
Q =1.035 mgd

ND-11
A= 4.0 ac.
ΣA= 302.7 ac.
ΣSD= 24.0
ΣΣSD= 1837.6
Q =1.294 mgd

ND-11
A= 4.0 ac.
ΣA= 251.7 ac.
ΣSD= 24.0
ΣΣSD= 1557.0
Q =1.051 mgd

ND-12
A= 2.8 ac.
ΣA=305.5 ac.
ΣSD= 16.8
ΣΣSD= 1844.4
Q =1.306 mgd

ND-12
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ΣA= 254.5 ac.
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Q =1.345 mgd

ND-13
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Q =1.100 mgd

ND-13A
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Q =0.04 mgd

ND-13A
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ΣSD= 0
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ΣA= 320.6 ac.
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Q =1.368 mgd

ND-14A
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ΣΣSD= 33.6
Q =0.044 mgd

ND-14A
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ΣA= 5.6 ac.
ΣSD= 33.6
ΣΣSD= 33.6
Q =0.03 mgd

ND-15
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ΣA= 269.6 ac.
ΣSD= 0
ΣΣSD= 1664.4
Q =1.122 mgd

ND-15
A= 0 ac.
ΣA= 320.6 ac.
ΣSD= 0
ΣΣSD= 1935.0
Q =1.368 mgd

ND-104
A= 126.9 ac.
ΣA= 126.9 ac.
ΣSD= 761.4
ΣΣSD= 761.4
Q =0.583 mgd

ND-104
A= 126.9 ac.
ΣA= 126.9 ac.
ΣSD= 761.4
ΣΣSD= 761.4
Q =0.58 mgd

0 100 200 300

1 inch = 100 ft.

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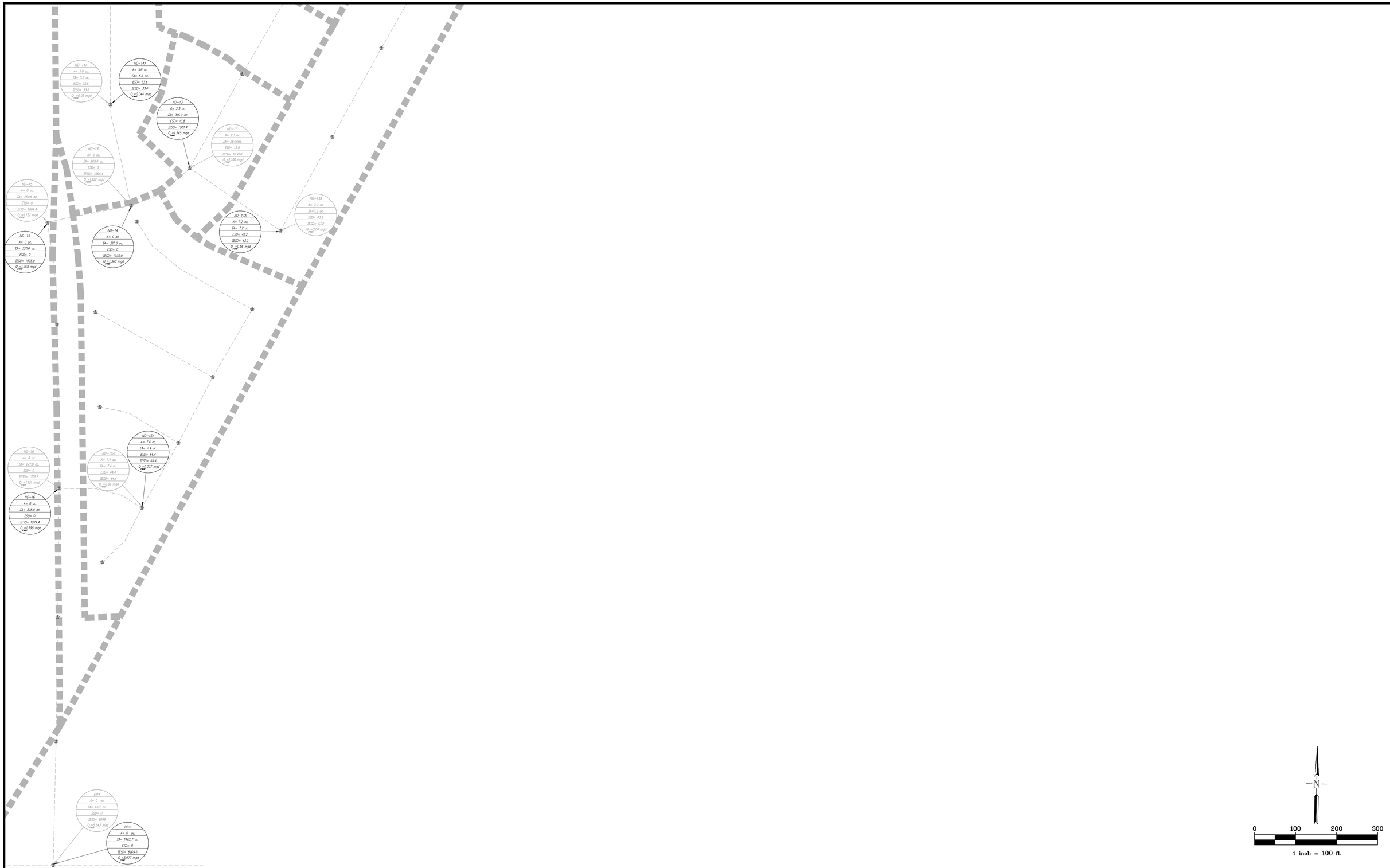
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RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

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RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

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EXHIBIT C
THE PRESERVE

(Note: Node (MH) Data Applies to Pipes Downstream of Subject Node)

Up Stream Node#	Down Stream Node#	**LDR (ac)**	ESD's (By Area)	ESD's (By Lot)	**Park (ac)**	ESD's	Total Area (ac)	Total ESD's	Cumulative Area (ac)	Cumulative ESD's	Qavg (MGD)	Q I/I (MGD)	Peaking Factor	Q Peak DWF (MGD)	Q Peak PWWF (MGD)	Q Peak (cfs)	Dia (in)	Slope (ft/ft)	C=COLL. T=TRUNK	Capacity @ $S_{.7}$ (cfs)	Capacity @ $S_{.8}$ (cfs)	Capacity @ $S_{.9}$ (cfs)	Capacity @ S_{Full} (cfs)	@ $S_{.7}$ (MGD)	Velocity @ Qpeak & S (fps)	Upsteam MH Rim	Upstream MH INV	Upstream MH Depth
MH-60	MH-55	1.5	8.8	9.0		0.0	1.5	8.8	1.5	9.0	0.003	0.002	2.159	0.006	0.008	0.012	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.14	244.8	238.40	6.4
MH-56	MH-55	0.6	3.6	3.0		0.0	0.6	3.6	0.6	3.6	0.001	0.001	2.219	0.002	0.003	0.005	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.06	244.1	237.59	6.5
MH-55	MH-54	1.2	7.2	8.0		0.0	1.2	7.2	3.3	20.0	0.006	0.005	2.104	0.013	0.018	0.027	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.31	243.1	236.69	6.4
MH-54	MH-53	1.4	8.1	9.0		0.0	1.4	8.1	4.6	29.0	0.009	0.006	2.078	0.019	0.025	0.039	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.45	242.2	235.76	6.4
MH-52	MH-51	1.3	7.5	7.0		0.0	1.3	7.5	1.3	7.5	0.002	0.002	2.175	0.005	0.006	0.010	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.11	241.2	233.51	7.7
MH-53	MH-45	0.2	1.2	0.0		0.0	0.2	1.2	4.8	29.0	0.009	0.007	2.078	0.019	0.025	0.039	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.45	241.2	234.93	6.3
MH-47	MH-46	1.0	6.0	6.0		0.0	1.0	6.0	1.0	6.0	0.002	0.001	2.186	0.004	0.005	0.008	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.10	242.6	236.12	6.5
MH-46	MH-45	1.7	10.0	13.0		0.0	1.7	10.0	2.7	19.0	0.006	0.004	2.108	0.012	0.016	0.025	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.29	241.8	235.40	6.4
MH-44	MH-43	1.4	8.1	8.0		0.0	1.4	8.1	1.4	8.1	0.003	0.002	2.166	0.005	0.007	0.011	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.13	239.8	232.28	7.5
MH-45	MH-38	0.2	1.2	0.0		0.0	0.2	1.2	7.7	48.0	0.015	0.011	2.042	0.030	0.041	0.064	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.73	240.8	233.95	6.9
MH-59	MH-58	1.0	6.0	4.0		0.0	1.0	6.0	1.0	6.0	0.002	0.001	2.186	0.004	0.005	0.008	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.10	245.9	239.42	6.5
MH-58	MH-57	2.3	14.0	14.0		0.0	2.3	14.0	3.3	20.0	0.006	0.005	2.104	0.013	0.018	0.027	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.31	244.4	238.09	6.3
MH-57	MH-48	1.3	8.0	9.0		0.0	1.3	8.0	4.7	28.1	0.009	0.007	2.080	0.018	0.025	0.038	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.44	243.0	236.58	6.4
MH-48	MH-40	0.9	5.5	6.0		0.0	0.9	5.5	5.6	33.6	0.010	0.008	2.067	0.022	0.029	0.045	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.52	242.4	235.58	6.8
MH-40	MH-39	1.3	7.6	8.0		0.0	1.3	7.6	6.9	41.2	0.013	0.010	2.053	0.026	0.036	0.055	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.64	241.4	234.66	6.7
MH-39	MH-38	1.1	6.8	7.0		0.0	1.1	6.8	8.0	48.0	0.015	0.011	2.042	0.030	0.042	0.064	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.74	240.7	233.72	7.0
MH-37	MH-36	1.0	6.0	6.0		0.0	1.0	6.0	1.0	6.0	0.002	0.001	2.186	0.004	0.005	0.008	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.10	239.3	232.92	6.4
MH-38	MH-29	0.2	1.2	0.0		0.0	0.2	1.2	15.9	96.0	0.030	0.022	1.990	0.059	0.081	0.126	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.46	239.4	232.94	6.5
MH-33	MH-30	0.8	4.5	5.0		0.0	0.8	4.5	0.8	5.0	0.002	0.001	2.197	0.003	0.004	0.007	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.08	241.4	234.69	6.7
MH-32A	MH-32	1.0	6.0	6.0		0.0	1.0	6.0	1.0	6.0	0.002	0.001	2.186	0.004	0.005	0.008	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.00	244.5	236.08	8.4
MH-32	MH-31	1.2	6.9	7.0		0.0	1.2	6.9	2.2	13.0	0.004	0.003	2.134	0.009	0.012	0.018	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.21	242.9	234.75	8.2
MH-31	MH-30	1.4	8.1	9.0		0.0	1.4	8.1	3.5	22.0	0.007	0.005	2.097	0.014	0.019	0.030	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.34	241.5	234.10	7.4
MH-30	MH-29	1.9	11.5	11.0		0.0	1.9	11.5	6.2	38.0	0.012	0.009	2.058	0.024	0.033	0.051	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.58	240.6	233.11	7.5
MH-29	MH-28	1.1	6.3	6.0		0.0	1.1	6.3	23.1	140.0	0.043	0.032	1.961	0.085	0.117	0.182	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.11	239.3	231.95	7.4
MH-51	MH-50	2.1	12.5	11.0		0.0	2.1	12.5	3.3	20.0	0.006	0.005	2.104	0.013	0.018	0.027	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.31	238.8	232.33	6.5
MH-50	MH-49	1.2	7.3	6.0		0.0	1.2	7.3	4.6	27.4	0.008	0.006	2.082	0.018	0.024	0.037	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.43	237.6	230.90	6.7
MH-49	MH-41	0.9	5.6	4.0		0.0	0.9	5.6	5.5	32.9	0.010	0.008	2.069	0.021	0.029	0.045	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.51	236.0	229.47	6.5
MH-43	MH-42	2.3	14.0	12.0		0.0	2.3	14.0	3.7	22.1	0.007	0.005	2.097	0.014	0.020	0.030	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.35	239.0	231.30	7.7
MH-42	MH-41	2.2	13.0	12.0		0.0	2.2	13.0	5.9	35.1	0.011	0.008	2.064	0.022	0.031	0.047	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.54	237.2	229.88	7.3
MH-41	MH-24	0.8	4.8	3.0		0.0	0.8	4.8	12.1	72.8	0.023	0.017	2.011	0.045	0.062	0.097	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.11	235.4	228.46	6.9
MH-36	MH-36A	1.8	10.5	10.0		0.0	1.8	10.5	2.8	16.5	0.005	0.004	2.117	0.011	0.015	0.023	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.26	238.5	232.15	6.3
MH-36A	MH-27	0.2	1.2	0.0		0.0	0.2	1.2	3.0	17.7	0.005	0.004	2.112	0.012	0.016	0.024	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.28	237.4	231.02	6.4
MH-35	MH-24	1.8	10.7	10.0		0.0	1.8	10.7	2.8	28.4	0.009	0.004	2.079	0.018	0.022	0.035	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.40	236.3	228.67	7.6
MH-35A	MH-35	1.1	6.3	6.0		0.0	1.1	6.3	1.1	6.3	0.002	0.001	2.182	0.004	0.006	0.009	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.10	236.8	229.58	7.2
MH-25	MH-24	0.8	4.9	4.0		0.0	0.8	4.9	0.8	4.9	0.002	0.001	2.199	0.003	0.004	0.007	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.08	235.3	228.99	6.3
MH-24	MH-22	0.0	0.0	0.0		0.0	0.0	0.0	15.8	106.1	0.033	0.022	1.982	0.065	0.087	0.135	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.56	234.4	227.48	6.9
MH-23	MH-22	0.8	4.7	6.0		0.0	0.8	4.7	0.8	6.0	0.002	0.001	2.186	0.004	0.005	0.008	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.09	234.6	227.54	7.1
MH-22	MH-21	0.0	0.0	0.0		0.0	0.0	0.0	16.6	110.8	0.034	0.023	1.979	0.068	0.091	0.141	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.63	233.6	226.46	7.1
MH-18	MH-16	0.6	3.5	3.0		0.0	0.6	3.5	0.6	3.5	0.001	0.001	2.220	0.002	0.003	0.005	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.06	234.0	227.35	6.7
MH-17	MH-16	0.5	3.2	4.0		0.0	0.5	3.2	0.5	4.0	0.001	0.001	2.212	0.003	0.003	0.005	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.06	234.7	226.85	7.8
MH-16	MH-15	1.4	8.1	10.0		0.0	1.4	8.1	2.4	17.0	0.005	0.003	2.115	0.011	0.015	0.022	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.26	233.9	226.25	7.7

EXHIBIT C
THE PRESERVE

(Note: Node (MH) Data Applies to Pipes Downstream of Subject Node)

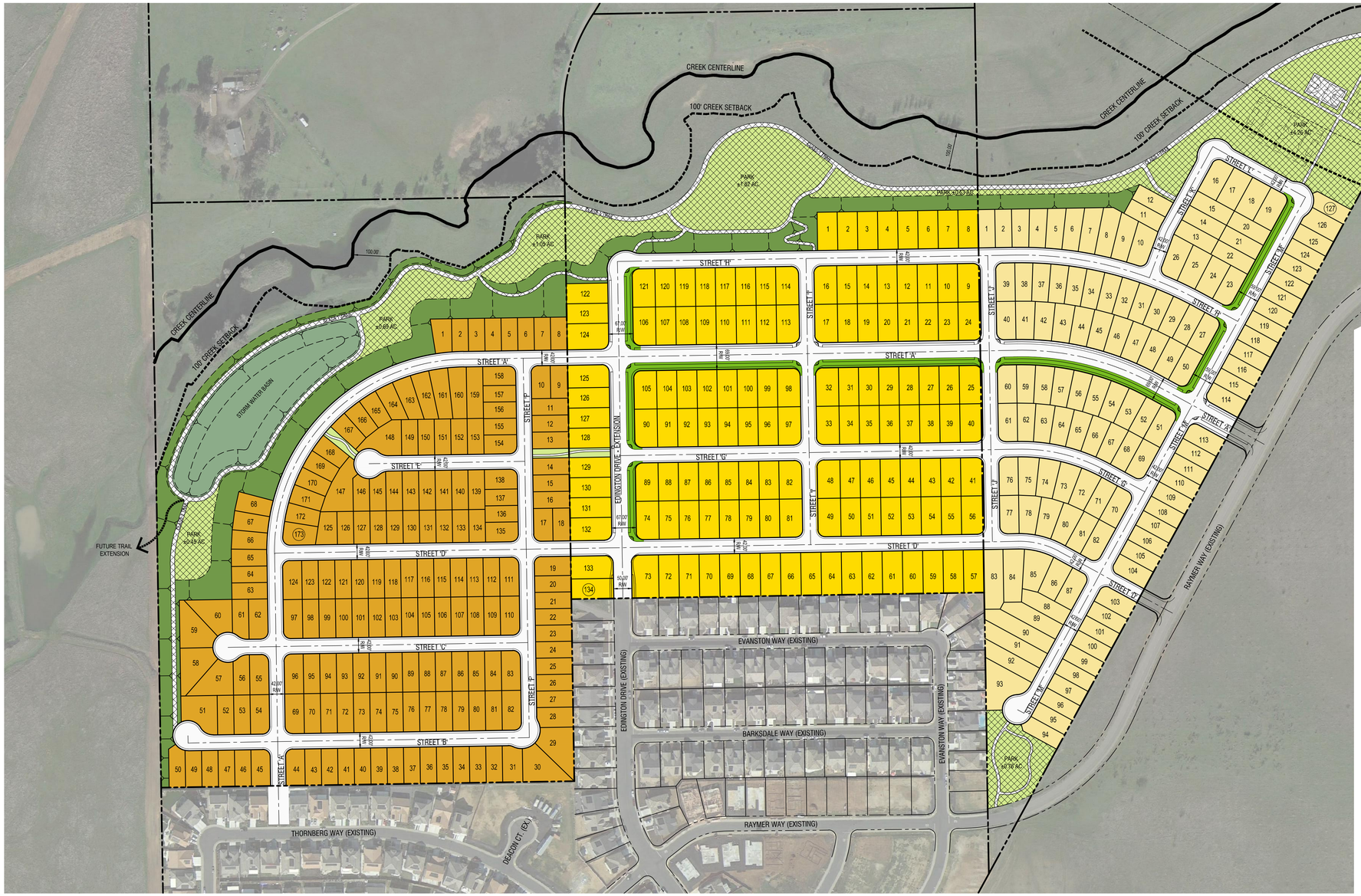
Up Stream Node#	Down Stream Node#	**LDR (ac)**	ESD's (By Area)	ESD's (By Lot)	**Park (ac)**	ESD's	Total Area (ac)	Total ESD's	Cumulative Area (ac)	Cumulative ESD's	Qavg (MGD)	Q I/I (MGD)	Peaking Factor	Q Peak DWF (MGD)	Q Peak PWWF (MGD)	Q Peak (cfs)	Dia (in)	Slope (ft/ft)	C=COLL. T=TRUNK	Capacity @ $S_{.7}$ (cfs)	Capacity @ $S_{.8}$ (cfs)	Capacity @ $S_{.9}$ (cfs)	Capacity @ S_{Full} (cfs)	@ $S_{.7}$ (MGD)	Velocity @ Qpeak & S (fps)	Upsteam MH Rim	Upstream MH INV	Upstream MH Depth
MH-21	MH-20	0.8	4.6	5.0		0.0	0.8	4.6	17.3	115.4	0.036	0.024	1.976	0.071	0.095	0.147	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.70	232.6	226.20	6.4
MH-20	MH-19	1.7	10.0	11.0		0.0	1.7	10.0	19.0	125.5	0.039	0.027	1.970	0.077	0.103	0.160	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.85	232.8	225.47	7.3
MH-19	MH-14	1.4	8.4	0.0		0.0	1.4	8.4	19.0	125.5	0.039	0.027	1.970	0.077	0.103	0.160	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.85	231.2	224.56	6.6
MH-15	MH-14	1.2	6.9	8.0		0.0	1.2	6.9	3.6	25.0	0.008	0.005	2.088	0.016	0.021	0.033	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.38	232.9	225.34	7.6
MH-14	MH-9	1.4	8.4	9.0		0.0	1.4	8.4	24.0	155.6	0.048	0.034	1.953	0.094	0.128	0.198	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.30	231.2	223.94	7.3
MH-4	MH-12	1.2	6.9	7.0		0.0	1.2	6.9	1.2	7.0	0.002	0.002	2.175	0.005	0.006	0.010	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.11	236.6	228.06	8.5
MH-12	MH-11	0.5	3.0	3.0		0.0	0.5	3.0	1.7	10.0	0.003	0.002	2.152	0.007	0.009	0.014	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.16	237.2	226.02	11.2
MH-11	MH-10	1.8	10.6	13.0		0.0	1.8	10.6	3.9	26.0	0.008	0.005	2.086	0.017	0.022	0.034	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.40	233.6	225.22	8.4
MH-10	MH-9	1.6	9.5	12.0		0.0	1.6	9.5	5.5	38.0	0.012	0.008	2.058	0.024	0.032	0.049	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.57	232.6	223.90	8.7
MH-9	MH-5	0.4	2.6	3.0		0.0	0.4	2.6	29.9	190.9	0.059	0.042	1.937	0.115	0.156	0.242	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.84	231.0	222.67	8.3
MH-8	MH-7	2.2	13.0	16.0		0.0	2.2	13.0	2.2	16.0	0.005	0.003	2.119	0.011	0.014	0.021	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.24	236.5	225.11	11.4
MH-7	MH-5	1.6	9.8	12.0		0.0	1.6	9.8	3.8	28.0	0.009	0.005	2.080	0.018	0.023	0.036	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.41	234.4	222.86	11.5
MH-6	MH-5	1.5	9.2	8.0		0.0	1.5	9.2	1.5	9.2	0.003	0.002	2.157	0.006	0.008	0.013	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.15	232.4	222.69	9.7
MH-5	MH-1	0.0	0.0	0.0		0.0	0.0	0.0	35.2	222.8	0.069	0.049	1.925	0.133	0.182	0.282	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	3.33	232.8	221.72	11.1
MH-4	MH-3	2.1	12.7	15.0		0.0	2.1	12.7	2.1	15.0	0.005	0.003	2.124	0.010	0.013	0.020	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.23	236.6	228.06	8.5
MH-3	MH-1	1.9	11.2	14.0		0.0	1.9	11.2	4.0	29.0	0.009	0.006	2.078	0.019	0.024	0.038	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.43	235.3	222.00	13.3
MH-2	MH-1	1.8	10.6	10.0		0.0	1.8	10.6	1.8	10.6	0.003	0.002	2.148	0.007	0.009	0.015	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	0.17	229.4	222.53	6.9
MH-1	MH-1A	0.0	0.0	0.0		0.0	0.0	0.0	41.0	257.3	0.080	0.057	1.914	0.153	0.210	0.325	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	3.88	234.5	220.77	13.7
MH-1A	ND-4	11.0	66.0	62.0		0.0	11.0	66.0	52.0	323.3	0.100	0.073	1.896	0.190	0.263	0.406	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	4.96	234.5	219.40	15.1
MH-28	MH-27	1.9	11.3	11.0		0.0	1.9	11.3	25.0	151.0	0.047	0.035	1.955	0.092	0.127	0.196	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.28	238.7	231.14	7.6
MH-27	MH-27A	1.4	8.3	8.0		0.0	1.4	8.3	29.3	175.0	0.054	0.041	1.944	0.105	0.147	0.227	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.65	236.9	230.03	6.9
MH-27A	MH-26	1.5	9.1	8.0		0.0	1.5	9.1	30.9	183.0	0.057	0.043	1.941	0.110	0.153	0.237	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.78	236.7	229.04	7.7
MH-11A	MH-11	0.4	2.6	3.0		0.0	0.4	2.6	0.4	3.0	0.001	0.001	2.230	0.002	0.003	0.004	8	0.0070	C	0.85	0.99	1.08	1.01	0.55	0.05	233.0	225.72	7.3
MH-26	MH-26A	0.6	3.6	2.0		0.0	0.6	3.6	31.5	185.0	0.057	0.044	1.940	0.111	0.155	0.240	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.82	235.2	228.10	7.1
MH-26A	ND-1	15.0	90.0	82.0		0.0	15.0	90.0	45.9	274.9	0.085	0.064	1.909	0.163	0.227	0.351	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	4.21	234.6	227.40	7.2
ND-1	ND-2	20.0	120.0			0.0	20.0	120.0	65.9	394.9	0.122	0.079	1.879	0.230	0.309	0.478	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.20			
ND-2	ND-3	10.3	61.8			0.0	10.3	61.8	76.2	456.7	0.142	0.091	1.868	0.264	0.356	0.551	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.26			
ND-3	ND-5	1.8	10.8			0.0	1.8	10.8	78.0	467.5	0.145	0.094	1.866	0.270	0.364	0.563	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.28			
ND-4	ND-5	0.8	4.8	4.0		0.0	0.8	4.8	52.8	328.1	0.102	0.063	1.894	0.193	0.256	0.396	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	2.12			
ND-5	ND-6	0.0	0.0			0.0	0.0	0.0	130.7	795.6	0.247	0.157	1.822	0.449	0.606	0.938	10	0.0034	C	1.07	1.24	1.35	1.26	0.69	2.56			
ND-6	ND-7	4.6	27.6		9.0	54.0	13.6	81.6	144.3	877.2	0.272	0.173	1.813	0.493	0.666	1.031	10	0.0036	C	1.10	1.27	1.39	1.30	0.71	2.68			
ND-7	ND-8	8.1	48.6			0.0	8.1	48.6	152.4	925.8	0.287	0.183	1.809	0.519	0.702	1.086	10	0.0036	C	1.10	1.27	1.39	1.30	0.71	2.71			
ND-8	ND-9	7.2	43.2			0.0	7.2	43.2	159.6	969.0	0.300	0.192	1.805	0.542	0.734	1.135	10	0.0025	C	0.92	1.06	1.16	1.08	0.59	2.30			
ND-9	ND-10	3.3	19.8			0.0	3.3	19.8	162.9	988.8	0.307	0.195	1.803	0.553	0.748	1.158	10	0.0031	C	1.02	1.18	1.29	1.21	0.66	2.56			
ND-10A	ND-10	126.9	761.4			0.0	126.9	761.4	126.9	761.4	0.236	0.152	1.825	0.431	0.583	0.902	12	0.0097	C	2.94	3.43	3.74	3.51	1.90	3.81			
ND-10	ND-11	8.9	53.4			0.0	8.9	53.4	298.7	1803.6	0.559	0.299	1.752	0.979	1.278	1.977	15	0.0015	T	2.10	2.45	2.67	2.50	1.36	2.23			
ND-11	ND-12	4.0	24.0			0.0	4.0	24.0	302.7	1827.6	0.567	0.303	1.750	0.992	1.294	2.003	15	0.0015	T	2.10	2.45	2.67	2.50	1.36	2.23			
ND-12	ND-13	2.8	16.8			0.0	2.8	16.8	305.5	1844.4	0.572	0.306	1.750	1.000	1.306	2.020	15	0.0036	T	3.25	3.79	4.13	3.88	2.10	3.14			
ND-13A	ND-13	7.2	43.2			0.0	7.2	43.2	7.2	43.2	0.013	0.009	2.049	0.027	0.036	0.056	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.23			
ND-13	ND-14	2.3	13.8			0.0	2.3	13.8	315.0	1901.4	0.589	0.315	1.747	1.030	1.345	2.081	15	0.0015	T	2.10	2.45	2.67	2.50	1.36	2.25			
ND-14A	ND-14	5.6	33.6			0.0	5.6	33.6	5.6	33.6	0.010	0.007	2.067	0.022	0.028	0.044	8	0.0096	C	0.99	1.17	1.28	1.20	0.64	1.67			

EXHIBIT C
THE PRESERVE

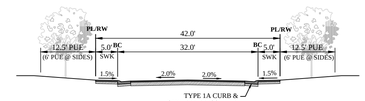
(Note: Node (MH) Data Applies to Pipes Downstream of Subject Node)

Up Stream Node#	Down Stream Node#	**LDR (ac)**	ESD's (By Area)	ESD's (By Lot)	**Park (ac)**	ESD's	Total Area (ac)	Total ESD's	Cumulative Area (ac)	Cumulative ESD's	Qavg (MGD)	Q I/I (MGD)	Peaking Factor	Q Peak DWF (MGD)	Q Peak PWWF (MGD)	Q Peak (cfs)	Dia (in)	Slope (ft/ft)	C=COLL. T=TRUNK	Capacity @ $S_{.7}$ (cfs)	Capacity @ $S_{.8}$ (cfs)	Capacity @ $S_{.9}$ (cfs)	Capacity @ S_{Full} (cfs)	@ $S_{.7}$ (MGD)	Velocity @ Qpeak & S (fps)	Upsteam MH Rim	Upstream MH INV	Upstream MH Depth
ND-14	ND-15	0.0	0.0			0.0	0.0	0.0	320.6	1935.0	0.600	0.321	1.745	1.047	1.368	2.116	15	0.0015	T	2.10	2.45	2.67	2.50	1.36	2.25			
ND-15	ND-16	0.0	0.0			0.0	0.0	0.0	320.6	1935.0	0.600	0.321	1.745	1.047	1.368	2.116	15	0.0137	T	6.33	7.39	8.06	7.56	4.09	5.19			
ND-16A	ND-16	7.4	44.4			0.0	7.4	44.4	7.4	44.4	0.014	0.009	2.047	0.028	0.037	0.057	8	0.0035	C	0.60	0.71	0.77	0.72	0.39	1.23			
ND-16	DR4	0.0	0.0			0.0	0.0	0.0	328.0	1979.4	0.614	0.328	1.743	1.070	1.398	2.163	15	0.0144	T	6.49	7.58	8.26	7.75	4.19	5.32			
DR4	OUT	1134.7	6990.2			0.0	1134.7	6990.2	1462.7	8969.6	2.781	1.463	1.606	4.464	5.927	9.171	24	0.0021	T	8.68	10.13	11.05	10.37	5.61	3.71			

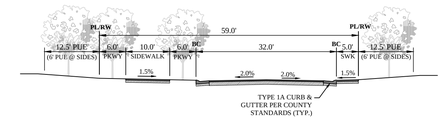
		321.0			9.0		330.0	
ΣESD			1926.0			54.0		1980.0



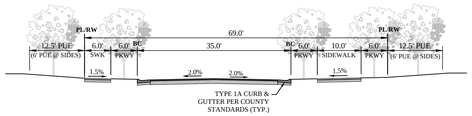
STREET SECTIONS



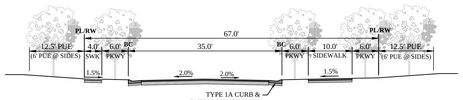
42' RIGHT OF WAY
RESIDENTIAL STREET
NOT TO SCALE



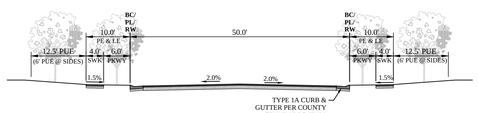
59' RIGHT OF WAY
RESIDENTIAL STREET
NOT TO SCALE



69' RIGHT OF WAY
RESIDENTIAL COLLECTOR STREET
NOT TO SCALE



67' RIGHT OF WAY
EDINGTON DRIVE EXTENSION
NOT TO SCALE



50' RIGHT OF WAY
EDINGTON DRIVE EXTENSION
NOT TO SCALE

NOTES

1. The shown yield may vary once grading and utility concepts are prepared.
2. The shown trail and park configuration is conceptual in nature. Final design will vary based on grading, utilities, client consultation and City consultation.
3. The shown yield and layout may vary if other constraints are identified not known at the time of conceptual site plan preparation.
4. The conceptual site plan is subject to change based on City consultation.
5. Shown residential blocks do not exceed the maximum 800' block length, but the block bounded by Streets A, B, C, D & F (Lots 69 - 134 of the 45'x90' lot type) exceeds the recommended 600' block length.

REQUIRED PARK LAND

ZONING CODE CHAPTER 22.40
Formula: (# of dwelling units) x (Factor for SFD) = Amount of land in acres
Calculation: 434 x 0.01475 = 6.40 Acres

Park Area Shown: ±11.42 Acres (Includes trails, walkways, flat usable recreation areas & recreation area within future Centennial Drive Right-of-Way.)

YIELD & LOT MIX

LOT TYPE: 45'x90' (minimum)
Yield: 173 Units

LOT TYPE: 55'x105' (minimum)
Yield: 134 Units

LOT TYPE: 45'x105' (minimum)
Yield: 127 Units

Total Yield: 434 Units

LEGEND

22 Lot Number
Parcel Boundary
Lot Line
Right of Way
Street Center Line
Creek Setback
Creek Centerline
10' Sidewalk w/ 6' parkways on either side

N

0 150 300 450
SCALE IN FEET: 1"= 150'

WINN NORTH DOUGLAS
CONCEPTUAL SITE PLAN
RANCHO CORDOVA, CA

RUGGERI-JENSEN-AZAR
ENGINEERS + PLANNERS + SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

AUGUST 2018
165018

EXHIBIT D



REVISIONS NO.	DESCRIPTION	DATE	BY

SCALE
HORIZ. ____
VERT. ____

CITY OF RANCHO CORDOVA

DRAWN BY: A. ZAMORANO
DATE 10/2019

DESIGNED BY: S. BOWMAN
R.C.E. 71924 DATE 10/2019

CHECKED BY: S. BOWMAN
R.C.E. 71924 DATE 10/2019

RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
2541 WARREN DRIVE, SUITE 100 ROCKLIN, CA 95677
PHONE: (916) 630-8900 FAX: (916) 630-8909

GRADING PLAN FOR
THE PRESERVE

PROJECT NO. 165018
EXHIBIT E
DWG. NO.
SHEET 1 — OF — 1

G:\2020\165018\SEWER STUDY\EXHIBITS\EXHIBIT E\EXHIBIT E.DWG 5/5/2020 9:48:00 AM RICH RADOYOS

RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS

January 7, 2021 JN: 165018

Mr. Bob Shattuck
Shattuck Community Planning
6589 Laurel Crest Circle
Roseville, CA 95678

RE: The Preserve – Unit Count Increase on Sewer and Water Studies

Mr. Shattuck:

As you are aware, the original Tentative Map for The Preserve had a unit count of 434 lots, as the project evolved, the unit count increased to 440 lots.

The Sewer Study reviewed and approved by the Sacramento Area Sewer District (SASD) was based on the current unit count of 440. During our last submittal to the District, we notified them of the increase and updated the sewer shed calculations.

The Water Study for the project was completed in September of 2018 and used the original unit count of 434. The additional 6 lots result in a 1.4% increase in unit count and will have a negligible impact on the water model. The existing water system has sufficient supply to support the development.

If you have any questions, please feel free to call me at (916) 630-8900.

Sincerely,

RUGGERI-JENSEN-AZAR



Rich Radoycis, P.E., LEED AP
Project Manager

Appendix K

Traffic Impact Analysis

The Preserve
City of Rancho Cordova, California

DRAFT
November 4, 2020

Prepared for:

Winn Communities



Prepared by:
Kimley»Horn

555 Capitol Mall, Suite 300
Sacramento, California 95814

Phone: (916) 858-5800

EXECUTIVE SUMMARY

This report documents the results of a traffic impact analysis completed for The Preserve project (the "proposed project" or "project"). The vacant project site is located west of the Raymer Way intersection with Grant Line Road in Rancho Cordova, California. The proposed project will consist of approximately 434 single-family detached housing units. Access to the project site will be provided by Raymer Way from the east and Americanos Way from the south. This study was performed in accordance with the County of Sacramento's traffic study guidelines and standards established by the Circulation Element of the City of Rancho Cordova's General Plan.

This analysis includes evaluation of the following transportation facilities:

- 22 Intersections
  - 19 within Rancho Cordova
  - 3 within Sacramento County's jurisdiction
- 17 Roadway Segments
  - 15 within Rancho Cordova
  - 2 within Sacramento County's jurisdiction

Based on the County's requirements, this traffic impact analysis was conducted for the study facilities for the following scenarios:

A. Existing (2019) Conditions
B. Existing (2019) plus Proposed Project Conditions
C. Cumulative (2035) Conditions
D. Cumulative (2035) plus Proposed Project Conditions

Significant findings of this study include:

- The proposed project is estimated to generate 4,014 new daily trips, with 313 new trips occurring during the AM peak-hour, and 416 new trips occurring during the PM peak-hour.
- The addition of the proposed project to the Existing (2019) Conditions results in a significant impact at two (2) study intersections, Intersection #17 (Jackson Road/SR-16 at Grant Line Road) and Intersection #20 (Grant Line Road at Raymer Way). With the application of mitigation measures recommended herein, the impacts to Intersection #17 can be mitigated. However, because the City of Rancho Cordova cannot guarantee that mitigation measure M1 can be implemented, the impact would remain ***significant and unavoidable***. With the implementation of mitigation measure M2, the impact to Intersection #20 is ***less than significant with mitigation***.
- The addition of the proposed project to Cumulative (2035) Conditions results in a significant impact at three (3) intersections. With the application of mitigation measures recommended herein, the impacts to intersections can be mitigated. However, because the City of Rancho Cordova cannot guarantee that these mitigation measures (M3, M4, and M5) can be implemented, the impact would remain ***significant and unavoidable***.

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INTRODUCTION

This report documents the results of a traffic impact analysis completed for The Preserve residential project (the "proposed project" or "project"). The vacant project site is located west of the Raymer Way intersection with Grant Line Road in Rancho Cordova, California. The purpose of this impact analysis is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the County of Sacramento's traffic study guidelines[1] and standards established by the Circulation Element of the City of Rancho Cordova's General Plan [2].

PROJECT DESCRIPTION

The proposed project will consist of approximately 434 single-family detached housing units. Access to the project site will be provided by Raymer Way from the east and Americanos Way from the south. The project location, study intersections and study segments are depicted in **Figure 1.** The proposed project site plan is shown in **Figure 2**. **Figure 3** illustrates the existing study intersections facilities, traffic control, and lane configurations.

Based on the County's requirements, this traffic impact analysis was conducted for the study facilities for the following scenarios:

A. Existing (2019) Conditions
B. Existing (2019) plus Proposed Project Conditions
C. Cumulative (2035) Conditions
D. Cumulative (2035) plus Proposed Project Conditions

The following transportation facilities are included in this evaluation:

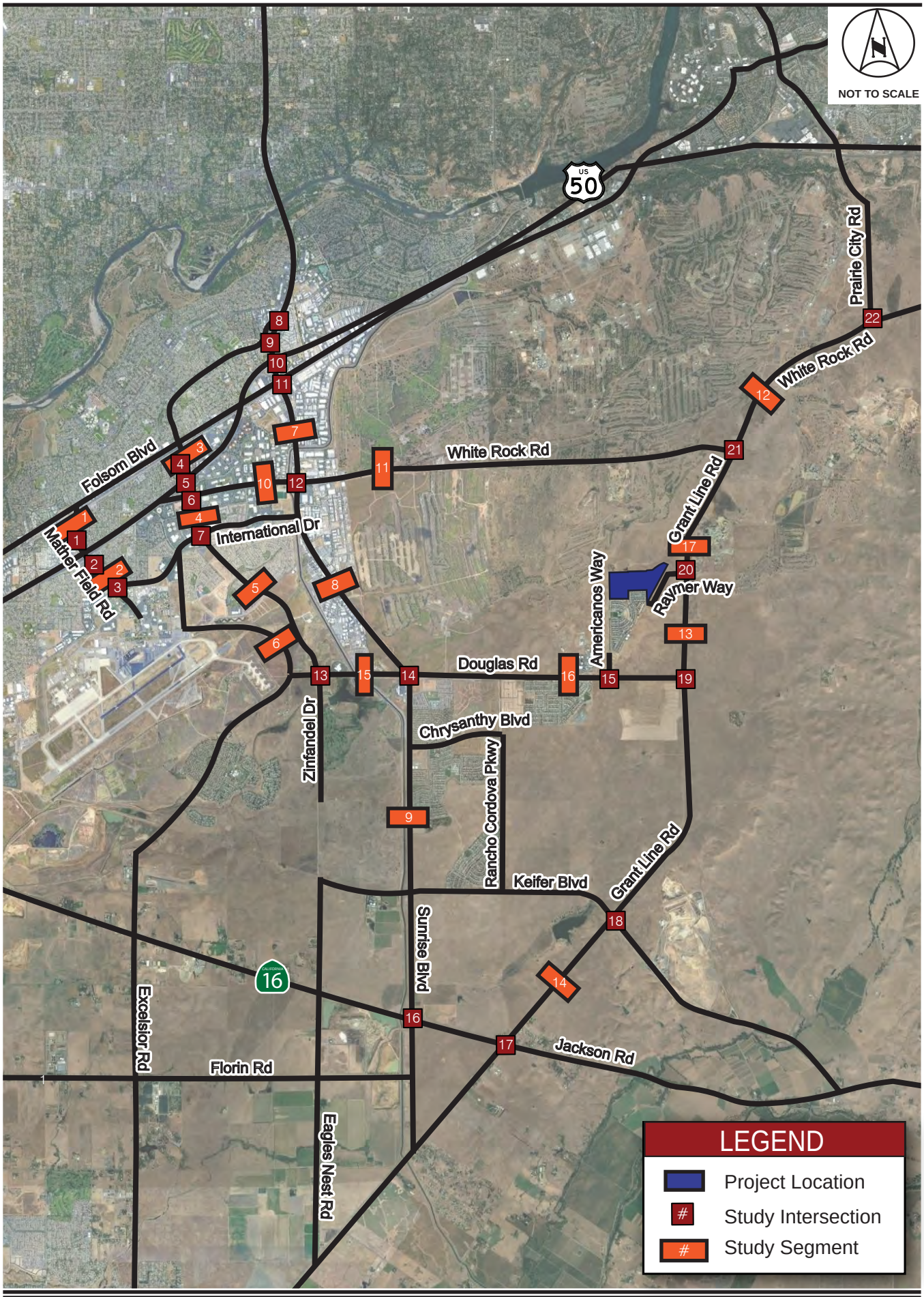
Intersections:

1. Mather Field Rd @ US-50 Westbound Ramps
2. Mather Field Rd @ US-50 Eastbound Ramps
3. Mather Field Rd @ International Dr
4. Zinfandel Dr @ US-50 Westbound Ramps
5. Zinfandel Dr @ US-50 Eastbound Ramps
6. Zinfandel Dr @ White Rock Rd
7. Zinfandel Dr @ International Dr
8. Sunrise Blvd @ Zinfandel Dr
9. Sunrise Blvd @ US-50 Westbound Ramps
10. Sunrise Blvd @ US-50 Eastbound Ramps
11. Sunrise Blvd @ Folsom Blvd
12. Sunrise Blvd @ White Rock Rd
13. Douglas Rd @ Zinfandel Dr
14. Douglas Rd @ Sunrise Blvd
15. Douglas Rd @ Americanos Blvd
16. Jackson Rd/SR-16 @ Sunrise Blvd
17. Jackson Rd/SR-16 @ Grant Line Rd
18. Grant Line Rd @ Kiefer Blvd
19. Grant Line Rd @ Douglas Rd
20. Grant Line Rd @ Raymer Way
21. Grant Line Rd @ White Rock Rd
22. White Rock Rd @ Prairie City Rd

[1] *Traffic Impact Analysis Guidelines, July 2004*, County of Sacramento.
[2] *City of Rancho Cordova General Plan: Circulation Element, May 2015,* City of Rancho Cordova

Roadway Segments

1. Mather Field Rd between Folsom Blvd and US-50 Westbound Ramps
2. Mather Field Rd between US-50 Eastbound Ramps and International Dr
3. Zinfandel Dr between Folsom Blvd and US-50 Westbound Ramps
4. Zinfandel Dr between White Rock Rd and International Dr
5. Zinfandel Dr between International Dr and Douglas Rd
6. Mather Blvd between Femoyer St and Douglas Rd
7. Sunrise Blvd between Folsom Blvd and White Rock Rd
8. Sunrise Blvd between White Rock Rd and Douglas Rd
9. Sunrise Blvd between Douglas Rd and Jackson Rd/SR-16
10. White Rock Rd between Zinfandel Dr and Sunrise Blvd
11. White Rock Rd between Sunrise Blvd and Grant Line Rd
12. White Rock Rd between Grant Line Rd and Prairie City Rd
13. Grant Line Rd between Raymer Wy and Douglas Rd
14. Grant Line Rd between Douglas Rd and Jackson Rd/SR-16
15. Douglas Rd between Mather Blvd and Sunrise Blvd
16. Douglas Rd between Sunrise Blvd and Grant Line Rd
17. Grant Line Rd between White Rock Rd and Raymer Wy



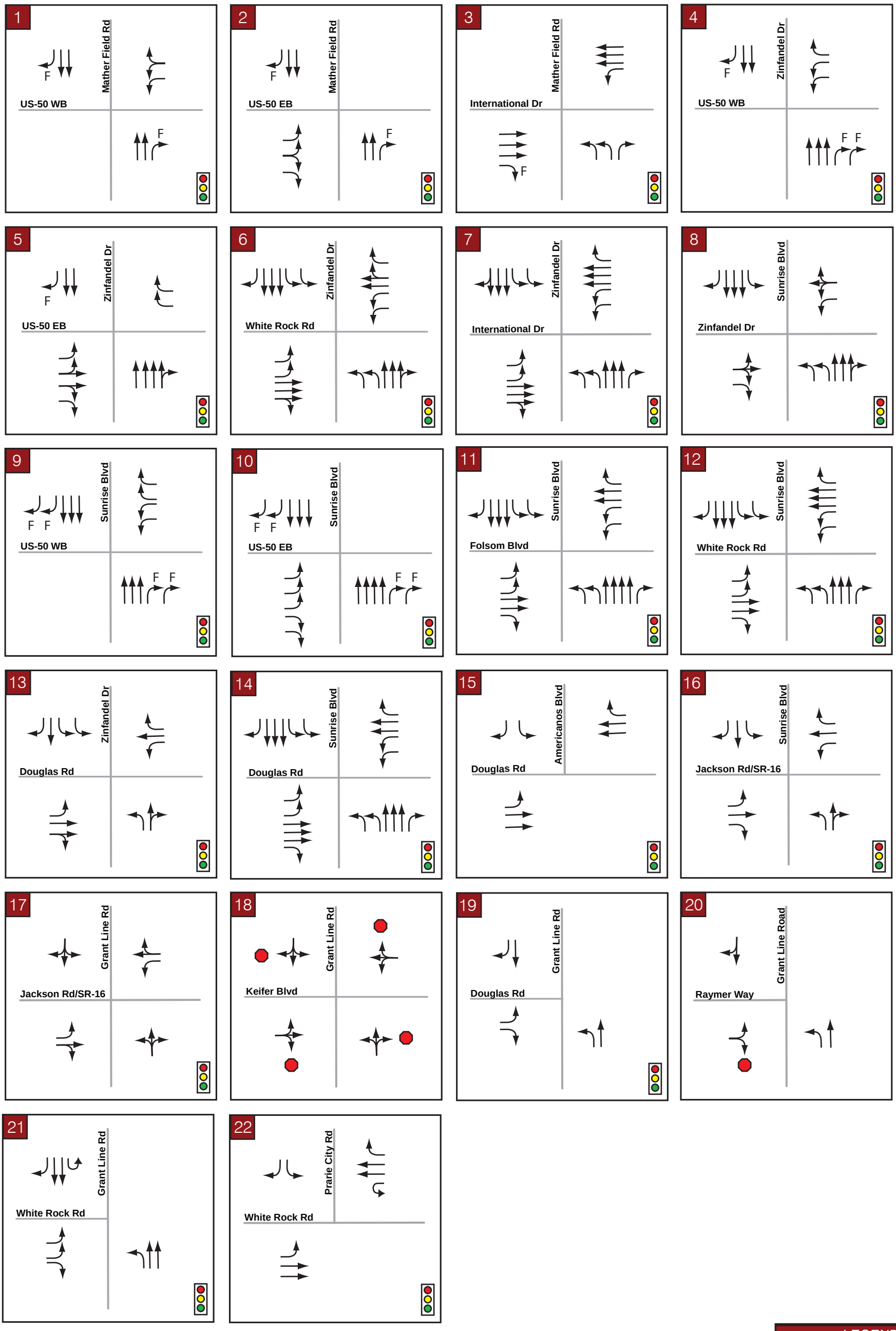
Kimley»Horn

Figure 1
Project Vicinity Map



Kimley»Horn

Figure 2
Proposed Project Site Plan



Kimley»Horn

Figure 3
Existing (2019) Study Intersections, Traffic Control, and Lane Geometries

PROJECT AREA ROADWAYS

The following are descriptions of the primary roadways in the vicinity of the project.

United States Route 50 (US-50) is an east-west interstate facility located approximately 5-miles from the proposed project. US-50 connects Rancho Cordova to Sacramento to the west and El Dorado County to the east. Primary access to the project site from US-50 is provided at the Sunrise Boulevard, Zinfandel Drive and Mather Field Road interchanges. Near Zinfandel Drive, US-50 carries approximately 180,000 vehicles per day[3] with five lanes in each direction.

Jackson Road (SR 16) is an expressway connecting Amador County and Sacramento County, along the southern edge of Rancho Cordova's city limits. Jackson Road connects with US-50 west of the project site. South of the project site, between Sunrise Boulevard and Grant Line Road, Jackson Road carries approximately 13,000 vehicles per day[3] with one lane in each direction.

Sunrise Boulevard is a north-south arterial, connecting the project site to north Rancho Cordova and Placer County.

Zinfandel Drive is a north-south arterial, connecting the project site to US-50, as well as the commercial, industrial and residential areas northwest of the project site.

Raymer Way is a local roadway adjacent to the project site and provides access to Grant Line Road to the east.

Americanos Way is a local roadway that will provide access to the project site from the south. This roadway will serve as a connection between the project site and Douglas Road.

TRANSPORTATION IMPACT STUDY METHODOLOGY

This study was performed in accordance with the County of Sacramento's traffic study guidelines[4] and standards established by the Circulation Element of the City of Rancho Cordova's General Plan[5].

Level of Service Definitions

Analysis of transportation facility significant environmental impacts is based on the concept of Level of Service (LOS). The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity.

Intersection Analysis

Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual (HCM) 6th Edition* and appropriate traffic analysis software. The HCM includes procedures for analyzing side-street stop controlled (SSSC), all-way stop controlled (AWSC), and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for each minor street approach movement. The AWSC and signalized intersection procedure defines LOS as a function of average control delay for the intersection as a whole. Table 1 presents intersection LOS definitions as defined in the HCM.

[3] Caltrans Traffic Counts, 2017. http://www.dot.ca.gov/trafficops/census/
[4] *Traffic Impact Analysis Guidelines, July 2004*, County of Sacramento.
[5] *City of Rancho Cordova General Plan: Circulation Element, May 2015,* City of Rancho Cordova

Table 1 – Intersection Level of Service Criteria

Level of Service (LOS)	Unsignalized	Signalized
	Average Control Delay* (sec/veh)	Average Control Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Source: Highway Capacity Manual, 2010
* Applied to the worst lane/lane group(s) for SSSC

Roadway Segment Analysis

The analysis of roadway segments involves the comparison of daily segment volumes to the LOS criteria provided in the County's traffic impact analysis guidelines[1]. The criteria provide maximum volumes for given service levels for various facility types. Table 2 replicates the County's roadway segment LOS criteria.

Table 2 – Roadway Segment Level of Service Criteria

Facility Type	# Lanes	Maximum Volume for Given Service Level				
		A	B	C	D	E
Residential	2	600	1,200	2,000	3,000	4,500
Residential Collector w/ Frontage	2	1,600	3,200	4,800	6,400	8,000
Residential Collector w/o Frontage	2	6,000	7,000	8,000	9,000	10,000
Arterial, Low Access Control	2	9,000	10,500	12,000	13,500	15,000
	4	18,000	21,000	24,000	27,000	30,000
	6	27,000	31,500	36,000	40,500	45,000
Arterial, Moderate Access Control	2	10,800	12,600	14,400	16,200	18,000
	4	21,600	25,200	28,800	32,400	36,000
	6	32,400	37,800	43,200	48,600	54,000
Arterial, High Access Control	2	12,000	14,000	16,000	18,000	20,000
	4	24,000	28,000	32,000	36,000	40,000
	6	36,000	42,000	48,000	54,000	60,000
Rural, 2-lane highway	2	2,400	4,800	7,900	13,500	22,900
Rural, 2-lane road, 24'-36' of pavement, paved shoulders	2	2,200	4,300	7,100	12,200	20,000
Rural, 2-lane road, 24'-36' of pavement, no shoulders	2	1,800	3,600	5,900	10,100	17,000

Source: Traffic Impact Analysis Guidelines, Table 2, County of Sacramento Department of Transportation, July 2004.

Based on the County's requirements[4], this LOS analysis was conducted for the study facilities for the following scenarios:

A. Existing (2019) Conditions
B. Existing (2019) plus Proposed Project Conditions
C. Cumulative (2035) Conditions
D. Cumulative (2035) plus Proposed Project Conditions

The following sections present the technical analysis results for the four primary scenarios.

EXISTING (2019) CONDTIONS

To establish existing conditions, new traffic counts were collected for the study intersections and roadway segments. Twenty (20) new weekday AM and PM peak-period intersection turning movement traffic counts were collected on May 22, 2019. These counts were conducted between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. Sixteen (16) new roadway segment counts were conducted on May 21, 2019. Weekday AM and PM peak-period turning movement traffic counts were also collected on November 8, 2017, at the Douglas Road intersection with Americanos Way (Intersection #15) and at the Grant Line Road intersection with Raymer Way (Intersection #20). These counts were conducted between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m.

Existing (2019) peak-hour turn movement volumes are presented in Figure 4, and the traffic count data sheets are provided in Appendix A. Analysis worksheets for this scenario are provided in Appendix B.

Intersections

Table 3 presents the peak-hour intersection operating conditions for this analysis scenario. As indicated in Table 3, the study intersections operate from LOS A to LOS F during the AM and PM peak-hours. It should be noted that U-turn movement volumes were added to the corresponding left-turn movement volumes due to *HCM 6th Edition* analysis methodology limitations.

Table 3 – Existing (2019) Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing (2019)	
				Delay (sec)	LOS
1	Mather Field Road @ US-50 Westbound Ramps	Signal	AM	**117.2**	**F**
			PM	26.4	C
2	Mather Field Road @ US-50 Eastbound Ramps	Signal	AM	**74.7**	**E**
			PM	24.3	C
3	Mather Field Road @ International Drive	Signal	AM	9.7	A
			PM	14.8	B
4	Zinfandel Drive @ US-50 Westbound Ramps	Signal	AM	32.7	C
			PM	20.2	C
5	Zinfandel Drive @ US-50 Eastbound Ramps	Signal	AM	**86.3**	**F**
			PM	36.7	D
6	Zinfandel Drive @ White Rock Road	Signal	AM	31.9	C
			PM	43.3	D
7	Zinfandel Drive @ International Drive	Signal	AM	22.0	C
			PM	30.2	C
8	Sunrise Boulevard @ Zinfandel Drive	Signal	AM	**110.8**	**F**
			PM	**56.6**	**E**
9	Sunrise Boulevard @ US-50 Westbound Ramps	Signal	AM	17.4	B
			PM	12.9	B
10	Sunrise Boulevard @ US-50 Eastbound Ramps	Signal	AM	23.4	C
			PM	22.0	C
11	Sunrise Boulevard @ Folsom Boulevard	Signal	AM	32.8	C
			PM	35.8	D
12	Sunrise Boulevard @ White Rock Road	Signal	AM	30.8	C
			PM	**58.0**	**E**
13	Douglas Road @ Zinfandel Drive	Signal	AM	41.7	D
			PM	19.6	B
14	Douglas Road @ Sunrise Boulevard	Signal	AM	29.1	C
			PM	42.7	D
15	Douglas Road @ Americanos Boulevard	Signal	AM	8.6	A
			PM	8.3	A
16	Jackson Road/SR-16 @ Sunrise Boulevard	Signal	AM	**70.7**	**E**
			PM	**59.6**	**E**
17	Jackson Road/SR-16 @ Grant Line Road	Signal	AM	**90.9**	**F**
			PM	**108.5**	**F**
18	Grant Line Road @ Kiefer Boulevard	AWSC	AM	16.3	C
			PM	17.1	C
19	Grant Line Road @ Douglas Road	Signal	AM	10.7	B
			PM	9.2	A
20	Grant Line Road @ Raymer Way	SSSC	AM	**2.2 (37 EB)**	**E**
			PM	0.7 (28.1 EB)	D
21	Grant Line Road @ White Rock Road	Signal	AM	6.9	A
			PM	11.9	B
22	White Rock Road @ Prairie City Road	Signal	AM	19.0	B
			PM	18.1	B

Notes: **Bold** represents unacceptable operations.

Roadway Segments

Table 4 presents the peak-hour intersection operating conditions for this analysis scenario. As indicated in Table 4, the study roadway segments operate from LOS A to LOS F.

Table 4 – Existing (2019) Roadway Segment Level of Service

ID	Roadway	Segment		Existing				
		From	To	Travel Lanes	Facility Type	Daily Volume	Volume / Capacity Ratio	Level of Service
1	Mather Field Rd	Folsom Blvd	US-50 WB Ramps	4	Arterial Moderate	23,486	0.65	B
2	Mather Field Rd	US-50 EB Ramps	International Dr	6	Arterial Moderate	19,544	0.36	A
3	Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	4	Arterial Moderate	21,533	0.60	A
4	Zinfandel Dr	White Rock Rd	International Dr	6	Arterial Moderate	29,740	0.55	A
5	Zinfandel Dr	International Dr	Douglas Rd	4	Arterial Moderate	15,603	0.43	A
6	Mather Field Rd	Femoyer St	Douglas Rd	2	Arterial Moderate	5,711	0.32	A
7	Sunrise Blvd	Folsom Blvd	White Rock Rd	6	Arterial Moderate	37,902	0.70	C
8	Sunrise Blvd	White Rock Rd	Douglas Road	6	Arterial Moderate	27,763	0.51	A
9	Sunrise Blvd	Douglas Rd	Jackson Rd/SR 16	2	Arterial Moderate	20,467	**1.14**	**F**
10	White Rock Rd	Zinfandel Dr	Sunrise Blvd	6	Arterial Moderate	14,871	0.28	A
11	White Rock Rd	Sunrise Blvd	Grant Line Road	2	Arterial Moderate	3,375	0.19	A
12	White Rock Rd	Grant Line Rd	Prairie City Rd	4	Arterial Moderate	14,582	0.41	A
13	Grant Line Road	Raymer Wy	Douglas Road	2	Rural (No Shoulder)	10,151	**0.60**	**E**
14	Grant Line Road	Douglas Rd	Jackson Rd/SR 16	2	Rural (Shoulder)	7,501	0.38	D
15	Douglas Rd	Mather Field Rd	Sunrise Blvd	2	Arterial Moderate	14,030	0.78	C
16	Douglas Rd	Sunrise Blvd	Grant Line Road	4	Arterial Moderate	10,853	0.30	A
17	Grant Line Road	White Rock Rd	Raymer Wy	2	Rural (No Shoulder)	10,384	0.61	E

Note: **Bold** represents unacceptable operations. Shaded indicates significant impact.

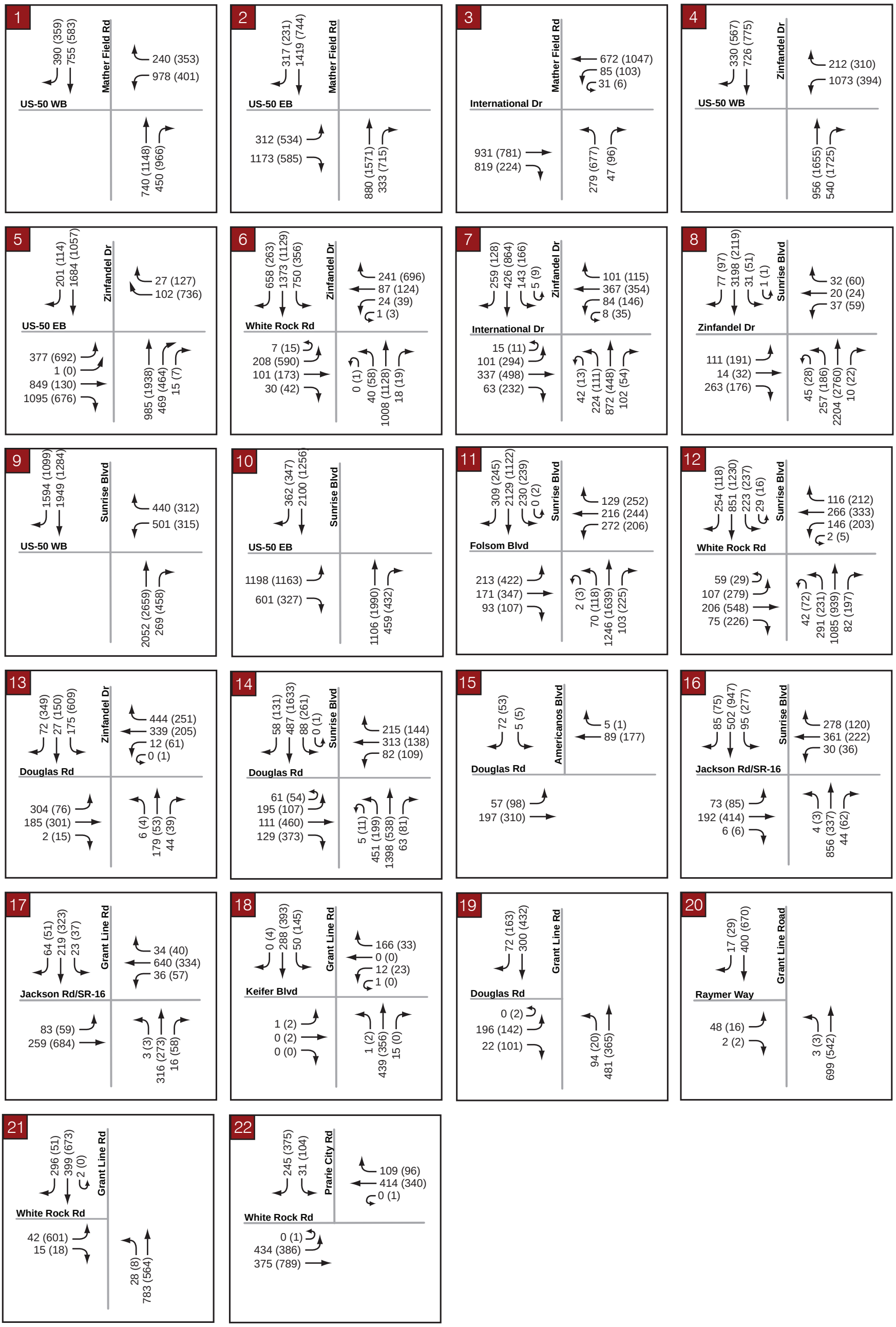


Figure 4
Existing (2019) Peak-Hour Traffic Volumes

ASSESSMENT OF PROPOSED PROJECT

Proposed Project Trip Generation and Assignment

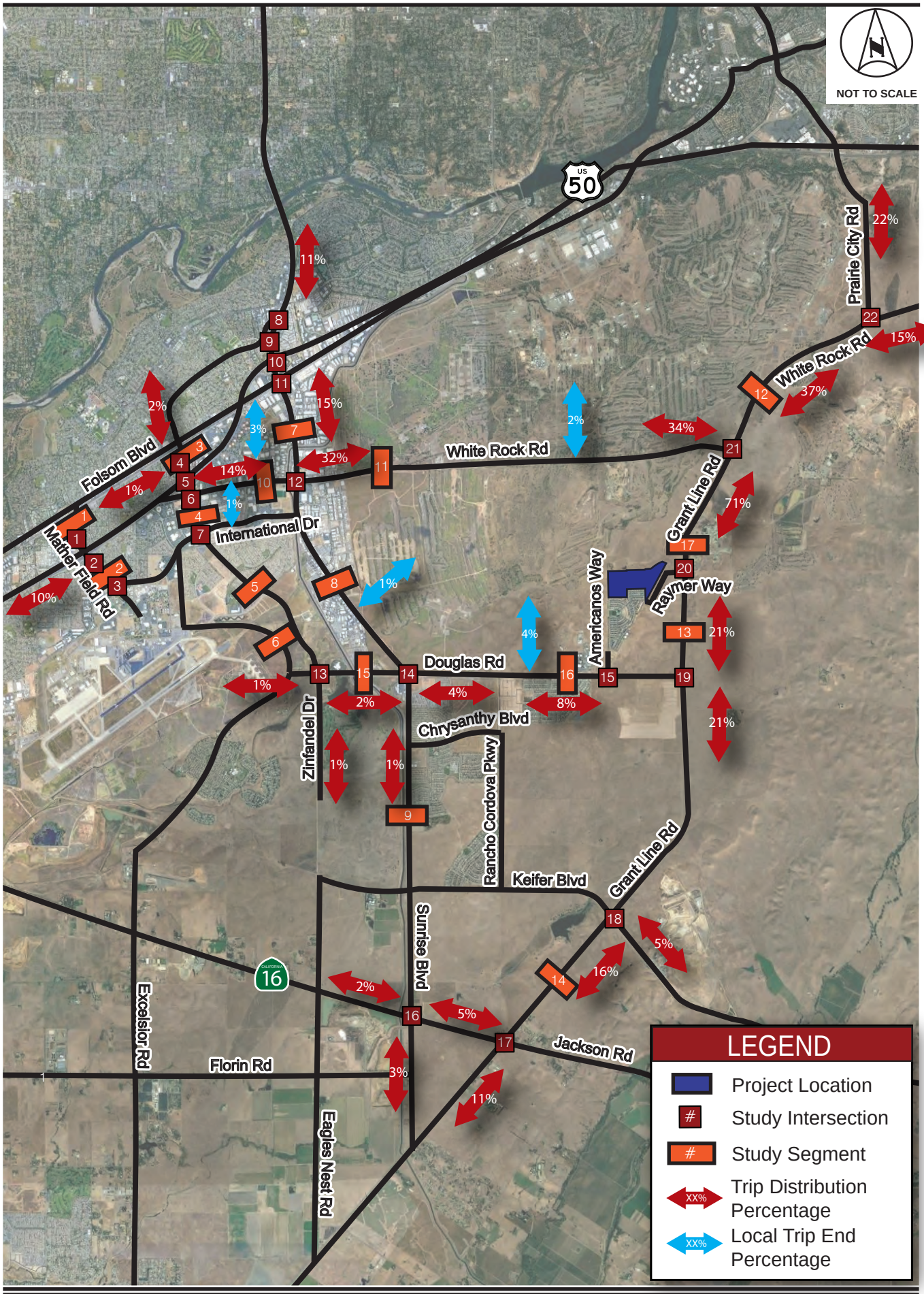
The number of trips anticipated to be generated by the proposed project are approximated using data included in *Trip Generation, 10th Edition,* published by the Institute of Transportation Engineers (ITE). ITE Land Use Code 210 (Single-Family Detached Housing) was used to represent the proposed units and the equation was used to calculate the generated trips. As shown in Table 5, the proposed project is estimated to generate 4,014 new daily trips, with 313 new trips occurring during the AM peak-hour, and 416 new trips occurring during the PM peak-hour.

Table 5 – Proposed Project Trip Generation

Land Use (ITE Code)	Size (Dwelling Units)	Daily Trips	AM Peak-Hour					PM Peak-Hour				
			Total Trips	In		Out		Total Trips	In		Out	
				%	Trips	%	Trips		%	Trips	%	Trips
Single-Family Detached Housing (210)[1]	434	4,014	313	25%	78	75%	235	416	63%	262	37%	154
New Project Trips		**4,014**	**313**		**78**		**235**	**416**		**262**		**154**

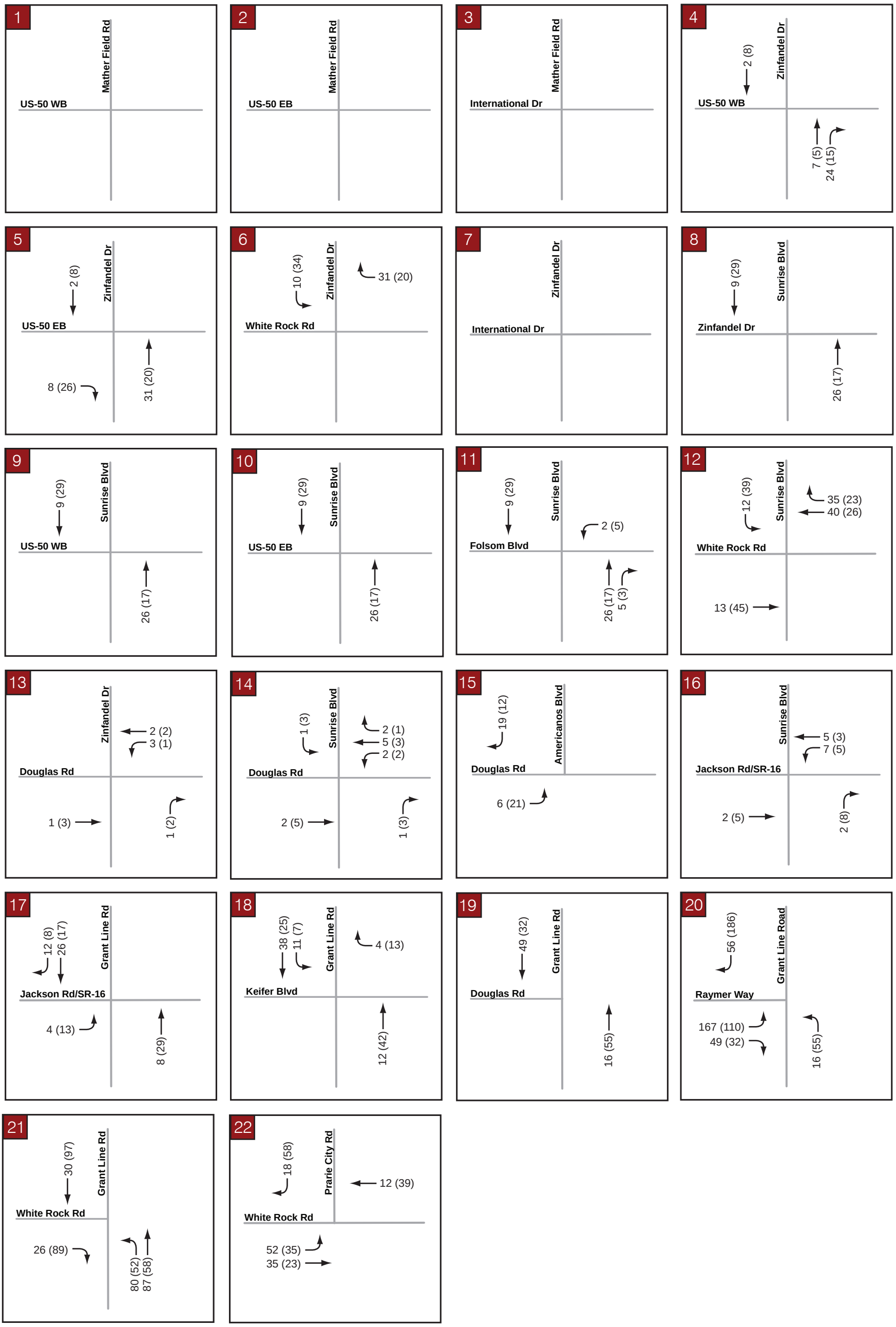
[1] *Trip generation based on Institute of Transporation Engineers (ITE), Trip Generation Manual, (10th Edition) equations for Single-Family Detached Housing (Land Use Code 210)*
Daily: Ln(T) = 0.92Ln(X) + 2.71
AM Peak Hour: T = 0.71(X) + 4.80
PM Peak Hour: Ln(T) = 0.96Ln(X) + 0.2
Where: T = trips generated, X = dwelling units

The project trip distribution percentages are provided in Figure 5. The assignments of project trips are depicted in Figure 6.



Kimley»Horn

Figure 5
Existing (2019) Project Trip Distribution



LEGEND	
#	Study Intersection
xx(xx)	AM(PM) Peak-Hour Volumes

EXISTING (2019) PLUS PROPOSED PROJECT CONDTIONS

As previously discussed, the number of trips anticipated to be generated by the proposed project was derived using the *Trip Generation Manual, 10th Edition,* published by the Institute for Traffic Engineering (ITE). These trips were assigned to the roadway network based on existing traffic volumes, the City's Travel Demand Model (TDM), and professional judgment. Using these volumes, levels of service were determined at the study facilities. Existing (2019) plus Proposed Project peak-hour turn movement volumes are presented in Figure 7. Levels of service were then determined at the study facilities. Analysis worksheets for this scenario are provided in Appendix C.

Table 6 presents the intersection operating conditions for this analysis scenario. As indicated in Table 6, the study intersections operate from LOS A to LOS F during the AM and PM peak-hours. As noted previously, U-turn movement volumes were added to the corresponding left-turn movement volumes due to *HCM 6th Edition* analysis methodology limitations.

Table 7 presents the roadway segment operating conditions for this analysis scenario. As indicated in Table 7, the study roadway segments operate from LOS A to LOS F.

Table 6 - Existing (2019) plus Proposed Project Intersection Levels of Service

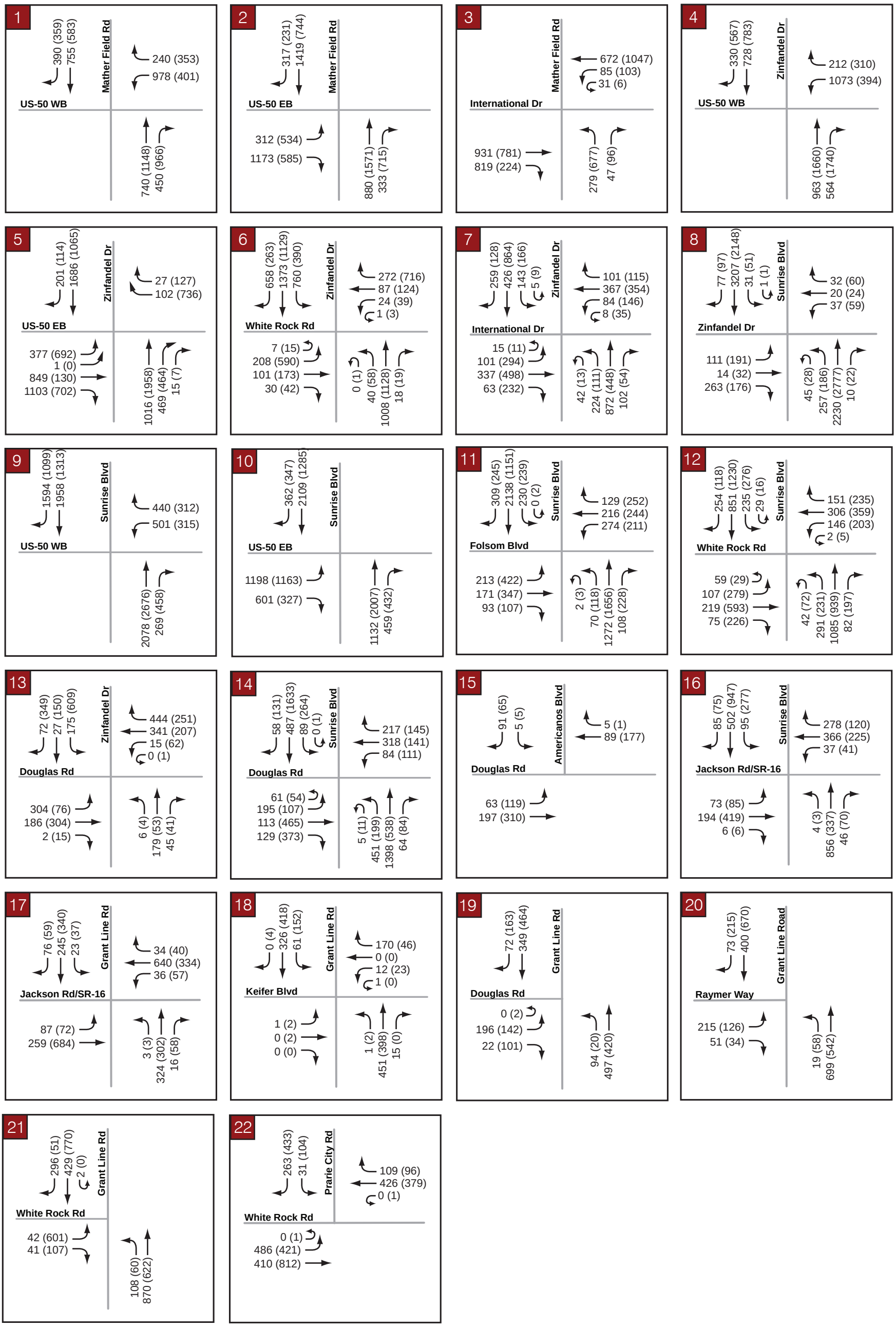
ID	Intersection	Control	Peak Hour	Existing (2019)		Existing (2019) plus Proposed Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Mather Field Road @ US-50 Westbound Ramps	Signal	AM	**117.2**	**F**	**117.2**	**F**
			PM	26.4	C	26.4	C
2	Mather Field Road @ US-50 Eastbound Ramps	Signal	AM	**74.7**	**E**	**74.7**	**E**
			PM	24.3	C	24.3	C
3	Mather Field Road @ International Drive	Signal	AM	9.7	A	9.7	A
			PM	14.8	B	14.8	B
4	Zinfandel Drive @ US-50 Westbound Ramps	Signal	AM	32.7	C	32.7	C
			PM	20.2	C	20.1	C
5	Zinfandel Drive @ US-50 Eastbound Ramps	Signal	AM	**86.3**	**F**	**87.0**	**F**
			PM	36.7	D	37.7	D
6	Zinfandel Drive @ White Rock Road	Signal	AM	31.9	C	32.1	C
			PM	43.3	D	45.2	D
7	Zinfandel Drive @ International Drive	Signal	AM	22.0	C	22.0	C
			PM	30.2	C	30.2	C
8	Sunrise Boulevard @ Zinfandel Drive	Signal	**AM**	**110.8**	**F**	**111.6**	**F**
			PM	**56.6**	**E**	**58.1**	**E**
9	Sunrise Boulevard @ US-50 Westbound Ramps	Signal	AM	17.4	B	17.4	B
			PM	12.9	B	12.9	B
10	Sunrise Boulevard @ US-50 Eastbound Ramps	Signal	AM	23.4	C	23.4	C
			PM	22.0	C	22.0	C
11	Sunrise Boulevard @ Folsom Boulevard	Signal	AM	32.8	C	32.9	C
			PM	35.8	D	36.0	D
12	Sunrise Boulevard @ White Rock Road	Signal	AM	30.8	C	33.4	C
			PM	**58.0**	**E**	**62.0**	**E**
13	Douglas Road @ Zinfandel Drive	Signal	AM	41.7	D	41.9	D
			PM	19.6	B	19.6	B
14	Douglas Road @ Sunrise Boulevard	Signal	AM	29.1	C	29.3	C
			PM	42.7	D	42.8	D
15	Douglas Road @ Americanos Boulevard	Signal	AM	8.6	A	9.0	A
			PM	8.3	A	8.6	A
16	Jackson Road/SR-16 @ Sunrise Boulevard	Signal	AM	**70.7**	**E**	**72.2**	**E**
			PM	**59.6**	**E**	**61.3**	**E**
17	Jackson Road/SR-16 @ Grant Line Road	Signal	AM	**90.9**	**F**	**103.7**	**F**
			PM	**108.5**	**F**	**120.4**	**F**
18	Grant Line Road @ Kiefer Boulevard	AWSC	AM	16.3	C	19.1	C
			PM	17.1	C	20.6	C
19	Grant Line Road @ Douglas Road	Signal	AM	10.7	B	11.0	B
			PM	9.2	A	9.3	A
20	Grant Line Road @ Raymer Way	SSSC	AM	**2.2 (37 EB)**	**E**	**146.3 (606 EB)**	**F**
			PM	0.7 (28.1 EB)	D	**84.1 (545 EB)**	**F**
21	Grant Line Road @ White Rock Road	Signal	AM	6.9	A	7.7	A
			PM	11.9	B	13.3	B
22	White Rock Road @ Prairie City Road	Signal	AM	19.0	B	23.2	C
			PM	18.1	B	25.8	C

Notes: **Bold** represents unacceptable operations. Shaded represents a significant impact.

Table 7- Existing (2019) Plus Project Roadway Segment Levels of Service

ID	Roadway	Segment		Existing					Existing plus Project					LOS Threshold
		From	To	Travel Lanes	Facility Type	Daily Volume	Volume / Capacity Ratio	Level of Service	Travel Lanes	Facility Type	Daily Volume	Volume / Capacity Ratio	Level of Service	
1	Mather Field Rd	Folsom Blvd	US-50 WB Ramps	4	Arterial Moderate	23,486	0.65	B	4	Arterial Moderate	23,486	0.65	B	D
2	Mather Field Rd	US-50 EB Ramps	International Dr	6	Arterial Moderate	19,544	0.36	A	6	Arterial Moderate	19,544	0.36	A	D
3	Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	4	Arterial Moderate	21,533	0.60	A	4	Arterial Moderate	21,653	0.60	B	D
4	Zinfandel Dr	White Rock Rd	International Dr	6	Arterial Moderate	29,740	0.55	A	6	Arterial Moderate	29,740	0.55	A	D
5	Zinfandel Dr	International Dr	Douglas Rd	4	Arterial Moderate	15,603	0.43	A	4	Arterial Moderate	15,603	0.43	A	D
6	Mather Field Rd	Femoyer St	Douglas Rd	2	Arterial Moderate	5,711	0.32	A	2	Arterial Moderate	5,711	0.32	A	D
7	Sunrise Blvd	Folsom Blvd	White Rock Rd	6	Arterial Moderate	37,902	0.70	C	6	Arterial Moderate	38,504	0.71	C	D
8	Sunrise Blvd	White Rock Rd	Douglas Road	6	Arterial Moderate	27,763	0.51	A	6	Arterial Moderate	27,803	0.51	A	D
9	Sunrise Blvd	Douglas Rd	Jackson Rd/SR 16	2	Arterial Moderate	20,467	**1.14**	**F**	2	Arterial Moderate	20,507	**1.14**	**F**	D
10	White Rock Rd	Zinfandel Dr	Sunrise Blvd	6	Arterial Moderate	14,871	0.28	A	6	Arterial Moderate	15,553	0.29	A	D
11	White Rock Rd	Sunrise Blvd	Grant Line Road	2	Arterial Moderate	3,375	0.19	A	2	Arterial Moderate	4,740	0.26	A	D
12	White Rock Rd	Grant Line Rd	Prairie City Rd	4	Arterial Moderate	14,582	0.41	A	4	Arterial Moderate	16,067	0.45	A	E
13	Grant Line Road	Raymer Wy	Douglas Road	2	Rural (No Shoulder)	10,151	**0.60**	**E**	2	Rural (No Shoulder)	10,994	**0.65**	**E**	D
14	Grant Line Road	Douglas Rd	Jackson Rd/SR 16	2	Rural (Shoulder)	7,501	0.38	D	2	Rural (Shoulder)	8,143	0.41	D	D
15	Douglas Rd	Mather Field Rd	Sunrise Blvd	2	Arterial Moderate	14,030	0.78	C	2	Arterial Moderate	14,110	0.78	C	D
16	Douglas Rd	Sunrise Blvd	Grant Line Road	4	Arterial Moderate	10,853	0.30	A	4	Arterial Moderate	11,174	0.31	A	D
17	Grant Line Road	White Rock Rd	Raymer Wy	2	Rural (No Shoulder)	10,384	0.61	E	2	Rural (No Shoulder)	13,234	0.78	E	E

Note: **Bold** represents unacceptable operations. Shaded indicates significant impact.



LEGEND

#	Study Intersection
xx(xx)	AM(PM) Peak-Hour Volumes

Figure 7
Existing (2019) plus Proposed Project Peak-Hour Traffic Volumes

CUMULATIVE CONDITIONS

Future traffic estimates were prepared using the modified SACMET travel demand model developed by the City of Rancho Cordova for the 2035 General Plan. The interpolated difference between the resulting traffic estimate and the 2008 baseline model results (the growth) was then added to Existing (2019) traffic volumes to establish Cumulative (2035) traffic estimates for this study. Using these volumes, levels of service were determined at the study facilities. Analysis worksheets for this scenario are provided in Appendix D. Figure 8 depicts the assumed lane geometries for the Cumulative (2035) scenario. Cumulative peak-hour turning movement volumes are presented in Figure 9.

Table 8 presents the peak-hour intersection operating conditions for this analysis scenario. As indicated in Table 8, the study intersections operate from LOS A to LOS F during the AM and PM peak-hours.

Table 9 presents the roadway segment operating conditions for this analysis scenario. As indicated in Table 9, the study roadway segments operate from LOS A to LOS F.

Table 8 – Cumulative (2035) Intersection Levels of Service

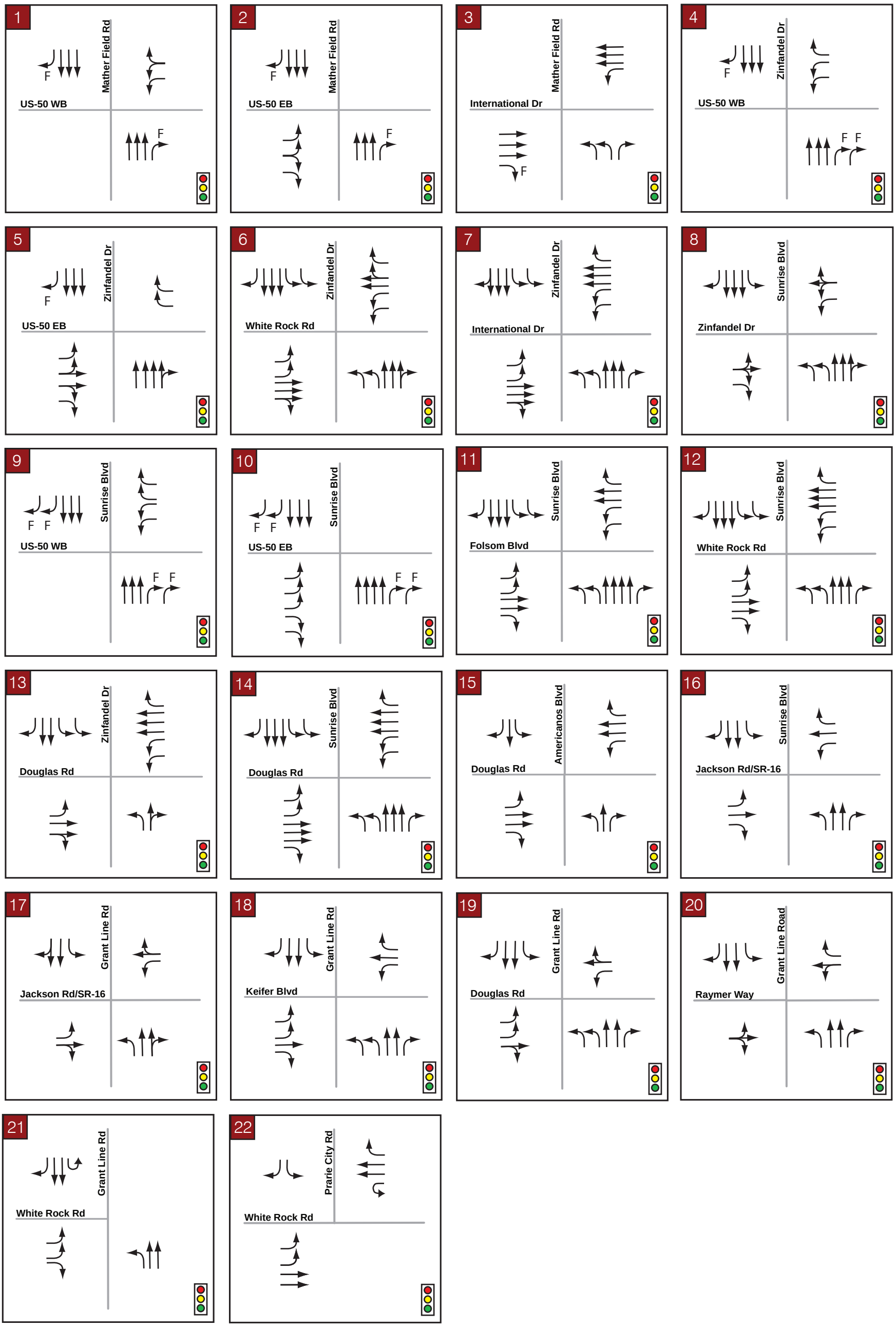
ID	Intersection	Control	Peak Hour	Cumulative (2035)	
				Delay (sec)	LOS
1	Mather Field Road @ US-50 Westbound Ramps	Signal	AM	37.7	D
			PM	16.3	B
2	Mather Field Road @ US-50 Eastbound Ramps	Signal	AM	34.5	C
			PM	27.8	C
3	Mather Field Road @ International Drive	Signal	AM	39.0	D
			PM	23.3	C
4	Zinfandel Drive @ US-50 Westbound Ramps	Signal	AM	22.1	C
			PM	15.0	B
5	Zinfandel Drive @ US-50 Eastbound Ramps	Signal	AM	73.6	E
			PM	**174.1**	**F**
6	Zinfandel Drive @ White Rock Road	Signal	AM	60.0	E
			PM	70.4	E
7	Zinfandel Drive @ International Drive	Signal	AM	**223.4**	**F**
			PM	**332.9**	**F**
8	Sunrise Boulevard @ Zinfandel Drive	Signal	AM	**217.8**	**F**
			PM	**166.9**	**F**
9	Sunrise Boulevard @ US-50 Westbound Ramps	Signal	AM	12.3	B
			PM	13.8	B
10	Sunrise Boulevard @ US-50 Eastbound Ramps	Signal	AM	13.5	B
			PM	13.2	B
11	Sunrise Boulevard @ Folsom Boulevard	Signal	AM	46.2	D
			PM	62.0	E
12	Sunrise Boulevard @ White Rock Road	Signal	AM	66.2	E
			PM	**140.3**	**F**
13	Douglas Road @ Zinfandel Drive	Signal	AM	**436.4**	**F**
			PM	**165.7**	**F**
14	Douglas Road @ Sunrise Boulevard	Signal	AM	**114.9**	**F**
			PM	**175.3**	**F**
15	Douglas Road @ Americanos Boulevard	Signal	AM	21.5	C
			PM	24.0	C
16	Jackson Road/SR-16 @ Sunrise Boulevard	Signal	AM	**142.7**	**F**
			PM	**172.3**	**F**
17	Jackson Road/SR-16 @ Grant Line Road	Signal	AM	**210.3**	**F**
			PM	**141.8**	**F**
18	Grant Line Road @ Kiefer Boulevard	Signal	AM	21.4	C
			PM	23.1	C
19	Grant Line Road @ Douglas Road	Signal	AM	41.6	D
			PM	47.4	D
20	Grant Line Road @ Raymer Way	Signal	AM	**170.3**	**F**
			PM	**100.8**	**F**
21	Grant Line Road @ White Rock Road	Signal	AM	**81.3**	**F**
			PM	**153.7**	**F**
22	White Rock Road @ Prairie City Road	Signal	AM	**178.6**	**F**
			PM	**249.4**	**F**

Notes: **Bold** represents unacceptable operations.

Table 9 – Cumulative (2035) Roadway Segment Level of Service

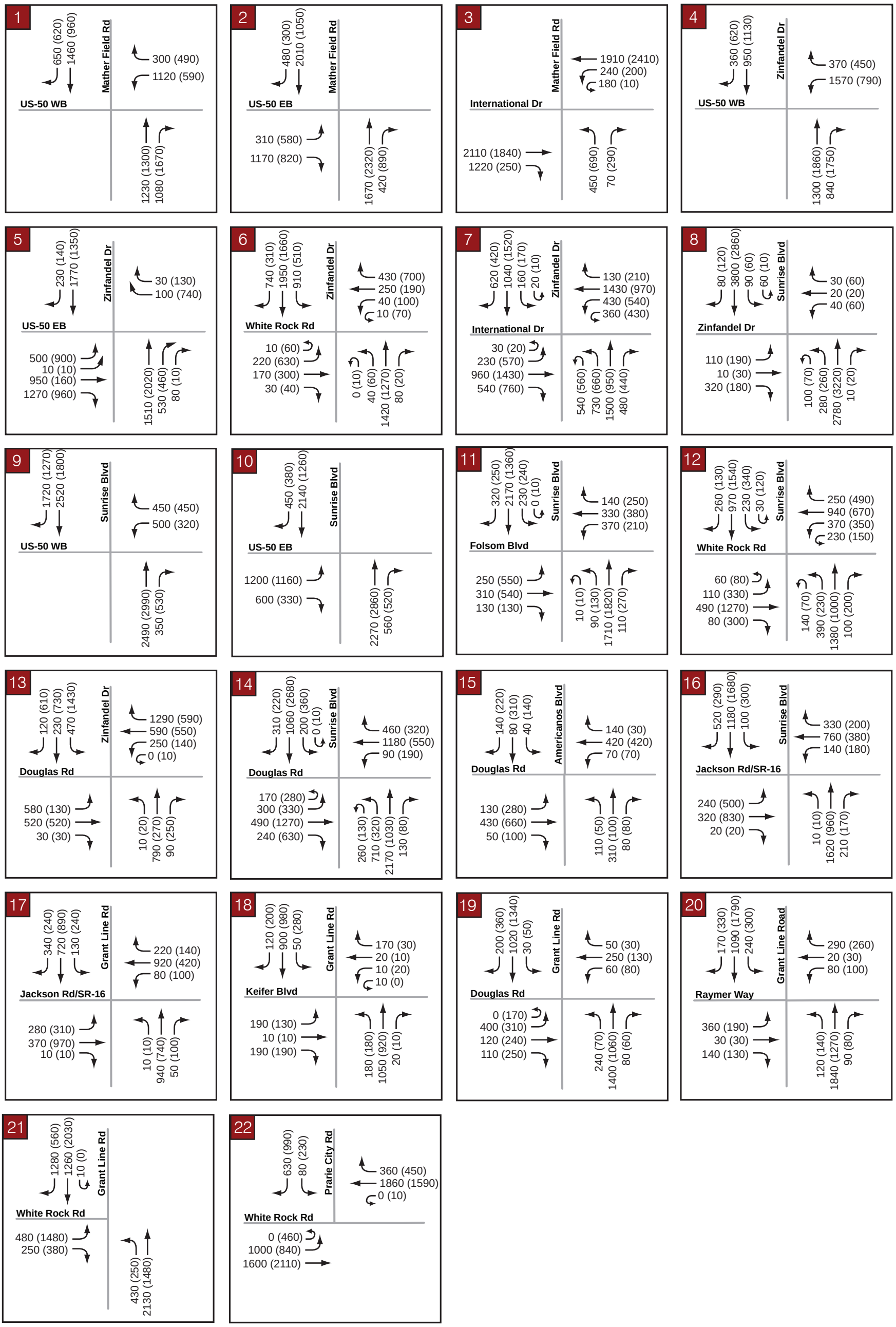
ID	Roadway	Segment		Cumulative				
		From	To	Travel Lanes	Facility Type	Daily Volume	Volume / Capacity Ratio	Level of Service
1	Mather Field Rd	Folsom Blvd	US-50 WB Ramps	6	Arterial Moderate	34,520	0.64	B
2	Mather Field Rd	US-50 EB Ramps	International Dr	6	Arterial Moderate	29,010	0.54	A
3	Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	6	Arterial Moderate	21,900	0.41	A
4	Zinfandel Dr	White Rock Rd	International Dr	6	Arterial Moderate	88,350	**1.64**	**F**
5	Zinfandel Dr	International Dr	Douglas Rd	4	Arterial Moderate	46,350	**1.29**	**F**
6	Mather Field Rd	Femoyer St	Douglas Rd	4	Arterial Moderate	15,630	0.43	A
7	Sunrise Blvd	Folsom Blvd	White Rock Rd	6	Arterial Moderate	39,830	0.74	C
8	Sunrise Blvd	White Rock Rd	Douglas Road	6	Arterial Moderate	38,650	0.72	C
9	Sunrise Blvd	Douglas Rd	Jackson Rd/SR 16	4	Arterial Moderate	43,460	**1.21**	**F**
10	White Rock Rd	Zinfandel Dr	Sunrise Blvd	6	Arterial Moderate	15,080	0.28	A
11	White Rock Rd	Sunrise Blvd	Grant Line Road	6	Arterial Moderate	13,380	0.25	A
12	White Rock Rd	Grant Line Rd	Prairie City Rd	4	Arterial Moderate	69,700	**1.94**	**F**
13	Grant Line Road	Raymer Wy	Douglas Road	4	Expressway	38,620	0.54	A
14	Grant Line Road	Douglas Rd	Jackson Rd/SR 16	4	Arterial High	23,280	0.58	A
15	Douglas Rd	Mather Field Rd	Sunrise Blvd	4	Arterial Moderate	60,580	**1.68**	**F**
16	Douglas Rd	Sunrise Blvd	Grant Line Road	6	Arterial Moderate	24,730	0.46	A
17	Grant Line Road	White Rock Rd	Raymer Wy	4	Expressway	51,290	0.71	C

Note: **Bold** represents unacceptable operations. Shaded indicates significant impact



LEGEND	
#	Study Intersection
	Signalized Study Intersection
F	Free Movement

Figure 8
Cumulative (2035) Study Intersections, Traffic Control, and Lane Geometries



LEGEND

#	Study Intersection
xx(xx)	AM(PM) Peak-Hour Volumes

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Figure 9
Cumulative (2035) Peak-Hour Traffic Volumes

CUMULATIVE PLUS PROPOSED PROJECT CONDITIONS

As previously discussed, the number of trips anticipated to be generated by the proposed project was derived using the *Trip Generation Manual, 10th Edition,* published by the Institute for Traffic Engineering (ITE). The project trips were assigned to the future roadway network based on modified SACMET travel demand model, as provided by the City of Rancho Cordova. Using these volumes, levels of service were determined at the study facilities.

The Cumulative Scenario Project Trip distribution and trip assignment are shown in Figure 10 and Figure 11, respectively. Cumulative plus Proposed Project peak-hour turning movement volumes are presented in Figure 12. Analysis worksheets for this scenario are provided in Appendix E.

Table 10 presents the peak-hour intersection operating conditions for this analysis scenario. As indicated in Table 10, the study intersections operate from LOS A to LOS F during the AM and PM peak-hours.

Table 11 presents the roadway segment operating conditions for this analysis scenario. As indicated in Table 11, the study roadway segments operate from LOS A to LOS F.

Table 10 - Cumulative (2035) plus Proposed Project Intersection Levels of Service

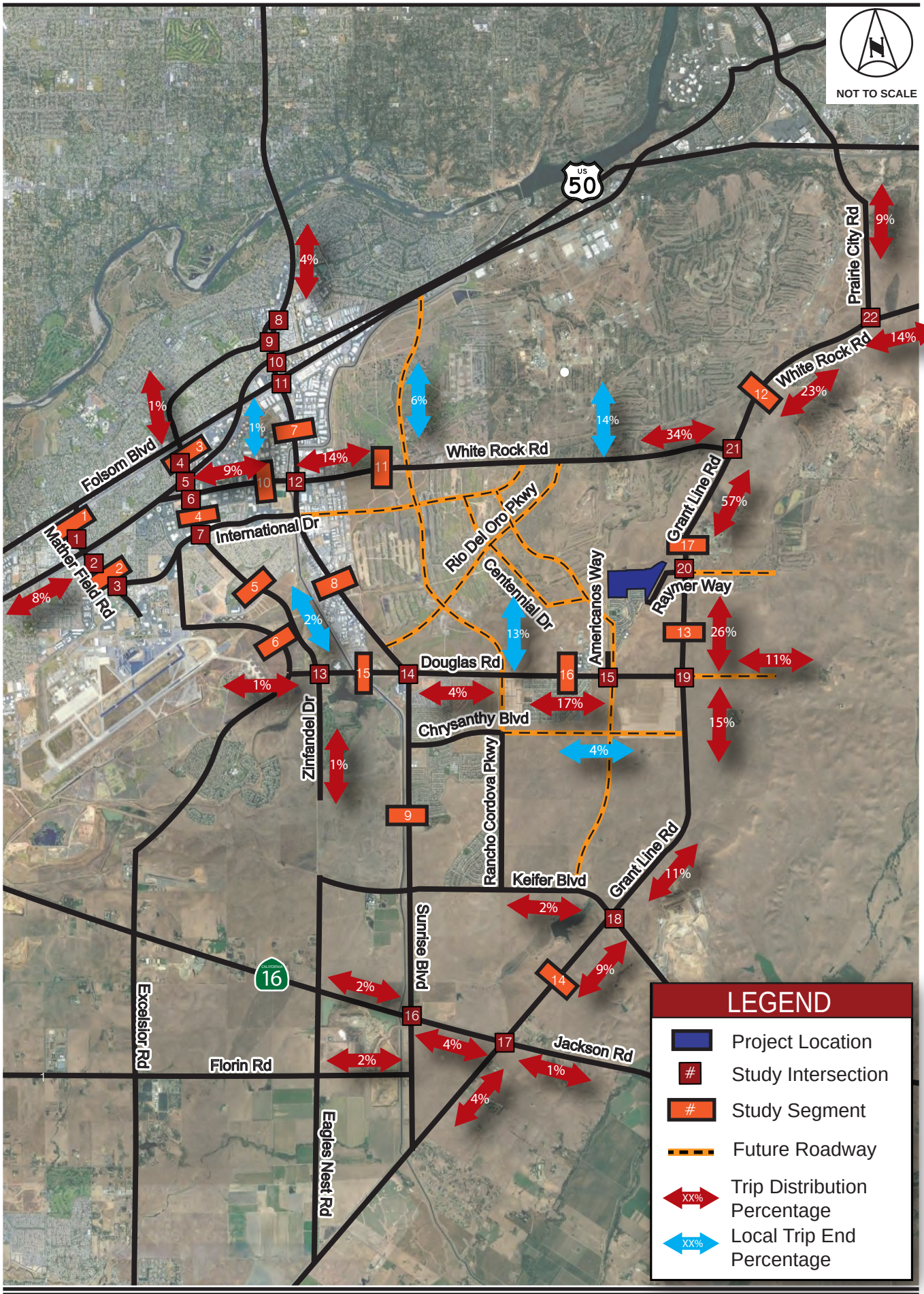
ID	Intersection	Control	Peak Hour	Cumulative (2035)		Cumulative (2035) plus Proposed Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Mather Field Road @ US-50 Westbound Ramps	Signal	AM	37.7	D	37.7	D
			PM	16.3	B	16.3	B
2	Mather Field Road @ US-50 Eastbound Ramps	Signal	AM	34.5	C	34.5	C
			PM	27.8	C	27.8	C
3	Mather Field Road @ International Drive	Signal	AM	39.0	D	39.0	D
			PM	23.3	C	23.3	C
4	Zinfandel Drive @ US-50 Westbound Ramps	Signal	AM	22.1	C	22.1	C
			PM	15.0	B	15.0	B
5	Zinfandel Drive @ US-50 Eastbound Ramps	Signal	AM	**73.6**	**E**	**75.6**	**E**
			PM	**174.1**	**F**	**175.5**	**F**
6	Zinfandel Drive @ White Rock Road	Signal	AM	**60.0**	**E**	**60.5**	**E**
			PM	**70.4**	**E**	**71.8**	**E**
7	Zinfandel Drive @ International Drive	Signal	AM	**223.4**	**F**	**223.4**	**F**
			PM	**332.9**	**F**	**332.9**	**F**
8	Sunrise Boulevard @ Zinfandel Drive	Signal	AM	**217.8**	**F**	**218.6**	**F**
			PM	**166.9**	**F**	**168.2**	**F**
9	Sunrise Boulevard @ US-50 Westbound Ramps	Signal	AM	12.3	B	12.4	B
			PM	13.8	B	13.9	B
10	Sunrise Boulevard @ US-50 Eastbound Ramps	Signal	AM	13.5	B	13.5	B
			PM	13.2	B	13.3	B
11	Sunrise Boulevard @ Folsom Boulevard	Signal	AM	46.2	D	46.2	D
			PM	**62.0**	**E**	**62.2**	**E**
12	Sunrise Boulevard @ White Rock Road	Signal	AM	**66.2**	**E**	**66.6**	**E**
			PM	**140.3**	**F**	**143.7**	**F**
13	Douglas Road @ Zinfandel Drive	Signal	AM	**436.4**	**F**	**436.2**	**F**
			PM	**165.7**	**F**	**166.0**	**F**
14	Douglas Road @ Sunrise Boulevard	Signal	AM	**114.9**	**F**	**115.3**	**F**
			PM	**175.3**	**F**	**175.2**	**F**
15	Douglas Road @ Americanos Boulevard	Signal	AM	21.5	C	23.2	C
			PM	24.0	C	26.2	C
16	Jackson Road/SR-16 @ Sunrise Boulevard	Signal	AM	**142.7**	**F**	**143.4**	**F**
			PM	**172.3**	**F**	**173.4**	**F**
17	Jackson Road/SR-16 @ Grant Line Road	Signal	AM	**210.3**	**F**	**214.0**	**F**
			PM	**141.8**	**F**	**145.5**	**F**
18	Grant Line Road @ Kiefer Boulevard	Signal	AM	21.4	C	21.5	C
			PM	23.1	C	23.5	C
19	Grant Line Road @ Douglas Road	Signal	AM	41.6	D	45.0	D
			PM	47.4	D	49.0	D
20	Grant Line Road @ Raymer Way	Signal	AM	**170.3**	**F**	**206.3**	**F**
			PM	**100.8**	**F**	**129.1**	**F**
21	Grant Line Road @ White Rock Road	Signal	AM	**81.3**	**F**	**88.6**	**F**
			PM	**153.7**	**F**	**166.7**	**F**
22	White Rock Road @ Prairie City Road	Signal	AM	**178.6**	**F**	**182.6**	**F**
			PM	**249.4**	**F**	**260.5**	**F**

Notes: **Bold** represents unacceptable operations. Shaded represents a significant impact.

Table 11 – Cumulative (2035) plus Proposed Project Roadway Segment Levels of Service

ID	Roadway	Segment		Cumulative					Cumulative plus Project					LOS Threshold
		From	To	Travel Lanes	Facility Type	Daily Volume	Volume / Capacity Ratio	Level of Service	Travel Lanes	Facility Type	Daily Volume	Volume / Capacity Ratio	Level of Service	
1	Mather Field Rd	Folsom Blvd	US-50 WB Ramps	6	Arterial Moderate	34,520	0.64	B	6	Arterial Moderate	34,520	0.64	B	D
2	Mather Field Rd	US-50 EB Ramps	International Dr	6	Arterial Moderate	29,010	0.54	A	6	Arterial Moderate	29,010	0.54	A	D
3	Zinfandel Dr	Folsom Blvd	US-50 WB Ramps	6	Arterial Moderate	21,900	0.41	A	6	Arterial Moderate	21,940	0.41	A	D
4	Zinfandel Dr	White Rock Rd	International Dr	6	Arterial Moderate	88,350	**1.64**	**F**	6	Arterial Moderate	88,350	**1.64**	**F**	D
5	Zinfandel Dr	International Dr	Douglas Rd	4	Arterial Moderate	46,350	**1.29**	**F**	4	Arterial Moderate	46,350	**1.29**	**F**	D
6	Mather Field Rd	Femoyer St	Douglas Rd	4	Arterial Moderate	15,630	0.43	A	4	Arterial Moderate	15,630	0.43	A	D
7	Sunrise Blvd	Folsom Blvd	White Rock Rd	6	Arterial Moderate	39,830	0.74	C	6	Arterial Moderate	39,991	0.74	C	D
8	Sunrise Blvd	White Rock Rd	Douglas Road	6	Arterial Moderate	38,650	0.72	C	6	Arterial Moderate	38,650	0.72	C	D
9	Sunrise Blvd	Douglas Rd	Jackson Rd/SR 16	4	Arterial Moderate	43,460	**1.21**	**F**	4	Arterial Moderate	43,460	**1.21**	**F**	D
10	White Rock Rd	Zinfandel Dr	Sunrise Blvd	6	Arterial Moderate	15,080	0.28	A	6	Arterial Moderate	15,481	0.29	A	D
11	White Rock Rd	Sunrise Blvd	Grant Line Road	6	Arterial Moderate	13,380	0.25	A	6	Arterial Moderate	14,745	0.27	A	D
12	White Rock Rd	Grant Line Rd	Prairie City Rd	4	Arterial Moderate	69,700	**1.94**	**F**	4	Arterial Moderate	70,623	**1.96**	**F**	E
13	Grant Line Road	Raymer Wy	Douglas Road	4	Expressway	38,620	0.54	A	4	Expressway	39,664	0.55	A	D
14	Grant Line Road	Douglas Rd	Jackson Rd/SR 16	4	Arterial High	23,280	0.58	A	4	Arterial High	23,641	0.59	A	D
15	Douglas Rd	Mather Field Rd	Sunrise Blvd	4	Arterial Moderate	60,580	**1.68**	**F**	4	Arterial Moderate	60,741	**1.69**	**F**	D
16	Douglas Rd	Sunrise Blvd	Grant Line Road	6	Arterial Moderate	24,730	0.46	A	6	Arterial Moderate	25,412	0.47	A	D
17	Grant Line Road	White Rock Rd	Raymer Wy	4	Expressway	51,290	0.71	C	4	Expressway	53,578	0.74	C	E

Note: **Bold** represents unacceptable operations. Shaded indicates significant impact



Kimley»Horn

Figure 10
Cumulative (2035) Project Trip Distribution

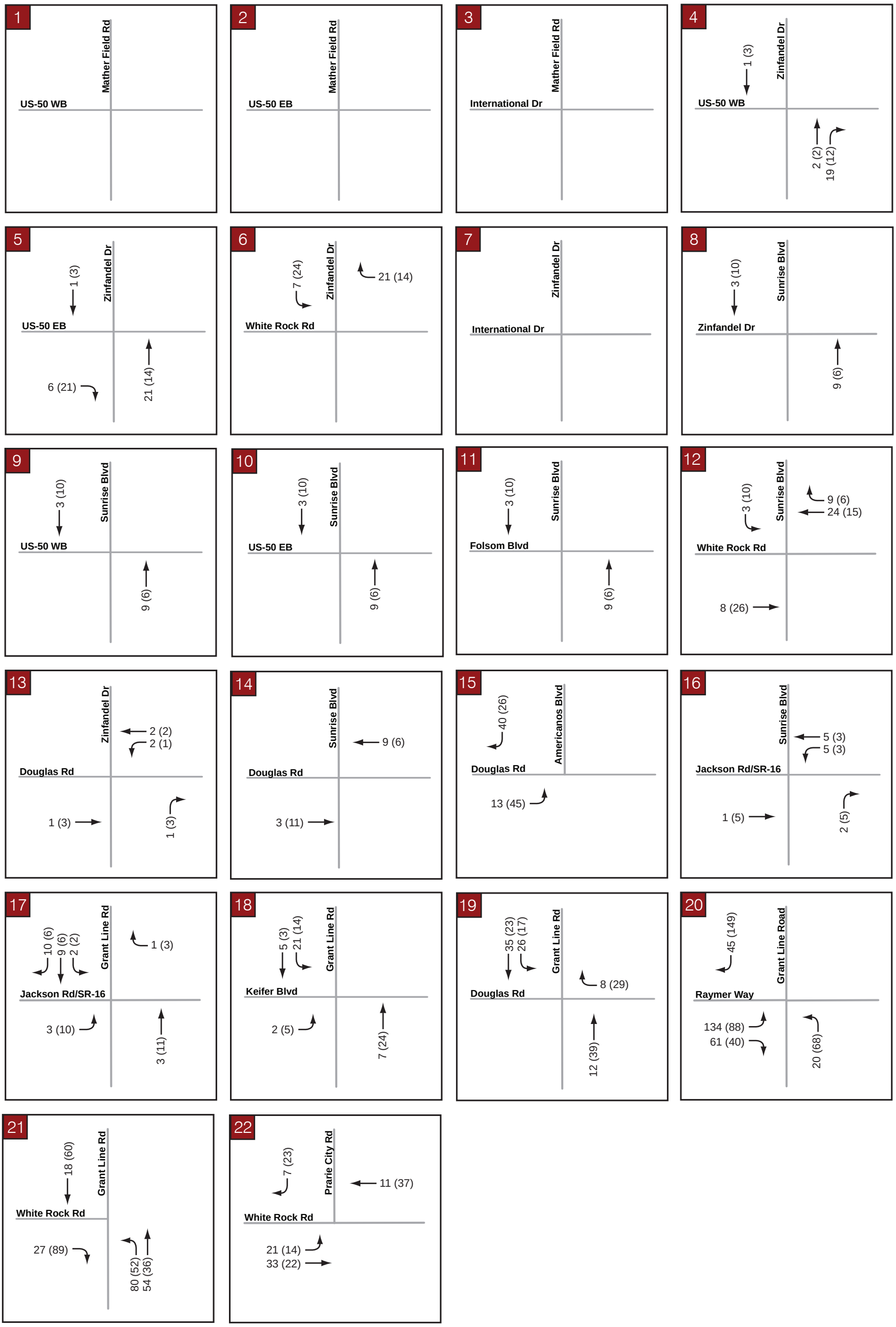
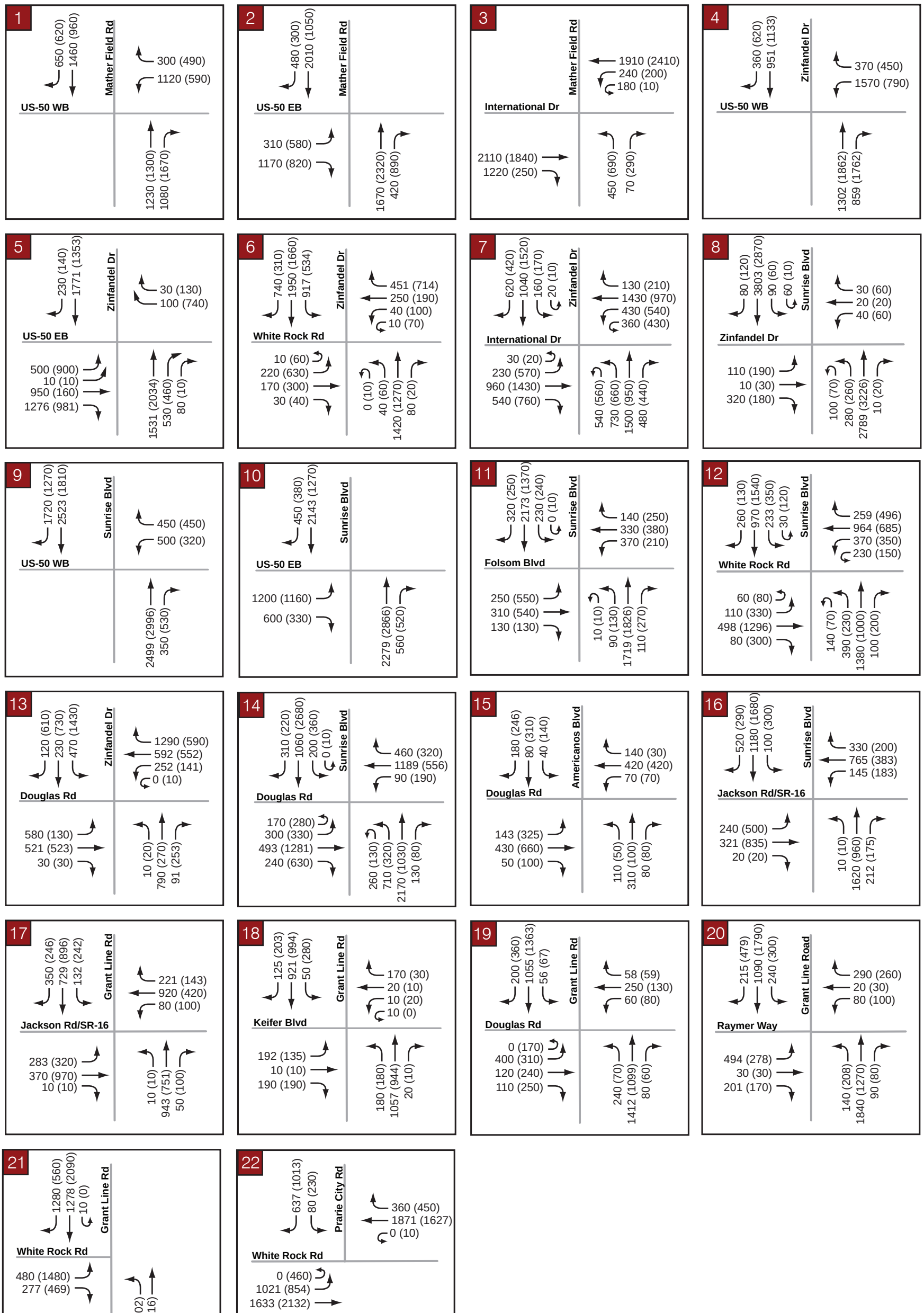


Figure 11
Cumulative (2035) Project Trip Assignment



LEGEND

#	Study Intersection
xx(xx)	AM(PM) Peak-Hour Volumes

Kimley»Horn

Figure 12
Cumulative (2035) plus Proposed Project Peak-Hour Traffic Volumes

IMPACTS AND MITIGATION

Regulatory Setting and Thresholds of Significance

Sacramento County

The Circulation Element of the latest County of Sacramento General Plan[6] includes the following relevant provisions:

> ***CI-9.*** *Plan and design the roadway system in a manner that meets Level of Service (LOS) D on rural roadways and LOS E on urban roadways, unless it is infeasible to implement project alternatives or mitigation measures that would achieve LOS D on rural roadways or LOS E on urban roadways. The urban areas are those areas within the Urban Service Boundary as shown in the Land Use Element of the Sacramento County General Plan. The areas outside the Urban Service Boundary are considered rural.*
>
> ***CI-35.*** *The applicant/developer of land development projects shall be responsible to install bicycle and pedestrian facilities in accordance with Sacramento County Improvement Standards and may be responsible to participate in the fair share funding of regional multi-use trails identified in the Sacramento County Bicycle Master Plan.*

Sacramento County's traffic study guidelines[1] provide guidelines for the implementation of the General Plan provisions: "The County defines the minimum acceptable operation level for its roadways and intersections to be LOS D for rural areas and LOS E for urban areas. The urban areas are those areas within the Urban Service Boundary as shown in the Land Use Element of the Sacramento County General Plan. The areas outside the Urban Service Boundary are considered rural."

All of the Sacramento County study facilities are within the Urban Services Boundary. Therefore, LOS E is the minimum acceptable LOS for all County facilities.

Thresholds of Significance

Roadways/Signalized Intersections: A project is considered to have a significant effect if it would:

- result in a roadway or a signalized intersection operating at an acceptable LOS to deteriorate to an unacceptable LOS; or
- increase the V/C ratio by more than 0.05 at a roadway or at a signalized intersection that is operating at an unacceptable LOS without the project.

Unsignalized Intersections: A project is considered to have a significant effect if it would:

- result in an unsignalized intersection movement/approach operating at an acceptable LOS to deteriorate to an unacceptable LOS, and also cause the intersection to meet a traffic signal warrant; or
- for an unsignalized intersection that meets a signal warrant, increase the delay by more than 5 seconds at a movement/approach that is operating at an unacceptable LOS without the project.

[6] *Sacramento County General Plan of 2005-2030,* Sacramento County Community Planning & Development Department, November 9, 2011.

City of Rancho Cordova

The Circulation Element of the City of Rancho Cordova's General Plan 2035 includes the following relevant provisions:

> *Policy C.1.2 - Seek to maintain operations on all roadways and intersections at Level of Service D or better at all times, including peak travel times, unless maintaining this Level of Service would, in the City's judgment, be infeasible and/or conflict with the achievement of other goals. Congestion in excess of Level of Service D may be accepted in these cases, provided that provisions are made to improve traffic flow and/or promote non-vehicular transportation as part of a development project or a City-initiated project. Please see Policy C.1.3 for additional policy guidance related to this issue.*
>
> *Examples of system improvements which may be accepted when Level of Service D cannot be maintained include the following, where the improvement or funding is in excess of standard City requirements:*
>
> *• Development of on- or off-street bicycle or pedestrian circulation (not including sidewalks that are constructed as part of roadway improvements);*
> *• Providing or funding public transportation facilities or services;*
> *• Other features as determined appropriate by the City.*
>
> *Policy C.1.3 - Recognize that regional traffic beyond the City's control, as well as circulation system decisions made prior to incorporation or by other agencies, will make it infeasible to achieve the City's desired Level of Service on all roadways. Subject development projects which affect these roadways to the provisions of Policy C.1.2 to provide offsetting improvements to the vehicular and/or non-vehicular transportation system.*

Impacts and Mitigation

Existing (2019) plus Proposed Project Conditions

As reflected in Table 6 and Table 7, the addition of the proposed project results in two (2) significant impacts. Analysis worksheets for the mitigations for this scenario are provided in Appendix F. The following is a discussion of each impact and its associated mitigation.

Intersection Impacts:

I1. Intersection #17, Jackson Road/SR-16 @ Grant Line Road
As shown in Table 6, this intersection operates at unacceptable LOS F during the AM and PM peak-hours without the project, and the project adds more than 5 seconds of delay to the intersection during the AM and PM peak-hours. ***This is a significant impact***.

I2. Intersection #20, Grant Line Road @ Raymer Way
As shown in Table 6, this intersection operates at LOS E and D during the AM and PM peak-hours without the project, and the project results in the intersection operating at LOS F. ***This is a significant impact***.

Mitigations:

M1. Intersection #17, Jackson Road/SR-16 @ Grant Line Road
The significant impact at this intersection during the AM and PM peak-hours can be mitigated by constructing a northbound and southbound left-turn pocket. As shown in Table 12, with the addition of this improvement, the intersection operates at LOS D during the AM and PM peak-

hours. However, a portion of the identified improvement lies outside of the City Limits and beyond the control of the City of Rancho Cordova. Because the City of Rancho Cordova cannot guarantee this measure can be implemented, the impact would remain ***significant and unavoidable***.

M2. Intersection #20, Grant Line Road @ Raymer

The significant impact at this intersection can be mitigated by converting the intersection from side street stop controlled to signalized along the existing Grant Line Road alignment. As shown in Table 12, with this mitigation, the intersection operates at LOS B and LOS C during the AM and PM peak-hours, respectively. Therefore, the impact is ***less than significant with mitigation***.

Table 12 – Intersection Levels of Service – Existing (2019) plus Proposed Project Mitigated Conditions

ID	Intersection	Control	Peak Hour	Existing (2019) plus Proposed Project		Control	Existing (2019) plus Proposed Project (Mitigated)	
				Delay (sec)	LOS		Delay (sec)	LOS
17	Jackson Road/SR-16 @ Grant Line Road	Signal	AM	**103.7**	**F**	Signal	46.3	D
			PM	**120.4**	**F**		40.1	D
20	Grant Line Road @ Raymer Way	SSSC	AM	**146.3 (606 EB)**	**F**	Signal	15.4	B
			PM	**84.1 (545 EB)**	**F**		22.2	C

Bold represents unacceptable operations. Shaded represents significant impact.

Cumulative plus Proposed Project Conditions

As reflected in Table 10 and Table 11, the addition of the proposed project results in three (3) significant impacts. Analysis worksheets for the mitigations for this scenario are provided in Appendix F. The following is a discussion of each impact and its associated mitigation.

Intersection Impacts:

I3. Intersection #20, Grant Line @ Raymer Way

As shown in Table 10, this intersection operates at unacceptable LOS F during the AM peak-hour without the project, and the project adds more than 5 seconds of delay to the intersection during the AM and PM peak-hours. ***This is a significant impact***.

I4. Intersection #21, Grant Line @ White Rock Road

As shown in Table 10, this intersection operates at unacceptable LOS F during the AM peak-hour without the project, and the project adds more than 5 seconds of delay to the intersection during the AM and PM peak-hours. ***This is a significant impact***.

I5. Intersection #22, White Rock Road @Prairie City Road

As shown in Table 10, this intersection operates at unacceptable LOS F during the AM and PM peak-hour without the project, and the project adds more than 5 seconds of delay to the intersection during the PM peak-hour. ***This is a significant impact***.

Mitigations:

M3. Intersection #20, Grant Line @ Raymer Way

The significant impact at this intersection can be mitigated by the addition of two eastbound left-turn lanes, a southbound left turn lane, a westbound left turn lane and restriping the thru-left land to a thru-right lane. It is expected that this these improvements will be implemented with the construction of the Capital South East Connector and related relocation of Grant Line Road. As shown in Table 13, this mitigation measure results in the intersection operating at LOS D during the AM and PM peak-hours. However, since the City of Rancho Cordova cannot guarantee the timing or implementation of Capital South East Connector, the impact would remain ***significant and unavoidable***.

M4. Intersection #21, Grant Line @ White Rock Road

The significant impact at this intersection during the AM and PM peak-hours can be mitigated by the addition of a northbound left-turn lane, a southbound through lane, and an eastbound left-turn lane. As shown in Table 13, this mitigation measure results in the intersection operating at LOS E and LOS D during the AM and PM peak-hours, respectively. However, the identified improvement lies outside of the City Limits and beyond the control of the City of Rancho Cordova. Because the City of Rancho Cordova cannot guarantee this measure can be implemented, the impact would remain ***significant and unavoidable***.

M5. Intersection #22, White Rock Road @ Prairie City Road

The significant impact at this intersection during the PM peak-hour can be mitigated with the addition of a second southbound right-turn lane and the addition of a right-turn overlap signal phase for the southbound right-turn. As shown in Table 13, this mitigation measure results in the intersection operating at LOS E during the AM and PM peak-hours. However, the identified improvement lies outside of the City Limits and beyond the control of the City of Rancho Cordova. Because the City of Rancho Cordova cannot guarantee this measure can be implemented, the impact would remain ***significant and unavoidable***.

Table 13 – Intersection Levels of Service – Cumulative (2035) plus Proposed Project Mitigated Conditions

ID	Intersection	Control	Peak Hour	Cumulative (2035) plus Proposed Project		Control	Cumulative (2035) plus Proposed Project (Mitigated)	
				Delay (sec)	LOS		Delay (sec)	LOS
20	Grant Line Road @ Raymer Way	Signal	AM	**206.3**	**F**	Signal	39.1	D
			PM	**129.1**	**F**		54.3	D
21	Grant Line Road @ White Rock Road	Signal	AM	**88.6**	**F**	Signal	59.2	E
			PM	**166.7**	**F**		46.7	D
22	White Rock Road @ Prairie City Road	Signal	AM	**182.6**	**F**	Signal	72.7	E
			PM	**260.5**	**F**		77.9	E

Bold represents unacceptable operations. Shaded represents significant impact.

CONCLUSIONS

Significant findings of this study include:

- The proposed project is estimated to generate 4,014 new daily trips, with 313 new trips occurring during the AM peak-hour, and 416 new trips occurring during the PM peak-hour.
- The addition of the proposed project to the Existing (2019) Conditions results in a significant impact at two (2) study intersections, Intersection #17 (Jackson Road/SR-16 at Grant Line Road) and Intersection #20 (Grant Line Road at Raymer Way). With the application of mitigation measures recommended herein, the impacts to Intersection #17 can be mitigated. However, because the City of Rancho Cordova cannot guarantee that mitigation measure M1 can be implemented, the impact would remain ***significant and unavoidable***. With the implementation of mitigation measure M2, the impact to Intersection #20 is ***less than significant with mitigation***.
- The addition of the proposed project to Cumulative (2035) Conditions results in a significant impact at three (3) intersections. With the application of mitigation measures recommended herein, the impacts to intersections can be mitigated. However, because the City of Rancho Cordova cannot guarantee that these mitigation measures (M3, M4, and M5) can be implemented, the impact would remain ***significant and unavoidable***.

Appendix A

Traffic Count Data Sheets

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grant Line Rd & Kiefer Blvd
City: Rancho Cordova
Control: 3-Way Stop(NB/SB/WB)

Project ID: 19-07202-001
Date: 5/21/2019

Total

NS/EW Streets:	Grant Line Rd				Grant Line Rd				Kiefer Blvd				Kiefer Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	78	5	0	11	63	0	0	0	0	0	0	9	0	22	0	188
7:15 AM	0	110	1	0	15	61	0	0	0	0	0	0	1	0	49	1	238
7:30 AM	0	111	7	0	15	92	0	0	0	0	0	0	4	0	49	0	278
7:45 AM	0	112	5	0	11	75	0	0	0	0	0	0	3	0	48	0	254
8:00 AM	1	106	2	0	9	60	0	0	1	0	0	0	4	0	20	0	203
8:15 AM	0	111	7	0	7	57	0	0	0	0	0	0	5	0	23	0	210
8:30 AM	0	114	14	0	9	45	0	0	0	0	0	0	6	0	12	0	200
8:45 AM	0	101	18	0	8	46	1	0	0	0	0	0	3	0	16	0	193
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	843	59	0	85	499	1	0	1	0	0	0	35	0	239	1	1764
APPROACH %'s :	0.11%	93.36%	6.53%	0.00%	14.53%	85.30%	0.17%	0.00%	100.00%	0.00%	0.00%	0.00%	12.73%	0.00%	86.91%	0.36%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	439	15	0	50	288	0	0	1	0	0	0	12	0	166	1	973
PEAK HR FACTOR :	0.250	0.980	0.536	0.000	0.833	0.783	0.000	0.000	0.250	0.000	0.000	0.000	0.750	0.000	0.847	0.250	0.875
		0.964				0.790				0.250				0.844			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	87	2	0	23	79	2	0	0	0	2	0	4	0	8	0	207
4:15 PM	1	98	5	0	26	99	0	0	2	0	0	0	5	1	10	0	247
4:30 PM	0	83	0	0	34	102	0	0	1	0	0	0	4	0	7	0	231
4:45 PM	0	80	0	0	42	87	2	0	0	2	0	0	8	0	6	0	227
5:00 PM	1	97	0	0	37	91	1	0	1	0	0	0	10	0	10	0	248
5:15 PM	1	96	0	0	32	113	1	0	0	0	0	0	1	0	10	0	254
5:30 PM	1	71	1	0	22	92	0	0	1	1	0	0	2	0	4	0	195
5:45 PM	0	75	0	0	21	68	1	0	0	0	1	0	0	0	5	0	171
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	687	8	0	237	731	7	0	5	3	3	0	34	1	60	0	1780
APPROACH %'s :	0.57%	98.28%	1.14%	0.00%	24.31%	74.97%	0.72%	0.00%	45.45%	27.27%	27.27%	0.00%	35.79%	1.05%	63.16%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	356	0	0	145	393	4	0	2	2	0	0	23	0	33	0	960
PEAK HR FACTOR :	0.500	0.918	0.000	0.000	0.863	0.869	0.500	0.000	0.500	0.250	0.000	0.000	0.575	0.000	0.825	0.000	0.945
		0.913				0.928				0.500				0.700			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grant Line Rd & Jackson Rd/SR-16
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-002
Date: 5/21/2019

Total

NS/EW Streets:	Grant Line Rd				Grant Line Rd				Jackson Rd/SR-16				Jackson Rd/SR-16				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	63	4	0	5	51	13	0	16	67	0	0	9	177	6	0	411
7:15 AM	1	85	4	0	7	50	10	0	18	72	0	0	14	164	4	0	429
7:30 AM	1	90	2	0	9	56	19	0	23	54	0	0	9	153	12	0	428
7:45 AM	1	78	6	0	2	62	22	0	26	66	0	0	4	146	12	0	425
8:00 AM	2	75	11	0	5	42	25	0	21	50	1	0	5	127	19	0	383
8:15 AM	2	86	5	0	2	45	10	0	15	78	0	0	7	139	15	0	404
8:30 AM	1	94	7	0	3	45	12	0	21	56	3	0	12	133	16	0	403
8:45 AM	1	90	4	0	6	32	13	0	22	70	1	0	9	119	5	0	372
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	661	43	0	39	383	124	0	162	513	5	0	69	1158	89	0	3255
APPROACH %'s :	1.26%	92.71%	6.03%	0.00%	7.14%	70.15%	22.71%	0.00%	23.82%	75.44%	0.74%	0.00%	5.24%	87.99%	6.76%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	3	316	16	0	23	219	64	0	83	259	0	0	36	640	34	0	1693
PEAK HR FACTOR :	0.750	0.878	0.667	0.000	0.639	0.883	0.727	0.000	0.798	0.899	0.000	0.000	0.643	0.904	0.708	0.000	0.987
		0.901				0.890				0.929				0.924			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	71	13	0	11	66	11	0	5	144	1	0	7	72	0	0	402
4:15 PM	0	84	16	0	13	74	10	0	11	162	0	0	14	78	10	0	472
4:30 PM	1	56	10	0	6	93	9	0	15	186	0	0	18	98	11	0	503
4:45 PM	1	61	17	0	9	69	13	0	17	180	0	0	14	79	13	0	473
5:00 PM	1	72	15	0	9	87	19	0	16	156	0	0	11	79	6	0	471
5:15 PM	1	73	14	0	9	85	16	0	16	175	0	0	2	67	13	0	471
5:30 PM	0	56	13	0	9	81	8	0	14	174	0	0	11	75	14	0	455
5:45 PM	0	60	6	0	11	53	9	0	7	170	1	0	10	69	6	0	402
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	533	104	0	77	608	95	0	101	1347	2	0	87	617	73	0	3649
APPROACH %'s :	0.78%	83.02%	16.20%	0.00%	9.87%	77.95%	12.18%	0.00%	6.97%	92.90%	0.14%	0.00%	11.20%	79.41%	9.40%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	3	273	58	0	37	323	51	0	59	684	0	0	57	334	40	0	1919
PEAK HR FACTOR :	0.750	0.813	0.853	0.000	0.712	0.868	0.671	0.000	0.868	0.919	0.000	0.000	0.792	0.852	0.769	0.000	0.954
		0.835				0.893				0.924				0.848			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Zinfandel Dr & Douglas Rd
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-003
Date: 5/21/2019

Total

NS/EW Streets:	Zinfandel Dr				Zinfandel Dr				Douglas Rd				Douglas Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	2	1	1	0	1	2	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	23	9	0	22	2	9	0	54	27	0	0	3	72	137	0	361
7:15 AM	3	29	11	0	42	5	9	0	63	28	0	0	9	92	133	0	424
7:30 AM	3	56	11	0	43	2	11	0	81	38	1	0	2	73	106	0	427
7:45 AM	1	46	15	0	45	13	18	0	81	49	1	0	1	101	135	0	506
8:00 AM	0	47	9	0	44	5	17	0	69	42	0	0	4	78	109	0	424
8:15 AM	2	30	9	0	43	7	26	0	73	56	0	0	5	87	94	0	432
8:30 AM	2	37	16	0	42	7	19	0	47	40	1	0	5	42	110	1	369
8:45 AM	2	19	6	0	35	7	10	0	38	20	1	0	9	46	94	0	287
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	16	287	86	0	316	48	119	0	506	300	4	0	38	591	918	1	3230
APPROACH %'s :	4.11%	73.78%	22.11%	0.00%	65.42%	9.94%	24.64%	0.00%	62.47%	37.04%	0.49%	0.00%	2.45%	38.18%	59.30%	0.06%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	6	179	44	0	175	27	72	0	304	185	2	0	12	339	444	0	1789
PEAK HR FACTOR :	0.500	0.799	0.733	0.000	0.972	0.519	0.692	0.000	0.938	0.826	0.500	0.000	0.600	0.839	0.822	0.000	0.884
		0.818				0.901				0.937				0.839			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	2	1	1	0	1	2	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	14	10	0	132	35	59	0	17	64	3	0	13	51	47	0	445
4:15 PM	0	8	9	0	149	32	79	0	13	66	3	0	13	39	52	0	463
4:30 PM	1	19	11	0	144	39	85	0	21	75	3	0	19	56	61	0	534
4:45 PM	0	6	8	0	135	36	88	0	19	86	2	0	17	44	60	0	501
5:00 PM	2	14	10	0	152	39	95	0	23	67	5	0	12	53	65	0	537
5:15 PM	1	14	10	0	178	36	81	0	13	73	5	0	13	52	65	1	542
5:30 PM	4	17	7	0	157	42	66	0	19	70	3	0	21	40	56	0	502
5:45 PM	2	8	6	0	145	28	64	0	15	44	1	0	7	47	42	0	409
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	10	100	71	0	1192	287	617	0	140	545	25	0	115	382	448	1	3933
APPROACH %'s :	5.52%	55.25%	39.23%	0.00%	56.87%	13.69%	29.44%	0.00%	19.72%	76.76%	3.52%	0.00%	12.16%	40.38%	47.36%	0.11%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	4	53	39	0	609	150	349	0	76	301	15	0	61	205	251	1	2114
PEAK HR FACTOR :	0.500	0.697	0.886	0.000	0.855	0.962	0.918	0.000	0.826	0.875	0.750	0.000	0.803	0.915	0.965	0.250	0.975
		0.774				0.939				0.916				0.952			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grant Line Rd & Douglas Rd
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-005
Date: 5/21/2019

Total

NS/EW Streets:	Grant Line Rd				Grant Line Rd				Douglas Rd				Douglas Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	13	87	0	0	0	69	12	0	27	0	11	0	0	0	0	0	219
7:15 AM	27	117	0	0	0	71	14	0	34	0	5	0	0	0	0	0	268
7:30 AM	24	119	0	0	0	88	18	0	74	0	6	0	0	0	0	0	329
7:45 AM	33	133	0	0	0	76	23	0	36	0	7	0	0	0	0	0	308
8:00 AM	10	112	0	0	0	65	17	0	52	0	4	0	0	0	0	0	260
8:15 AM	13	111	0	0	0	55	12	0	62	0	3	0	0	0	0	0	256
8:30 AM	11	124	0	0	0	52	15	0	43	0	6	0	0	0	0	0	251
8:45 AM	8	112	0	0	0	42	11	0	33	0	4	0	0	0	0	0	210
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	139	915	0	0	0	518	122	0	361	0	46	0	0	0	0	0	2101
APPROACH %'s :	13.19%	86.81%	0.00%	0.00%	0.00%	80.94%	19.06%	0.00%	88.70%	0.00%	11.30%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	94	481	0	0	0	300	72	0	196	0	22	0	0	0	0	0	1165
PEAK HR FACTOR :	0.712	0.904	0.000	0.000	0.000	0.852	0.783	0.000	0.662	0.000	0.786	0.000	0.000	0.000	0.000	0.000	0.885
	0.866				0.877				0.681								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	86	0	0	0	85	35	0	37	0	10	0	0	0	0	0	255
4:15 PM	6	109	0	0	0	125	41	0	35	0	18	1	0	0	0	0	335
4:30 PM	5	80	0	0	0	86	38	0	42	0	33	0	0	0	0	0	284
4:45 PM	2	75	0	0	0	114	45	0	26	0	26	1	0	0	0	0	289
5:00 PM	7	101	0	0	0	107	39	0	39	0	24	0	0	0	0	0	317
5:15 PM	8	96	0	0	0	119	44	0	35	0	22	0	0	0	0	0	324
5:30 PM	2	77	0	0	0	96	52	0	48	0	11	0	0	0	0	0	286
5:45 PM	3	87	0	0	0	68	36	0	29	0	12	0	0	0	0	0	235
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	35	711	0	0	0	800	330	0	291	0	156	2	0	0	0	0	2325
APPROACH %'s :	4.69%	95.31%	0.00%	0.00%	0.00%	70.80%	29.20%	0.00%	64.81%	0.00%	34.74%	0.45%					
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	20	365	0	0	0	432	163	0	142	0	101	2	0	0	0	0	1225
PEAK HR FACTOR :	0.714	0.837	0.000	0.000	0.000	0.864	0.906	0.000	0.845	0.000	0.765	0.500	0.000	0.000	0.000	0.000	0.914
	0.837				0.896				0.817								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mather Field Rd & US-50 WB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-006
Date: 5/22/2019

Total

NS/EW Streets:	Mather Field Rd				Mather Field Rd				US-50 WB Ramps				US-50 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	1	0	0	2	1	0	0	0	0	0	1.5	0	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	146	166	0	0	112	123	0	0	0	0	0	212	0	40	0	799
7:15 AM	0	169	140	0	0	175	82	0	0	0	0	0	227	0	60	0	853
7:30 AM	0	205	104	0	0	179	88	0	0	0	0	0	247	0	56	0	879
7:45 AM	0	188	96	0	0	205	76	0	0	0	0	0	284	0	67	0	916
8:00 AM	0	189	121	0	0	178	115	0	0	0	0	0	213	0	67	0	883
8:15 AM	0	158	129	0	0	193	111	0	0	0	0	0	234	0	50	0	875
8:30 AM	0	148	138	0	0	168	104	0	0	0	0	0	189	0	52	0	799
8:45 AM	0	135	122	0	0	115	98	0	0	0	0	0	151	0	61	0	682
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1338	1016	0	0	1325	797	0	0	0	0	0	1757	0	453	0	6686
APPROACH %'s :	0.00%	56.84%	43.16%	0.00%	0.00%	62.44%	37.56%	0.00%					79.50%	0.00%	20.50%	0.00%	
PEAK HR :	**07:30 AM - 08:30 AM**																TOTAL
PEAK HR VOL :	0	740	450	0	0	755	390	0	0	0	0	0	978	0	240	0	3553
PEAK HR FACTOR :	0.000	0.902	0.872	0.000	0.000	0.921	0.848	0.000	0.000	0.000	0.000	0.000	0.861	0.000	0.896	0.000	0.970
		0.960				0.942								0.868			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	1	0	0	2	1	0	0	0	0	0	1.5	0	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	227	263	0	0	143	109	0	0	0	0	0	70	0	72	0	884
4:15 PM	0	241	205	0	0	136	68	0	0	0	0	0	65	0	75	0	790
4:30 PM	0	279	246	0	0	136	95	0	0	0	0	0	83	0	81	0	920
4:45 PM	0	290	240	0	0	146	84	0	0	0	0	0	98	0	94	0	952
5:00 PM	0	293	245	0	0	176	97	0	0	0	0	0	97	0	77	0	985
5:15 PM	0	286	235	0	0	125	83	0	0	0	0	0	123	0	101	0	953
5:30 PM	0	240	176	0	0	136	90	0	0	0	0	0	91	0	84	0	817
5:45 PM	0	234	149	0	0	129	86	0	0	0	0	0	100	0	87	0	785
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2090	1759	0	0	1127	712	0	0	0	0	0	727	0	671	0	7086
APPROACH %'s :	0.00%	54.30%	45.70%	0.00%	0.00%	61.28%	38.72%	0.00%					52.00%	0.00%	48.00%	0.00%	
PEAK HR :	**04:30 PM - 05:30 PM**																TOTAL
PEAK HR VOL :	0	1148	966	0	0	583	359	0	0	0	0	0	401	0	353	0	3810
PEAK HR FACTOR :	0.000	0.980	0.982	0.000	0.000	0.828	0.925	0.000	0.000	0.000	0.000	0.000	0.815	0.000	0.874	0.000	0.967
		0.982				0.863								0.842			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mather Field Rd & US-50 EB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-007
Date: 5/22/2019

Total

NS/EW Streets:	Mather Field Rd				Mather Field Rd				US-50 EB Ramps				US-50 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	2	0	0	2	1	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	237	66	0	0	284	46	0	76	0	222	0	0	0	0	0	931
7:15 AM	0	238	84	0	0	309	80	0	67	0	265	0	0	0	0	0	1043
7:30 AM	0	230	88	0	0	348	96	0	83	0	305	0	0	0	0	0	1150
7:45 AM	0	225	86	0	0	387	79	0	61	0	329	0	0	0	0	0	1167
8:00 AM	0	219	77	0	0	346	63	0	84	0	261	0	0	0	0	0	1050
8:15 AM	0	206	82	0	0	338	79	0	84	0	278	0	0	0	0	0	1067
8:30 AM	0	205	82	0	0	278	77	0	76	0	242	0	0	0	0	0	960
8:45 AM	0	178	69	0	0	225	52	0	76	0	200	0	0	0	0	0	800
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1738	634	0	0	2515	572	0	607	0	2102	0	0	0	0	0	8168
APPROACH %'s :	0.00%	73.27%	26.73%	0.00%	0.00%	81.47%	18.53%	0.00%	22.41%	0.00%	77.59%	0.00%					
PEAK HR :	**07:30 AM - 08:30 AM**																TOTAL
PEAK HR VOL :	0	880	333	0	0	1419	317	0	312	0	1173	0	0	0	0	0	4434
PEAK HR FACTOR :	0.000	0.957	0.946	0.000	0.000	0.917	0.826	0.000	0.929	0.000	0.891	0.000	0.000	0.000	0.000	0.000	0.950
		0.954				0.931				0.952							

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	2	0	0	2	1	0	1.5	0	1.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	381	239	0	0	137	70	0	113	0	157	0	0	0	0	0	1097
4:15 PM	0	285	179	0	0	162	48	0	150	0	146	0	0	0	0	0	970
4:30 PM	0	402	211	0	0	151	52	0	131	0	144	0	0	0	0	0	1091
4:45 PM	0	388	182	0	0	202	48	0	120	0	158	0	0	0	0	0	1098
5:00 PM	0	432	182	0	0	188	71	0	124	0	119	0	0	0	0	0	1116
5:15 PM	0	349	140	0	0	203	60	0	159	0	164	0	0	0	0	0	1075
5:30 PM	0	291	99	0	0	186	57	0	128	0	153	0	0	0	0	0	914
5:45 PM	0	244	83	0	0	183	42	0	145	0	148	0	0	0	0	0	845
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2772	1315	0	0	1412	448	0	1070	0	1189	0	0	0	0	0	8206
APPROACH %'s :	0.00%	67.82%	32.18%	0.00%	0.00%	75.91%	24.09%	0.00%	47.37%	0.00%	52.63%	0.00%					
PEAK HR :	**04:30 PM - 05:30 PM**																TOTAL
PEAK HR VOL :	0	1571	715	0	0	744	231	0	534	0	585	0	0	0	0	0	4380
PEAK HR FACTOR :	0.000	0.909	0.847	0.000	0.000	0.916	0.813	0.000	0.840	0.000	0.892	0.000	0.000	0.000	0.000	0.000	0.981
		0.931				0.927				0.866							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mather Field Rd & International Dr
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-008
Date: 5/22/2019

Total

NS/EW Streets:	Mather Field Rd				Mather Field Rd				International Dr				International Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	0	1	0	0	0	0	0	0	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	61	0	12	0	0	0	0	0	0	144	204	0	10	166	0	1	598
7:15 AM	65	0	9	0	0	0	0	0	0	203	174	0	20	183	0	3	657
7:30 AM	69	0	11	0	0	0	0	0	0	193	184	0	23	214	0	3	697
7:45 AM	62	0	11	0	0	0	0	0	0	284	234	0	22	168	0	4	785
8:00 AM	67	0	13	0	0	0	0	0	0	231	208	0	19	139	0	8	685
8:15 AM	81	0	12	0	0	0	0	0	0	223	193	0	21	151	0	16	697
8:30 AM	66	0	17	0	0	0	0	0	0	198	163	0	4	142	0	2	592
8:45 AM	82	0	6	0	0	0	0	0	0	173	162	0	18	126	0	5	572
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	553	0	91	0	0	0	0	0	0	1649	1522	0	137	1289	0	42	5283
APPROACH %'s :	85.87%	0.00%	14.13%	0.00%					0.00%	52.00%	48.00%	0.00%	9.33%	87.81%	0.00%	2.86%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	279	0	47	0	0	0	0	0	0	931	819	0	85	672	0	31	2864
PEAK HR FACTOR :	0.861	0.000	0.904	0.000	0.000	0.000	0.000	0.000	0.000	0.820	0.875	0.000	0.924	0.785	0.000	0.484	0.912
	0.876									0.845				0.821			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	0	1	0	0	0	0	0	0	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	263	0	33	0	0	0	0	0	0	145	41	0	25	264	0	2	773
4:15 PM	153	0	26	0	0	0	0	0	0	179	59	0	18	234	0	4	673
4:30 PM	251	0	26	0	0	0	0	0	0	165	55	0	18	254	0	1	770
4:45 PM	145	0	21	0	0	0	0	0	0	186	57	0	23	247	0	0	679
5:00 PM	174	0	30	0	0	0	0	0	0	219	55	0	32	291	0	4	805
5:15 PM	107	0	19	0	0	0	0	0	0	211	57	0	30	255	0	1	680
5:30 PM	108	0	9	0	0	0	0	0	0	185	53	0	17	220	0	2	594
5:45 PM	73	0	7	0	0	0	0	0	0	188	60	0	8	179	0	6	521
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1274	0	171	0	0	0	0	0	0	1478	437	0	171	1944	0	20	5495
APPROACH %'s :	88.17%	0.00%	11.83%	0.00%					0.00%	77.18%	22.82%	0.00%	8.01%	91.05%	0.00%	0.94%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	677	0	96	0	0	0	0	0	0	781	224	0	103	1047	0	6	2934
PEAK HR FACTOR :	0.674	0.000	0.800	0.000	0.000	0.000	0.000	0.000	0.000	0.892	0.982	0.000	0.805	0.899	0.000	0.375	0.911
	0.698									0.917				0.884			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Zinfandel Dr & International Dr
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-009
Date: 5/22/2019

Total

NS/EW Streets:	Zinfandel Dr				Zinfandel Dr				International Dr				International Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	0	0	2	3	0	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	65	195	14	2	18	59	42	1	15	59	14	1	10	76	25	4	600
7:15 AM	71	234	16	8	24	62	47	0	19	62	14	1	14	93	24	5	694
7:30 AM	47	221	21	7	40	71	61	1	21	81	16	3	13	86	30	0	719
7:45 AM	71	208	30	9	29	138	75	2	28	95	21	3	29	113	19	4	874
8:00 AM	56	219	26	19	39	98	58	1	25	83	13	3	25	86	26	0	777
8:15 AM	50	224	25	7	35	119	65	1	27	78	13	6	17	82	26	4	779
8:30 AM	58	148	6	5	27	74	40	1	36	83	22	0	14	63	30	4	611
8:45 AM	52	160	18	7	28	91	57	1	34	68	13	2	16	54	28	2	631
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	470	1609	156	64	240	712	445	8	205	609	126	19	138	653	208	23	5685
APPROACH %'s :	20.44%	69.99%	6.79%	2.78%	17.08%	50.68%	31.67%	0.57%	21.38%	63.50%	13.14%	1.98%	13.50%	63.89%	20.35%	2.25%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	224	872	102	42	143	426	259	5	101	337	63	15	84	367	101	8	3149
PEAK HR FACTOR :	0.789	0.973	0.850	0.553	0.894	0.772	0.863	0.625	0.902	0.887	0.750	0.625	0.724	0.812	0.842	0.500	0.901
	0.969				0.853				0.878				0.848				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	0	0	2	3	0	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	20	91	12	4	46	182	48	1	80	104	56	2	32	106	41	7	832
4:15 PM	26	125	11	5	43	214	34	2	63	124	51	2	31	73	20	4	828
4:30 PM	30	106	16	1	36	204	30	4	89	134	54	4	36	76	31	7	858
4:45 PM	27	99	11	1	31	204	33	1	65	107	61	2	35	97	34	11	819
5:00 PM	28	118	16	6	56	242	31	2	77	133	66	3	44	108	30	13	973
5:15 PM	30	88	16	11	42	213	31	1	56	98	57	2	27	79	34	8	793
5:30 PM	28	113	13	6	48	219	19	1	45	78	63	1	35	94	24	6	793
5:45 PM	23	108	17	7	27	191	22	7	30	64	56	2	30	79	23	6	692
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	212	848	112	41	329	1669	248	19	505	842	464	18	270	712	237	62	6588
APPROACH %'s :	17.48%	69.91%	9.23%	3.38%	14.53%	73.69%	10.95%	0.84%	27.61%	46.04%	25.37%	0.98%	21.08%	55.58%	18.50%	4.84%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	111	448	54	13	166	864	128	9	294	498	232	11	146	354	115	35	3478
PEAK HR FACTOR :	0.925	0.896	0.844	0.542	0.741	0.893	0.941	0.563	0.826	0.929	0.879	0.688	0.830	0.819	0.846	0.673	0.894
	0.932				0.881				0.921				0.833				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Zinfandel Dr & White Rock Rd
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-010
Date: 5/22/2019

Total

NS/EW Streets:	Zinfandel Dr				Zinfandel Dr				White Rock Rd				White Rock Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	0	0	2	3	1	0	2	3	0	0	2	1.5	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	8	214	3	0	125	171	122	0	35	17	3	4	7	19	72	1	801
7:15 AM	8	272	6	0	151	313	155	0	45	19	6	4	6	24	54	0	1063
7:30 AM	7	250	5	0	154	287	147	0	62	26	6	1	4	18	81	0	1048
7:45 AM	8	238	5	0	199	373	170	0	46	28	5	1	6	29	48	0	1156
8:00 AM	14	243	2	0	202	329	169	0	61	27	10	2	9	21	44	0	1133
8:15 AM	11	277	6	0	195	384	172	0	39	20	9	3	5	19	68	1	1209
8:30 AM	9	241	8	0	138	244	139	0	77	16	8	2	7	20	49	1	959
8:45 AM	11	209	6	0	129	282	112	0	49	21	5	4	9	18	56	1	912
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	76	1944	41	0	1293	2383	1186	0	414	174	52	21	53	168	472	4	8281
APPROACH %'s :	3.69%	94.32%	1.99%	0.00%	26.59%	49.01%	24.39%	0.00%	62.63%	26.32%	7.87%	3.18%	7.60%	24.10%	67.72%	0.57%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	40	1008	18	0	750	1373	658	0	208	101	30	7	24	87	241	1	4546
PEAK HR FACTOR :	0.714	0.910	0.750	0.000	0.928	0.894	0.956	0.000	0.839	0.902	0.750	0.583	0.667	0.750	0.744	0.250	0.940
		0.906				0.926				0.865				0.857			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	0	0	2	3	1	0	2	3	0	0	2	1.5	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	14	262	5	0	76	215	57	0	132	27	4	1	12	27	146	2	980
4:15 PM	10	321	5	0	62	228	52	0	140	31	10	4	11	28	147	3	1052
4:30 PM	13	294	3	0	101	291	51	0	148	44	12	4	11	27	157	1	1157
4:45 PM	11	282	3	1	85	241	69	0	157	38	13	3	8	30	176	1	1118
5:00 PM	21	266	6	0	90	295	68	0	136	46	9	2	8	42	180	1	1170
5:15 PM	13	286	7	0	80	302	75	0	149	45	8	6	12	25	183	0	1191
5:30 PM	8	259	8	0	82	311	60	0	108	20	12	1	9	32	130	1	1041
5:45 PM	4	272	5	0	63	260	76	0	91	30	11	2	5	29	123	2	973
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	94	2242	42	1	639	2143	508	0	1061	281	79	23	76	240	1242	11	8682
APPROACH %'s :	3.95%	94.24%	1.77%	0.04%	19.42%	65.14%	15.44%	0.00%	73.48%	19.46%	5.47%	1.59%	4.84%	15.30%	79.16%	0.70%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	58	1128	19	1	356	1129	263	0	590	173	42	15	39	124	696	3	4636
PEAK HR FACTOR :	0.690	0.959	0.679	0.250	0.881	0.935	0.877	0.000	0.939	0.940	0.808	0.625	0.813	0.738	0.951	0.750	0.973
		0.973				0.956				0.972				0.933			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Zinfandel Dr & US-50 EB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-011
Date: 5/22/2019

Total

NS/EW Streets:	Zinfandel Dr					Zinfandel Dr				US-50 EB Ramps					US-50 EB Ramps					
AM	NORTHBOUND					SOUTHBOUND				EASTBOUND					WESTBOUND					
	0	4	0	0	0	0	2	1	0	1.5	1.5	1.5	0	0	0	0	2	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	TOTAL
7:00 AM	0	263	0	0	97	0	221	33	0	63	152	225	0	0	0	0	27	0	5	1086
7:15 AM	0	240	0	0	92	0	320	44	0	80	204	275	0	0	0	0	33	0	11	1299
7:30 AM	0	264	7	0	143	0	370	58	0	75	197	251	0	1	0	0	29	0	5	1400
7:45 AM	0	200	6	0	102	0	431	45	0	110	253	301	0	0	0	0	25	0	11	1484
8:00 AM	0	271	2	0	112	0	472	45	0	93	209	254	0	0	0	0	23	0	6	1487
8:15 AM	0	250	0	0	112	0	411	53	0	99	190	289	0	0	0	0	25	0	5	1434
8:30 AM	0	235	2	0	115	0	300	40	0	88	173	208	0	0	0	0	36	0	8	1205
8:45 AM	0	242	1	0	93	0	324	28	0	93	148	196	0	0	0	0	25	0	6	1156
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	TOTAL
TOTAL VOLUMES :	0	1965	18	0	866	0	2849	346	0	701	1526	1999	0	1	0	0	223	0	57	10551
APPROACH %'s :	0.00%	68.97%	0.63%	0.00%	30.40%	0.00%	89.17%	10.83%	0.00%	16.58%	36.10%	47.29%	0.00%	0.02%	0.00%	0.00%	79.64%	0.00%	20.36%	
PEAK HR :	07:30 AM - 08:30 AM																			TOTAL
PEAK HR VOL :	0	985	15	0	469	0	1684	201	0	377	849	1095	0	1	0	0	102	0	27	5805
PEAK HR FACTOR :	0.000	0.909	0.536	0.000	0.820	0.000	0.892	0.866	0.000	0.857	0.839	0.909	0.000	0.250	0.000	0.000	0.879	0.000	0.614	0.976
			0.887				0.912					0.874					0.896			

PM	NORTHBOUND					SOUTHBOUND				EASTBOUND					WESTBOUND					
	0	4	0	0	0	0	2	1	0	1.5	1.5	1.5	0	0	0	0	2	0	0	
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	TOTAL
4:00 PM	0	428	0	0	123	0	212	29	0	191	35	151	0	0	0	0	206	0	33	1408
4:15 PM	0	464	0	0	143	0	230	22	0	141	24	153	0	1	0	0	169	0	33	1380
4:30 PM	0	471	3	0	139	0	229	29	0	169	34	173	0	0	0	0	203	0	35	1485
4:45 PM	0	477	1	0	109	0	273	33	0	170	26	162	0	0	0	0	171	0	29	1451
5:00 PM	0	492	0	0	106	0	249	23	0	187	35	166	0	0	0	0	208	0	35	1501
5:15 PM	0	498	3	0	110	0	306	29	0	166	35	175	0	0	0	0	154	0	28	1504
5:30 PM	0	375	1	0	104	0	251	26	0	197	31	167	0	0	0	0	159	0	19	1330
5:45 PM	0	382	1	0	102	0	263	27	0	168	30	150	0	1	0	0	122	0	30	1276
	NL	NT	NR	NU	NT2	SL	ST	SR	SU	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	TOTAL
TOTAL VOLUMES :	0	3587	9	0	936	0	2013	218	0	1389	250	1297	0	2	0	0	1392	0	242	11335
APPROACH %'s :	0.00%	79.15%	0.20%	0.00%	20.65%	0.00%	90.23%	9.77%	0.00%	47.28%	8.51%	44.15%	0.00%	0.07%	0.00%	0.00%	85.19%	0.00%	14.81%	
PEAK HR :	04:30 PM - 05:30 PM																			TOTAL
PEAK HR VOL :	0	1938	7	0	464	0	1057	114	0	692	130	676	0	0	0	0	736	0	127	5941
PEAK HR FACTOR :	0.000	0.973	0.583	0.000	0.835	0.000	0.864	0.864	0.000	0.925	0.929	0.966	0.000	0.000	0.000	0.000	0.885	0.000	0.907	0.988
			0.982				0.874					0.965					0.888			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Zinfandel Dr & US-50 WB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-012
Date: 5/22/2019

Total

NS/EW Streets:	Zinfandel Dr				Zinfandel Dr				US-50 WB Ramps				US-50 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	2	0	0	2	1	0	0	0	0	0	2	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	122	227	0	0	93	97	0	0	0	0	0	155	0	19	0	713
7:15 AM	0	162	193	0	0	140	82	0	0	0	0	0	246	0	43	0	866
7:30 AM	0	211	121	0	0	200	74	0	0	0	0	0	203	0	62	0	871
7:45 AM	0	234	139	0	0	199	73	0	0	0	0	0	300	0	75	0	1020
8:00 AM	0	270	126	0	0	188	79	0	0	0	0	0	302	0	42	0	1007
8:15 AM	0	199	136	0	0	173	85	0	0	0	0	0	277	0	54	0	924
8:30 AM	0	253	139	0	0	166	93	0	0	0	0	0	194	0	41	0	886
8:45 AM	0	220	130	0	0	147	71	0	0	0	0	0	231	0	53	0	852
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1671	1211	0	0	1306	654	0	0	0	0	0	1908	0	389	0	7139
APPROACH %'s :	0.00%	57.98%	42.02%	0.00%	0.00%	66.63%	33.37%	0.00%					83.06%	0.00%	16.94%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	956	540	0	0	726	330	0	0	0	0	0	1073	0	212	0	3837
PEAK HR FACTOR :	0.000	0.885	0.971	0.000	0.000	0.912	0.887	0.000	0.000	0.000	0.000	0.000	0.888	0.000	0.707	0.000	0.940
		0.944				0.971								0.857			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	2	0	0	2	1	0	0	0	0	0	2	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	396	457	0	0	186	122	0	0	0	0	0	82	0	67	0	1310
4:15 PM	0	389	368	0	0	161	137	0	0	0	0	0	78	0	79	0	1212
4:30 PM	0	402	454	0	0	185	136	0	0	0	0	0	93	0	82	0	1352
4:45 PM	0	427	402	0	0	200	133	0	0	0	0	0	97	0	73	0	1332
5:00 PM	0	428	434	0	0	205	144	0	0	0	0	0	87	0	66	0	1364
5:15 PM	0	398	435	0	0	185	154	0	0	0	0	0	117	0	89	0	1378
5:30 PM	0	429	318	0	0	197	119	0	0	0	0	0	105	0	60	0	1228
5:45 PM	0	364	287	0	0	189	115	0	0	0	0	0	82	0	67	0	1104
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3233	3155	0	0	1508	1060	0	0	0	0	0	741	0	583	0	10280
APPROACH %'s :	0.00%	50.61%	49.39%	0.00%	0.00%	58.72%	41.28%	0.00%					55.97%	0.00%	44.03%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1655	1725	0	0	775	567	0	0	0	0	0	394	0	310	0	5426
PEAK HR FACTOR :	0.000	0.967	0.950	0.000	0.000	0.945	0.920	0.000	0.000	0.000	0.000	0.000	0.842	0.000	0.871	0.000	0.984
		0.980				0.961								0.854			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Sunrise Blvd & White Rock Rd
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-013
Date: 5/22/2019

Total

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				White Rock Rd				White Rock Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	2	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	63	238	23	10	57	201	62	4	27	47	9	14	21	54	23	0	853
7:15 AM	57	247	19	9	54	198	66	4	20	38	15	15	41	52	46	0	881
7:30 AM	84	292	24	8	46	205	62	5	31	52	18	15	39	83	24	0	988
7:45 AM	72	275	18	12	52	234	65	4	25	57	21	11	43	62	36	1	988
8:00 AM	66	256	21	9	50	213	69	11	29	43	22	20	30	64	27	1	931
8:15 AM	69	262	19	13	75	199	58	9	22	54	14	13	34	57	29	0	927
8:30 AM	55	243	30	4	52	222	51	6	25	30	15	13	31	49	29	0	855
8:45 AM	47	253	16	11	40	220	39	10	24	41	22	9	35	39	33	1	840
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	513	2066	170	76	426	1692	472	53	203	362	136	110	274	460	247	3	7263
APPROACH %'s :	18.16%	73.13%	6.02%	2.69%	16.12%	64.02%	17.86%	2.01%	25.03%	44.64%	16.77%	13.56%	27.85%	46.75%	25.10%	0.30%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	291	1085	82	42	223	851	254	29	107	206	75	59	146	266	116	2	3834
PEAK HR FACTOR :	0.866	0.929	0.854	0.808	0.743	0.909	0.920	0.659	0.863	0.904	0.852	0.738	0.849	0.801	0.806	0.500	0.970
		0.919				0.956				0.963				0.908			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	2	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	38	228	42	15	61	340	24	6	46	99	54	3	55	67	57	2	1137
4:15 PM	50	201	44	14	51	299	21	10	40	119	43	2	49	62	52	0	1057
4:30 PM	59	237	60	16	60	321	19	2	61	118	80	6	36	82	46	1	1204
4:45 PM	52	220	38	18	62	292	31	8	64	145	41	5	60	67	52	2	1157
5:00 PM	71	258	57	19	59	288	40	5	84	177	63	9	51	126	62	1	1370
5:15 PM	49	224	42	19	56	329	28	1	70	108	42	9	56	58	52	1	1144
5:30 PM	51	188	28	20	54	275	31	9	48	97	43	7	53	56	42	1	1003
5:45 PM	22	183	21	8	49	241	34	6	43	73	26	9	47	40	47	1	850
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	392	1739	332	129	452	2385	228	47	456	936	392	50	407	558	410	9	8922
APPROACH %'s :	15.12%	67.09%	12.81%	4.98%	14.52%	76.64%	7.33%	1.51%	24.86%	51.04%	21.37%	2.73%	29.41%	40.32%	29.62%	0.65%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	231	939	197	72	237	1230	118	16	279	548	226	29	203	333	212	5	4875
PEAK HR FACTOR :	0.813	0.910	0.821	0.947	0.956	0.935	0.738	0.500	0.830	0.774	0.706	0.806	0.846	0.661	0.855	0.625	0.890
		0.888				0.967				0.812				0.784			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Sunrise Blvd & Folsom Blvd
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-014
Date: 5/22/2019

Total

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				Folsom Blvd				Folsom Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	4	1	0	2	3	1	0	2	2	1	0	2	1.5	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	10	250	20	1	69	545	62	2	34	34	8	0	60	36	31	0	1162
7:15 AM	8	277	20	0	70	475	79	1	41	32	26	0	62	55	42	0	1188
7:30 AM	15	329	27	1	55	487	66	0	54	36	12	0	70	55	34	0	1241
7:45 AM	15	300	30	1	68	533	87	0	51	49	34	0	73	69	32	0	1342
8:00 AM	28	309	26	0	54	562	79	0	49	45	28	0	59	51	37	0	1327
8:15 AM	12	308	20	0	53	547	77	0	59	41	19	0	70	41	26	0	1273
8:30 AM	16	303	20	1	72	484	77	0	53	36	23	0	63	40	39	0	1227
8:45 AM	19	330	32	0	51	469	75	0	42	27	17	0	47	38	44	0	1191
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	123	2406	195	4	492	4102	602	3	383	300	167	0	504	385	285	0	9951
APPROACH %'s :	4.51%	88.20%	7.15%	0.15%	9.46%	78.90%	11.58%	0.06%	45.06%	35.29%	19.65%	0.00%	42.93%	32.79%	24.28%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	70	1246	103	2	230	2129	309	0	213	171	93	0	272	216	129	0	5183
PEAK HR FACTOR :	0.625	0.947	0.858	0.500	0.846	0.947	0.888	0.000	0.903	0.872	0.684	0.000	0.932	0.783	0.872	0.000	0.966
	0.955				0.960				0.890				0.886				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	4	1	0	2	3	1	0	2	2	1	0	2	1.5	1.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	464	50	1	51	280	60	2	100	67	26	0	49	54	61	0	1281
4:15 PM	27	451	59	1	63	274	59	0	111	83	28	0	42	60	60	0	1318
4:30 PM	29	355	56	1	43	270	66	2	115	84	25	0	55	74	69	0	1244
4:45 PM	32	420	54	1	65	258	67	0	104	82	29	0	48	56	64	0	1280
5:00 PM	30	413	56	0	68	320	53	0	92	98	25	0	61	54	59	0	1329
5:15 PM	33	378	76	0	60	255	70	1	101	110	27	0	67	77	53	0	1308
5:30 PM	27	383	59	0	58	274	61	0	66	87	21	0	54	61	50	0	1201
5:45 PM	14	291	68	0	52	253	59	0	82	61	28	0	39	42	45	0	1034
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	208	3155	478	4	460	2184	495	5	771	672	209	0	415	478	461	0	9995
APPROACH %'s :	5.41%	82.05%	12.43%	0.10%	14.63%	69.47%	15.74%	0.16%	46.67%	40.68%	12.65%	0.00%	30.65%	35.30%	34.05%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	118	1639	225	3	239	1122	245	2	422	347	107	0	206	244	252	0	5171
PEAK HR FACTOR :	0.922	0.909	0.953	0.750	0.879	0.877	0.914	0.250	0.917	0.885	0.922	0.000	0.844	0.824	0.913	0.000	0.973
	0.922				0.912				0.978				0.886				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Sunrise Blvd & US-50 EB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-015
Date: 5/22/2019

Total

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				US-50 EB Ramps				US-50 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	4	2	0	0	3	2	0	3	0	2	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	241	87	0	0	548	80	0	179	0	142	0	0	0	0	0	1277
7:15 AM	0	256	96	0	0	444	102	0	278	0	160	0	0	0	0	0	1336
7:30 AM	0	301	129	0	0	475	112	0	289	0	145	0	0	0	0	0	1451
7:45 AM	0	264	113	0	0	545	84	0	298	0	164	0	0	0	0	0	1468
8:00 AM	0	290	115	0	0	545	81	0	289	0	132	0	0	0	0	0	1452
8:15 AM	0	259	119	0	0	518	83	0	321	0	144	0	0	0	0	0	1444
8:30 AM	0	293	112	0	0	492	114	0	290	0	161	0	0	0	0	0	1462
8:45 AM	0	303	121	0	0	491	98	0	276	0	120	0	0	0	0	0	1409
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2207	892	0	0	4058	754	0	2220	0	1168	0	0	0	0	0	11299
APPROACH %'s :	0.00%	71.22%	28.78%	0.00%	0.00%	84.33%	15.67%	0.00%	65.53%	0.00%	34.47%	0.00%					
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	1106	459	0	0	2100	362	0	1198	0	601	0	0	0	0	0	5826
PEAK HR FACTOR :	0.000	0.944	0.964	0.000	0.000	0.963	0.794	0.000	0.933	0.000	0.916	0.000	0.000	0.000	0.000	0.000	0.992
		0.966				0.979				0.967							

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	4	2	0	0	3	2	0	3	0	2	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	551	113	0	0	299	99	0	317	0	99	0	0	0	0	0	1478
4:15 PM	0	477	116	0	0	320	70	0	287	0	75	0	0	0	0	0	1345
4:30 PM	0	451	102	0	0	301	99	0	279	0	78	0	0	0	0	0	1310
4:45 PM	0	511	101	0	0	336	79	0	280	0	75	0	0	0	0	0	1382
5:00 PM	0	429	103	0	0	346	87	0	259	0	73	0	0	0	0	0	1297
5:15 PM	0	403	103	0	0	321	94	0	250	0	86	0	0	0	0	0	1257
5:30 PM	0	448	79	0	0	303	34	0	260	0	75	0	0	0	0	0	1199
5:45 PM	0	367	68	0	0	297	30	0	253	0	72	0	0	0	0	0	1087
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3637	785	0	0	2523	592	0	2185	0	633	0	0	0	0	0	10355
APPROACH %'s :	0.00%	82.25%	17.75%	0.00%	0.00%	81.00%	19.00%	0.00%	77.54%	0.00%	22.46%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1990	432	0	0	1256	347	0	1163	0	327	0	0	0	0	0	5515
PEAK HR FACTOR :	0.000	0.903	0.931	0.000	0.000	0.935	0.876	0.000	0.917	0.000	0.826	0.000	0.000	0.000	0.000	0.000	0.933
		0.912				0.966				0.895							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Sunrise Blvd & US-50 WB Ramps
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-016
Date: 5/22/2019

Total

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				US-50 WB Ramps				US-50 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	2	0	0	3	2	0	0	0	0	0	2	0	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	373	65	0	0	540	461	0	0	0	0	0	77	0	84	0	1600
7:15 AM	0	445	79	0	0	478	402	0	0	0	0	0	79	0	94	0	1577
7:30 AM	0	532	73	0	0	484	422	0	0	0	0	0	90	0	111	0	1712
7:45 AM	0	480	64	0	0	494	374	0	0	0	0	0	155	0	123	0	1690
8:00 AM	0	507	59	0	0	488	406	0	0	0	0	0	130	0	108	0	1698
8:15 AM	0	533	73	0	0	483	392	0	0	0	0	0	126	0	98	0	1705
8:30 AM	0	498	69	0	0	494	410	0	0	0	0	0	102	0	86	0	1659
8:45 AM	0	499	83	0	0	452	308	0	0	0	0	0	119	0	99	0	1560
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3867	565	0	0	3913	3175	0	0	0	0	0	878	0	803	0	13201
APPROACH %'s :	0.00%	87.25%	12.75%	0.00%	0.00%	55.21%	44.79%	0.00%					52.23%	0.00%	47.77%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	2052	269	0	0	1949	1594	0	0	0	0	0	501	0	440	0	6805
PEAK HR FACTOR :	0.000	0.962	0.921	0.000	0.000	0.986	0.944	0.000	0.000	0.000	0.000	0.000	0.808	0.000	0.894	0.000	0.994
		0.958				0.978								0.846			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	2	0	0	3	2	0	0	0	0	0	2	0	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	718	131	0	0	326	268	0	0	0	0	0	80	0	84	0	1607
4:15 PM	0	651	124	0	0	292	289	0	0	0	0	0	74	0	73	0	1503
4:30 PM	0	591	99	0	0	323	303	0	0	0	0	0	86	0	91	0	1493
4:45 PM	0	699	104	0	0	343	239	0	0	0	0	0	75	0	64	0	1524
5:00 PM	0	594	120	0	0	325	275	0	0	0	0	0	91	0	71	0	1476
5:15 PM	0	517	97	0	0	316	311	0	0	0	0	0	92	0	66	0	1399
5:30 PM	0	632	87	0	0	278	296	0	0	0	0	0	85	0	74	0	1452
5:45 PM	0	537	97	0	0	256	310	0	0	0	0	0	95	0	99	0	1394
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4939	859	0	0	2459	2291	0	0	0	0	0	678	0	622	0	11848
APPROACH %'s :	0.00%	85.18%	14.82%	0.00%	0.00%	51.77%	48.23%	0.00%					52.15%	0.00%	47.85%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	2659	458	0	0	1284	1099	0	0	0	0	0	315	0	312	0	6127
PEAK HR FACTOR :	0.000	0.926	0.874	0.000	0.000	0.936	0.907	0.000	0.000	0.000	0.000	0.000	0.916	0.000	0.857	0.000	0.953
		0.918				0.952								0.886			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Sunrise Blvd & Zinfandel Dr
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-017
Date: 5/22/2019

Total

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				Zinfandel Dr				Zinfandel Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	0	0	1	3	1	0	0.3	0.3	1.3	0	1.3	0.3	0.3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	36	382	0	10	3	848	11	0	21	4	59	0	9	3	3	0	1389
7:15 AM	32	532	1	11	1	844	8	1	26	3	56	0	15	6	10	0	1546
7:30 AM	54	558	2	14	3	766	19	0	33	2	77	0	13	3	11	0	1555
7:45 AM	59	561	2	9	11	866	18	0	18	3	51	0	8	8	6	0	1620
8:00 AM	81	520	3	6	8	761	19	0	25	6	66	0	9	6	8	0	1518
8:15 AM	63	565	3	16	9	805	21	1	35	3	69	0	7	3	7	0	1607
8:30 AM	57	511	2	10	5	786	23	0	39	4	59	0	7	3	8	0	1514
8:45 AM	69	551	3	8	6	718	20	1	22	2	52	0	7	7	10	0	1476
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	451	4180	16	84	46	6394	139	3	219	27	489	0	75	39	63	0	12225
APPROACH %'s :	9.53%	88.35%	0.34%	1.78%	0.70%	97.14%	2.11%	0.05%	29.80%	3.67%	66.53%	0.00%	42.37%	22.03%	35.59%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	257	2204	10	45	31	3198	77	1	111	14	263	0	37	20	32	0	6300
PEAK HR FACTOR :	0.793	0.975	0.833	0.703	0.705	0.923	0.917	0.250	0.793	0.583	0.854	0.000	0.712	0.625	0.727	0.000	0.972
		0.972				0.924				0.866				0.824			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	0	0	1	3	1	0	0.3	0.3	1.3	0	1.3	0.3	0.3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	34	743	5	5	7	475	22	1	54	9	48	0	18	3	11	0	1435
4:15 PM	62	640	4	15	25	527	20	0	43	8	41	0	15	8	20	0	1428
4:30 PM	52	630	8	4	11	610	32	0	43	6	42	0	14	7	16	0	1475
4:45 PM	38	747	5	4	8	507	23	0	51	9	45	0	12	6	13	0	1468
5:00 PM	35	591	8	3	9	499	26	0	38	2	44	0	23	7	29	0	1314
5:15 PM	54	534	4	11	21	631	35	4	57	7	42	0	17	14	14	0	1445
5:30 PM	61	693	9	11	14	542	33	0	41	9	41	0	18	5	19	0	1496
5:45 PM	46	595	5	10	13	458	29	0	46	7	50	0	15	6	11	0	1291
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	382	5173	48	63	108	4249	220	5	373	57	353	0	132	56	133	0	11352
APPROACH %'s :	6.74%	91.30%	0.85%	1.11%	2.36%	92.73%	4.80%	0.11%	47.64%	7.28%	45.08%	0.00%	41.12%	17.45%	41.43%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	186	2760	22	28	51	2119	97	1	191	32	176	0	59	24	60	0	5806
PEAK HR FACTOR :	0.750	0.924	0.688	0.467	0.510	0.868	0.758	0.250	0.884	0.889	0.917	0.000	0.819	0.750	0.750	0.000	0.984
		0.943				0.868				0.899				0.831			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Sunrise Blvd & Jackson Rd/SR-16
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-018
Date: 5/21/2019

Total

NS/EW Streets:	Sunrise Blvd				Sunrise Blvd				Jackson Rd/SR-16				Jackson Rd/SR-16				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	196	8	0	23	82	23	0	8	45	1	0	5	109	65	0	566
7:15 AM	0	190	9	0	25	141	26	0	16	49	1	0	8	100	66	0	631
7:30 AM	2	210	15	0	22	163	22	0	14	50	0	0	3	94	72	0	667
7:45 AM	0	225	6	0	21	110	22	0	21	57	2	0	6	94	86	0	650
8:00 AM	2	231	14	0	27	88	15	0	22	36	3	0	13	73	54	0	578
8:15 AM	2	190	4	0	23	78	26	0	22	62	4	0	10	97	50	0	568
8:30 AM	0	153	7	0	28	76	19	0	30	46	1	0	6	68	54	0	488
8:45 AM	2	116	7	0	25	75	20	0	18	53	1	0	4	92	54	0	467
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	1511	70	0	194	813	173	0	151	398	13	0	55	727	501	0	4615
APPROACH %'s :	0.57%	95.03%	4.40%	0.00%	16.44%	68.90%	14.66%	0.00%	26.87%	70.82%	2.31%	0.00%	4.29%	56.66%	39.05%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	4	856	44	0	95	502	85	0	73	192	6	0	30	361	278	0	2526
PEAK HR FACTOR :	0.500	0.926	0.733	0.000	0.880	0.770	0.817	0.000	0.830	0.842	0.500	0.000	0.577	0.903	0.808	0.000	0.947
		0.915				0.824				0.847				0.899			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	1	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	90	4	0	55	204	15	0	23	82	2	0	13	39	25	0	553
4:15 PM	0	97	15	0	55	220	15	0	11	111	3	0	15	58	19	0	619
4:30 PM	1	96	14	0	82	220	12	0	24	102	1	0	9	69	40	0	670
4:45 PM	0	73	12	0	68	226	22	0	22	108	3	0	12	49	16	0	611
5:00 PM	2	84	22	0	67	252	28	0	16	96	0	0	8	50	32	0	657
5:15 PM	0	84	14	0	60	249	13	0	23	108	2	0	7	54	32	0	646
5:30 PM	2	60	11	0	75	205	24	0	24	109	2	0	10	56	24	0	602
5:45 PM	0	60	8	0	76	167	19	0	29	88	2	0	8	49	28	0	534
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	644	100	0	538	1743	148	0	172	804	15	0	82	424	216	0	4892
APPROACH %'s :	0.80%	85.87%	13.33%	0.00%	22.15%	71.76%	6.09%	0.00%	17.36%	81.13%	1.51%	0.00%	11.36%	58.73%	29.92%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	3	337	62	0	277	947	75	0	85	414	6	0	36	222	120	0	2584
PEAK HR FACTOR :	0.375	0.878	0.705	0.000	0.845	0.939	0.670	0.000	0.885	0.958	0.500	0.000	0.750	0.804	0.750	0.000	0.964
		0.905				0.936				0.949				0.801			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grant Line Rd & White Rock Rd
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-019
Date: 5/21/2019

Total

NS/EW Streets:	Grant Line Rd				Grant Line Rd				White Rock Rd				White Rock Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	7	137	0	0	0	102	72	0	7	0	7	0	0	0	0	0	332
7:15 AM	8	156	0	0	0	101	69	1	10	0	8	0	0	0	0	0	353
7:30 AM	6	225	0	0	0	102	72	0	13	0	2	0	0	0	0	0	420
7:45 AM	10	216	0	0	0	101	82	0	11	0	2	0	0	0	0	0	422
8:00 AM	4	186	0	0	0	95	73	1	8	0	3	0	0	0	0	0	370
8:15 AM	4	170	0	0	0	101	46	1	7	0	3	0	0	0	0	0	332
8:30 AM	9	174	0	0	0	89	46	0	12	0	5	0	0	0	0	0	335
8:45 AM	6	126	0	0	0	58	27	0	5	0	1	0	0	0	0	0	223
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	54	1390	0	0	0	749	487	3	73	0	31	0	0	0	0	0	2787
APPROACH %'s :	3.74%	96.26%	0.00%	0.00%	0.00%	60.45%	39.31%	0.24%	70.19%	0.00%	29.81%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	28	783	0	0	0	399	296	2	42	0	15	0	0	0	0	0	1565
PEAK HR FACTOR :	0.700	0.870	0.000	0.000	0.000	0.978	0.902	0.500	0.808	0.000	0.469	0.000	0.000	0.000	0.000	0.000	0.927
	0.878				0.952				0.792								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	2	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	114	0	0	0	129	23	0	121	0	2	0	0	0	0	0	392
4:15 PM	2	137	0	0	0	146	18	0	129	0	5	0	0	0	0	0	437
4:30 PM	2	125	0	0	0	137	14	0	148	0	6	0	0	0	0	0	432
4:45 PM	2	138	0	0	0	175	16	0	141	0	2	0	0	0	0	0	474
5:00 PM	0	130	0	0	0	158	15	0	164	0	1	0	0	0	0	0	468
5:15 PM	2	147	0	0	0	183	9	0	176	0	10	0	0	0	0	0	527
5:30 PM	4	149	0	0	0	157	11	0	120	0	5	0	0	0	0	0	446
5:45 PM	1	113	0	0	0	122	8	1	83	0	5	0	0	0	0	0	333
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	16	1053	0	0	0	1207	114	1	1082	0	36	0	0	0	0	0	3509
APPROACH %'s :	1.50%	98.50%	0.00%	0.00%	0.00%	91.30%	8.62%	0.08%	96.78%	0.00%	3.22%	0.00%					
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	8	564	0	0	0	673	51	0	601	0	18	0	0	0	0	0	1915
PEAK HR FACTOR :	0.500	0.946	0.000	0.000	0.000	0.919	0.797	0.000	0.854	0.000	0.450	0.000	0.000	0.000	0.000	0.000	0.908
	0.935				0.943				0.832								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Prairie City Rd & White Rock Rd
City: Rancho Cordova
Control: Signalized

Project ID: 19-07202-020
Date: 5/21/2019

Total

NS/EW Streets:	Prairie City Rd				Prairie City Rd				White Rock Rd				White Rock Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	1	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	6	0	63	0	58	56	0	0	0	93	18	0	294
7:15 AM	0	0	0	0	6	0	64	0	76	71	0	0	0	126	15	0	358
7:30 AM	0	0	0	0	10	0	65	0	116	85	0	0	0	126	34	0	436
7:45 AM	0	0	0	0	10	0	72	0	126	96	0	0	0	89	27	0	420
8:00 AM	0	0	0	0	5	0	54	0	88	99	0	0	0	117	24	0	387
8:15 AM	0	0	0	0	6	0	54	0	104	95	0	0	0	82	24	0	365
8:30 AM	0	0	0	0	8	0	40	0	102	100	0	0	0	79	27	1	357
8:45 AM	0	0	0	0	7	0	51	0	99	79	0	1	0	40	25	0	302
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	58	0	463	0	769	681	0	1	0	752	194	1	2919
APPROACH %'s :					11.13%	0.00%	88.87%	0.00%	53.00%	46.93%	0.00%	0.07%	0.00%	79.41%	20.49%	0.11%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	31	0	245	0	434	375	0	0	0	414	109	0	1608
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.775	0.000	0.851	0.000	0.861	0.947	0.000	0.000	0.000	0.821	0.801	0.000	0.922
							0.841				0.911				0.817		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	1	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	34	0	87	0	73	140	0	0	0	65	16	0	415
4:15 PM	0	0	0	0	26	0	94	0	102	193	0	0	0	85	23	0	523
4:30 PM	0	0	0	0	26	0	78	0	82	185	0	0	0	78	22	0	471
4:45 PM	0	0	0	0	26	0	87	0	88	182	0	0	0	87	29	0	499
5:00 PM	0	0	0	0	26	0	104	0	100	195	0	1	0	82	22	1	531
5:15 PM	0	0	0	0	26	0	106	0	116	227	0	0	0	93	23	0	591
5:30 PM	0	0	0	0	21	0	67	0	84	179	0	0	0	65	16	1	433
5:45 PM	0	0	0	0	19	0	68	0	82	135	0	0	0	49	10	0	363
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	204	0	691	0	727	1436	0	1	0	604	161	2	3826
APPROACH %'s :					22.79%	0.00%	77.21%	0.00%	33.60%	66.36%	0.00%	0.05%	0.00%	78.75%	20.99%	0.26%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	104	0	375	0	386	789	0	1	0	340	96	1	2092
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	1.000	0.000	0.884	0.000	0.832	0.869	0.000	0.250	0.000	0.914	0.828	0.250	0.885
							0.907				0.857				0.942		

Prepared by NDS/ATD

VOLUME

Mather Blvd Bet. Femoyer St & Douglas Rd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,724	2,987	5,711

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00			0	1	1	12:00			34	20	54
00:15			3	0	3	12:15			29	23	52
00:30			2	0	2	12:30			23	34	57
00:45			3	2	5	12:45			23	41	64
			8	3	11				109	118	227
01:00			3	0	3	13:00			31	28	59
01:15			2	0	2	13:15			32	29	61
01:30			1	1	2	13:30			32	30	62
01:45			3	1	4	13:45			38	35	73
			9	2	11				133	122	255
02:00			1	0	1	14:00			37	29	66
02:15			2	0	2	14:15			34	30	64
02:30			1	2	3	14:30			50	32	82
02:45			1	0	1	14:45			33	30	63
			5	2	7				154	121	275
03:00			1	0	1	15:00			60	37	97
03:15			0	5	5	15:15			82	34	116
03:30			1	2	3	15:30			91	31	122
03:45			2	0	2	15:45			90	29	119
			4	7	11				323	131	454
04:00			1	3	4	16:00			134	29	163
04:15			0	4	4	16:15			120	28	148
04:30			1	7	8	16:30			179	32	211
04:45			1	5	6	16:45			130	27	157
			3	19	22				563	116	679
05:00			3	11	14	17:00			171	34	205
05:15			4	13	17	17:15			125	41	166
05:30			3	36	39	17:30			102	34	136
05:45			10	36	46	17:45			53	25	78
			20	96	116				451	134	585
06:00			4	44	48	18:00			62	24	86
06:15			10	61	71	18:15			36	19	55
06:30			12	97	109	18:30			39	22	61
06:45			13	146	159	18:45			32	17	49
			39	348	387				169	82	251
07:00			14	149	163	19:00			39	15	54
07:15			14	198	212	19:15			25	14	39
07:30			14	181	195	19:30			27	8	35
07:45			27	195	222	19:45			19	13	32
			69	723	792				110	50	160
08:00			37	148	185	20:00			20	6	26
08:15			32	139	171	20:15			17	11	28
08:30			21	94	115	20:30			14	13	27
08:45			20	74	94	20:45			23	11	34
			110	455	565				74	41	115
09:00			18	56	74	21:00			17	5	22
09:15			18	44	62	21:15			14	9	23
09:30			17	25	42	21:30			12	8	20
09:45			18	25	43	21:45			11	11	22
			71	150	221				54	33	87
10:00			21	29	50	22:00			8	2	10
10:15			20	29	49	22:15			6	6	12
10:30			16	25	41	22:30			4	4	8
10:45			19	21	40	22:45			7	5	12
			76	104	180				25	17	42
11:00			31	20	51	23:00			5	3	8
11:15			22	18	40	23:15			9	1	10
11:30			34	32	66	23:30			5	4	9
11:45			35	33	68	23:45			4	2	6
			122	103	225				23	10	33
TOTALS			536	2012	**2548**	**TOTALS**			2188	975	**3163**
SPLIT %			21.0%	79.0%	**44.6%**	**SPLIT %**			69.2%	30.8%	**55.4%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,724	2,987	5,711

AM Peak Hour			11:30	07:00	**07:15**	**PM Peak Hour**			16:30	16:45	**16:30**
AM Pk Volume			132	723	**814**	**PM Pk Volume**			605	136	**739**
Pk Hr Factor			0.943	0.913	**0.917**	**Pk Hr Factor**			0.845	0.829	**0.876**
7 - 9 Volume	0	0	179	1178	**1357**	**4 - 6 Volume**	0	0	1014	250	**1264**
7 - 9 Peak Hour			07:45	07:00	**07:15**	**4 - 6 Peak Hour**			16:30	16:45	**16:30**
7 - 9 Pk Volume	0	0	117	723	**814**	**4 - 6 Pk Volume**	0	0	605	136	**739**
Pk Hr Factor	0.000	0.000	0.791	0.913	**0.917**	**Pk Hr Factor**	0.000	0.000	0.845	0.829	**0.876**

Prepared by NDS/ATD

VOLUME

Douglas Rd Bet. Mather Blvd & Sunrise Blvd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	7,263	6,767	14,030

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			12		5		17		12:00			90		76		166	
00:15			12		4		16		12:15			102		74		176	
00:30			9		1		10		12:30			91		89		180	
00:45			6	39	3	13	9	52	12:45			65	348	99	338	164	686
01:00			7		4		11		13:00			85		79		164	
01:15			7		4		11		13:15			81		83		164	
01:30			2		1		3		13:30			77		72		149	
01:45			3	19	2	11	5	30	13:45			99	342	82	316	181	658
02:00			3		3		6		14:00			105		96		201	
02:15			6		2		8		14:15			110		79		189	
02:30			5		5		10		14:30			107		95		202	
02:45			3	17	1	11	4	28	14:45			130	452	86	356	216	808
03:00			2		7		9		15:00			141		73		214	
03:15			1		7		8		15:15			137		90		227	
03:30			4		7		11		15:30			147		106		253	
03:45			8	15	12	33	20	48	15:45			160	585	96	365	256	950
04:00			3		7		10		16:00			220		104		324	
04:15			4		9		13		16:15			219		112		331	
04:30			11		13		24		16:30			233		141		374	
04:45			15	33	20	49	35	82	16:45			234	906	125	482	359	1388
05:00			11		24		35		17:00			247		137		384	
05:15			11		41		52		17:15			253		135		388	
05:30			28		75		103		17:30			231		113		344	
05:45			33	83	77	217	110	300	17:45			208	939	92	477	300	1416
06:00			49		92		141		18:00			164		98		262	
06:15			46		118		164		18:15			129		91		220	
06:30			62		188		250		18:30			152		72		224	
06:45			86	243	196	594	282	837	18:45			105	550	59	320	164	870
07:00			62		212		274		19:00			119		64		183	
07:15			87		224		311		19:15			98		66		164	
07:30			101		228		329		19:30			110		51		161	
07:45			108	358	235	899	343	1257	19:45			73	400	52	233	125	633
08:00			99		202		301		20:00			90		37		127	
08:15			118		188		306		20:15			70		44		114	
08:30			100		176		276		20:30			60		35		95	
08:45			68	385	155	721	223	1106	20:45			73	293	39	155	112	448
09:00			65		94		159		21:00			50		36		86	
09:15			60		88		148		21:15			53		29		82	
09:30			60		90		150		21:30			59		31		90	
09:45			68	253	71	343	139	596	21:45			41	203	35	131	76	334
10:00			68		71		139		22:00			48		23		71	
10:15			65		66		131		22:15			35		16		51	
10:30			65		75		140		22:30			24		10		34	
10:45			71	269	59	271	130	540	22:45			33	140	16	65	49	205
11:00			62		77		139		23:00			28		8		36	
11:15			73		64		137		23:15			21		8		29	
11:30			85		103		188		23:30			16		12		28	
11:45			86	306	84	328	170	634	23:45			20	85	11	39	31	124
TOTALS				2020		3490		**5510**	**TOTALS**				5243		3277		**8520**
SPLIT %				36.7%		63.3%		**39.3%**	**SPLIT %**				61.5%		38.5%		**60.7%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	7,263	6,767	14,030

AM Peak Hour			07:30	07:00	**07:15**	**PM Peak Hour**			16:30	16:30	**16:30**
AM Pk Volume			426	899	**1284**	**PM Pk Volume**			967	538	**1505**
Pk Hr Factor			0.903	0.956	**0.936**	**Pk Hr Factor**			0.956	0.954	**0.970**
7 - 9 Volume	0	0	743	1620	**2363**	**4 - 6 Volume**	0	0	1845	959	**2804**
7 - 9 Peak Hour			07:30	07:00	**07:15**	**4 - 6 Peak Hour**			16:30	16:30	**16:30**
7 - 9 Pk Volume	0	0	426	899	**1284**	**4 - 6 Pk Volume**	0	0	967	538	**1505**
Pk Hr Factor	0.000	0.000	0.903	0.956	**0.936**	**Pk Hr Factor**	0.000	0.000	0.956	0.954	**0.970**

Prepared by NDS/ATD

VOLUME

Douglas Rd Bet. Sunrise Blvd & Grant Line Rd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	5,457	5,396	10,853

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			5		4		9		12:00			78		73		151	
00:15			3		2		5		12:15			74		63		137	
00:30			7		3		10		12:30			82		85		167	
00:45			2	17	2	11	4	28	12:45			53	287	74	295	127	582
01:00			3		5		8		13:00			59		55		114	
01:15			4		2		6		13:15			64		66		130	
01:30			6		1		7		13:30			90		74		164	
01:45			1	14	1	9	2	23	13:45			73	286	86	281	159	567
02:00			4		1		5		14:00			81		70		151	
02:15			2		1		3		14:15			69		81		150	
02:30			4		3		7		14:30			77		118		195	
02:45			2	12	5	10	7	22	14:45			147	374	100	369	247	743
03:00			2		3		5		15:00			104		80		184	
03:15			1		2		3		15:15			102		85		187	
03:30			3		7		10		15:30			131		94		225	
03:45			1	7	6	18	7	25	15:45			128	465	90	349	218	814
04:00			0		5		5		16:00			144		97		241	
04:15			5		4		9		16:15			136		76		212	
04:30			6		13		19		16:30			144		99		243	
04:45			14	25	15	37	29	62	16:45			156	580	86	358	242	938
05:00			6		28		34		17:00			167		86		253	
05:15			7		30		37		17:15			192		90		282	
05:30			18		55		73		17:30			181		91		272	
05:45			29	60	54	167	83	227	17:45			133	673	99	366	232	1039
06:00			25		56		81		18:00			111		79		190	
06:15			46		83		129		18:15			109		71		180	
06:30			66		117		183		18:30			77		59		136	
06:45			59	196	133	389	192	585	18:45			82	379	60	269	142	648
07:00			51		161		212		19:00			84		60		144	
07:15			57		145		202		19:15			74		47		121	
07:30			59		144		203		19:30			78		40		118	
07:45			64	231	177	627	241	858	19:45			72	308	44	191	116	499
08:00			56		158		214		20:00			63		43		106	
08:15			63		113		176		20:15			74		31		105	
08:30			48		118		166		20:30			53		24		77	
08:45			46	213	87	476	133	689	20:45			50	240	26	124	76	364
09:00			74		84		158		21:00			41		27		68	
09:15			62		66		128		21:15			38		21		59	
09:30			63		67		130		21:30			42		24		66	
09:45			49	248	69	286	118	534	21:45			27	148	21	93	48	241
10:00			49		85		134		22:00			26		11		37	
10:15			71		70		141		22:15			26		12		38	
10:30			61		61		122		22:30			16		9		25	
10:45			58	239	71	287	129	526	22:45			21	89	6	38	27	127
11:00			74		85		159		23:00			12		6		18	
11:15			77		70		147		23:15			16		5		21	
11:30			81		92		173		23:30			12		7		19	
11:45			79	311	72	319	151	630	23:45			15	55	9	27	24	82
TOTALS				1573		2636		**4209**	**TOTALS**				3884		2760		**6644**
SPLIT %				37.4%		62.6%		**38.8%**	**SPLIT %**				58.5%		41.5%		**61.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	5,457	5,396	10,853

AM Peak Hour			11:15	07:00	**07:15**	**PM Peak Hour**			16:45	14:30	**16:45**
AM Pk Volume			315	627	**860**	**PM Pk Volume**			696	383	**1049**
Pk Hr Factor			0.972	0.886	**0.892**	**Pk Hr Factor**			0.906	0.811	**0.930**
7 - 9 Volume	0	0	444	1103	**1547**	**4 - 6 Volume**	0	0	1253	724	**1977**
7 - 9 Peak Hour			07:30	07:00	**07:15**	**4 - 6 Peak Hour**			16:45	17:00	**16:45**
7 - 9 Pk Volume	0	0	242	627	**860**	**4 - 6 Pk Volume**	0	0	696	366	**1049**
Pk Hr Factor	0.000	0.000	0.945	0.886	**0.892**	**Pk Hr Factor**	0.000	0.000	0.906	0.924	**0.930**

Prepared by NDS/ATD

VOLUME

White Rock Rd Bet. Zinfandel Dr & Sunrise Blvd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	7,334	7,537	14,871

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			4		11		15		12:00			149		134		283	
00:15			3		3		6		12:15			155		156		311	
00:30			1		5		6		12:30			141		141		282	
00:45			5	13	2	21	7	34	12:45			148	593	104	535	252	1128
01:00			6		10		16		13:00			143		129		272	
01:15			3		2		5		13:15			153		138		291	
01:30			0		5		5		13:30			118		125		243	
01:45			1	10	5	22	6	32	13:45			120	534	127	519	247	1053
02:00			0		2		2		14:00			117		123		240	
02:15			3		6		9		14:15			103		126		229	
02:30			6		2		8		14:30			126		223		349	
02:45			8	17	2	12	10	29	14:45			98	444	156	628	254	1072
03:00			7		2		9		15:00			99		189		288	
03:15			2		27		29		15:15			96		121		217	
03:30			9		16		25		15:30			131		178		309	
03:45			16	34	6	51	22	85	15:45			104	430	157	645	261	1075
04:00			7		9		16		16:00			157		183		340	
04:15			18		8		26		16:15			151		128		279	
04:30			38		15		53		16:30			175		217		392	
04:45			47	110	11	43	58	153	16:45			185	668	169	697	354	1365
05:00			42		13		55		17:00			184		259		443	
05:15			57		30		87		17:15			183		153		336	
05:30			114		39		153		17:30			126		159		285	
05:45			204	417	42	124	246	541	17:45			96	589	127	698	223	1287
06:00			102		57		159		18:00			86		121		207	
06:15			91		81		172		18:15			93		101		194	
06:30			104		70		174		18:30			53		88		141	
06:45			148	445	98	306	246	751	18:45			62	294	84	394	146	688
07:00			114		102		216		19:00			81		105		186	
07:15			117		111		228		19:15			57		72		129	
07:30			167		117		284		19:30			44		70		114	
07:45			179	577	102	432	281	1009	19:45			47	229	58	305	105	534
08:00			137		124		261		20:00			42		52		94	
08:15			131		101		232		20:15			26		44		70	
08:30			103		93		196		20:30			24		42		66	
08:45			120	491	114	432	234	923	20:45			21	113	44	182	65	295
09:00			97		108		205		21:00			13		57		70	
09:15			89		88		177		21:15			20		28		48	
09:30			79		87		166		21:30			13		17		30	
09:45			102	367	93	376	195	743	21:45			14	60	23	125	37	185
10:00			94		77		171		22:00			11		16		27	
10:15			73		84		157		22:15			10		11		21	
10:30			99		119		218		22:30			14		18		32	
10:45			86	352	100	380	186	732	22:45			4	39	16	61	20	100
11:00			114		124		238		23:00			2		23		25	
11:15			116		116		232		23:15			4		8		12	
11:30			106		133		239		23:30			8		10		18	
11:45			154	490	129	502	283	992	23:45			4	18	6	47	10	65
TOTALS				3323		2701		**6024**	**TOTALS**				4011		4836		**8847**
SPLIT %				55.2%		44.8%		**40.5%**	**SPLIT %**				45.3%		54.7%		**59.5%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	7,334	7,537	14,871

AM Peak Hour			07:30	11:45	**11:45**	**PM Peak Hour**			16:30	16:30	**16:30**
AM Pk Volume			614	560	**1159**	**PM Pk Volume**			727	798	**1525**
Pk Hr Factor			0.858	0.897	**0.932**	**Pk Hr Factor**			0.982	0.770	**0.861**
7 - 9 Volume	0	0	1068	864	**1932**	**4 - 6 Volume**	0	0	1257	1395	**2652**
7 - 9 Peak Hour			07:30	07:15	**07:30**	**4 - 6 Peak Hour**			16:30	16:30	**16:30**
7 - 9 Pk Volume	0	0	614	454	**1058**	**4 - 6 Pk Volume**	0	0	727	798	**1525**
Pk Hr Factor	0.000	0.000	0.858	0.915	**0.931**	**Pk Hr Factor**	0.000	0.000	0.982	0.770	**0.861**

Prepared by NDS/ATD

VOLUME

White Rock Rd Bet. Sunrise Blvd & Grant Line Rd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,012	1,363	3,375

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00			0	0	0	12:00			19	11	30
00:15			0	0	0	12:15			19	9	28
00:30			0	0	0	12:30			19	14	33
00:45			0	0	0	12:45			20	10	30
01:00			0	1	1	13:00			15	12	27
01:15			0	0	0	13:15			19	15	34
01:30			0	0	0	13:30			24	18	42
01:45			0	0	0	13:45			31	12	43
02:00			0	0	0	14:00			21	18	39
02:15			0	0	0	14:15			17	11	28
02:30			1	0	1	14:30			31	11	42
02:45			0	2	2	14:45			36	21	57
03:00			0	0	0	15:00			34	11	45
03:15			0	0	0	15:15			44	8	52
03:30			0	0	0	15:30			53	15	68
03:45			0	1	1	15:45			67	24	91
04:00			0	1	1	16:00			85	10	95
04:15			0	1	1	16:15			142	20	162
04:30			0	2	2	16:30			145	16	161
04:45			3	3	6	16:45			152	17	169
05:00			2	1	3	17:00			161	20	181
05:15			2	5	7	17:15			187	15	202
05:30			6	5	11	17:30			122	16	138
05:45			5	18	23	17:45			75	5	80
06:00			6	23	29	18:00			61	12	73
06:15			7	18	25	18:15			34	8	42
06:30			10	34	44	18:30			17	10	27
06:45			9	64	73	18:45			14	3	17
07:00			8	56	64	19:00			8	4	12
07:15			7	79	86	19:15			6	4	10
07:30			12	81	93	19:30			4	5	9
07:45			9	90	99	19:45			3	3	6
08:00			9	79	88	20:00			5	4	9
08:15			15	74	89	20:15			6	5	11
08:30			9	51	60	20:30			3	1	4
08:45			14	48	62	20:45			0	3	3
09:00			8	31	39	21:00			5	4	9
09:15			18	22	40	21:15			3	3	6
09:30			8	15	23	21:30			1	1	2
09:45			16	9	25	21:45			0	0	0
10:00			10	18	28	22:00			3	0	3
10:15			15	17	32	22:15			3	1	4
10:30			15	11	26	22:30			0	2	2
10:45			17	22	39	22:45			0	1	1
11:00			10	16	26	23:00			0	2	2
11:15			14	13	27	23:15			0	1	1
11:30			14	15	29	23:30			0	2	2
11:45			19	19	38	23:45			0	0	0
TOTALS			298	945	**1243**	**TOTALS**			1714	418	**2132**
SPLIT %			24.0%	76.0%	**36.8%**	**SPLIT %**			80.4%	19.6%	**63.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,012	1,363	3,375

AM Peak Hour			11:45	07:15	**07:30**	**PM Peak Hour**			16:30	16:15	**16:30**
AM Pk Volume			76	329	**369**	**PM Pk Volume**			645	73	**713**
Pk Hr Factor			1.000	0.914	**0.932**	**Pk Hr Factor**			0.862	0.913	**0.882**
7 - 9 Volume	0	0	83	558	**641**	**4 - 6 Volume**	0	0	1069	119	**1188**
7 - 9 Peak Hour			08:00	07:15	**07:30**	**4 - 6 Peak Hour**			16:30	16:15	**16:30**
7 - 9 Pk Volume	0	0	47	329	**369**	**4 - 6 Pk Volume**	0	0	645	73	**713**
Pk Hr Factor	0.000	0.000	0.783	0.914	**0.932**	**Pk Hr Factor**	0.000	0.000	0.862	0.913	**0.882**

Prepared by NDS/ATD

VOLUME

White Rock Rd Bet. Grant Line Rd & Prairie City Rd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_006

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	7,600	6,982	14,582

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			5		2		7		12:00			89		63		152	
00:15			5		4		9		12:15			84		71		155	
00:30			3		3		6		12:30			64		95		159	
00:45			3	16	4	13	7	29	12:45			87	324	80	309	167	633
01:00			3		6		9		13:00			82		67		149	
01:15			1		4		5		13:15			72		88		160	
01:30			2		1		3		13:30			94		97		191	
01:45			2	8	1	12	3	20	13:45			76	324	87	339	163	663
02:00			1		0		1		14:00			69		100		169	
02:15			0		2		2		14:15			102		107		209	
02:30			3		5		8		14:30			98		122		220	
02:45			3	7	4	11	7	18	14:45			108	377	139	468	247	845
03:00			4		2		6		15:00			105		134		239	
03:15			2		0		2		15:15			118		170		288	
03:30			6		1		7		15:30			150		174		324	
03:45			5	17	4	7	9	24	15:45			189	562	208	686	397	1248
04:00			4		7		11		16:00			188		154		342	
04:15			6		8		14		16:15			284		182		466	
04:30			12		5		17		16:30			281		165		446	
04:45			13	35	19	39	32	74	16:45			258	1011	174	675	432	1686
05:00			18		22		40		17:00			266		198		464	
05:15			28		22		50		17:15			330		209		539	
05:30			46		31		77		17:30			269		139		408	
05:45			54	146	50	125	104	271	17:45			216	1081	123	669	339	1750
06:00			49		62		111		18:00			147		142		289	
06:15			68		85		153		18:15			129		111		240	
06:30			108		97		205		18:30			102		87		189	
06:45			132	357	146	390	278	747	18:45			70	448	69	409	139	857
07:00			98		158		256		19:00			58		45		103	
07:15			139		156		295		19:15			36		62		98	
07:30			186		203		389		19:30			32		36		68	
07:45			228	651	188	705	416	1356	19:45			27	153	61	204	88	357
08:00			185		174		359		20:00			35		44		79	
08:15			187		143		330		20:15			45		33		78	
08:30			196		121		317		20:30			21		27		48	
08:45			191	759	130	568	321	1327	20:45			21	122	34	138	55	260
09:00			121		93		214		21:00			18		36		54	
09:15			130		95		225		21:15			25		24		49	
09:30			99		79		178		21:30			30		31		61	
09:45			89	439	78	345	167	784	21:45			14	87	22	113	36	200
10:00			77		82		159		22:00			11		14		25	
10:15			70		73		143		22:15			10		24		34	
10:30			80		51		131		22:30			12		11		23	
10:45			93	320	69	275	162	595	22:45			2	35	21	70	23	105
11:00			78		88		166		23:00			9		8		17	
11:15			78		86		164		23:15			8		14		22	
11:30			75		106		181		23:30			4		12		16	
11:45			66	297	85	365	151	662	23:45			3	24	13	47	16	71
TOTALS				3052		2855		**5907**	**TOTALS**				4548		4127		**8675**
SPLIT %				51.7%		48.3%		**40.5%**	**SPLIT %**				52.4%		47.6%		**59.5%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	7,600	6,982	14,582

AM Peak Hour			07:45	07:15	**07:30**	**PM Peak Hour**			16:30	16:30	**16:30**
AM Pk Volume			796	721	**1494**	**PM Pk Volume**			1135	746	**1881**
Pk Hr Factor			0.873	0.888	**0.898**	**Pk Hr Factor**			0.860	0.892	**0.872**
7 - 9 Volume	0	0	1410	1273	**2683**	**4 - 6 Volume**	0	0	2092	1344	**3436**
7 - 9 Peak Hour			07:45	07:15	**07:30**	**4 - 6 Peak Hour**			16:30	16:30	**16:30**
7 - 9 Pk Volume	0	0	796	721	**1494**	**4 - 6 Pk Volume**	0	0	1135	746	**1881**
Pk Hr Factor	0.000	0.000	0.873	0.888	**0.898**	**Pk Hr Factor**	0.000	0.000	0.860	0.892	**0.872**

Prepared by NDS/ATD

VOLUME

Mather Field Rd Bet. Folsom Blvd & US-50 WB Ramps

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_007

DAILY TOTALS	NB	SB	EB	WB	Total
	11,787	11,699	0	0	23,486

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	38		28				66		12:00	202		157				359	
00:15	34		23				57		12:15	148		156				304	
00:30	25		19				44		12:30	186		160				346	
00:45	22	119	19	89			41	208	12:45	155	691	199	672			354	1363
01:00	13		18				31		13:00	160		193				353	
01:15	24		9				33		13:15	154		163				317	
01:30	22		9				31		13:30	200		176				376	
01:45	18	77	12	48			30	125	13:45	168	682	160	692			328	1374
02:00	15		12				27		14:00	179		194				373	
02:15	12		6				18		14:15	201		177				378	
02:30	9		15				24		14:30	220		182				402	
02:45	16	52	17	50			33	102	14:45	235	835	227	780			462	1615
03:00	8		11				19		15:00	228		200				428	
03:15	12		11				23		15:15	242		225				467	
03:30	9		21				30		15:30	267		196				463	
03:45	5	34	8	51			13	85	15:45	286	1023	171	792			457	1815
04:00	12		13				25		16:00	281		176				457	
04:15	15		30				45		16:15	254		160				414	
04:30	10		54				64		16:30	251		176				427	
04:45	17	54	59	156			76	210	16:45	277	1063	182	694			459	1757
05:00	17		51				68		17:00	298		189				487	
05:15	34		84				118		17:15	283		166				449	
05:30	36		129				165		17:30	270		175				445	
05:45	47	134	121	385			168	519	17:45	231	1082	185	715			416	1797
06:00	41		136				177		18:00	192		171				363	
06:15	58		162				220		18:15	209		174				383	
06:30	70		184				254		18:30	181		167				348	
06:45	77	246	194	676			271	922	18:45	165	747	154	666			319	1413
07:00	113		174				287		19:00	145		150				295	
07:15	169		210				379		19:15	157		133				290	
07:30	191		198				389		19:30	145		124				269	
07:45	189	662	227	809			416	1471	19:45	149	596	112	519			261	1115
08:00	185		223				408		20:00	132		119				251	
08:15	175		224				399		20:15	125		113				238	
08:30	173		224				397		20:30	136		109				245	
08:45	157	690	169	840			326	1530	20:45	124	517	102	443			226	960
09:00	114		172				286		21:00	97		69				166	
09:15	105		151				256		21:15	118		94				212	
09:30	108		168				276		21:30	98		89				187	
09:45	124	451	164	655			288	1106	21:45	93	406	60	312			153	718
10:00	118		164				282		22:00	81		62				143	
10:15	138		153				291		22:15	69		71				140	
10:30	116		163				279		22:30	64		43				107	
10:45	133	505	133	613			266	1118	22:45	55	269	55	231			110	500
11:00	147		166				313		23:00	59		38				97	
11:15	145		134				279		23:15	60		42				102	
11:30	150		158				308		23:30	65		41				106	
11:45	172	614	188	646			360	1260	23:45	54	238	44	165			98	403
TOTALS		3638		5018				8656	TOTALS		8149		6681				14830
SPLIT %		42.0%		58.0%				36.9%	SPLIT %		54.9%		45.1%				63.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	11,787	11,699	0	0	23,486

AM Peak Hour	07:30	07:45			07:45	PM Peak Hour	16:45	14:45			15:15
AM Pk Volume	740	898			1620	PM Pk Volume	1128	848			1844
Pk Hr Factor	0.969	0.989			0.974	Pk Hr Factor	0.946	0.934			0.987
7 - 9 Volume	1352	1649	0	0	3001	4 - 6 Volume	2145	1409	0	0	3554
7 - 9 Peak Hour	07:30	07:45			07:45	4 - 6 Peak Hour	16:45	17:00			16:45
7 - 9 Pk Volume	740	898	0	0	1620	4 - 6 Pk Volume	1128	715	0	0	1840
Pk Hr Factor	0.969	0.989	0.000	0.000	0.974	Pk Hr Factor	0.946	0.946	0.000	0.000	0.945

Prepared by NDS/ATD

VOLUME

Mather Field Rd Bet. US-50 EB Ramps & International Dr

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_008

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	9,824	9,720	19,544

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00					17		16		33		12:00					151		148		299	
00:15					21		10		31		12:15					143		174		317	
00:30					13		9		22		12:30					160		173		333	
00:45					13	64	3	38	16	102	12:45					141	595	166	661	307	1256
01:00					11		10		21		13:00					152		148		300	
01:15					10		7		17		13:15					134		133		267	
01:30					6		8		14		13:30					140		157		297	
01:45					7	34	6	31	13	65	13:45					120	546	141	579	261	1125
02:00					5		4		9		14:00					123		139		262	
02:15					4		7		11		14:15					148		142		290	
02:30					4		3		7		14:30					124		204		328	
02:45					4	17	9	23	13	40	14:45					167	562	186	671	353	1233
03:00					5		3		8		15:00					160		189		349	
03:15					7		7		14		15:15					178		148		326	
03:30					6		11		17		15:30					183		216		399	
03:45					10	28	9	30	19	58	15:45					175	696	212	765	387	1461
04:00					9		11		20		16:00					181		260		441	
04:15					8		8		16		16:15					182		213		395	
04:30					22		24		46		16:30					189		288		477	
04:45					38	77	17	60	55	137	16:45					198	750	244	1005	442	1755
05:00					31		25		56		17:00					207		322		529	
05:15					27		32		59		17:15					228		269		497	
05:30					63		52		115		17:30					176		194		370	
05:45					100	221	52	161	152	382	17:45					161	772	182	967	343	1739
06:00					82		72		154		18:00					109		188		297	
06:15					106		100		206		18:15					144		146		290	
06:30					111		148		259		18:30					127		113		240	
06:45					189	488	150	470	339	958	18:45					107	487	110	557	217	1044
07:00					149		178		327		19:00					92		104		196	
07:15					210		214		424		19:15					92		85		177	
07:30					242		208		450		19:30					76		90		166	
07:45					293	894	181	781	474	1675	19:45					88	348	69	348	157	696
08:00					246		175		421		20:00					95		71		166	
08:15					241		177		418		20:15					93		58		151	
08:30					182		144		326		20:30					61		70		131	
08:45					146	815	141	637	287	1452	20:45					87	336	42	241	129	577
09:00					149		110		259		21:00					62		45		107	
09:15					146		94		240		21:15					59		58		117	
09:30					113		94		207		21:30					56		32		88	
09:45					116	524	126	424	242	948	21:45					52	229	37	172	89	401
10:00					120		79		199		22:00					45		31		76	
10:15					113		100		213		22:15					42		31		73	
10:30					112		106		218		22:30					37		27		64	
10:45					122	467	109	394	231	861	22:45					45	169	25	114	70	283
11:00					131		120		251		23:00					41		17		58	
11:15					132		120		252		23:15					42		13		55	
11:30					146		139		285		23:30					38		12		50	
11:45					146	555	162	541	308	1096	23:45					29	150	8	50	37	200
TOTALS						4184		3590		7774	TOTALS						5640		6130		11770
SPLIT %						53.8%		46.2%		39.8%	SPLIT %						47.9%		52.1%		60.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	9,824	9,720	19,544

AM Peak Hour			07:30	07:00	07:15	PM Peak Hour			16:30	16:30	16:30
AM Pk Volume			1022	781	1769	PM Pk Volume			822	1123	1945
Pk Hr Factor			0.872	0.912	0.933	Pk Hr Factor			0.901	0.872	0.919
7 - 9 Volume	0	0	1709	1418	3127	4 - 6 Volume	0	0	1522	1972	3494
7 - 9 Peak Hour			07:30	07:00	07:15	4 - 6 Peak Hour			16:30	16:30	16:30
7 - 9 Pk Volume	0	0	1022	781	1769	4 - 6 Pk Volume	0	0	822	1123	1945
Pk Hr Factor	0.000	0.000	0.872	0.912	0.933	Pk Hr Factor	0.000	0.000	0.901	0.872	0.919

Prepared by NDS/ATD

VOLUME

Zinfandel Dr Bet. Folsom Blvd & US-50 WB Ramps

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_009

DAILY TOTALS	NB	SB	EB	WB	Total
	11,913	9,620	0	0	21,533

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	13		21						34		12:00	271		181						452	
00:15	24		9						33		12:15	200		184						384	
00:30	23		15						38		12:30	249		221						470	
00:45	13	73	12	57					25	130	12:45	202	922	169	755					371	1677
01:00	18		12						30		13:00	204		203						407	
01:15	9		9						18		13:15	189		152						341	
01:30	11		6						17		13:30	217		171						388	
01:45	11	49	2	29					13	78	13:45	197	807	140	666					337	1473
02:00	6		19						25		14:00	221		152						373	
02:15	6		7						13		14:15	192		145						337	
02:30	14		8						22		14:30	243		157						400	
02:45	8	34	6	40					14	74	14:45	240	896	162	616					402	1512
03:00	8		4						12		15:00	208		168						376	
03:15	8		5						13		15:15	249		176						425	
03:30	6		9						15		15:30	280		170						450	
03:45	15	37	9	27					24	64	15:45	241	978	146	660					387	1638
04:00	12		8						20		16:00	301		180						481	
04:15	3		11						14		16:15	271		129						400	
04:30	19		18						37		16:30	338		147						485	
04:45	19	53	26	63					45	116	16:45	294	1204	159	615					453	1819
05:00	20		25						45		17:00	281		158						439	
05:15	11		38						49		17:15	323		155						478	
05:30	29		47						76		17:30	299		174						473	
05:45	41	101	68	178					109	279	17:45	252	1155	180	667					432	1822
06:00	31		48						79		18:00	207		160						367	
06:15	55		78						133		18:15	183		164						347	
06:30	59		135						194		18:30	244		147						391	
06:45	70	215	106	367					176	582	18:45	194	828	143	614					337	1442
07:00	73		149						222		19:00	166		152						318	
07:15	120		130						250		19:15	137		151						288	
07:30	174		168						342		19:30	145		127						272	
07:45	154	521	166	613					320	1134	19:45	143	591	121	551					264	1142
08:00	135		195						330		20:00	125		129						254	
08:15	114		162						276		20:15	116		127						243	
08:30	126		125						251		20:30	98		105						203	
08:45	119	494	118	600					237	1094	20:45	116	455	84	445					200	900
09:00	111		104						215		21:00	99		72						171	
09:15	109		110						219		21:15	97		71						168	
09:30	96		109						205		21:30	98		71						169	
09:45	121	437	109	432					230	869	21:45	103	397	51	265					154	662
10:00	133		114						247		22:00	56		63						119	
10:15	126		108						234		22:15	55		48						103	
10:30	147		113						260		22:30	47		51						98	
10:45	133	539	138	473					271	1012	22:45	58	216	44	206					102	422
11:00	166		101						267		23:00	47		26						73	
11:15	193		147						340		23:15	33		41						74	
11:30	219		171						390		23:30	34		22						56	
11:45	189	767	143	562					332	1329	23:45	30	144	30	119					60	263
TOTALS		3320		3441						**6761**	**TOTALS**		8593		6179						**14772**
SPLIT %		49.1%		50.9%						**31.4%**	**SPLIT %**		58.2%		41.8%						**68.6%**

DAILY TOTALS	NB	SB	EB	WB	Total
	11,913	9,620	0	0	21,533

AM Peak Hour	11:45	11:45				**11:45**	**PM Peak Hour**	16:30	12:15				**16:30**
AM Pk Volume	909	729				**1638**	**PM Pk Volume**	1236	777				**1855**
Pk Hr Factor	0.839	0.825				**0.871**	**Pk Hr Factor**	0.914	0.879				**0.956**
7 - 9 Volume	1015	1213	0	0		**2228**	**4 - 6 Volume**	2359	1282	0	0		**3641**
7 - 9 Peak Hour	07:15	07:30				**07:30**	**4 - 6 Peak Hour**	16:30	17:00				**16:30**
7 - 9 Pk Volume	583	691	0	0		**1268**	**4 - 6 Pk Volume**	1236	667	0	0		**1855**
Pk Hr Factor	0.838	0.886	0.000	0.000		**0.927**	**Pk Hr Factor**	0.914	0.926	0.000	0.000		**0.956**

Prepared by NDS/ATD

VOLUME

Zinfandel Dr Bet. White Rock Rd & International Dr

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_010

DAILY TOTALS	NB	SB	EB	WB	Total
	14,945	14,795	0	0	29,740

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	18		30				48		12:00	287		205				492	
00:15	11		18				29		12:15	234		277				511	
00:30	14		18				32		12:30	271		218				489	
00:45	9	52	18	84			27	136	12:45	232	1024	255	955			487	1979
01:00	18		17				35		13:00	255		211				466	
01:15	13		17				30		13:15	207		223				430	
01:30	7		8				15		13:30	226		221				447	
01:45	2	40	5	47			7	87	13:45	211	899	218	873			429	1772
02:00	9		8				17		14:00	269		216				485	
02:15	5		11				16		14:15	260		196				456	
02:30	11		13				24		14:30	288		185				473	
02:45	9	34	5	37			14	71	14:45	278	1095	242	839			520	1934
03:00	11		5				16		15:00	305		251				556	
03:15	8		11				19		15:15	255		265				520	
03:30	14		7				21		15:30	302		263				565	
03:45	21	54	18	41			39	95	15:45	236	1098	258	1037			494	2135
04:00	28		5				33		16:00	322		264				586	
04:15	26		12				38		16:15	298		281				579	
04:30	32		28				60		16:30	334		267				601	
04:45	42	128	30	75			72	203	16:45	325	1279	307	1119			632	2398
05:00	42		30				72		17:00	338		274				612	
05:15	65		39				104		17:15	286		302				588	
05:30	98		56				154		17:30	251		311				562	
05:45	106	311	82	207			188	518	17:45	228	1103	323	1210			551	2313
06:00	102		112				214		18:00	263		212				475	
06:15	142		150				292		18:15	209		245				454	
06:30	212		191				403		18:30	229		212				441	
06:45	239	695	221	674			460	1369	18:45	184	885	193	862			377	1747
07:00	253		223				476		19:00	161		217				378	
07:15	269		272				541		19:15	157		196				353	
07:30	327		283				610		19:30	123		166				289	
07:45	264	1113	338	1116			602	2229	19:45	115	556	157	736			272	1292
08:00	299		356				655		20:00	141		160				301	
08:15	220		299				519		20:15	113		161				274	
08:30	279		284				563		20:30	117		143				260	
08:45	178	976	272	1211			450	2187	20:45	91	462	142	606			233	1068
09:00	220		179				399		21:00	75		97				172	
09:15	188		171				359		21:15	68		131				199	
09:30	191		178				369		21:30	77		123				200	
09:45	182	781	188	716			370	1497	21:45	66	286	91	442			157	728
10:00	197		163				360		22:00	63		99				162	
10:15	192		158				350		22:15	66		72				138	
10:30	222		156				378		22:30	35		59				94	
10:45	207	818	181	658			388	1476	22:45	38	202	79	309			117	511
11:00	203		176				379		23:00	40		48				88	
11:15	203		200				403		23:15	37		41				78	
11:30	272		179				451		23:30	28		41				69	
11:45	250	928	222	777			472	1705	23:45	21	126	34	164			55	290
TOTALS		5930		5643				**11573**	**TOTALS**		9015		9152				**18167**
SPLIT %		51.2%		48.8%				**38.9%**	**SPLIT %**		49.6%		50.4%				**61.1%**

DAILY TOTALS	NB	SB	EB	WB	Total
	14,945	14,795	0	0	29,740

AM Peak Hour	07:15	07:45				**07:15**	**PM Peak Hour**	16:15	17:00				**16:30**
AM Pk Volume	1159	1277				**2408**	**PM Pk Volume**	1295	1210				**2433**
Pk Hr Factor	0.886	0.897				**0.919**	**Pk Hr Factor**	0.958	0.937				**0.962**
7 - 9 Volume	2089	2327	0	0		**4416**	**4 - 6 Volume**	2382	2329	0	0		**4711**
7 - 9 Peak Hour	07:15	07:45				**07:15**	**4 - 6 Peak Hour**	16:15	17:00				**16:30**
7 - 9 Pk Volume	1159	1277	0	0		**2408**	**4 - 6 Pk Volume**	1295	1210	0	0		**2433**
Pk Hr Factor	0.886	0.897	0.000	0.000		**0.919**	**Pk Hr Factor**	0.958	0.937	0.000	0.000		**0.962**

Prepared by NDS/ATD

VOLUME

Zinfandel Dr Bet. International Dr & Douglas Rd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_011

DAILY TOTALS	NB	SB	EB	WB	Total
	7,287	8,316	0	0	15,603

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	4		17						21		12:00	94		100						194	
00:15	6		14						20		12:15	83		147						230	
00:30	4		12						16		12:30	94		120						214	
00:45	5	19	9	52					14	71	12:45	98	369	93	460					191	829
01:00	7		12						19		13:00	113		124						237	
01:15	6		10						16		13:15	90		93						183	
01:30	1		2						3		13:30	96		101						197	
01:45	4	18	5	29					9	47	13:45	93	392	126	444					219	836
02:00	2		2						4		14:00	114		110						224	
02:15	0		5						5		14:15	99		119						218	
02:30	3		3						6		14:30	114		101						215	
02:45	2	7	2	12					4	19	14:45	110	437	142	472					252	909
03:00	6		1						7		15:00	88		177						265	
03:15	3		2						5		15:15	78		182						260	
03:30	9		6						15		15:30	88		184						272	
03:45	14	32	9	18					23	50	15:45	85	339	183	726					268	1065
04:00	13		2						15		16:00	107		265						372	
04:15	18		6						24		16:15	91		249						340	
04:30	22		12						34		16:30	115		251						366	
04:45	23	76	11	31					34	107	16:45	92	405	286	1051					378	1456
05:00	22		12						34		17:00	113		321						434	
05:15	42		18						60		17:15	110		262						372	
05:30	72		23						95		17:30	102		238						340	
05:45	84	220	19	72					103	292	17:45	85	410	238	1059					323	1469
06:00	88		40						128		18:00	104		186						290	
06:15	121		57						178		18:15	85		176						261	
06:30	162		53						215		18:30	95		170						265	
06:45	195	566	73	223					268	789	18:45	67	351	140	672					207	1023
07:00	223		51						274		19:00	61		133						194	
07:15	242		68						310		19:15	62		137						199	
07:30	268		75						343		19:30	52		130						182	
07:45	272	1005	92	286					364	1291	19:45	56	231	110	510					166	741
08:00	228		109						337		20:00	44		103						147	
08:15	196		80						276		20:15	47		86						133	
08:30	217		78						295		20:30	41		95						136	
08:45	148	789	71	338					219	1127	20:45	40	172	91	375					131	547
09:00	122		52						174		21:00	33		69						102	
09:15	121		61						182		21:15	26		85						111	
09:30	98		70						168		21:30	28		77						105	
09:45	108	449	65	248					173	697	21:45	32	119	60	291					92	410
10:00	87		65						152		22:00	24		66						90	
10:15	94		65						159		22:15	31		44						75	
10:30	91		82						173		22:30	17		39						56	
10:45	87	359	82	294					169	653	22:45	18	90	52	201					70	291
11:00	93		75						168		23:00	9		33						42	
11:15	65		87						152		23:15	5		34						39	
11:30	123		79						202		23:30	10		28						38	
11:45	118	399	99	340					217	739	23:45	9	33	17	112					26	145
TOTALS		3939		1943						5882	TOTALS		3348		6373						9721
SPLIT %		67.0%		33.0%						37.7%	SPLIT %		34.4%		65.6%						62.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	7,287	8,316	0	0	15,603

AM Peak Hour	07:15	11:45			07:15	PM Peak Hour	14:00	16:30			16:30
AM Pk Volume	1010	466			1354	PM Pk Volume	437	1120			1550
Pk Hr Factor	0.928	0.793			0.930	Pk Hr Factor	0.958	0.872			0.893
7 - 9 Volume	1794	624	0	0	2418	4 - 6 Volume	815	2110	0	0	2925
7 - 9 Peak Hour	07:15	07:45			07:15	4 - 6 Peak Hour	16:30	16:30			16:30
7 - 9 Pk Volume	1010	359	0	0	1354	4 - 6 Pk Volume	430	1120	0	0	1550
Pk Hr Factor	0.928	0.823	0.000	0.000	0.930	Pk Hr Factor	0.935	0.872	0.000	0.000	0.893

Prepared by NDS/ATD

VOLUME

Sunrise Blvd Bet. Folsom Blvd & White Rock Rd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_012

DAILY TOTALS	NB	SB	EB	WB	Total
	18,167	19,735	0	0	37,902

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	23		26				49		12:00	367		318				685	
00:15	15		14				29		12:15	298		312				610	
00:30	10		17				27		12:30	296		342				638	
00:45	14	62	12	69			26	131	12:45	313	1274	327	1299			640	2573
01:00	15		20				35		13:00	297		324				621	
01:15	6		11				17		13:15	311		364				675	
01:30	21		14				35		13:30	333		287				620	
01:45	9	51	17	62			26	113	13:45	313	1254	364	1339			677	2593
02:00	7		10				17		14:00	311		334				645	
02:15	5		4				9		14:15	328		306				634	
02:30	11		13				24		14:30	429		313				742	
02:45	7	30	15	42			22	72	14:45	354	1422	298	1251			652	2673
03:00	5		5				10		15:00	362		330				692	
03:15	13		17				30		15:15	332		304				636	
03:30	23		12				35		15:30	435		358				793	
03:45	25	66	14	48			39	114	15:45	323	1452	340	1332			663	2784
04:00	14		10				24		16:00	351		376				727	
04:15	18		27				45		16:15	375		362				737	
04:30	38		37				75		16:30	395		331				726	
04:45	35	105	111	185			146	290	16:45	354	1475	370	1439			724	2914
05:00	58		78				136		17:00	382		395				777	
05:15	59		106				165		17:15	366		345				711	
05:30	83		183				266		17:30	305		372				677	
05:45	114	314	258	625			372	939	17:45	284	1337	292	1404			576	2741
06:00	144		201				345		18:00	243		287				530	
06:15	194		270				464		18:15	247		248				495	
06:30	218		310				528		18:30	191		269				460	
06:45	260	816	398	1179			658	1995	18:45	200	881	232	1036			432	1917
07:00	286		353				639		19:00	175		209				384	
07:15	326		362				688		19:15	207		216				423	
07:30	348		376				724		19:30	174		162				336	
07:45	354	1314	371	1462			725	2776	19:45	156	712	165	752			321	1464
08:00	339		387				726		20:00	119		131				250	
08:15	325		364				689		20:15	102		138				240	
08:30	298		343				641		20:30	80		109				189	
08:45	291	1253	360	1454			651	2707	20:45	92	393	121	499			213	892
09:00	230		274				504		21:00	129		132				261	
09:15	254		268				522		21:15	84		119				203	
09:30	237		278				515		21:30	71		82				153	
09:45	267	988	249	1069			516	2057	21:45	98	382	83	416			181	798
10:00	239		247				486		22:00	78		65				143	
10:15	249		257				506		22:15	49		63				112	
10:30	276		253				529		22:30	47		53				100	
10:45	277	1041	270	1027			547	2068	22:45	18	192	76	257			94	449
11:00	296		312				608		23:00	40		39				79	
11:15	302		319				621		23:15	25		39				64	
11:30	325		356				681		23:30	23		52				75	
11:45	319	1242	339	1326			658	2568	23:45	23	111	33	163			56	274
TOTALS		7282		8548				**15830**	**TOTALS**		10885		11187				**22072**
SPLIT %		46.0%		54.0%				**41.8%**	**SPLIT %**		49.3%		50.7%				**58.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	18,167	19,735	0	0	37,902

AM Peak Hour	07:15	07:30				**07:30**	**PM Peak Hour**	16:15	16:45				**16:15**
AM Pk Volume	1367	1498				**2864**	**PM Pk Volume**	1506	1482				**2964**
Pk Hr Factor	0.965	0.968				**0.986**	**Pk Hr Factor**	0.953	0.938				**0.954**
7 - 9 Volume	2567	2916	0	0		**5483**	**4 - 6 Volume**	2812	2843	0	0		**5655**
7 - 9 Peak Hour	07:15	07:30				**07:30**	**4 - 6 Peak Hour**	16:15	16:45				**16:15**
7 - 9 Pk Volume	1367	1498	0	0		**2864**	**4 - 6 Pk Volume**	1506	1482	0	0		**2964**
Pk Hr Factor	0.965	0.968	0.000	0.000		**0.986**	**Pk Hr Factor**	0.953	0.938	0.000	0.000		**0.954**

Prepared by NDS/ATD

VOLUME

Sunrise Blvd Bet. White Rock Rd & Douglas Rd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_013

DAILY TOTALS	NB	SB	EB	WB	Total
	13,581	14,182	0	0	27,763

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	11		21				32		12:00	189		182				371	
00:15	10		11				21		12:15	178		190				368	
00:30	11		12				23		12:30	203		174				377	
00:45	7	39	7	51			14	90	12:45	187	757	184	730			371	1487
01:00	8		14				22		13:00	184		105				289	
01:15	4		7				11		13:15	216		198				414	
01:30	7		10				17		13:30	186		185				371	
01:45	4	23	7	38			11	61	13:45	180	766	201	689			381	1455
02:00	2		6				8		14:00	193		228				421	
02:15	6		2				8		14:15	179		229				408	
02:30	11		5				16		14:30	196		240				436	
02:45	10	29	6	19			16	48	14:45	197	765	249	946			446	1711
03:00	5		3				8		15:00	217		317				534	
03:15	10		16				26		15:15	169		300				469	
03:30	17		10				27		15:30	211		384				595	
03:45	24	56	5	34			29	90	15:45	178	775	371	1372			549	2147
04:00	15		2				17		16:00	224		448				672	
04:15	12		8				20		16:15	205		414				619	
04:30	37		16				53		16:30	229		462				691	
04:45	64	128	30	56			94	184	16:45	189	847	417	1741			606	2588
05:00	58		24				82		17:00	236		508				744	
05:15	82		31				113		17:15	204		444				648	
05:30	117		56				173		17:30	173		419				592	
05:45	157	414	84	195			241	609	17:45	176	789	350	1721			526	2510
06:00	155		81				236		18:00	171		332				503	
06:15	208		107				315		18:15	157		296				453	
06:30	261		104				365		18:30	124		227				351	
06:45	337	961	127	419			464	1380	18:45	121	573	199	1054			320	1627
07:00	359		160				519		19:00	124		163				287	
07:15	383		168				551		19:15	95		204				299	
07:30	431		161				592		19:30	111		161				272	
07:45	476	1649	168	657			644	2306	19:45	85	415	121	649			206	1064
08:00	403		164				567		20:00	73		149				222	
08:15	383		155				538		20:15	61		117				178	
08:30	343		216				559		20:30	66		105				171	
08:45	324	1453	191	726			515	2179	20:45	52	252	114	485			166	737
09:00	224		167				391		21:00	52		121				173	
09:15	223		161				384		21:15	55		90				145	
09:30	213		144				357		21:30	46		75				121	
09:45	226	886	142	614			368	1500	21:45	67	220	62	348			129	568
10:00	192		121				313		22:00	52		51				103	
10:15	194		137				331		22:15	39		56				95	
10:30	225		170				395		22:30	26		36				62	
10:45	190	801	142	570			332	1371	22:45	13	130	52	195			65	325
11:00	196		176				372		23:00	35		35				70	
11:15	195		180				375		23:15	12		30				42	
11:30	187		201				388		23:30	17		27				44	
11:45	200	778	190	747			390	1525	23:45	11	75	34	126			45	201
TOTALS		7217		4126				11343	TOTALS		6364		10056				16420
SPLIT %		63.6%		36.4%				40.9%	SPLIT %		38.8%		61.2%				59.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	13,581	14,182	0	0	27,763

AM Peak Hour	07:15	11:30				07:15	PM Peak Hour	16:15	16:30				16:30
AM Pk Volume	1693	763				2354	PM Pk Volume	859	1831				2689
Pk Hr Factor	0.889	0.949				0.914	Pk Hr Factor	0.910	0.901				0.904
7 - 9 Volume	3102	1383	0	0		4485	4 - 6 Volume	1636	3462	0	0		5098
7 - 9 Peak Hour	07:15	08:00				07:15	4 - 6 Peak Hour	16:15	16:30				16:30
7 - 9 Pk Volume	1693	726	0	0		2354	4 - 6 Pk Volume	859	1831	0	0		2689
Pk Hr Factor	0.889	0.840	0.000	0.000		0.914	Pk Hr Factor	0.910	0.901	0.000	0.000		0.904

Prepared by NDS/ATD

VOLUME

Sunrise Blvd Bet. Douglas Rd & Jackson Rd/SR-16

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_014

DAILY TOTALS	NB	SB	EB	WB	Total
	9,528	10,939	0	0	20,467

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	4		24				28		12:00	108		135				243	
00:15	4		7				11		12:15	119		120				239	
00:30	10		11				21		12:30	105		120				225	
00:45	7	25	5	47			12	72	12:45	123	455	117	492			240	947
01:00	5		9				14		13:00	129		127				256	
01:15	2		5				7		13:15	126		154				280	
01:30	4		10				14		13:30	125		156				281	
01:45	3	14	4	28			7	42	13:45	116	496	176	613			292	1109
02:00	3		4				7		14:00	114		156				270	
02:15	2		1				3		14:15	109		168				277	
02:30	12		1				13		14:30	102		217				319	
02:45	7	24	5	11			12	35	14:45	115	440	214	755			329	1195
03:00	5		2				7		15:00	121		247				368	
03:15	6		9				15		15:15	124		244				368	
03:30	15		7				22		15:30	141		272				413	
03:45	25	51	7	25			32	76	15:45	150	536	314	1077			464	1613
04:00	10		4				14		16:00	140		357				497	
04:15	15		6				21		16:15	135		376				511	
04:30	30		12				42		16:30	160		353				513	
04:45	41	96	24	46			65	142	16:45	112	547	397	1483			509	2030
05:00	49		19				68		17:00	132		367				499	
05:15	74		24				98		17:15	140		424				564	
05:30	87		35				122		17:30	105		344				449	
05:45	148	358	37	115			185	473	17:45	104	481	306	1441			410	1922
06:00	142		47				189		18:00	95		241				336	
06:15	198		85				283		18:15	96		247				343	
06:30	236		81				317		18:30	80		159				239	
06:45	279	855	100	313			379	1168	18:45	75	346	168	815			243	1161
07:00	291		114				405		19:00	72		126				198	
07:15	320		179				499		19:15	65		126				191	
07:30	342		116				458		19:30	68		123				191	
07:45	373	1326	128	537			501	1863	19:45	60	265	102	477			162	742
08:00	337		125				462		20:00	56		97				153	
08:15	275		138				413		20:15	59		102				161	
08:30	255		110				365		20:30	48		67				115	
08:45	225	1092	122	495			347	1587	20:45	34	197	85	351			119	548
09:00	174		98				272		21:00	37		82				119	
09:15	173		121				294		21:15	30		82				112	
09:30	138		90				228		21:30	24		46				70	
09:45	150	635	101	410			251	1045	21:45	53	144	51	261			104	405
10:00	122		101				223		22:00	31		46				77	
10:15	118		96				214		22:15	30		42				72	
10:30	143		97				240		22:30	17		32				49	
10:45	128	511	121	415			249	926	22:45	16	94	30	150			46	244
11:00	120		114				234		23:00	13		23				36	
11:15	123		104				227		23:15	13		27				40	
11:30	137		136				273		23:30	6		24				30	
11:45	117	497	134	488			251	985	23:45	11	43	20	94			31	137
TOTALS		5484		2930				**8414**	**TOTALS**		4044		8009				**12053**
SPLIT %		65.2%		34.8%				**41.1%**	**SPLIT %**		33.6%		66.4%				**58.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	9,528	10,939	0	0	20,467

AM Peak Hour	07:15	07:15						**07:15**	**PM Peak Hour**	15:45	16:30							**16:30**
AM Pk Volume	1372	548						**1920**	**PM Pk Volume**	585	1541							**2085**
Pk Hr Factor	0.920	0.765						**0.958**	**Pk Hr Factor**	0.914	0.909							**0.924**
7 - 9 Volume	2418	1032	0	0				**3450**	**4 - 6 Volume**	1028	2924	0	0					**3952**
7 - 9 Peak Hour	07:15	07:15						**07:15**	**4 - 6 Peak Hour**	16:00	16:30							**16:30**
7 - 9 Pk Volume	1372	548	0	0				**1920**	**4 - 6 Pk Volume**	547	1541	0	0					**2085**
Pk Hr Factor	0.920	0.765	0.000	0.000				**0.958**	**Pk Hr Factor**	0.855	0.909	0.000	0.000					**0.924**

Prepared by NDS/ATD

VOLUME

Grant Line Rd Bet. White Rock Rd & Douglas Rd

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_015

DAILY TOTALS	NB	SB	EB	WB	Total
	5,394	4,757	0	0	10,151

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	5		2				7		12:00	53		48				101	
00:15	6		2				8		12:15	69		46				115	
00:30	1		4				5		12:30	44		61				105	
00:45	2	14	3	11			5	25	12:45	66	232	47	202			113	434
01:00	2		4				6		13:00	58		47				105	
01:15	0		4				4		13:15	54		53				107	
01:30	2		1				3		13:30	66		60				126	
01:45	2	6	2	11			4	17	13:45	63	241	70	230			133	471
02:00	0		0				0		14:00	46		53				99	
02:15	1		1				2		14:15	84		65				149	
02:30	6		3				9		14:30	83		89				172	
02:45	3	10	3	7			6	17	14:45	58	271	91	298			149	569
03:00	3		2				5		15:00	75		91				166	
03:15	3		0				3		15:15	78		114				192	
03:30	6		0				6		15:30	102		122				224	
03:45	2	14	3	5			5	19	15:45	120	375	151	478			271	853
04:00	4		5				9		16:00	121		122				243	
04:15	7		6				13		16:15	136		155				291	
04:30	13		5				18		16:30	127		130				257	
04:45	9	33	12	28			21	61	16:45	98	482	152	559			250	1041
05:00	22		18				40		17:00	134		141				275	
05:15	27		20				47		17:15	125		166				291	
05:30	37		15				52		17:30	122		143				265	
05:45	54	140	30	83			84	223	17:45	129	510	109	559			238	1069
06:00	41		35				76		18:00	75		100				175	
06:15	71		64				135		18:15	89		85				174	
06:30	100		63				163		18:30	67		68				135	
06:45	116	328	75	237			191	565	18:45	50	281	62	315			112	596
07:00	102		81				183		19:00	47		34				81	
07:15	135		73				208		19:15	30		56				86	
07:30	175		123				298		19:30	23		35				58	
07:45	175	587	93	370			268	957	19:45	26	126	39	164			65	290
08:00	161		86				247		20:00	31		42				73	
08:15	176		64				240		20:15	35		31				66	
08:30	171		67				238		20:30	15		20				35	
08:45	176	684	54	271			230	955	20:45	21	102	30	123			51	225
09:00	107		48				155		21:00	14		27				41	
09:15	90		58				148		21:15	18		23				41	
09:30	91		55				146		21:30	19		23				42	
09:45	63	351	42	203			105	554	21:45	19	70	24	97			43	167
10:00	59		56				115		22:00	4		13				17	
10:15	58		42				100		22:15	11		21				32	
10:30	68		38				106		22:30	10		11				21	
10:45	67	252	47	183			114	435	22:45	5	30	16	61			21	91
11:00	55		47				102		23:00	6		9				15	
11:15	70		62				132		23:15	7		9				16	
11:30	54		60				114		23:30	4		9				13	
11:45	57	236	54	223			111	459	23:45	2	19	12	39			14	58
TOTALS		2655		1632				**4287**	**TOTALS**		2739		3125				**5864**
SPLIT %		61.9%		38.1%				**42.2%**	**SPLIT %**		46.7%		53.3%				**57.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	5,394	4,757	0	0	10,151

AM Peak Hour	07:30	07:15						**07:30**	**PM Peak Hour**	17:00	16:45							**16:45**
AM Pk Volume	687	375						**1053**	**PM Pk Volume**	510	602							**1081**
Pk Hr Factor	0.976	0.762						**0.883**	**Pk Hr Factor**	0.951	0.907							**0.929**
7 - 9 Volume	1271	641	0	0				**1912**	**4 - 6 Volume**	992	1118	0	0					**2110**
7 - 9 Peak Hour	07:30	07:15						**07:30**	**4 - 6 Peak Hour**	17:00	16:45							**16:45**
7 - 9 Pk Volume	687	375	0	0				**1053**	**4 - 6 Pk Volume**	510	602	0	0					**1081**
Pk Hr Factor	0.976	0.762	0.000	0.000				**0.883**	**Pk Hr Factor**	0.951	0.907	0.000	0.000					**0.929**

Prepared by NDS/ATD

VOLUME

Grant Line Rd Bet. Douglas Rd & Jackson Rd/SR-16

Day: Tuesday
Date: 5/21/2019

City: Rancho Cordova
Project #: CA19_7203_016

DAILY TOTALS	NB	SB	EB	WB	Total
	4,000	3,501	0	0	7,501

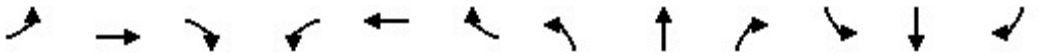
AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	3		4				7		12:00	48		42				90	
00:15	5		1				6		12:15	37		35				72	
00:30	2		3				5		12:30	42		37				79	
00:45	2	12	2	10			4	22	12:45	44	171	34	148			78	319
01:00	2		0				2		13:00	36		47				83	
01:15	1		3				4		13:15	43		35				78	
01:30	1		2				3		13:30	49		45				94	
01:45	2	6	3	8			5	14	13:45	41	169	54	181			95	350
02:00	0		0				0		14:00	54		50				104	
02:15	1		1				2		14:15	47		46				93	
02:30	4		2				6		14:30	56		74				130	
02:45	2	7	3	6			5	13	14:45	54	211	72	242			126	453
03:00	4		2				6		15:00	60		71				131	
03:15	3		0				3		15:15	80		73				153	
03:30	5		0				5		15:30	71		80				151	
03:45	2	14	3	5			5	19	15:45	81	292	104	328			185	620
04:00	6		1				7		16:00	81		88				169	
04:15	4		6				10		16:15	99		90				189	
04:30	9		5				14		16:30	84		108				192	
04:45	9	28	6	18			15	46	16:45	75	339	96	382			171	721
05:00	23		16				39		17:00	89		96				185	
05:15	22		13				35		17:15	100		109				209	
05:30	45		19				64		17:30	78		102				180	
05:45	49	139	16	64			65	203	17:45	87	354	68	375			155	729
06:00	43		32				75		18:00	58		73				131	
06:15	66		43				109		18:15	63		71				134	
06:30	84		61				145		18:30	42		37				79	
06:45	86	279	62	198			148	477	18:45	45	208	39	220			84	428
07:00	84		64				148		19:00	26		25				51	
07:15	113		62				175		19:15	29		33				62	
07:30	109		86				195		19:30	20		17				37	
07:45	113	419	74	286			187	705	19:45	17	92	18	93			35	185
08:00	118		63				181		20:00	18		21				39	
08:15	106		63				169		20:15	19		15				34	
08:30	130		61				191		20:30	18		17				35	
08:45	120	474	53	240			173	714	20:45	14	69	14	67			28	136
09:00	82		41				123		21:00	9		19				28	
09:15	67		42				109		21:15	17		12				29	
09:30	69		50				119		21:30	15		11				26	
09:45	34	252	43	176			77	428	21:45	9	50	20	62			29	112
10:00	46		43				89		22:00	8		7				15	
10:15	55		32				87		22:15	10		12				22	
10:30	55		45				100		22:30	5		8				13	
10:45	47	203	45	165			92	368	22:45	7	30	10	37			17	67
11:00	58		42				100		23:00	3		5				8	
11:15	32		35				67		23:15	7		7				14	
11:30	29		49				78		23:30	1		5				6	
11:45	50	169	38	164			88	333	23:45	2	13	9	26			11	39
TOTALS		2002		1340				3342	TOTALS		1998		2161				4159
SPLIT %		59.9%		40.1%				44.6%	SPLIT %		48.0%		52.0%				55.4%

DAILY TOTALS	NB	SB	EB	WB	Total
	4,000	3,501	0	0	7,501

AM Peak Hour	08:00	07:00				07:15	PM Peak Hour	17:00	16:30				16:30
AM Pk Volume	474	286				738	PM Pk Volume	354	409				757
Pk Hr Factor	0.912	0.831				0.946	Pk Hr Factor	0.885	0.938				0.906
7 - 9 Volume	893	526	0	0		1419	4 - 6 Volume	693	757	0	0		1450
7 - 9 Peak Hour	08:00	07:00				07:15	4 - 6 Peak Hour	17:00	16:30				16:30
7 - 9 Pk Volume	474	286	0	0		738	4 - 6 Pk Volume	354	409	0	0		757
Pk Hr Factor	0.912	0.831	0.000	0.000		0.946	Pk Hr Factor	0.885	0.938	0.000	0.000		0.906

Appendix B

Analysis Worksheets for
Existing (2019) Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	978	0	240	0	740	450	0	755	390
Future Volume (veh/h)	0	0	0	978	0	240	0	740	450	0	755	390
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				700	594	276	0	771	0	0	803	0
Peak Hour Factor				0.87	0.87	0.87	0.96	0.96	0.96	0.94	0.94	0.94
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				568	384	178	0	2869		0	2869	
Arrive On Green				0.32	0.32	0.32	0.00	0.81	0.00	0.00	0.81	0.00
Sat Flow, veh/h				1781	1203	559	0	3741	0	0	3741	0
Grp Volume(v), veh/h				700	0	870	0	771	0	0	803	0
Grp Sat Flow(s),veh/h/ln				1781	0	1762	0	1777	0	0	1777	0
Q Serve(g_s), s				35.1	0.0	35.1	0.0	5.9	0.0	0.0	6.2	0.0
Cycle Q Clear(g_c), s				35.1	0.0	35.1	0.0	5.9	0.0	0.0	6.2	0.0
Prop In Lane				1.00		0.32	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				568	0	562	0	2869		0	2869	
V/C Ratio(X)				1.23	0.00	1.55	0.00	0.27		0.00	0.28	
Avail Cap(c_a), veh/h				568	0	562	0	2869		0	2869	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				37.4	0.0	37.5	0.0	2.6	0.0	0.0	2.6	0.0
Incr Delay (d2), s/veh				118.9	0.0	255.2	0.0	0.2	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				33.7	0.0	54.6	0.0	1.2	0.0	0.0	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				156.4	0.0	292.7	0.0	2.8	0.0	0.0	2.9	0.0
LnGrp LOS				F	A	F	A	A		A	A	
Approach Vol, veh/h					1570			771	A		803	A
Approach Delay, s/veh					231.9			2.8			2.9	
Approach LOS					F			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	94.5		94.5		40.0			
Change Period (Y+Rc), s	* 5		5.0		4.9			
Max Green Setting (Gmax), s	* 66		65.0		35.1			
Max Q Clear Time (g_c+I1), s	8.2		7.9		37.1			
Green Ext Time (p_c), s	1.8		1.7		0.0			

Intersection Summary	
HCM 6th Ctrl Delay	117.2
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	312	0	1173	0	0	0	0	880	333	0	1419	317
Future Volume (veh/h)	312	0	1173	0	0	0	0	880	333	0	1419	317
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	219	0	1352				0	926	0	0	1526	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	2
Cap, veh/h	560	0	994				0	3806		0	2649	
Arrive On Green	0.31	0.00	0.31				0.00	0.75	0.00	0.00	0.75	0.00
Sat Flow, veh/h	1781	0	3160				0	5443	0	0	3647	1585
Grp Volume(v), veh/h	219	0	1352				0	926	0	0	1526	0
Grp Sat Flow(s),veh/h/ln	1781	0	1580				0	1702	0	0	1777	1585
Q Serve(g_s), s	10.6	0.0	34.6				0.0	6.2	0.0	0.0	21.1	0.0
Cycle Q Clear(g_c), s	10.6	0.0	34.6				0.0	6.2	0.0	0.0	21.1	0.0
Prop In Lane	1.00		1.00				0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	560	0	994				0	3806		0	2649	
V/C Ratio(X)	0.39	0.00	1.36				0.00	0.24		0.00	0.58	
Avail Cap(c_a), veh/h	560	0	994				0	3806		0	2649	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	29.5	0.0	37.7				0.0	4.4	0.0	0.0	6.2	0.0
Incr Delay (d2), s/veh	0.2	0.0	168.7				0.0	0.2	0.0	0.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	36.4				0.0	1.6	0.0	0.0	6.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.6	0.0	206.4				0.0	4.5	0.0	0.0	7.2	0.0
LnGrp LOS	C	A	F				A	A		A	A	
Approach Vol, veh/h		1571						926	A		1526	A
Approach Delay, s/veh		181.7						4.5			7.2	
Approach LOS		F						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	87.5	40.0	87.5
Change Period (Y+Rc), s	* 5	* 5.4	5.0
Max Green Setting (Gmax), s	* 66	* 35	65.0
Max Q Clear Time (g_c+I1), s	23.1	36.6	8.2
Green Ext Time (p_c), s	4.3	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	74.7
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	931	819	116	672	279	47
Future Volume (veh/h)	931	819	116	672	279	47
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1108	0	141	820	317	53
Peak Hour Factor	0.84	0.84	0.82	0.82	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2661		180	3655	443	203
Arrive On Green	0.52	0.00	0.10	0.72	0.13	0.13
Sat Flow, veh/h	5443	0	1781	5274	3456	1585
Grp Volume(v), veh/h	1108	0	141	820	317	53
Grp Sat Flow(s),veh/h/ln	1702	0	1781	1702	1728	1585
Q Serve(g_s), s	7.2	0.0	4.2	3.0	4.8	1.6
Cycle Q Clear(g_c), s	7.2	0.0	4.2	3.0	4.8	1.6
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2661		180	3655	443	203
V/C Ratio(X)	0.42		0.78	0.22	0.72	0.26
Avail Cap(c_a), veh/h	6088		650	6088	2314	1061
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.0	0.0	23.9	2.6	22.8	21.4
Incr Delay (d2), s/veh	0.2	0.0	2.8	0.1	0.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	1.7	0.3	1.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.2	0.0	26.7	2.7	23.6	21.7
LnGrp LOS	A		C	A	C	C
Approach Vol, veh/h	1108	A		961	370	
Approach Delay, s/veh	8.2			6.2	23.3	
Approach LOS	A			A	C	

Timer - Assigned Phs	2		5	6	8
Phs Duration (G+Y+Rc), s	44.0		10.6	33.4	10.5
Change Period (Y+Rc), s	5.0		* 5.1	5.0	3.5
Max Green Setting (Gmax), s	65.0		* 20	65.0	36.5
Max Q Clear Time (g_c+I1), s	5.0		6.2	9.2	6.8
Green Ext Time (p_c), s	12.7		0.0	19.2	0.2

Intersection Summary	
HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1073	0	212	0	956	540	0	726	330
Future Volume (veh/h)	0	0	0	1073	0	212	0	956	540	0	726	330
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				1248	0	247	0	1017	0	0	748	0
Peak Hour Factor				0.86	0.86	0.86	0.94	0.94	0.94	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1292	0	593	0	2731		0	1900	
Arrive On Green				0.37	0.00	0.37	0.00	0.53	0.00	0.00	0.53	0.00
Sat Flow, veh/h				3456	0	1585	0	5274	2790	0	3647	1585
Grp Volume(v), veh/h				1248	0	247	0	1017	0	0	748	0
Grp Sat Flow(s),veh/h/ln				1728	0	1585	0	1702	1395	0	1777	1585
Q Serve(g_s), s				44.2	0.0	14.4	0.0	14.5	0.0	0.0	15.5	0.0
Cycle Q Clear(g_c), s				44.2	0.0	14.4	0.0	14.5	0.0	0.0	15.5	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1292	0	593	0	2731		0	1900	
V/C Ratio(X)				0.97	0.00	0.42	0.00	0.37		0.00	0.39	
Avail Cap(c_a), veh/h				1333	0	611	0	2731		0	1900	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				38.3	0.0	29.0	0.0	16.9	0.0	0.0	17.1	0.0
Incr Delay (d2), s/veh				16.6	0.0	0.2	0.0	0.4	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				21.4	0.0	5.5	0.0	5.4	0.0	0.0	6.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				55.0	0.0	29.2	0.0	17.3	0.0	0.0	17.7	0.0
LnGrp LOS				D	A	C	A	B		A	B	
Approach Vol, veh/h					1495			1017	A		748	A
Approach Delay, s/veh					50.7			17.3			17.7	
Approach LOS					D			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	71.4		71.4		53.6			
Change Period (Y+Rc), s	4.6		4.6		6.8			
Max Green Setting (Gmax), s	65.4		65.4		48.2			
Max Q Clear Time (g_c+I1), s	17.5		16.5		46.2			
Green Ext Time (p_c), s	1.7		2.5		0.5			

Intersection Summary		
HCM 6th Ctrl Delay	32.7	
HCM 6th LOS	C	

Notes

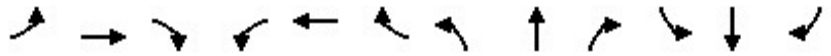
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL2	EBL	EBT	EBR	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	377	1	849	1095	102	27	985	469	15	1684	201
Future Volume (vph)	377	1	849	1095	102	27	985	469	15	1684	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	6.8	4.9		4.6			4.6	4.0
Lane Util. Factor		0.91	0.86	0.91	0.88		0.86			0.95	1.00
Frpb, ped/bikes		1.00	0.99	0.98	0.99		0.99			1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.94	0.85	0.85		0.95			1.00	0.85
Flt Protected		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1603	3009	1417	2747		6064			3539	1545
Flt Permitted		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1603	3009	1417	2747		6064			3539	1545
Peak-hour factor, PHF	0.87	0.92	0.87	0.87	0.90	0.92	0.89	0.92	0.89	0.91	0.91
Adj. Flow (vph)	433	1	976	1259	113	29	1107	510	17	1851	221
RTOR Reduction (vph)	0	0	5	9	16	0	1	0	0	0	0
Lane Group Flow (vph)	0	434	1538	683	126	0	1633	0	0	1851	221
Confl. Peds. (#/hr)	6			6	3				3		6
Confl. Bikes (#/hr)									2		3
Turn Type	Split	Perm	NA	Perm	Perm		NA			NA	Free
Protected Phases	4		4				6			2	
Permitted Phases		4		4	8						Free
Actuated Green, G (s)		48.2	48.2	48.2	50.1		65.4			65.4	125.0
Effective Green, g (s)		48.2	48.2	48.2	50.1		65.4			65.4	125.0
Actuated g/C Ratio		0.39	0.39	0.39	0.40		0.52			0.52	1.00
Clearance Time (s)		6.8	6.8	6.8	4.9		4.6			4.6	
Vehicle Extension (s)		1.0	1.0	1.0	3.0		1.0			1.0	
Lane Grp Cap (vph)		618	1160	546	1100		3172			1851	1545
v/s Ratio Prot							0.27			c0.52	
v/s Ratio Perm		0.27	0.51	0.48	0.05						0.14
v/c Ratio		0.70	1.33	1.25	0.11		0.51			1.00	0.14
Uniform Delay, d1		32.4	38.4	38.4	23.5		19.4			29.8	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00			1.25	1.00
Incremental Delay, d2		3.0	152.7	127.8	0.0		0.6			17.4	0.1
Delay (s)		35.3	191.1	166.2	23.6		20.0			54.5	0.1
Level of Service		D	F	F	C		C			D	A
Approach Delay (s)			159.3				20.0			48.7	
Approach LOS			F				C			D	

Intersection Summary			
HCM 2000 Control Delay	86.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	101	30	25	87	241	40	1008	18	750	1373	658
Future Volume (veh/h)	215	101	30	25	87	241	40	1008	18	750	1373	658
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	250	117	35	29	101	280	44	1108	20	806	1476	708
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.91	0.91	0.91	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	935	256	60	300	1282	80	1365	25	862	2505	764
Arrive On Green	0.09	0.24	0.24	0.02	0.16	0.16	0.02	0.26	0.26	0.25	0.49	0.49
Sat Flow, veh/h	3456	3961	1085	3563	1870	3070	3456	5163	93	3456	5106	1557
Grp Volume(v), veh/h	250	99	53	29	101	280	44	730	398	806	1476	708
Grp Sat Flow(s),veh/h/ln	1728	1702	1642	1781	1870	1535	1728	1702	1852	1728	1702	1557
Q Serve(g_s), s	6.9	2.2	2.5	0.8	4.7	5.8	1.2	19.5	19.5	22.2	20.1	41.3
Cycle Q Clear(g_c), s	6.9	2.2	2.5	0.8	4.7	5.8	1.2	19.5	19.5	22.2	20.1	41.3
Prop In Lane	1.00		0.66	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	320	803	387	60	300	1282	80	900	490	862	2505	764
V/C Ratio(X)	0.78	0.12	0.14	0.49	0.34	0.22	0.55	0.81	0.81	0.94	0.59	0.93
Avail Cap(c_a), veh/h	693	2241	1081	715	1241	2827	693	2273	1237	871	3378	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.1	29.2	29.3	47.4	36.2	18.6	47.0	33.5	33.5	35.7	17.7	23.1
Incr Delay (d2), s/veh	1.6	0.0	0.1	2.3	0.2	0.0	2.2	0.7	1.3	16.6	0.1	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.9	0.9	0.4	2.1	1.9	0.5	7.8	8.5	10.8	7.1	15.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.7	29.2	29.4	49.6	36.5	18.7	49.1	34.2	34.7	52.3	17.8	32.9
LnGrp LOS	D	C	C	D	D	B	D	C	C	D	B	C
Approach Vol, veh/h		402			410			1172			2990	
Approach Delay, s/veh		38.9			25.2			34.9			30.7	
Approach LOS		D			C			C			C	

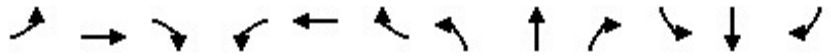
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	53.4	14.5	21.6	29.7	31.4	7.1	28.9
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 6	5.5	* 5.7	5.5	* 6
Max Green Setting (Gmax), s	19.5	* 64	19.5	* 65	24.5	* 65	19.5	* 64
Max Q Clear Time (g_c+I1), s	3.2	43.3	8.9	7.8	24.2	21.5	2.8	4.5
Green Ext Time (p_c), s	0.0	4.3	0.1	0.4	0.0	2.6	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	31.9
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



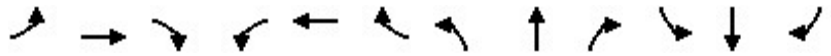
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	337	63	92	367	101	266	872	102	148	426	259
Future Volume (veh/h)	116	337	63	92	367	101	266	872	102	148	426	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	132	383	72	108	432	119	274	899	105	174	501	305
Peak Hour Factor	0.88	0.88	0.88	0.85	0.85	0.85	0.97	0.97	0.97	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	653	119	185	722	220	655	1841	570	270	848	389
Arrive On Green	0.06	0.15	0.15	0.05	0.14	0.14	0.19	0.36	0.36	0.08	0.25	0.25
Sat Flow, veh/h	3456	4328	788	3456	5106	1554	3456	5106	1581	3456	3404	1563
Grp Volume(v), veh/h	132	299	156	108	432	119	274	899	105	174	501	305
Grp Sat Flow(s),veh/h/ln	1728	1702	1712	1728	1702	1554	1728	1702	1581	1728	1702	1563
Q Serve(g_s), s	2.3	5.1	5.4	1.9	5.0	4.5	4.4	8.6	2.9	3.1	8.1	11.4
Cycle Q Clear(g_c), s	2.3	5.1	5.4	1.9	5.0	4.5	4.4	8.6	2.9	3.1	8.1	11.4
Prop In Lane	1.00		0.46	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	514	258	185	722	220	655	1841	570	270	848	389
V/C Ratio(X)	0.61	0.58	0.61	0.58	0.60	0.54	0.42	0.49	0.18	0.64	0.59	0.78
Avail Cap(c_a), veh/h	1074	1855	933	1074	2782	847	1074	5239	1622	1074	3492	1603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	24.8	24.9	29.0	25.3	25.1	22.4	15.6	13.7	28.1	20.8	22.0
Incr Delay (d2), s/veh	1.0	0.4	0.9	1.1	0.3	0.8	0.2	0.1	0.1	1.0	0.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.9	2.0	0.8	1.8	1.5	1.6	2.8	0.9	1.2	2.8	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	25.2	25.8	30.1	25.6	25.8	22.5	15.7	13.8	29.0	21.0	23.3
LnGrp LOS	C	C	C	C	C	C	C	B	B	C	C	C
Approach Vol, veh/h		587			659			1278			980	
Approach Delay, s/veh		26.3			26.4			17.0			23.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	21.2	9.5	14.7	10.4	28.2	8.9	15.3
Change Period (Y+Rc), s	5.5	* 5.6	5.5	5.8	5.5	* 5.6	5.5	5.8
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.2	19.5	* 64	19.5	34.2
Max Q Clear Time (g_c+I1), s	16.4	13.4	4.3	7.0	5.1	10.6	3.9	7.4
Green Ext Time (p_c), s	0.1	1.8	0.1	1.0	0.1	2.2	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	14	263	37	20	32	302	2204	10	32	3198	77
Future Volume (veh/h)	111	14	263	37	20	32	302	2204	10	32	3198	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	134	223	45	24	39	311	2272	10	35	3476	84
Peak Hour Factor	0.87	0.87	0.87	0.82	0.82	0.82	0.97	0.97	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	155	262	100	36	58	363	3102	14	45	2598	786
Arrive On Green	0.17	0.17	0.17	0.06	0.06	0.06	0.11	0.59	0.59	0.03	0.51	0.51
Sat Flow, veh/h	892	934	1574	1781	639	1038	3456	5247	23	1781	5106	1545
Grp Volume(v), veh/h	262	0	223	45	0	63	311	1474	808	35	3476	84
Grp Sat Flow(s),veh/h/ln	1826	0	1574	1781	0	1677	1728	1702	1866	1781	1702	1545
Q Serve(g_s), s	17.9	0.0	17.6	3.1	0.0	4.7	11.3	40.0	40.0	2.5	65.2	3.6
Cycle Q Clear(g_c), s	17.9	0.0	17.6	3.1	0.0	4.7	11.3	40.0	40.0	2.5	65.2	3.6
Prop In Lane	0.49		1.00	1.00		0.62	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	262	100	0	94	363	2013	1103	45	2598	786
V/C Ratio(X)	0.86	0.00	0.85	0.45	0.00	0.67	0.86	0.73	0.73	0.78	1.34	0.11
Avail Cap(c_a), veh/h	492	0	424	480	0	451	537	2013	1103	281	2598	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	0.0	51.9	58.6	0.0	59.3	56.4	18.9	18.9	62.1	31.5	16.3
Incr Delay (d2), s/veh	4.9	0.0	4.8	1.2	0.0	3.1	6.1	1.2	2.2	10.5	154.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	7.3	1.5	0.0	2.1	5.1	14.6	16.3	1.2	61.8	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.9	0.0	56.6	59.8	0.0	62.4	62.5	20.1	21.1	72.7	186.2	16.4
LnGrp LOS	E	A	E	E	A	E	E	C	C	E	F	B
Approach Vol, veh/h		485			108			2593			3595	
Approach Delay, s/veh		56.8			61.3			25.5			181.2	
Approach LOS		E			E			C			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.6	70.1		26.8	8.0	80.7		12.7
Change Period (Y+Rc), s	* 5.1	* 4.9		5.5	* 4.8	* 4.9		5.5
Max Green Setting (Gmax), s	* 26	* 65		34.5	* 20	* 65		34.5
Max Q Clear Time (g_c+I1), s	13.3	67.2		19.9	4.5	42.0		6.7
Green Ext Time (p_c), s	0.1	0.0		0.6	0.0	6.2		0.1

Intersection Summary	
HCM 6th Ctrl Delay	110.8
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	501	0	440	0	2052	269	0	1949	1594
Future Volume (veh/h)	0	0	0	501	0	440	0	2052	269	0	1949	1594
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				589	0	518	0	2138	0	0	1989	0
Peak Hour Factor				0.85	0.85	0.85	0.96	0.96	0.96	0.98	0.98	0.98
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				716	0	578	0	3837		0	3491	
Arrive On Green				0.21	0.00	0.21	0.00	0.68	0.00	0.00	0.68	0.00
Sat Flow, veh/h				3456	0	2790	0	5611	1585	0	5274	2790
Grp Volume(v), veh/h				589	0	518	0	2138	0	0	1989	0
Grp Sat Flow(s),veh/h/ln				1728	0	1395	0	1870	1585	0	1702	1395
Q Serve(g_s), s				17.9	0.0	19.9	0.0	21.4	0.0	0.0	22.2	0.0
Cycle Q Clear(g_c), s				17.9	0.0	19.9	0.0	21.4	0.0	0.0	22.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				716	0	578	0	3837		0	3491	
V/C Ratio(X)				0.82	0.00	0.90	0.00	0.56		0.00	0.57	
Avail Cap(c_a), veh/h				1037	0	837	0	3837		0	3491	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				41.7	0.0	42.5	0.0	8.9	0.0	0.0	9.0	0.0
Incr Delay (d2), s/veh				2.3	0.0	7.0	0.0	0.6	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.8	0.0	7.4	0.0	7.2	0.0	0.0	6.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				44.0	0.0	49.5	0.0	9.5	0.0	0.0	9.7	0.0
LnGrp LOS				D	A	D	A	A		A	A	
Approach Vol, veh/h					1107			2138	A		1989	A
Approach Delay, s/veh					46.6			9.5			9.7	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	80.2		80.2		29.8			
Change Period (Y+Rc), s	* 5		5.0		7.0			
Max Green Setting (Gmax), s	* 65		65.0		33.0			
Max Q Clear Time (g_c+I1), s	24.2		23.4		21.9			
Green Ext Time (p_c), s	6.5		7.4		0.9			

Intersection Summary		
HCM 6th Ctrl Delay		17.4
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1198	0	601	0	0	0	0	1106	459	0	2100	362
Future Volume (veh/h)	1198	0	601	0	0	0	0	1106	459	0	2100	362
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	1235	0	620				0	1366	0	0	2143	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.98	0.98	0.98
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1349	0	749				0	4696		0	3522	
Arrive On Green	0.27	0.00	0.27				0.00	0.63	0.00	0.00	0.63	0.00
Sat Flow, veh/h	5023	0	2790				0	7481	1585	0	5611	1585
Grp Volume(v), veh/h	1235	0	620				0	1366	0	0	2143	0
Grp Sat Flow(s),veh/h/ln	1674	0	1395				0	1870	1585	0	1870	1585
Q Serve(g_s), s	26.2	0.0	23.0				0.0	9.1	0.0	0.0	25.3	0.0
Cycle Q Clear(g_c), s	26.2	0.0	23.0				0.0	9.1	0.0	0.0	25.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1349	0	749				0	4696		0	3522	
V/C Ratio(X)	0.92	0.00	0.83				0.00	0.29		0.00	0.61	
Avail Cap(c_a), veh/h	1521	0	845				0	4696		0	3522	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	39.0	0.0	37.8				0.0	9.3	0.0	0.0	12.3	0.0
Incr Delay (d2), s/veh	7.8	0.0	5.5				0.0	0.2	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	8.3				0.0	3.3	0.0	0.0	9.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	0.0	43.3				0.0	9.5	0.0	0.0	13.1	0.0
LnGrp LOS	D	A	D				A	A		A	B	
Approach Vol, veh/h		1855						1366	A		2143	A
Approach Delay, s/veh		45.7						9.5			13.1	
Approach LOS		D						A			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	73.7	36.3	73.7
Change Period (Y+Rc), s	* 4.7	6.7	4.7
Max Green Setting (Gmax), s	* 66	33.3	65.3
Max Q Clear Time (g_c+I1), s	27.3	28.2	11.1
Green Ext Time (p_c), s	7.4	1.3	3.7

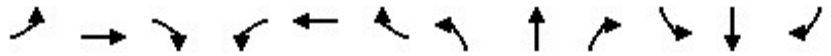
Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	171	93	272	216	129	72	1246	103	230	2129	309
Future Volume (veh/h)	213	171	93	272	216	129	72	1246	103	230	2129	309
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	192	104	306	266	129	76	1312	108	240	2218	322
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.95	0.95	0.95	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	295	563	245	363	655	267	124	3015	741	295	2646	814
Arrive On Green	0.09	0.16	0.16	0.10	0.18	0.18	0.04	0.47	0.47	0.09	0.52	0.52
Sat Flow, veh/h	3456	3554	1546	3563	3741	1524	3456	6434	1581	3456	5106	1571
Grp Volume(v), veh/h	239	192	104	306	266	129	76	1312	108	240	2218	322
Grp Sat Flow(s),veh/h/ln	1728	1777	1546	1781	1870	1524	1728	1609	1581	1728	1702	1571
Q Serve(g_s), s	8.3	5.9	7.5	10.4	7.8	9.4	2.7	16.7	4.8	8.4	45.5	15.3
Cycle Q Clear(g_c), s	8.3	5.9	7.5	10.4	7.8	9.4	2.7	16.7	4.8	8.4	45.5	15.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	295	563	245	363	655	267	124	3015	741	295	2646	814
V/C Ratio(X)	0.81	0.34	0.42	0.84	0.41	0.48	0.61	0.44	0.15	0.81	0.84	0.40
Avail Cap(c_a), veh/h	549	986	429	565	1035	422	549	3362	826	549	2677	824
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	46.0	46.6	54.2	45.0	45.7	58.4	21.8	18.6	55.2	25.2	17.9
Incr Delay (d2), s/veh	2.1	0.5	1.7	3.9	0.7	2.3	3.0	0.1	0.1	2.1	2.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	2.7	3.0	4.8	3.7	3.7	1.2	6.0	1.8	3.6	17.5	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	46.5	48.4	58.1	45.7	48.0	61.4	21.8	18.7	57.3	28.0	18.6
LnGrp LOS	E	D	D	E	D	D	E	C	B	E	C	B
Approach Vol, veh/h		535			701			1496			2780	
Approach Delay, s/veh		51.7			51.5			23.6			29.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	69.5	16.0	27.5	16.0	63.4	18.0	25.5
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	* 6
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.0	19.5	* 64	19.5	* 34
Max Q Clear Time (g_c+I1), s	4.7	47.5	10.3	11.4	10.4	18.7	12.4	9.5
Green Ext Time (p_c), s	0.1	16.2	0.1	3.6	0.1	8.5	0.2	2.3

Intersection Summary	
HCM 6th Ctrl Delay	32.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



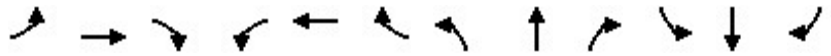
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	206	75	148	266	116	333	1085	82	252	851	254
Future Volume (veh/h)	166	206	75	148	266	116	333	1085	82	252	851	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	173	215	78	163	292	127	362	1179	89	262	886	265
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.92	0.92	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	531	232	223	747	231	423	1953	598	324	1807	552
Arrive On Green	0.08	0.17	0.17	0.07	0.16	0.16	0.14	0.43	0.43	0.10	0.39	0.39
Sat Flow, veh/h	3110	3198	1399	3110	4595	1419	3110	4595	1407	3110	4595	1404
Grp Volume(v), veh/h	173	215	78	163	292	127	362	1179	89	262	886	265
Grp Sat Flow(s),veh/h/ln	1555	1599	1399	1555	1532	1419	1555	1532	1407	1555	1532	1404
Q Serve(g_s), s	5.3	5.9	4.8	5.0	5.6	8.0	11.1	19.4	3.8	8.1	14.2	13.8
Cycle Q Clear(g_c), s	5.3	5.9	4.8	5.0	5.6	8.0	11.1	19.4	3.8	8.1	14.2	13.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	234	531	232	223	747	231	423	1953	598	324	1807	552
V/C Ratio(X)	0.74	0.41	0.34	0.73	0.39	0.55	0.86	0.60	0.15	0.81	0.49	0.48
Avail Cap(c_a), veh/h	620	2094	916	620	1598	493	620	3027	927	620	3018	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.3	36.5	36.0	44.5	36.6	37.6	41.3	21.7	17.3	42.8	22.3	22.2
Incr Delay (d2), s/veh	1.7	1.0	1.7	1.7	1.1	6.9	5.5	0.6	0.2	1.9	0.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.3	1.7	1.9	2.1	3.1	4.4	6.5	1.2	3.1	4.8	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	37.5	37.7	46.2	37.7	44.5	46.8	22.4	17.5	44.7	22.7	23.5
LnGrp LOS	D	D	D	D	D	D	D	C	B	D	C	C
Approach Vol, veh/h		466			582			1630			1413	
Approach Delay, s/veh		40.7			41.6			27.5			26.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.8	44.2	12.8	21.9	15.7	47.4	12.5	22.2
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	13.3	* 64	19.5	34.0	19.5	* 64	19.5	64.0
Max Q Clear Time (g_c+I1), s	13.1	16.2	7.3	10.0	10.1	21.4	7.0	7.9
Green Ext Time (p_c), s	0.2	17.1	0.1	5.3	0.1	20.2	0.1	3.3

Intersection Summary	
HCM 6th Ctrl Delay	30.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



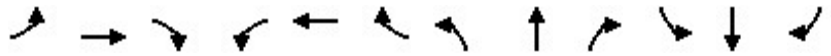
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	185	2	12	339	444	6	179	44	175	27	72
Future Volume (veh/h)	304	185	2	12	339	444	6	179	44	175	27	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	323	197	2	14	404	529	7	218	54	194	30	80
Peak Hour Factor	0.94	0.94	0.94	0.84	0.84	0.84	0.82	0.82	0.82	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	338	1959	20	17	672	557	9	247	61	260	450	382
Arrive On Green	0.19	0.54	0.54	0.01	0.36	0.36	0.01	0.17	0.17	0.08	0.24	0.24
Sat Flow, veh/h	1781	3604	37	1781	1870	1550	1781	1447	359	3456	1870	1585
Grp Volume(v), veh/h	323	97	102	14	404	529	7	0	272	194	30	80
Grp Sat Flow(s),veh/h/ln	1781	1777	1864	1781	1870	1550	1781	0	1806	1728	1870	1585
Q Serve(g_s), s	18.4	2.7	2.7	0.8	18.1	34.1	0.4	0.0	15.1	5.6	1.3	4.1
Cycle Q Clear(g_c), s	18.4	2.7	2.7	0.8	18.1	34.1	0.4	0.0	15.1	5.6	1.3	4.1
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	338	966	1013	17	672	557	9	0	309	260	450	382
V/C Ratio(X)	0.95	0.10	0.10	0.82	0.60	0.95	0.74	0.00	0.88	0.75	0.07	0.21
Avail Cap(c_a), veh/h	338	1127	1182	345	1188	985	338	0	1147	657	1183	1002
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	11.3	11.3	50.7	26.9	32.0	51.0	0.0	41.5	46.5	30.1	31.2
Incr Delay (d2), s/veh	36.6	0.0	0.0	28.0	0.3	6.9	34.1	0.0	3.3	1.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	0.9	1.0	0.5	7.4	12.9	0.3	0.0	6.7	2.4	0.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.7	11.3	11.3	78.7	27.2	38.9	85.1	0.0	44.8	48.1	30.1	31.3
LnGrp LOS	E	B	B	E	C	D	F	A	D	D	C	C
Approach Vol, veh/h		522			947			279			304	
Approach Delay, s/veh		52.4			34.5			45.8			41.9	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	41.8	6.0	29.8	6.1	60.7	13.2	22.6
Change Period (Y+Rc), s	5.5	* 4.9	5.5	* 5.1	* 5.1	* 4.9	5.5	* 5.1
Max Green Setting (Gmax), s	19.5	* 65	19.5	* 65	* 20	* 65	19.5	* 65
Max Q Clear Time (g_c+I1), s	20.4	36.1	2.4	6.1	2.8	4.7	7.6	17.1
Green Ext Time (p_c), s	0.0	0.8	0.0	0.1	0.0	0.3	0.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	41.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



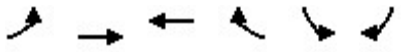
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	111	129	82	313	215	456	1398	63	88	487	58
Future Volume (veh/h)	256	111	129	82	313	215	456	1398	63	88	487	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	261	113	132	93	356	244	518	1589	72	99	547	65
Peak Hour Factor	0.98	0.98	0.98	0.88	0.88	0.88	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	1206	374	156	646	288	598	1845	565	164	1203	374
Arrive On Green	0.10	0.24	0.24	0.05	0.18	0.18	0.17	0.36	0.36	0.05	0.24	0.24
Sat Flow, veh/h	3456	5106	1585	3456	3554	1585	3456	5106	1565	3456	5106	1585
Grp Volume(v), veh/h	261	113	132	93	356	244	518	1589	72	99	547	65
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1585	1728	1702	1565	1728	1702	1585
Q Serve(g_s), s	6.0	1.4	5.6	2.1	7.4	12.1	11.9	23.5	2.5	2.3	7.5	2.7
Cycle Q Clear(g_c), s	6.0	1.4	5.6	2.1	7.4	12.1	11.9	23.5	2.5	2.3	7.5	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	1206	374	156	646	288	598	1845	565	164	1203	374
V/C Ratio(X)	0.76	0.09	0.35	0.60	0.55	0.85	0.87	0.86	0.13	0.60	0.45	0.17
Avail Cap(c_a), veh/h	829	2091	649	829	1451	647	829	3937	1207	829	3931	1220
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.7	24.3	25.9	38.1	30.2	32.2	32.7	24.1	17.4	38.0	26.6	24.8
Incr Delay (d2), s/veh	1.3	0.0	0.2	1.4	0.3	2.6	5.5	0.5	0.0	1.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.5	1.9	0.9	2.9	4.4	4.9	8.1	0.8	0.9	2.7	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.0	24.3	26.1	39.4	30.5	34.8	38.2	24.6	17.4	39.3	26.7	24.9
LnGrp LOS	D	C	C	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h		506			693			2179			711	
Approach Delay, s/veh		31.3			33.2			27.6			28.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	36.8	9.2	26.0	19.6	26.6	13.6	21.6
Change Period (Y+Rc), s	5.5	* 7.4	5.5	* 6.8	5.5	* 7.4	5.5	6.8
Max Green Setting (Gmax), s	19.5	* 63	19.5	* 33	19.5	* 63	19.5	33.2
Max Q Clear Time (g_c+I1), s	14.3	25.5	4.1	7.6	13.9	9.5	8.0	14.1
Green Ext Time (p_c), s	0.0	3.9	0.0	0.2	0.2	1.1	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	29.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



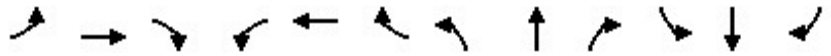
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	197	89	5	5	72
Future Volume (veh/h)	57	197	89	5	5	72
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	66	226	99	6	6	94
Peak Hour Factor	0.87	0.87	0.90	0.90	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	80	1381	402	179	253	225
Arrive On Green	0.04	0.39	0.11	0.11	0.14	0.14
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	66	226	99	6	6	94
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	0.9	1.0	0.6	0.1	0.1	1.3
Cycle Q Clear(g_c), s	0.9	1.0	0.6	0.1	0.1	1.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	80	1381	402	179	253	225
V/C Ratio(X)	0.83	0.16	0.25	0.03	0.02	0.42
Avail Cap(c_a), veh/h	1491	9787	9802	4372	2586	2301
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.1	4.7	9.5	9.2	8.7	9.2
Incr Delay (d2), s/veh	7.9	0.0	0.1	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.1	0.0	0.0	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.0	4.7	9.6	9.3	8.7	9.6
LnGrp LOS	B	A	A	A	A	A
Approach Vol, veh/h		292	105		100	
Approach Delay, s/veh		7.9	9.6		9.6	
Approach LOS		A	A		A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.4	8.2		8.8		14.6
Change Period (Y+Rc), s	* 5.4	* 5.5		5.5		* 5.5
Max Green Setting (Gmax), s	* 26	* 65		34.0		* 65
Max Q Clear Time (g_c+I1), s	2.9	2.6		3.3		3.0
Green Ext Time (p_c), s	0.0	0.2		0.1		0.4

Intersection Summary	
HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



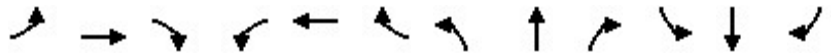
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	192	6	30	361	278	4	856	44	95	502	85
Future Volume (veh/h)	73	192	6	30	361	278	4	856	44	95	502	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	226	7	33	401	309	4	941	48	116	612	104
Peak Hour Factor	0.85	0.85	0.85	0.90	0.90	0.90	0.91	0.91	0.91	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	497	421	42	429	364	39	826	42	141	982	927
Arrive On Green	0.06	0.27	0.27	0.02	0.23	0.23	0.02	0.47	0.47	0.08	0.53	0.53
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1764	90	1781	1870	1585
Grp Volume(v), veh/h	86	226	7	33	401	309	4	0	989	116	612	104
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1854	1781	1870	1585
Q Serve(g_s), s	6.5	13.7	0.4	2.5	28.6	25.4	0.3	0.0	63.6	8.7	31.4	4.0
Cycle Q Clear(g_c), s	6.5	13.7	0.4	2.5	28.6	25.4	0.3	0.0	63.6	8.7	31.4	4.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	107	497	421	42	429	364	39	0	868	141	982	927
V/C Ratio(X)	0.80	0.45	0.02	0.78	0.93	0.85	0.10	0.00	1.14	0.82	0.62	0.11
Avail Cap(c_a), veh/h	269	497	421	269	457	387	269	0	868	321	982	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.1	41.6	36.8	66.0	51.4	50.1	65.1	0.0	36.1	61.6	22.8	12.5
Incr Delay (d2), s/veh	5.2	0.2	0.0	11.1	25.1	14.5	0.4	0.0	76.7	4.5	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	6.1	0.2	1.2	15.8	11.1	0.1	0.0	44.7	4.0	12.9	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.3	41.9	36.8	77.1	76.4	64.6	65.5	0.0	112.8	66.2	23.7	12.5
LnGrp LOS	E	D	D	E	E	E	E	A	F	E	C	B
Approach Vol, veh/h		319			743			993			832	
Approach Delay, s/veh		48.9			71.5			112.7			28.2	
Approach LOS		D			E			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	38.0	7.5	77.7	7.7	42.9	15.2	70.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 6.4	4.5	6.8	4.5	6.4
Max Green Setting (Gmax), s	20.5	33.2	20.5	* 64	20.5	33.2	24.5	63.6
Max Q Clear Time (g_c+I1), s	8.5	30.6	2.3	33.4	4.5	15.7	10.7	65.6
Green Ext Time (p_c), s	0.0	0.6	0.0	2.2	0.0	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	70.7
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	259	0	36	640	34	3	316	16	23	219	64
Future Volume (veh/h)	83	259	0	36	640	34	3	316	16	23	219	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	89	278	0	40	711	38	3	351	18	26	246	72
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	761	0	52	660	35	3	370	19	28	261	76
Arrive On Green	0.06	0.41	0.00	0.03	0.38	0.38	0.21	0.21	0.21	0.20	0.20	0.20
Sat Flow, veh/h	1781	1870	0	1781	1759	94	15	1749	90	136	1284	376
Grp Volume(v), veh/h	89	278	0	40	0	749	372	0	0	344	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1853	1853	0	0	1796	0	0
Q Serve(g_s), s	8.3	17.4	0.0	3.8	0.0	63.2	33.3	0.0	0.0	31.8	0.0	0.0
Cycle Q Clear(g_c), s	8.3	17.4	0.0	3.8	0.0	63.2	33.3	0.0	0.0	31.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	0.01		0.05	0.08		0.21
Lane Grp Cap(c), veh/h	108	761	0	52	0	696	393	0	0	365	0	0
V/C Ratio(X)	0.83	0.37	0.00	0.78	0.00	1.08	0.95	0.00	0.00	0.94	0.00	0.00
Avail Cap(c_a), veh/h	270	761	0	217	0	696	418	0	0	407	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	78.2	34.8	0.0	81.2	0.0	52.6	65.4	0.0	0.0	66.1	0.0	0.0
Incr Delay (d2), s/veh	5.9	0.1	0.0	8.9	0.0	56.6	29.4	0.0	0.0	27.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	7.8	0.0	1.8	0.0	39.0	18.5	0.0	0.0	17.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.1	34.9	0.0	90.1	0.0	109.2	94.9	0.0	0.0	93.8	0.0	0.0
LnGrp LOS	F	C	A	F	A	F	F	A	A	F	A	A
Approach Vol, veh/h		367			789			372			344	
Approach Delay, s/veh		46.8			108.3			94.9			93.8	
Approach LOS		D			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.7	70.0		41.0	9.4	75.3		42.7
Change Period (Y+Rc), s	4.5	6.8		6.8	4.5	* 6.8		7.0
Max Green Setting (Gmax), s	25.5	63.2		38.2	20.5	* 64		38.0
Max Q Clear Time (g_c+I1), s	10.3	65.2		33.8	5.8	19.4		35.3
Green Ext Time (p_c), s	0.0	0.0		0.5	0.0	0.8		0.3

Intersection Summary	
HCM 6th Ctrl Delay	90.9
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	13	0	166	1	439	15	50	288	0
Future Vol, veh/h	1	0	0	13	0	166	1	439	15	50	288	0
Peak Hour Factor	0.70	0.70	0.70	0.84	0.84	0.84	0.96	0.96	0.96	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	15	0	198	1	457	16	63	365	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	11.4	18.3	16.6
HCM LOS	A	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	7%	15%
Vol Thru, %	96%	0%	0%	85%
Vol Right, %	3%	0%	93%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	455	1	179	338
LT Vol	1	1	13	50
Through Vol	439	0	0	288
RT Vol	15	0	166	0
Lane Flow Rate	474	1	213	428
Geometry Grp	1	1	1	1
Degree of Util (X)	0.677	0.003	0.331	0.623
Departure Headway (Hd)	5.144	6.92	5.597	5.246
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	701	515	641	689
Service Time	3.179	4.994	3.643	3.281
HCM Lane V/C Ratio	0.676	0.002	0.332	0.621
HCM Control Delay	18.3	10	11.4	16.6
HCM Lane LOS	C	A	B	C
HCM 95th-tile Q	5.3	0	1.4	4.4



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	196	22	94	481	300	72
Future Volume (veh/h)	196	22	94	481	300	72
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	280	31	108	553	341	82
Peak Hour Factor	0.70	0.70	0.87	0.87	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	358	319	135	868	459	389
Arrive On Green	0.20	0.20	0.08	0.46	0.25	0.25
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	280	31	108	553	341	82
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	4.8	0.5	1.9	7.3	5.4	1.3
Cycle Q Clear(g_c), s	4.8	0.5	1.9	7.3	5.4	1.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	358	319	135	868	459	389
V/C Ratio(X)	0.78	0.10	0.80	0.64	0.74	0.21
Avail Cap(c_a), veh/h	1950	1735	1127	3724	3707	3141
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	10.5	14.7	6.6	11.2	9.7
Incr Delay (d2), s/veh	1.4	0.0	4.0	0.3	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.1	0.6	0.7	1.3	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.6	10.5	18.7	6.9	12.1	9.8
LnGrp LOS	B	B	B	A	B	A
Approach Vol, veh/h	311			661	423	
Approach Delay, s/veh	13.3			8.8	11.7	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.0	14.0			21.1	11.2
Change Period (Y+Rc), s	* 4.6	* 6.1			* 6.1	4.7
Max Green Setting (Gmax), s	* 26	* 64			* 64	35.3
Max Q Clear Time (g_c+I1), s	3.9	7.4			9.3	6.8
Green Ext Time (p_c), s	0.0	0.5			0.8	0.1

Intersection Summary	
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	2	3	699	400	17
Future Vol, veh/h	48	2	3	699	400	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	86	86	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	3	3	813	435	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1263	444	453	0	-	0
Stage 1	444	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	187	614	1108	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	433	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	186	614	1108	-	-	-
Mov Cap-2 Maneuver	186	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	433	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	37	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1108	-	191	-	-
HCM Lane V/C Ratio	0.003	-	0.422	-	-
HCM Control Delay (s)	8.3	-	37	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0	-	1.9	-	-



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	42	15	28	783	0	399	296
Future Volume (veh/h)	42	15	28	783	0	399	296
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	53	19	32	890		420	312
Peak Hour Factor	0.79	0.79	0.88	0.88		0.95	0.95
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	160	111	42	1769		966	504
Arrive On Green	0.05	0.05	0.02	0.50		0.27	0.27
Sat Flow, veh/h	3456	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	53	19	32	890		420	312
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777		1777	1585
Q Serve(g_s), s	0.4	0.3	0.5	4.6		2.7	4.5
Cycle Q Clear(g_c), s	0.4	0.3	0.5	4.6		2.7	4.5
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	160	111	42	1769		966	504
V/C Ratio(X)	0.33	0.17	0.76	0.50		0.43	0.62
Avail Cap(c_a), veh/h	6926	3214	1277	6979		6940	3169
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	12.6	11.9	13.2	4.6		8.2	7.9
Incr Delay (d2), s/veh	0.4	0.3	9.8	0.1		0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.3	0.2	0.0		0.4	0.7
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	13.0	12.2	23.0	4.7		8.3	8.3
LnGrp LOS	B	B	C	A		A	A
Approach Vol, veh/h	72			922		732	
Approach Delay, s/veh	12.8			5.3		8.3	
Approach LOS	B			A		A	

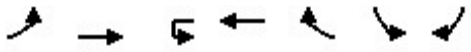
Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	6.1	14.3		6.8		20.4	
Change Period (Y+Rc), s	5.5	* 6.9		5.5		* 6.9	
Max Green Setting (Gmax), s	19.5	* 53		54.5		* 53	
Max Q Clear Time (g_c+I1), s	2.5	6.5		2.4		6.6	
Green Ext Time (p_c), s	0.0	0.8		0.0		1.8	

Intersection Summary	
HCM 6th Ctrl Delay	6.9
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	434	375	0	414	109	31	245
Future Volume (veh/h)	434	375	0	414	109	31	245
Initial Q (Qb), veh	0	0		0	0	0	0
Ped-Bike Adj(A_pbT)	1.00				1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870		1870	1870	1870	1870
Adj Flow Rate, veh/h	477	412		505	133	37	292
Peak Hour Factor	0.91	0.91		0.82	0.82	0.84	0.84
Percent Heavy Veh, %	2	2		2	2	2	2
Cap, veh/h	526	2035		662	295	381	339
Arrive On Green	0.30	0.57		0.19	0.19	0.21	0.21
Sat Flow, veh/h	1781	3647		3647	1585	1781	1585
Grp Volume(v), veh/h	477	412		505	133	37	292
Grp Sat Flow(s),veh/h/ln	1781	1777		1777	1585	1781	1585
Q Serve(g_s), s	14.7	3.2		7.7	4.3	1.0	10.1
Cycle Q Clear(g_c), s	14.7	3.2		7.7	4.3	1.0	10.1
Prop In Lane	1.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	526	2035		662	295	381	339
V/C Ratio(X)	0.91	0.20		0.76	0.45	0.10	0.86
Avail Cap(c_a), veh/h	929	3942		3936	1756	1075	957
HCM Platoon Ratio	1.00	1.00		1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00		1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	5.9		22.0	20.6	18.0	21.6
Incr Delay (d2), s/veh	3.3	0.0		0.7	0.4	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.7		2.7	1.3	0.3	3.3
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	22.6	5.9		22.7	21.0	18.1	24.2
LnGrp LOS	C	A		C	C	B	C
Approach Vol, veh/h		889		638		329	
Approach Delay, s/veh		14.9		22.4		23.5	
Approach LOS		B		C		C	

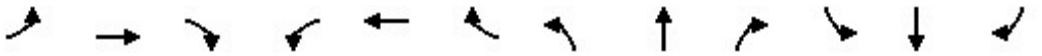
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	22.1	17.4			39.4	17.7
Change Period (Y+Rc), s	* 5.2	* 6.7			* 6.7	5.5
Max Green Setting (Gmax), s	* 36	* 63			* 63	34.5
Max Q Clear Time (g_c+I1), s	16.7	9.7			5.2	12.1
Green Ext Time (p_c), s	0.1	1.0			0.7	0.1

Intersection Summary	
HCM 6th Ctrl Delay	19.0
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	401	0	353	0	1148	966	0	583	359
Future Volume (veh/h)	0	0	0	401	0	353	0	1148	966	0	583	359
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				448	40	420	0	1171	0	0	678	0
Peak Hour Factor				0.84	0.84	0.84	0.98	0.98	0.98	0.86	0.86	0.86
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				547	42	442	0	2143		0	2143	
Arrive On Green				0.31	0.31	0.31	0.00	0.60	0.00	0.00	0.60	0.00
Sat Flow, veh/h				1781	137	1441	0	3741	0	0	3741	0
Grp Volume(v), veh/h				448	0	460	0	1171	0	0	678	0
Grp Sat Flow(s),veh/h/ln				1781	0	1579	0	1777	0	0	1777	0
Q Serve(g_s), s				25.6	0.0	31.4	0.0	21.5	0.0	0.0	10.3	0.0
Cycle Q Clear(g_c), s				25.6	0.0	31.4	0.0	21.5	0.0	0.0	10.3	0.0
Prop In Lane				1.00		0.91	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				547	0	484	0	2143		0	2143	
V/C Ratio(X)				0.82	0.00	0.95	0.00	0.55		0.00	0.32	
Avail Cap(c_a), veh/h				568	0	504	0	2143		0	2143	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				35.3	0.0	37.3	0.0	12.9	0.0	0.0	10.7	0.0
Incr Delay (d2), s/veh				8.3	0.0	26.9	0.0	1.0	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.2	0.0	15.5	0.0	7.8	0.0	0.0	3.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				43.6	0.0	64.2	0.0	13.9	0.0	0.0	11.1	0.0
LnGrp LOS				D	A	E	A	B		A	B	
Approach Vol, veh/h					908			1171	A		678	A
Approach Delay, s/veh					54.0			13.9			11.1	
Approach LOS					D			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	71.3		71.3		38.7			
Change Period (Y+Rc), s	* 5		5.0		4.9			
Max Green Setting (Gmax), s	* 66		65.0		35.1			
Max Q Clear Time (g_c+I1), s	12.3		23.5		33.4			
Green Ext Time (p_c), s	1.5		2.9		0.4			

Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	534	0	585	0	0	0	0	1571	715	0	744	231
Future Volume (veh/h)	534	0	585	0	0	0	0	1571	715	0	744	231
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	832	0	438				0	1689	0	0	800	0
Peak Hour Factor	0.87	0.87	0.87				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	2
Cap, veh/h	1047	0	464				0	3123		0	2174	
Arrive On Green	0.29	0.00	0.29				0.00	0.61	0.00	0.00	0.61	0.00
Sat Flow, veh/h	3563	0	1580				0	5443	0	0	3647	1585
Grp Volume(v), veh/h	832	0	438				0	1689	0	0	800	0
Grp Sat Flow(s),veh/h/ln	1781	0	1580				0	1702	0	0	1777	1585
Q Serve(g_s), s	23.7	0.0	29.8				0.0	21.1	0.0	0.0	12.4	0.0
Cycle Q Clear(g_c), s	23.7	0.0	29.8				0.0	21.1	0.0	0.0	12.4	0.0
Prop In Lane	1.00		1.00				0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	1047	0	464				0	3123		0	2174	
V/C Ratio(X)	0.79	0.00	0.94				0.00	0.54		0.00	0.37	
Avail Cap(c_a), veh/h	1121	0	497				0	3123		0	2174	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	35.8	0.0	38.0				0.0	12.4	0.0	0.0	10.7	0.0
Incr Delay (d2), s/veh	3.4	0.0	25.3				0.0	0.7	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	14.6				0.0	7.2	0.0	0.0	4.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.2	0.0	63.3				0.0	13.1	0.0	0.0	11.2	0.0
LnGrp LOS	D	A	E				A	B		A	B	
Approach Vol, veh/h		1270						1689	A		800	A
Approach Delay, s/veh		47.5						13.1			11.2	
Approach LOS		D						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	72.3	37.7	72.3
Change Period (Y+Rc), s	* 5	* 5.4	5.0
Max Green Setting (Gmax), s	* 66	* 35	65.0
Max Q Clear Time (g_c+I1), s	14.4	31.8	23.1
Green Ext Time (p_c), s	1.8	0.5	5.0

Intersection Summary	
HCM 6th Ctrl Delay	24.3
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	781	224	109	1047	677	96
Future Volume (veh/h)	781	224	109	1047	677	96
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	849	0	124	1190	967	137
Peak Hour Factor	0.92	0.92	0.88	0.88	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1912		159	2796	1079	495
Arrive On Green	0.37	0.00	0.09	0.55	0.31	0.31
Sat Flow, veh/h	5443	0	1781	5274	3456	1585
Grp Volume(v), veh/h	849	0	124	1190	967	137
Grp Sat Flow(s),veh/h/ln	1702	0	1781	1702	1728	1585
Q Serve(g_s), s	7.6	0.0	4.1	8.3	16.2	3.9
Cycle Q Clear(g_c), s	7.6	0.0	4.1	8.3	16.2	3.9
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1912		159	2796	1079	495
V/C Ratio(X)	0.44		0.78	0.43	0.90	0.28
Avail Cap(c_a), veh/h	5473		585	5473	2080	954
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	27.0	8.1	19.9	15.7
Incr Delay (d2), s/veh	0.3	0.0	3.1	0.2	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	1.7	2.1	5.6	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.6	0.0	30.2	8.3	21.0	15.8
LnGrp LOS	B		C	A	C	B
Approach Vol, veh/h	849	A		1314	1104	
Approach Delay, s/veh	14.6			10.4	20.4	
Approach LOS	B			B	C	

Timer - Assigned Phs	2		5	6	8
Phs Duration (G+Y+Rc), s	38.2		10.5	27.7	22.4
Change Period (Y+Rc), s	5.0		* 5.1	5.0	3.5
Max Green Setting (Gmax), s	65.0		* 20	65.0	36.5
Max Q Clear Time (g_c+I1), s	10.3		6.1	9.6	18.2
Green Ext Time (p_c), s	21.1		0.0	13.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	394	0	310	0	1655	1725	0	775	567
Future Volume (veh/h)	0	0	0	394	0	310	0	1655	1725	0	775	567
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				464	0	365	0	1689	0	0	807	0
Peak Hour Factor				0.85	0.85	0.85	0.98	0.98	0.98	0.96	0.96	0.96
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				850	0	390	0	3384		0	2355	
Arrive On Green				0.25	0.00	0.25	0.00	0.66	0.00	0.00	0.66	0.00
Sat Flow, veh/h				3456	0	1585	0	5274	2790	0	3647	1585
Grp Volume(v), veh/h				464	0	365	0	1689	0	0	807	0
Grp Sat Flow(s),veh/h/ln				1728	0	1585	0	1702	1395	0	1777	1585
Q Serve(g_s), s				14.6	0.0	28.2	0.0	20.8	0.0	0.0	12.4	0.0
Cycle Q Clear(g_c), s				14.6	0.0	28.2	0.0	20.8	0.0	0.0	12.4	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				850	0	390	0	3384		0	2355	
V/C Ratio(X)				0.55	0.00	0.94	0.00	0.50		0.00	0.34	
Avail Cap(c_a), veh/h				1333	0	611	0	3384		0	2355	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				41.0	0.0	46.2	0.0	10.6	0.0	0.0	9.2	0.0
Incr Delay (d2), s/veh				0.2	0.0	12.2	0.0	0.5	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.3	0.0	12.4	0.0	7.0	0.0	0.0	4.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				41.2	0.0	58.4	0.0	11.2	0.0	0.0	9.6	0.0
LnGrp LOS				D	A	E	A	B		A	A	
Approach Vol, veh/h					829			1689	A		807	A
Approach Delay, s/veh					48.8			11.2			9.6	
Approach LOS					D			B			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	87.4		87.4		37.6			
Change Period (Y+Rc), s	4.6		4.6		6.8			
Max Green Setting (Gmax), s	65.4		65.4		48.2			
Max Q Clear Time (g_c+I1), s	14.4		22.8		30.2			
Green Ext Time (p_c), s	1.8		5.0		0.6			

Intersection Summary		
HCM 6th Ctrl Delay		20.2
HCM 6th LOS		C

Notes

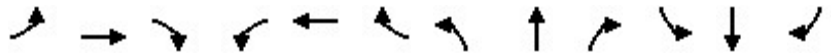
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL2	EBL	EBT	EBR	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	692	0	130	676	736	127	1938	464	7	1057	114
Future Volume (vph)	692	0	130	676	736	127	1938	464	7	1057	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	6.8	4.6		4.6			4.6	4.0
Lane Util. Factor		0.91	0.86	0.91	0.88		0.86			0.95	1.00
Frpb, ped/bikes		1.00	0.99	0.98	1.00		1.00			1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.89	0.85	0.85		0.97			1.00	0.85
Flt Protected		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1610	2815	1411	2787		6185			3539	1540
Flt Permitted		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1610	2815	1411	2787		6185			3539	1540
Peak-hour factor, PHF	0.97	0.92	0.97	0.97	0.89	0.92	0.98	0.92	0.98	0.87	0.87
Adj. Flow (vph)	713	0	134	697	827	138	1978	504	7	1215	131
RTOR Reduction (vph)	0	0	28	28	16	0	0	0	0	0	0
Lane Group Flow (vph)	0	713	455	320	949	0	2489	0	0	1215	131
Confl. Peds. (#/hr)	11			11	3				3		11
Confl. Bikes (#/hr)									8		5
Turn Type	Split	Split	NA	Perm	Prot		NA			NA	Free
Protected Phases	4	4	4		2!		6!			2	
Permitted Phases				4	2						Free
Actuated Green, G (s)		48.2	48.2	48.2	65.4		65.4			65.4	125.0
Effective Green, g (s)		48.2	48.2	48.2	65.4		65.4			65.4	125.0
Actuated g/C Ratio		0.39	0.39	0.39	0.52		0.52			0.52	1.00
Clearance Time (s)		6.8	6.8	6.8	4.6		4.6			4.6	
Vehicle Extension (s)		1.0	1.0	1.0	1.0		1.0			1.0	
Lane Grp Cap (vph)		620	1085	544	1458		3235			1851	1540
v/s Ratio Prot		c0.44	0.16		0.34		c0.40			0.34	
v/s Ratio Perm				0.23							0.09
v/c Ratio		1.15	0.42	0.59	0.65		0.77			0.66	0.09
Uniform Delay, d1		38.4	28.1	30.5	21.5		23.8			21.6	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00			1.18	1.00
Incremental Delay, d2		85.1	0.1	1.1	2.3		1.8			1.8	0.1
Delay (s)		123.5	28.2	31.6	23.8		25.6			27.3	0.1
Level of Service		F	C	C	C		C			C	A
Approach Delay (s)			73.0				25.6			24.7	
Approach LOS			E				C			C	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	605	173	42	42	124	696	59	1128	19	356	1129	263
Future Volume (veh/h)	605	173	42	42	124	696	59	1128	19	356	1129	263
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	624	178	43	45	133	748	61	1163	20	371	1176	274
Peak Hour Factor	0.97	0.97	0.97	0.93	0.93	0.93	0.97	0.97	0.97	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	596	1621	369	82	451	1137	104	1348	23	431	1815	558
Arrive On Green	0.17	0.39	0.39	0.02	0.24	0.24	0.03	0.26	0.26	0.12	0.36	0.36
Sat Flow, veh/h	3456	4149	945	3563	1870	3077	3456	5168	89	3456	5106	1569
Grp Volume(v), veh/h	624	144	77	45	133	748	61	766	417	371	1176	274
Grp Sat Flow(s),veh/h/ln	1728	1702	1690	1781	1870	1539	1728	1702	1852	1728	1702	1569
Q Serve(g_s), s	19.5	3.0	3.3	1.4	6.6	23.0	2.0	24.3	24.3	11.9	21.8	15.4
Cycle Q Clear(g_c), s	19.5	3.0	3.3	1.4	6.6	23.0	2.0	24.3	24.3	11.9	21.8	15.4
Prop In Lane	1.00		0.56	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	596	1330	660	82	451	1137	104	888	483	431	1815	558
V/C Ratio(X)	1.05	0.11	0.12	0.55	0.30	0.66	0.59	0.86	0.86	0.86	0.65	0.49
Avail Cap(c_a), veh/h	596	1928	957	615	1068	2152	596	1955	1064	749	2905	893
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.8	21.9	22.0	54.6	35.0	30.0	54.1	39.8	39.8	48.5	30.5	28.4
Incr Delay (d2), s/veh	49.6	0.0	0.0	2.1	0.1	0.2	1.9	1.0	1.8	2.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	1.2	1.3	0.6	2.9	8.1	0.9	9.9	10.9	5.1	8.5	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.3	21.9	22.0	56.8	35.2	30.3	56.0	40.8	41.7	50.5	30.6	28.7
LnGrp LOS	F	C	C	E	D	C	E	D	D	D	C	C
Approach Vol, veh/h		845			926			1244			1821	
Approach Delay, s/veh		76.9			32.3			41.9			34.4	
Approach LOS		E			C			D			C	

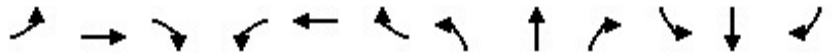
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	45.9	25.0	33.2	19.6	35.2	8.1	50.1
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 6	5.5	* 5.7	5.5	* 6
Max Green Setting (Gmax), s	19.5	* 64	19.5	* 65	24.5	* 65	19.5	* 64
Max Q Clear Time (g_c+I1), s	14.0	23.8	21.5	25.0	13.9	26.3	3.4	5.3
Green Ext Time (p_c), s	0.0	3.1	0.0	0.9	0.2	2.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	43.3
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	305	498	232	181	354	115	124	448	54	175	864	128
Future Volume (veh/h)	305	498	232	181	354	115	124	448	54	175	864	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	332	541	252	218	427	139	133	482	58	199	982	145
Peak Hour Factor	0.92	0.92	0.92	0.83	0.83	0.83	0.93	0.93	0.93	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	411	808	362	297	1040	309	466	1706	515	277	1249	184
Arrive On Green	0.12	0.24	0.24	0.09	0.20	0.20	0.13	0.33	0.33	0.08	0.28	0.28
Sat Flow, veh/h	3456	3411	1530	3456	5106	1519	3456	5106	1543	3456	4473	658
Grp Volume(v), veh/h	332	540	253	218	427	139	133	482	58	199	747	380
Grp Sat Flow(s),veh/h/ln	1728	1702	1536	1728	1702	1519	1728	1702	1543	1728	1702	1727
Q Serve(g_s), s	8.0	12.2	12.8	5.2	6.2	6.8	2.9	5.9	2.2	4.8	17.2	17.3
Cycle Q Clear(g_c), s	8.0	12.2	12.8	5.2	6.2	6.8	2.9	5.9	2.2	4.8	17.2	17.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	411	807	364	297	1040	309	466	1706	515	277	951	482
V/C Ratio(X)	0.81	0.67	0.70	0.73	0.41	0.45	0.29	0.28	0.11	0.72	0.79	0.79
Avail Cap(c_a), veh/h	791	1367	617	791	2051	610	791	3861	1167	791	2574	1306
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	29.5	29.7	38.0	29.5	29.7	33.1	20.9	19.6	38.2	28.3	28.4
Incr Delay (d2), s/veh	1.4	0.4	0.9	1.3	0.1	0.4	0.1	0.0	0.0	1.3	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	4.7	4.5	2.2	2.4	2.4	1.2	2.2	0.7	2.0	6.5	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	29.8	30.6	39.3	29.6	30.1	33.3	20.9	19.7	39.5	28.9	29.5
LnGrp LOS	D	C	C	D	C	C	C	C	B	D	C	C
Approach Vol, veh/h		1125			784			673			1326	
Approach Delay, s/veh		32.4			32.4			23.2			30.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	29.4	15.6	23.2	12.3	34.0	12.8	26.0
Change Period (Y+Rc), s	5.5	* 5.6	5.5	5.8	5.5	* 5.6	5.5	5.8
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.2	19.5	* 64	19.5	34.2
Max Q Clear Time (g_c+I1), s	14.9	19.3	10.0	8.8	6.8	7.9	7.2	14.8
Green Ext Time (p_c), s	0.1	2.5	0.2	1.0	0.1	1.1	0.1	1.7

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	32	176	59	24	60	214	2760	22	52	2119	97
Future Volume (veh/h)	191	32	176	59	24	60	214	2760	22	52	2119	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.96	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	212	36	196	71	29	72	228	2936	23	60	2436	111
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	43	256	179	46	115	280	2791	22	77	2523	777
Arrive On Green	0.16	0.16	0.16	0.10	0.10	0.10	0.08	0.53	0.53	0.04	0.49	0.49
Sat Flow, veh/h	1533	260	1568	1781	462	1148	3456	5225	41	1781	5106	1572
Grp Volume(v), veh/h	248	0	196	71	0	101	228	1910	1049	60	2436	111
Grp Sat Flow(s),veh/h/ln	1794	0	1568	1781	0	1611	1728	1702	1862	1781	1702	1572
Q Serve(g_s), s	17.5	0.0	15.6	4.9	0.0	7.8	8.5	69.6	69.6	4.3	60.2	5.0
Cycle Q Clear(g_c), s	17.5	0.0	15.6	4.9	0.0	7.8	8.5	69.6	69.6	4.3	60.2	5.0
Prop In Lane	0.85		1.00	1.00		0.71	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	293	0	256	179	0	161	280	1818	995	77	2523	777
V/C Ratio(X)	0.85	0.00	0.76	0.40	0.00	0.63	0.81	1.05	1.05	0.78	0.97	0.14
Avail Cap(c_a), veh/h	475	0	415	471	0	426	528	1818	995	276	2554	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	0.0	52.1	55.0	0.0	56.3	58.9	30.4	30.4	61.7	31.9	18.0
Incr Delay (d2), s/veh	3.9	0.0	1.8	0.5	0.0	1.5	2.2	35.7	44.1	6.2	10.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	6.3	2.2	0.0	3.3	3.7	35.0	40.6	2.1	25.4	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	0.0	53.9	55.5	0.0	57.8	61.1	66.1	74.5	68.0	42.7	18.0
LnGrp LOS	E	A	D	E	A	E	E	F	F	E	D	B
Approach Vol, veh/h		444			172			3187			2607	
Approach Delay, s/veh		55.5			56.8			68.5			42.2	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.7	69.3		26.8	10.4	74.5		18.6
Change Period (Y+Rc), s	* 5.1	* 4.9		5.5	* 4.8	* 4.9		5.5
Max Green Setting (Gmax), s	* 20	* 65		34.5	* 20	* 65		34.5
Max Q Clear Time (g_c+I1), s	10.5	62.2		19.5	6.3	71.6		9.8
Green Ext Time (p_c), s	0.1	2.2		0.6	0.0	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	56.6
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	315	0	312	0	2659	458	0	1284	1099
Future Volume (veh/h)	0	0	0	315	0	312	0	2659	458	0	1284	1099
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				354	0	351	0	2890	0	0	1352	0
Peak Hour Factor				0.89	0.89	0.89	0.92	0.92	0.92	0.95	0.95	0.95
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				506	0	408	0	4178		0	3802	
Arrive On Green				0.15	0.00	0.15	0.00	0.74	0.00	0.00	0.74	0.00
Sat Flow, veh/h				3456	0	2790	0	5611	1585	0	5274	2790
Grp Volume(v), veh/h				354	0	351	0	2890	0	0	1352	0
Grp Sat Flow(s),veh/h/ln				1728	0	1395	0	1870	1585	0	1702	1395
Q Serve(g_s), s				10.7	0.0	13.5	0.0	29.8	0.0	0.0	10.1	0.0
Cycle Q Clear(g_c), s				10.7	0.0	13.5	0.0	29.8	0.0	0.0	10.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				506	0	408	0	4178		0	3802	
V/C Ratio(X)				0.70	0.00	0.86	0.00	0.69		0.00	0.36	
Avail Cap(c_a), veh/h				1037	0	837	0	4178		0	3802	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.7	0.0	45.9	0.0	7.4	0.0	0.0	4.9	0.0
Incr Delay (d2), s/veh				0.7	0.0	2.1	0.0	1.0	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	0.0	4.8	0.0	8.8	0.0	0.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				45.3	0.0	48.0	0.0	8.4	0.0	0.0	5.1	0.0
LnGrp LOS				D	A	D	A	A		A	A	
Approach Vol, veh/h					705			2890	A		1352	A
Approach Delay, s/veh					46.6			8.4			5.1	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	86.9		86.9		23.1			
Change Period (Y+Rc), s	* 5		5.0		7.0			
Max Green Setting (Gmax), s	* 65		65.0		33.0			
Max Q Clear Time (g_c+I1), s	12.1		31.8		15.5			
Green Ext Time (p_c), s	3.6		13.1		0.6			

Intersection Summary		
HCM 6th Ctrl Delay	12.9	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1163	0	327	0	0	0	0	1990	432	0	1256	347
Future Volume (veh/h)	1163	0	327	0	0	0	0	1990	432	0	1256	347
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	1292	0	363				0	2187	0	0	1295	0
Peak Hour Factor	0.90	0.90	0.90				0.91	0.91	0.91	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1393	0	774				0	4631		0	3473	
Arrive On Green	0.28	0.00	0.28				0.00	0.62	0.00	0.00	0.62	0.00
Sat Flow, veh/h	5023	0	2790				0	7481	1585	0	5611	1585
Grp Volume(v), veh/h	1292	0	363				0	2187	0	0	1295	0
Grp Sat Flow(s),veh/h/ln	1674	0	1395				0	1870	1585	0	1870	1585
Q Serve(g_s), s	27.5	0.0	11.9				0.0	17.3	0.0	0.0	12.6	0.0
Cycle Q Clear(g_c), s	27.5	0.0	11.9				0.0	17.3	0.0	0.0	12.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1393	0	774				0	4631		0	3473	
V/C Ratio(X)	0.93	0.00	0.47				0.00	0.47		0.00	0.37	
Avail Cap(c_a), veh/h	1521	0	845				0	4631		0	3473	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	38.7	0.0	33.0				0.0	11.3	0.0	0.0	10.4	0.0
Incr Delay (d2), s/veh	9.3	0.0	0.2				0.0	0.3	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.0	4.0				0.0	6.4	0.0	0.0	4.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	0.0	33.2				0.0	11.6	0.0	0.0	10.7	0.0
LnGrp LOS	D	A	C				A	B		A	B	
Approach Vol, veh/h		1655						2187	A		1295	A
Approach Delay, s/veh		44.7						11.6			10.7	
Approach LOS		D						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	72.8	37.2	72.8
Change Period (Y+Rc), s	* 4.7	6.7	4.7
Max Green Setting (Gmax), s	* 66	33.3	65.3
Max Q Clear Time (g_c+I1), s	14.6	29.5	19.3
Green Ext Time (p_c), s	3.4	1.0	7.7

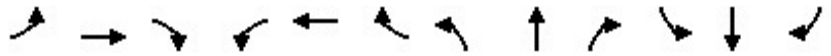
Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	422	347	107	206	244	252	121	1639	225	241	1122	245
Future Volume (veh/h)	422	347	107	206	244	252	121	1639	225	241	1122	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	431	354	109	231	234	309	132	1782	245	265	1233	269
Peak Hour Factor	0.98	0.98	0.98	0.89	0.89	0.89	0.92	0.92	0.92	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	489	878	384	293	352	582	193	2418	588	325	2113	654
Arrive On Green	0.14	0.25	0.25	0.08	0.19	0.19	0.06	0.38	0.38	0.09	0.41	0.41
Sat Flow, veh/h	3456	3554	1555	3563	1870	3096	3456	6434	1564	3456	5106	1579
Grp Volume(v), veh/h	431	354	109	231	234	309	132	1782	245	265	1233	269
Grp Sat Flow(s),veh/h/ln	1728	1777	1555	1781	1870	1548	1728	1609	1564	1728	1702	1579
Q Serve(g_s), s	13.9	9.5	6.4	7.2	13.2	10.2	4.3	27.1	13.2	8.5	21.2	13.7
Cycle Q Clear(g_c), s	13.9	9.5	6.4	7.2	13.2	10.2	4.3	27.1	13.2	8.5	21.2	13.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	489	878	384	293	352	582	193	2418	588	325	2113	654
V/C Ratio(X)	0.88	0.40	0.28	0.79	0.67	0.53	0.68	0.74	0.42	0.82	0.58	0.41
Avail Cap(c_a), veh/h	593	1067	467	612	560	927	593	3638	884	593	2896	896
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.8	35.7	34.6	51.1	42.8	41.6	52.6	30.6	26.2	50.5	25.7	23.5
Incr Delay (d2), s/veh	11.3	0.4	0.6	1.8	3.7	1.3	2.6	0.3	0.3	1.9	0.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	4.2	2.5	3.3	6.4	4.0	1.9	10.0	4.9	3.7	8.2	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.1	36.2	35.2	52.9	46.5	42.9	55.2	30.9	26.5	52.4	26.2	24.4
LnGrp LOS	E	D	D	D	D	D	E	C	C	D	C	C
Approach Vol, veh/h		894			774			2159			1767	
Approach Delay, s/veh		47.1			47.0			31.9			29.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	52.8	21.6	27.4	16.2	48.5	14.8	34.1
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	* 6
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.0	19.5	* 64	19.5	* 34
Max Q Clear Time (g_c+I1), s	6.3	23.2	15.9	15.2	10.5	29.1	9.2	11.5
Green Ext Time (p_c), s	0.2	23.2	0.2	4.3	0.1	13.5	0.1	3.9

Intersection Summary	
HCM 6th Ctrl Delay	35.8
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	308	548	226	208	333	212	303	939	197	253	1230	118
Future Volume (veh/h)	308	548	226	208	333	212	303	939	197	253	1230	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	380	677	279	267	427	272	340	1055	221	261	1268	122
Peak Hour Factor	0.81	0.81	0.81	0.78	0.78	0.78	0.89	0.89	0.89	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	386	893	396	305	1163	360	376	1753	542	299	1640	506
Arrive On Green	0.12	0.28	0.28	0.10	0.25	0.25	0.12	0.38	0.38	0.10	0.36	0.36
Sat Flow, veh/h	3110	3198	1417	3110	4595	1423	3110	4595	1420	3110	4595	1419
Grp Volume(v), veh/h	380	677	279	267	427	272	340	1055	221	261	1268	122
Grp Sat Flow(s),veh/h/ln	1555	1599	1417	1555	1532	1423	1555	1532	1420	1555	1532	1419
Q Serve(g_s), s	19.2	30.4	27.7	13.3	12.0	27.7	17.0	29.0	17.9	13.0	38.5	9.5
Cycle Q Clear(g_c), s	19.2	30.4	27.7	13.3	12.0	27.7	17.0	29.0	17.9	13.0	38.5	9.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	386	893	396	305	1163	360	376	1753	542	299	1640	506
V/C Ratio(X)	0.98	0.76	0.70	0.88	0.37	0.75	0.91	0.60	0.41	0.87	0.77	0.24
Avail Cap(c_a), veh/h	386	1303	577	386	1163	360	386	1884	582	386	1878	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.7	51.8	50.8	69.9	48.3	54.2	68.2	39.0	35.6	70.1	44.9	35.6
Incr Delay (d2), s/veh	41.4	2.8	4.6	14.4	0.7	12.1	23.1	0.8	1.0	13.6	2.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	12.3	10.2	5.8	4.6	11.0	7.8	10.8	6.3	5.7	14.7	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.1	54.6	55.4	84.3	49.0	66.3	91.3	39.8	36.6	83.6	47.2	36.1
LnGrp LOS	F	D	E	F	D	E	F	D	D	F	D	D
Approach Vol, veh/h		1336			966			1616			1651	
Approach Delay, s/veh		70.5			63.6			50.2			52.1	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.5	61.9	25.0	45.8	20.6	65.7	20.9	49.9
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.0	19.5	* 64	19.5	64.0
Max Q Clear Time (g_c+I1), s	19.0	40.5	21.2	29.7	15.0	31.0	15.3	32.4
Green Ext Time (p_c), s	0.0	15.5	0.0	2.5	0.1	17.1	0.1	11.5

Intersection Summary	
HCM 6th Ctrl Delay	58.0
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



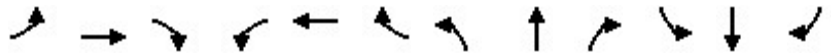
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	301	15	62	205	251	4	53	39	609	150	349
Future Volume (veh/h)	76	301	15	62	205	251	4	53	39	609	150	349
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	83	327	16	65	216	264	5	69	51	648	160	371
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.77	0.77	0.77	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	779	38	81	383	325	7	108	80	775	615	521
Arrive On Green	0.06	0.23	0.23	0.05	0.20	0.20	0.00	0.11	0.11	0.22	0.33	0.33
Sat Flow, veh/h	1781	3444	168	1781	1870	1585	1781	999	738	3456	1870	1585
Grp Volume(v), veh/h	83	168	175	65	216	264	5	0	120	648	160	371
Grp Sat Flow(s),veh/h/ln	1781	1777	1835	1781	1870	1585	1781	0	1737	1728	1870	1585
Q Serve(g_s), s	2.4	4.2	4.2	1.9	5.4	8.3	0.1	0.0	3.4	9.3	3.3	10.7
Cycle Q Clear(g_c), s	2.4	4.2	4.2	1.9	5.4	8.3	0.1	0.0	3.4	9.3	3.3	10.7
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	106	402	415	81	383	325	7	0	188	775	615	521
V/C Ratio(X)	0.79	0.42	0.42	0.80	0.56	0.81	0.70	0.00	0.64	0.84	0.26	0.71
Avail Cap(c_a), veh/h	667	2221	2294	681	2341	1984	667	0	2175	1294	2330	1975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	17.2	17.2	24.6	18.6	19.8	25.9	0.0	22.2	19.3	12.8	15.3
Incr Delay (d2), s/veh	4.8	0.3	0.3	6.6	0.5	1.9	36.7	0.0	1.3	1.0	0.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.4	1.4	0.8	1.9	2.7	0.1	0.0	1.3	3.2	1.1	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.0	17.5	17.5	31.2	19.1	21.7	62.6	0.0	23.6	20.2	12.9	16.0
LnGrp LOS	C	B	B	C	B	C	E	A	C	C	B	B
Approach Vol, veh/h		426			545			125			1179	
Approach Delay, s/veh		19.7			21.8			25.1			17.9	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	15.6	5.7	22.2	7.5	16.7	17.2	10.7
Change Period (Y+Rc), s	5.5	* 4.9	5.5	* 5.1	* 5.1	* 4.9	5.5	* 5.1
Max Green Setting (Gmax), s	19.5	* 65	19.5	* 65	* 20	* 65	19.5	* 65
Max Q Clear Time (g_c+I1), s	4.4	10.3	2.1	12.7	3.9	6.2	11.3	5.4
Green Ext Time (p_c), s	0.0	0.4	0.0	0.4	0.0	0.5	0.4	0.2

Intersection Summary	
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



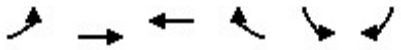
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	161	460	373	109	138	144	210	538	81	262	1633	131
Future Volume (veh/h)	161	460	373	109	138	144	210	538	81	262	1633	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	183	523	424	120	152	158	228	585	88	285	1775	142
Peak Hour Factor	0.88	0.88	0.88	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	239	1410	438	174	914	403	284	1869	573	341	1953	606
Arrive On Green	0.07	0.28	0.28	0.05	0.26	0.26	0.08	0.37	0.37	0.10	0.38	0.38
Sat Flow, veh/h	3456	5106	1585	3456	3554	1565	3456	5106	1565	3456	5106	1585
Grp Volume(v), veh/h	183	523	424	120	152	158	228	585	88	285	1775	142
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1565	1728	1702	1565	1728	1702	1585
Q Serve(g_s), s	6.3	10.0	31.9	4.1	4.0	10.1	7.8	9.9	4.6	9.8	39.7	7.3
Cycle Q Clear(g_c), s	6.3	10.0	31.9	4.1	4.0	10.1	7.8	9.9	4.6	9.8	39.7	7.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	239	1410	438	174	914	403	284	1869	573	341	1953	606
V/C Ratio(X)	0.77	0.37	0.97	0.69	0.17	0.39	0.80	0.31	0.15	0.84	0.91	0.23
Avail Cap(c_a), veh/h	559	1410	438	559	978	431	559	2655	814	559	2651	823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	35.2	43.1	56.3	34.7	37.0	54.4	27.4	25.7	53.4	35.3	25.3
Incr Delay (d2), s/veh	1.9	0.1	34.6	1.8	0.0	0.2	2.0	0.0	0.0	2.6	3.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.9	15.9	1.8	1.7	3.7	3.3	3.8	1.6	4.2	15.7	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	35.3	77.8	58.2	34.8	37.2	56.4	27.4	25.7	56.0	38.6	25.3
LnGrp LOS	E	D	E	E	C	D	E	C	C	E	D	C
Approach Vol, veh/h		1130			430			901			2202	
Approach Delay, s/veh		54.7			42.2			34.6			40.0	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	51.5	11.6	40.1	15.4	53.5	13.8	37.8
Change Period (Y+Rc), s	5.5	* 7.4	5.5	* 6.8	5.5	* 7.4	5.5	6.8
Max Green Setting (Gmax), s	19.5	* 63	19.5	* 33	19.5	* 63	19.5	33.2
Max Q Clear Time (g_c+I1), s	11.9	6.1	33.9	9.8	41.7	8.3	12.1	
Green Ext Time (p_c), s	0.1	1.2	0.0	0.0	0.1	4.4	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	42.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



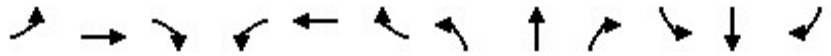
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	98	310	177	1	5	53
Future Volume (veh/h)	98	310	177	1	5	53
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	117	369	239	1	7	74
Peak Hour Factor	0.84	0.84	0.74	0.74	0.72	0.72
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	145	1586	546	244	219	195
Arrive On Green	0.08	0.45	0.15	0.15	0.12	0.12
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	117	369	239	1	7	74
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	1.6	1.6	1.6	0.0	0.1	1.1
Cycle Q Clear(g_c), s	1.6	1.6	1.6	0.0	0.1	1.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	145	1586	546	244	219	195
V/C Ratio(X)	0.81	0.23	0.44	0.00	0.03	0.38
Avail Cap(c_a), veh/h	1367	8974	8988	4009	2371	2110
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	4.4	9.8	9.2	9.9	10.3
Incr Delay (d2), s/veh	4.0	0.0	0.2	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.3	0.0	0.0	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.6	4.4	10.0	9.2	9.9	10.8
LnGrp LOS	B	A	B	A	A	B
Approach Vol, veh/h		486	240		81	
Approach Delay, s/veh		7.1	10.0		10.7	
Approach LOS		A	B		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.5	9.4		8.6		16.9
Change Period (Y+Rc), s	* 5.4	* 5.5		5.5		* 5.5
Max Green Setting (Gmax), s	* 2.1	* 65		34.0		* 65
Max Q Clear Time (g_c+I1), s	3.6	3.6		3.1		3.6
Green Ext Time (p_c), s	0.0	0.4		0.0		0.7

Intersection Summary	
HCM 6th Ctrl Delay	8.3
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



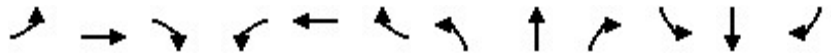
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	414	6	36	222	120	3	337	62	277	947	75
Future Volume (veh/h)	85	414	6	36	222	120	3	337	62	277	947	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	89	436	6	45	278	150	3	370	68	295	1007	80
Peak Hour Factor	0.95	0.95	0.95	0.80	0.80	0.80	0.91	0.91	0.91	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	464	393	58	408	346	43	555	102	319	965	917
Arrive On Green	0.06	0.25	0.25	0.03	0.22	0.22	0.02	0.36	0.36	0.18	0.52	0.52
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1537	282	1781	1870	1585
Grp Volume(v), veh/h	89	436	6	45	278	150	3	0	438	295	1007	80
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1820	1781	1870	1585
Q Serve(g_s), s	6.1	28.3	0.4	3.1	16.9	10.1	0.2	0.0	25.1	20.2	64.0	2.8
Cycle Q Clear(g_c), s	6.1	28.3	0.4	3.1	16.9	10.1	0.2	0.0	25.1	20.2	64.0	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	111	464	393	58	408	346	43	0	657	319	965	917
V/C Ratio(X)	0.80	0.94	0.02	0.78	0.68	0.43	0.07	0.00	0.67	0.92	1.04	0.09
Avail Cap(c_a), veh/h	294	501	424	294	501	424	294	0	933	352	965	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	45.7	35.2	59.5	44.5	41.9	59.1	0.0	33.3	50.1	30.0	11.6
Incr Delay (d2), s/veh	4.9	24.2	0.0	8.0	1.7	0.3	0.2	0.0	0.4	26.9	40.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	15.6	0.1	1.5	7.7	3.8	0.1	0.0	10.5	11.0	36.2	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.2	69.9	35.2	67.6	46.2	42.2	59.4	0.0	33.8	76.9	70.9	11.6
LnGrp LOS	E	E	D	E	D	D	E	A	C	E	F	B
Approach Vol, veh/h		531			473			441			1382	
Approach Delay, s/veh		68.2			47.0			34.0			68.7	
Approach LOS		E			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	33.9	7.5	70.4	8.5	37.6	26.7	51.2
Change Period (Y+Rc), s	4.5	6.8	4.5	* 6.4	4.5	6.8	4.5	6.4
Max Green Setting (Gmax), s	20.5	33.2	20.5	* 64	20.5	33.2	24.5	63.6
Max Q Clear Time (g_c+I1), s	8.1	18.9	2.2	66.0	5.1	30.3	22.2	27.1
Green Ext Time (p_c), s	0.0	0.9	0.0	0.0	0.0	0.4	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	59.6
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	684	0	57	334	40	3	273	58	37	323	51
Future Volume (veh/h)	59	684	0	57	334	40	3	273	58	37	323	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	64	743	0	67	393	47	4	329	70	42	363	57
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.83	0.83	0.83	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	688	0	84	604	72	4	325	69	37	316	50
Arrive On Green	0.05	0.37	0.00	0.05	0.37	0.37	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1870	0	1781	1635	196	18	1480	315	166	1431	225
Grp Volume(v), veh/h	64	743	0	67	0	440	403	0	0	462	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1830	1813	0	0	1822	0	0
Q Serve(g_s), s	6.2	63.6	0.0	6.4	0.0	34.5	38.0	0.0	0.0	38.2	0.0	0.0
Cycle Q Clear(g_c), s	6.2	63.6	0.0	6.4	0.0	34.5	38.0	0.0	0.0	38.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.11	0.01		0.17	0.09		0.12
Lane Grp Cap(c), veh/h	80	688	0	84	0	676	398	0	0	402	0	0
V/C Ratio(X)	0.80	1.08	0.00	0.80	0.00	0.65	1.01	0.00	0.00	1.15	0.00	0.00
Avail Cap(c_a), veh/h	263	688	0	211	0	676	398	0	0	402	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	81.8	54.7	0.0	81.7	0.0	45.3	67.5	0.0	0.0	67.4	0.0	0.0
Incr Delay (d2), s/veh	6.6	58.2	0.0	6.5	0.0	1.8	48.2	0.0	0.0	92.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	39.8	0.0	3.1	0.0	15.5	22.4	0.0	0.0	27.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.4	112.9	0.0	88.1	0.0	47.0	115.7	0.0	0.0	159.5	0.0	0.0
LnGrp LOS	F	F	A	F	A	D	F	A	A	F	A	A
Approach Vol, veh/h		807			507			403			462	
Approach Delay, s/veh		111.0			52.5			115.7			159.5	
Approach LOS		F			D			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.3	70.7		45.0	12.6	70.4		45.0
Change Period (Y+Rc), s	4.5	6.8		6.8	4.5	* 6.8		7.0
Max Green Setting (Gmax), s	25.5	63.2		38.2	20.5	* 64		38.0
Max Q Clear Time (g_c+I1), s	8.2	36.5		40.2	8.4	65.6		40.0
Green Ext Time (p_c), s	0.0	1.4		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	108.5
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	17.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	0	23	0	33	2	356	0	145	393	4
Future Vol, veh/h	2	2	0	23	0	33	2	356	0	145	393	4
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.91	0.91	0.91	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	3	0	33	0	47	2	391	0	156	423	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.6	9.8	13.2	20.8
HCM LOS	A	A	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	50%	41%	27%
Vol Thru, %	99%	50%	0%	73%
Vol Right, %	0%	0%	59%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	358	4	56	542
LT Vol	2	2	23	145
Through Vol	356	2	0	393
RT Vol	0	0	33	4
Lane Flow Rate	393	6	80	583
Geometry Grp	1	1	1	1
Degree of Util (X)	0.526	0.01	0.131	0.756
Departure Headway (Hd)	4.817	6.504	5.913	4.667
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	553	610	769
Service Time	2.888	4.508	3.913	2.73
HCM Lane V/C Ratio	0.528	0.011	0.131	0.758
HCM Control Delay	13.2	9.6	9.8	20.8
HCM Lane LOS	B	A	A	C
HCM 95th-tile Q	3.1	0	0.4	7.1



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	144	101	20	365	432	163
Future Volume (veh/h)	144	101	20	365	432	163
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	176	123	24	435	480	181
Peak Hour Factor	0.82	0.82	0.84	0.84	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	267	237	32	924	606	513
Arrive On Green	0.15	0.15	0.02	0.49	0.32	0.32
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	176	123	24	435	480	181
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	2.8	2.2	0.4	4.6	7.1	2.6
Cycle Q Clear(g_c), s	2.8	2.2	0.4	4.6	7.1	2.6
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	267	237	32	924	606	513
V/C Ratio(X)	0.66	0.52	0.74	0.47	0.79	0.35
Avail Cap(c_a), veh/h	2075	1847	1199	3963	3944	3343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	11.9	14.8	5.1	9.3	7.8
Incr Delay (d2), s/veh	1.0	0.7	11.8	0.1	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.5	0.2	0.2	1.2	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.2	12.5	26.6	5.2	10.2	8.0
LnGrp LOS	B	B	C	A	B	A
Approach Vol, veh/h	299			459	661	
Approach Delay, s/veh	12.9			6.3	9.6	
Approach LOS	B			A	A	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	5.1	15.9			21.1	9.2
Change Period (Y+Rc), s	* 4.6	* 6.1			* 6.1	4.7
Max Green Setting (Gmax), s	* 28	* 64			* 64	35.3
Max Q Clear Time (g_c+I1), s	2.4	9.1			6.6	4.8
Green Ext Time (p_c), s	0.0	0.7			0.6	0.1

Intersection Summary	
HCM 6th Ctrl Delay	9.2
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	2	3	542	670	29
Future Vol, veh/h	16	2	3	542	670	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	56	56	98	98	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	4	3	553	728	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1303	744	760	0	-	0
Stage 1	744	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	177	415	852	-	-	-
Stage 1	470	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	176	415	852	-	-	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	468	-	-	-	-	-
Stage 2	572	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.1	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	852	-	188	-	-
HCM Lane V/C Ratio	0.004	-	0.171	-	-
HCM Control Delay (s)	9.2	-	28.1	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	601	18	8	564	0	673	51
Future Volume (veh/h)	601	18	8	564	0	673	51
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	724	22	9	606		716	54
Peak Hour Factor	0.83	0.83	0.93	0.93		0.94	0.94
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	903	426	13	1491		963	844
Arrive On Green	0.26	0.26	0.01	0.42		0.27	0.27
Sat Flow, veh/h	3456	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	724	22	9	606		716	54
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777		1777	1585
Q Serve(g_s), s	7.6	0.4	0.2	4.6		7.2	0.6
Cycle Q Clear(g_c), s	7.6	0.4	0.2	4.6		7.2	0.6
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	903	426	13	1491		963	844
V/C Ratio(X)	0.80	0.05	0.71	0.41		0.74	0.06
Avail Cap(c_a), veh/h	4845	2234	894	4882		4854	2580
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	13.4	10.5	19.3	7.9		12.9	4.4
Incr Delay (d2), s/veh	0.6	0.0	23.2	0.1		0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.4	0.1	0.8		1.8	0.2
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	14.1	10.6	42.5	8.0		13.4	4.4
LnGrp LOS	B	B	D	A		B	A
Approach Vol, veh/h	746			615		770	
Approach Delay, s/veh	13.9			8.5		12.7	
Approach LOS	B			A		B	

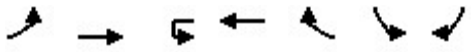
Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	5.8	17.4		15.7		23.2	
Change Period (Y+Rc), s	5.5	* 6.9		5.5		* 6.9	
Max Green Setting (Gmax), s	19.5	* 53		54.5		* 53	
Max Q Clear Time (g_c+I1), s	2.2	9.2		9.6		6.6	
Green Ext Time (p_c), s	0.0	1.4		0.6		1.1	

Intersection Summary	
HCM 6th Ctrl Delay	11.9
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	387	789	0	340	96	104	375
Future Volume (veh/h)	387	789	0	340	96	104	375
Initial Q (Qb), veh	0	0		0	0	0	0
Ped-Bike Adj(A_pbT)	1.00				1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870		1870	1870	1870	1870
Adj Flow Rate, veh/h	450	917		362	102	114	412
Peak Hour Factor	0.86	0.86		0.94	0.94	0.91	0.91
Percent Heavy Veh, %	2	2		2	2	2	2
Cap, veh/h	497	1806		504	225	512	456
Arrive On Green	0.28	0.51		0.14	0.14	0.29	0.29
Sat Flow, veh/h	1781	3647		3647	1585	1781	1585
Grp Volume(v), veh/h	450	917		362	102	114	412
Grp Sat Flow(s),veh/h/ln	1781	1777		1777	1585	1781	1585
Q Serve(g_s), s	14.6	10.2		5.8	3.5	2.9	14.9
Cycle Q Clear(g_c), s	14.6	10.2		5.8	3.5	2.9	14.9
Prop In Lane	1.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	497	1806		504	225	512	456
V/C Ratio(X)	0.90	0.51		0.72	0.45	0.22	0.90
Avail Cap(c_a), veh/h	888	3771		3765	1679	1029	915
HCM Platoon Ratio	1.00	1.00		1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00		1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	9.7		24.5	23.5	16.2	20.5
Incr Delay (d2), s/veh	3.0	0.1		0.7	0.5	0.1	2.8
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	2.6		2.1	1.1	1.0	4.7
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	23.7	9.8		25.2	24.0	16.3	23.3
LnGrp LOS	C	A		C	C	B	C
Approach Vol, veh/h		1367		464		526	
Approach Delay, s/veh		14.4		25.0		21.8	
Approach LOS		B		C		C	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	21.9	15.2			37.1	22.7
Change Period (Y+Rc), s	* 5.2	* 6.7			* 6.7	5.5
Max Green Setting (Gmax), s	* 36	* 63			* 63	34.5
Max Q Clear Time (g_c+I1), s	16.6	7.8			12.2	16.9
Green Ext Time (p_c), s	0.1	0.7			1.9	0.2

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

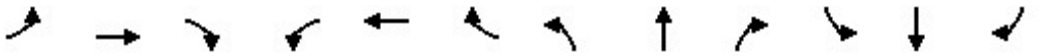
Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix C

Analysis Worksheets for
Existing (2019) plus Proposed Project Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	978	0	240	0	740	450	0	755	390
Future Volume (veh/h)	0	0	0	978	0	240	0	740	450	0	755	390
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				700	594	276	0	771	0	0	803	0
Peak Hour Factor				0.87	0.87	0.87	0.96	0.96	0.96	0.94	0.94	0.94
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				568	384	178	0	2869		0	2869	
Arrive On Green				0.32	0.32	0.32	0.00	0.81	0.00	0.00	0.81	0.00
Sat Flow, veh/h				1781	1203	559	0	3741	0	0	3741	0
Grp Volume(v), veh/h				700	0	870	0	771	0	0	803	0
Grp Sat Flow(s),veh/h/ln				1781	0	1762	0	1777	0	0	1777	0
Q Serve(g_s), s				35.1	0.0	35.1	0.0	5.9	0.0	0.0	6.2	0.0
Cycle Q Clear(g_c), s				35.1	0.0	35.1	0.0	5.9	0.0	0.0	6.2	0.0
Prop In Lane				1.00		0.32	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				568	0	562	0	2869		0	2869	
V/C Ratio(X)				1.23	0.00	1.55	0.00	0.27		0.00	0.28	
Avail Cap(c_a), veh/h				568	0	562	0	2869		0	2869	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				37.4	0.0	37.5	0.0	2.6	0.0	0.0	2.6	0.0
Incr Delay (d2), s/veh				118.9	0.0	255.2	0.0	0.2	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				33.7	0.0	54.6	0.0	1.2	0.0	0.0	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				156.4	0.0	292.7	0.0	2.8	0.0	0.0	2.9	0.0
LnGrp LOS				F	A	F	A	A		A	A	
Approach Vol, veh/h					1570			771	A		803	A
Approach Delay, s/veh					231.9			2.8			2.9	
Approach LOS					F			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	94.5		94.5		40.0			
Change Period (Y+Rc), s	* 5		5.0		4.9			
Max Green Setting (Gmax), s	* 66		65.0		35.1			
Max Q Clear Time (g_c+I1), s	8.2		7.9		37.1			
Green Ext Time (p_c), s	1.8		1.7		0.0			

Intersection Summary	
HCM 6th Ctrl Delay	117.2
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	312	0	1173	0	0	0	0	880	333	0	1419	317
Future Volume (veh/h)	312	0	1173	0	0	0	0	880	333	0	1419	317
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	219	0	1352				0	926	0	0	1526	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	2
Cap, veh/h	560	0	994				0	3806		0	2649	
Arrive On Green	0.31	0.00	0.31				0.00	0.75	0.00	0.00	0.75	0.00
Sat Flow, veh/h	1781	0	3160				0	5443	0	0	3647	1585
Grp Volume(v), veh/h	219	0	1352				0	926	0	0	1526	0
Grp Sat Flow(s),veh/h/ln	1781	0	1580				0	1702	0	0	1777	1585
Q Serve(g_s), s	10.6	0.0	34.6				0.0	6.2	0.0	0.0	21.1	0.0
Cycle Q Clear(g_c), s	10.6	0.0	34.6				0.0	6.2	0.0	0.0	21.1	0.0
Prop In Lane	1.00		1.00				0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	560	0	994				0	3806		0	2649	
V/C Ratio(X)	0.39	0.00	1.36				0.00	0.24		0.00	0.58	
Avail Cap(c_a), veh/h	560	0	994				0	3806		0	2649	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	29.5	0.0	37.7				0.0	4.4	0.0	0.0	6.2	0.0
Incr Delay (d2), s/veh	0.2	0.0	168.7				0.0	0.2	0.0	0.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	36.4				0.0	1.6	0.0	0.0	6.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.6	0.0	206.4				0.0	4.5	0.0	0.0	7.2	0.0
LnGrp LOS	C	A	F				A	A		A	A	
Approach Vol, veh/h		1571						926	A		1526	A
Approach Delay, s/veh		181.7						4.5			7.2	
Approach LOS		F						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	87.5	40.0	87.5
Change Period (Y+Rc), s	* 5	* 5.4	5.0
Max Green Setting (Gmax), s	* 66	* 35	65.0
Max Q Clear Time (g_c+I1), s	23.1	36.6	8.2
Green Ext Time (p_c), s	4.3	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	74.7
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	931	819	116	672	279	47
Future Volume (veh/h)	931	819	116	672	279	47
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1108	0	141	820	317	53
Peak Hour Factor	0.84	0.84	0.82	0.82	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2661		180	3655	443	203
Arrive On Green	0.52	0.00	0.10	0.72	0.13	0.13
Sat Flow, veh/h	5443	0	1781	5274	3456	1585
Grp Volume(v), veh/h	1108	0	141	820	317	53
Grp Sat Flow(s),veh/h/ln	1702	0	1781	1702	1728	1585
Q Serve(g_s), s	7.2	0.0	4.2	3.0	4.8	1.6
Cycle Q Clear(g_c), s	7.2	0.0	4.2	3.0	4.8	1.6
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2661		180	3655	443	203
V/C Ratio(X)	0.42		0.78	0.22	0.72	0.26
Avail Cap(c_a), veh/h	6088		650	6088	2314	1061
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.0	0.0	23.9	2.6	22.8	21.4
Incr Delay (d2), s/veh	0.2	0.0	2.8	0.1	0.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	1.7	0.3	1.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.2	0.0	26.7	2.7	23.6	21.7
LnGrp LOS	A		C	A	C	C
Approach Vol, veh/h	1108	A		961	370	
Approach Delay, s/veh	8.2			6.2	23.3	
Approach LOS	A			A	C	

Timer - Assigned Phs	2		5	6	8
Phs Duration (G+Y+Rc), s	44.0		10.6	33.4	10.5
Change Period (Y+Rc), s	5.0		* 5.1	5.0	3.5
Max Green Setting (Gmax), s	65.0		* 20	65.0	36.5
Max Q Clear Time (g_c+I1), s	5.0		6.2	9.2	6.8
Green Ext Time (p_c), s	12.7		0.0	19.2	0.2

Intersection Summary	
HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1073	0	212	0	963	564	0	728	330
Future Volume (veh/h)	0	0	0	1073	0	212	0	963	564	0	728	330
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				1248	0	247	0	1024	0	0	751	0
Peak Hour Factor				0.86	0.86	0.86	0.94	0.94	0.94	0.97	0.97	0.97
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1292	0	593	0	2731		0	1900	
Arrive On Green				0.37	0.00	0.37	0.00	0.53	0.00	0.00	0.53	0.00
Sat Flow, veh/h				3456	0	1585	0	5274	2790	0	3647	1585
Grp Volume(v), veh/h				1248	0	247	0	1024	0	0	751	0
Grp Sat Flow(s),veh/h/ln				1728	0	1585	0	1702	1395	0	1777	1585
Q Serve(g_s), s				44.2	0.0	14.4	0.0	14.6	0.0	0.0	15.6	0.0
Cycle Q Clear(g_c), s				44.2	0.0	14.4	0.0	14.6	0.0	0.0	15.6	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1292	0	593	0	2731		0	1900	
V/C Ratio(X)				0.97	0.00	0.42	0.00	0.38		0.00	0.40	
Avail Cap(c_a), veh/h				1333	0	611	0	2731		0	1900	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				38.3	0.0	29.0	0.0	16.9	0.0	0.0	17.2	0.0
Incr Delay (d2), s/veh				16.6	0.0	0.2	0.0	0.4	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				21.4	0.0	5.5	0.0	5.5	0.0	0.0	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				55.0	0.0	29.2	0.0	17.3	0.0	0.0	17.8	0.0
LnGrp LOS				D	A	C	A	B		A	B	
Approach Vol, veh/h					1495			1024	A		751	A
Approach Delay, s/veh					50.7			17.3			17.8	
Approach LOS					D			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	71.4		71.4		53.6			
Change Period (Y+Rc), s	4.6		4.6		6.8			
Max Green Setting (Gmax), s	65.4		65.4		48.2			
Max Q Clear Time (g_c+I1), s	17.6		16.6		46.2			
Green Ext Time (p_c), s	1.7		2.5		0.5			

Intersection Summary		
HCM 6th Ctrl Delay	32.7	
HCM 6th LOS	C	

Notes

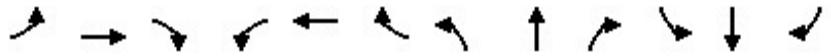
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL2	EBL	EBT	EBR	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	377	1	849	1103	102	27	1016	469	15	1686	201
Future Volume (vph)	377	1	849	1103	102	27	1016	469	15	1686	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	6.8	4.9		4.6			4.6	4.0
Lane Util. Factor		0.91	0.86	0.91	0.88		0.86			0.95	1.00
Frpb, ped/bikes		1.00	0.99	0.98	0.99		0.99			1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.94	0.85	0.85		0.95			1.00	0.85
Flt Protected		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1603	3008	1417	2747		6071			3539	1545
Flt Permitted		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1603	3008	1417	2747		6071			3539	1545
Peak-hour factor, PHF	0.87	0.92	0.87	0.87	0.90	0.92	0.89	0.92	0.89	0.91	0.91
Adj. Flow (vph)	433	1	976	1268	113	29	1142	510	17	1853	221
RTOR Reduction (vph)	0	0	5	9	16	0	1	0	0	0	0
Lane Group Flow (vph)	0	434	1542	688	126	0	1668	0	0	1853	221
Confl. Peds. (#/hr)	6			6	3				3		6
Confl. Bikes (#/hr)									2		3
Turn Type	Split	Perm	NA	Perm	Perm		NA			NA	Free
Protected Phases	4		4				6			2	
Permitted Phases		4		4	8						Free
Actuated Green, G (s)		48.2	48.2	48.2	50.1		65.4			65.4	125.0
Effective Green, g (s)		48.2	48.2	48.2	50.1		65.4			65.4	125.0
Actuated g/C Ratio		0.39	0.39	0.39	0.40		0.52			0.52	1.00
Clearance Time (s)		6.8	6.8	6.8	4.9		4.6			4.6	
Vehicle Extension (s)		1.0	1.0	1.0	3.0		1.0			1.0	
Lane Grp Cap (vph)		618	1159	546	1100		3176			1851	1545
v/s Ratio Prot							0.27			c0.52	
v/s Ratio Perm		0.27	0.51	0.49	0.05						0.14
v/c Ratio		0.70	1.33	1.26	0.11		0.53			1.00	0.14
Uniform Delay, d1		32.4	38.4	38.4	23.5		19.6			29.8	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00			1.25	1.00
Incremental Delay, d2		3.0	154.7	131.6	0.0		0.6			17.6	0.1
Delay (s)		35.3	193.1	170.0	23.6		20.2			54.8	0.1
Level of Service		D	F	F	C		C			D	A
Approach Delay (s)			161.5				20.2			48.9	
Approach LOS			F				C			D	

Intersection Summary			
HCM 2000 Control Delay	87.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	101	30	25	87	272	40	1008	18	760	1373	658
Future Volume (veh/h)	215	101	30	25	87	272	40	1008	18	760	1373	658
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	250	117	35	29	101	316	44	1108	20	817	1476	708
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.91	0.91	0.91	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	933	255	60	299	1286	80	1364	25	868	2512	766
Arrive On Green	0.09	0.24	0.24	0.02	0.16	0.16	0.02	0.26	0.26	0.25	0.49	0.49
Sat Flow, veh/h	3456	3961	1085	3563	1870	3069	3456	5163	93	3456	5106	1557
Grp Volume(v), veh/h	250	99	53	29	101	316	44	730	398	817	1476	708
Grp Sat Flow(s),veh/h/ln	1728	1702	1642	1781	1870	1535	1728	1702	1852	1728	1702	1557
Q Serve(g_s), s	6.9	2.2	2.5	0.8	4.7	6.6	1.2	19.6	19.6	22.6	20.2	41.3
Cycle Q Clear(g_c), s	6.9	2.2	2.5	0.8	4.7	6.6	1.2	19.6	19.6	22.6	20.2	41.3
Prop In Lane	1.00		0.66	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	319	802	387	60	299	1286	80	899	489	868	2512	766
V/C Ratio(X)	0.78	0.12	0.14	0.49	0.34	0.25	0.55	0.81	0.81	0.94	0.59	0.92
Avail Cap(c_a), veh/h	691	2233	1077	712	1236	2825	691	2264	1232	868	3365	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.3	29.4	29.5	47.6	36.4	18.9	47.2	33.6	33.6	35.8	17.7	23.1
Incr Delay (d2), s/veh	1.6	0.0	0.1	2.3	0.2	0.0	2.2	0.7	1.3	17.8	0.1	9.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.9	0.9	0.4	2.1	2.2	0.5	7.8	8.6	11.1	7.1	15.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.9	29.4	29.5	49.8	36.7	18.9	49.3	34.3	34.9	53.6	17.8	32.7
LnGrp LOS	D	C	C	D	D	B	D	C	C	D	B	C
Approach Vol, veh/h		402			446			1172			3001	
Approach Delay, s/veh		39.1			24.9			35.1			31.1	
Approach LOS		D			C			D			C	

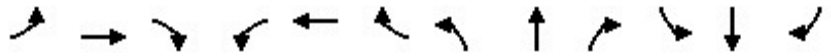
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	53.7	14.5	21.6	30.0	31.5	7.1	29.0
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 6	5.5	* 5.7	5.5	* 6
Max Green Setting (Gmax), s	19.5	* 64	19.5	* 65	24.5	* 65	19.5	* 64
Max Q Clear Time (g_c+I1), s	3.2	43.3	8.9	8.6	24.6	21.6	2.8	4.5
Green Ext Time (p_c), s	0.0	4.3	0.1	0.4	0.0	2.6	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	32.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



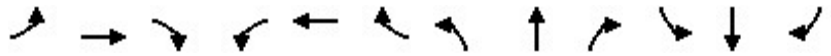
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	337	63	92	367	101	266	872	102	148	426	259
Future Volume (veh/h)	116	337	63	92	367	101	266	872	102	148	426	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	132	383	72	108	432	119	274	899	105	174	501	305
Peak Hour Factor	0.88	0.88	0.88	0.85	0.85	0.85	0.97	0.97	0.97	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	653	119	185	722	220	655	1841	570	270	848	389
Arrive On Green	0.06	0.15	0.15	0.05	0.14	0.14	0.19	0.36	0.36	0.08	0.25	0.25
Sat Flow, veh/h	3456	4328	788	3456	5106	1554	3456	5106	1581	3456	3404	1563
Grp Volume(v), veh/h	132	299	156	108	432	119	274	899	105	174	501	305
Grp Sat Flow(s),veh/h/ln	1728	1702	1712	1728	1702	1554	1728	1702	1581	1728	1702	1563
Q Serve(g_s), s	2.3	5.1	5.4	1.9	5.0	4.5	4.4	8.6	2.9	3.1	8.1	11.4
Cycle Q Clear(g_c), s	2.3	5.1	5.4	1.9	5.0	4.5	4.4	8.6	2.9	3.1	8.1	11.4
Prop In Lane	1.00		0.46	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	514	258	185	722	220	655	1841	570	270	848	389
V/C Ratio(X)	0.61	0.58	0.61	0.58	0.60	0.54	0.42	0.49	0.18	0.64	0.59	0.78
Avail Cap(c_a), veh/h	1074	1855	933	1074	2782	847	1074	5239	1622	1074	3492	1603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	24.8	24.9	29.0	25.3	25.1	22.4	15.6	13.7	28.1	20.8	22.0
Incr Delay (d2), s/veh	1.0	0.4	0.9	1.1	0.3	0.8	0.2	0.1	0.1	1.0	0.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.9	2.0	0.8	1.8	1.5	1.6	2.8	0.9	1.2	2.8	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	25.2	25.8	30.1	25.6	25.8	22.5	15.7	13.8	29.0	21.0	23.3
LnGrp LOS	C	C	C	C	C	C	C	B	B	C	C	C
Approach Vol, veh/h		587			659			1278			980	
Approach Delay, s/veh		26.3			26.4			17.0			23.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	21.2	9.5	14.7	10.4	28.2	8.9	15.3
Change Period (Y+Rc), s	5.5	* 5.6	5.5	5.8	5.5	* 5.6	5.5	5.8
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.2	19.5	* 64	19.5	34.2
Max Q Clear Time (g_c+I1), s	6.4	13.4	4.3	7.0	5.1	10.6	3.9	7.4
Green Ext Time (p_c), s	0.1	1.8	0.1	1.0	0.1	2.2	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	14	263	37	20	32	302	2230	10	32	3207	77
Future Volume (veh/h)	111	14	263	37	20	32	302	2230	10	32	3207	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	134	223	45	24	39	311	2299	10	35	3486	84
Peak Hour Factor	0.87	0.87	0.87	0.82	0.82	0.82	0.97	0.97	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	155	262	100	36	58	363	3102	13	45	2598	786
Arrive On Green	0.17	0.17	0.17	0.06	0.06	0.06	0.11	0.59	0.59	0.03	0.51	0.51
Sat Flow, veh/h	892	934	1574	1781	639	1038	3456	5247	23	1781	5106	1545
Grp Volume(v), veh/h	262	0	223	45	0	63	311	1491	818	35	3486	84
Grp Sat Flow(s),veh/h/ln	1826	0	1574	1781	0	1677	1728	1702	1866	1781	1702	1545
Q Serve(g_s), s	17.9	0.0	17.6	3.1	0.0	4.7	11.3	40.8	40.9	2.5	65.2	3.6
Cycle Q Clear(g_c), s	17.9	0.0	17.6	3.1	0.0	4.7	11.3	40.8	40.9	2.5	65.2	3.6
Prop In Lane	0.49		1.00	1.00		0.62	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	262	100	0	94	363	2013	1103	45	2598	786
V/C Ratio(X)	0.86	0.00	0.85	0.45	0.00	0.67	0.86	0.74	0.74	0.78	1.34	0.11
Avail Cap(c_a), veh/h	492	0	424	480	0	451	537	2013	1103	281	2598	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	0.0	51.9	58.6	0.0	59.3	56.4	19.1	19.1	62.1	31.5	16.3
Incr Delay (d2), s/veh	4.9	0.0	4.8	1.2	0.0	3.1	6.1	1.3	2.4	10.5	156.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	7.3	1.5	0.0	2.1	5.1	14.9	16.7	1.2	62.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.9	0.0	56.6	59.8	0.0	62.4	62.5	20.4	21.5	72.7	187.9	16.4
LnGrp LOS	E	A	E	E	A	E	E	C	C	E	F	B
Approach Vol, veh/h		485			108			2620			3605	
Approach Delay, s/veh		56.8			61.3			25.7			182.8	
Approach LOS		E			E			C			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.6	70.1		26.8	8.0	80.7		12.7
Change Period (Y+Rc), s	* 5.1	* 4.9		5.5	* 4.8	* 4.9		5.5
Max Green Setting (Gmax), s	* 26	* 65		34.5	* 20	* 65		34.5
Max Q Clear Time (g_c+I1), s	13.3	67.2		19.9	4.5	42.9		6.7
Green Ext Time (p_c), s	0.1	0.0		0.6	0.0	6.3		0.1

Intersection Summary	
HCM 6th Ctrl Delay	111.6
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	501	0	440	0	2078	269	0	1958	1594
Future Volume (veh/h)	0	0	0	501	0	440	0	2078	269	0	1958	1594
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				589	0	518	0	2165	0	0	1998	0
Peak Hour Factor				0.85	0.85	0.85	0.96	0.96	0.96	0.98	0.98	0.98
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				716	0	578	0	3837		0	3491	
Arrive On Green				0.21	0.00	0.21	0.00	0.68	0.00	0.00	0.68	0.00
Sat Flow, veh/h				3456	0	2790	0	5611	1585	0	5274	2790
Grp Volume(v), veh/h				589	0	518	0	2165	0	0	1998	0
Grp Sat Flow(s),veh/h/ln				1728	0	1395	0	1870	1585	0	1702	1395
Q Serve(g_s), s				17.9	0.0	19.9	0.0	21.9	0.0	0.0	22.4	0.0
Cycle Q Clear(g_c), s				17.9	0.0	19.9	0.0	21.9	0.0	0.0	22.4	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				716	0	578	0	3837		0	3491	
V/C Ratio(X)				0.82	0.00	0.90	0.00	0.56		0.00	0.57	
Avail Cap(c_a), veh/h				1037	0	837	0	3837		0	3491	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				41.7	0.0	42.5	0.0	9.0	0.0	0.0	9.0	0.0
Incr Delay (d2), s/veh				2.3	0.0	7.0	0.0	0.6	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.8	0.0	7.4	0.0	7.4	0.0	0.0	6.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				44.0	0.0	49.5	0.0	9.6	0.0	0.0	9.7	0.0
LnGrp LOS				D	A	D	A	A		A	A	
Approach Vol, veh/h					1107			2165	A		1998	A
Approach Delay, s/veh					46.6			9.6			9.7	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	80.2		80.2		29.8			
Change Period (Y+Rc), s	* 5		5.0		7.0			
Max Green Setting (Gmax), s	* 65		65.0		33.0			
Max Q Clear Time (g_c+I1), s	24.4		23.9		21.9			
Green Ext Time (p_c), s	6.5		7.5		0.9			

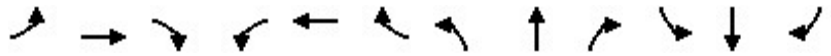
Intersection Summary		
HCM 6th Ctrl Delay		17.4
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1198	0	601	0	0	0	0	1132	459	0	2109	362
Future Volume (veh/h)	1198	0	601	0	0	0	0	1132	459	0	2109	362
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	1235	0	620				0	1384	0	0	2152	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.98	0.98	0.98
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1349	0	749				0	4696		0	3522	
Arrive On Green	0.27	0.00	0.27				0.00	0.63	0.00	0.00	0.63	0.00
Sat Flow, veh/h	5023	0	2790				0	7481	1585	0	5611	1585
Grp Volume(v), veh/h	1235	0	620				0	1384	0	0	2152	0
Grp Sat Flow(s),veh/h/ln	1674	0	1395				0	1870	1585	0	1870	1585
Q Serve(g_s), s	26.2	0.0	23.0				0.0	9.3	0.0	0.0	25.5	0.0
Cycle Q Clear(g_c), s	26.2	0.0	23.0				0.0	9.3	0.0	0.0	25.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1349	0	749				0	4696		0	3522	
V/C Ratio(X)	0.92	0.00	0.83				0.00	0.29		0.00	0.61	
Avail Cap(c_a), veh/h	1521	0	845				0	4696		0	3522	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	39.0	0.0	37.8				0.0	9.4	0.0	0.0	12.4	0.0
Incr Delay (d2), s/veh	7.8	0.0	5.5				0.0	0.2	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	8.3				0.0	3.4	0.0	0.0	9.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	0.0	43.3				0.0	9.5	0.0	0.0	13.2	0.0
LnGrp LOS	D	A	D				A	A		A	B	
Approach Vol, veh/h		1855						1384	A		2152	A
Approach Delay, s/veh		45.7						9.5			13.2	
Approach LOS		D						A			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	73.7	36.3	73.7
Change Period (Y+Rc), s	* 4.7	6.7	4.7
Max Green Setting (Gmax), s	* 66	33.3	65.3
Max Q Clear Time (g_c+I1), s	27.5	28.2	11.3
Green Ext Time (p_c), s	7.4	1.3	3.7

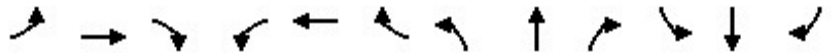
Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	171	93	274	216	129	72	1272	108	230	2138	309
Future Volume (veh/h)	213	171	93	274	216	129	72	1272	108	230	2138	309
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	192	104	308	266	129	76	1339	114	240	2227	322
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.95	0.95	0.95	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	295	561	244	365	655	267	124	3016	741	295	2647	814
Arrive On Green	0.09	0.16	0.16	0.10	0.18	0.18	0.04	0.47	0.47	0.09	0.52	0.52
Sat Flow, veh/h	3456	3554	1546	3563	3741	1524	3456	6434	1581	3456	5106	1571
Grp Volume(v), veh/h	239	192	104	308	266	129	76	1339	114	240	2227	322
Grp Sat Flow(s),veh/h/ln	1728	1777	1546	1781	1870	1524	1728	1609	1581	1728	1702	1571
Q Serve(g_s), s	8.4	5.9	7.5	10.4	7.8	9.4	2.7	17.2	5.1	8.4	45.8	15.3
Cycle Q Clear(g_c), s	8.4	5.9	7.5	10.4	7.8	9.4	2.7	17.2	5.1	8.4	45.8	15.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	295	561	244	365	655	267	124	3016	741	295	2647	814
V/C Ratio(X)	0.81	0.34	0.43	0.84	0.41	0.48	0.61	0.44	0.15	0.81	0.84	0.40
Avail Cap(c_a), veh/h	548	986	429	565	1035	422	548	3361	826	548	2676	823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	46.1	46.7	54.2	45.0	45.7	58.4	21.9	18.7	55.2	25.3	17.9
Incr Delay (d2), s/veh	2.1	0.5	1.7	4.1	0.7	2.3	3.0	0.1	0.1	2.1	2.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	2.7	3.0	4.9	3.7	3.7	1.2	6.2	1.9	3.7	17.6	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	46.6	48.5	58.3	45.7	48.0	61.4	22.0	18.7	57.3	28.1	18.6
LnGrp LOS	E	D	D	E	D	D	E	C	B	E	C	B
Approach Vol, veh/h		535			703			1529			2789	
Approach Delay, s/veh		51.7			51.6			23.7			29.5	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	69.5	16.0	27.5	16.0	63.4	18.1	25.4
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	* 6
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.0	19.5	* 64	19.5	* 34
Max Q Clear Time (g_c+I1), s	4.7	47.8	10.4	11.4	10.4	19.2	12.4	9.5
Green Ext Time (p_c), s	0.1	15.9	0.1	3.6	0.1	8.7	0.2	2.3

Intersection Summary	
HCM 6th Ctrl Delay	32.9
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



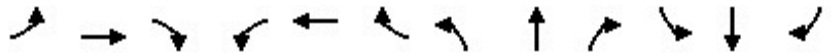
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	219	75	148	306	151	333	1085	82	264	851	254
Future Volume (veh/h)	166	219	75	148	306	151	333	1085	82	264	851	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	173	228	78	163	336	166	362	1179	89	275	886	265
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.92	0.92	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	612	268	220	865	267	419	1893	579	333	1766	540
Arrive On Green	0.07	0.19	0.19	0.07	0.19	0.19	0.13	0.41	0.41	0.11	0.38	0.38
Sat Flow, veh/h	3110	3198	1400	3110	4595	1420	3110	4595	1407	3110	4595	1404
Grp Volume(v), veh/h	173	228	78	163	336	166	362	1179	89	275	886	265
Grp Sat Flow(s),veh/h/ln	1555	1599	1400	1555	1532	1420	1555	1532	1407	1555	1532	1404
Q Serve(g_s), s	5.7	6.5	5.0	5.4	6.7	11.2	11.9	21.1	4.1	9.0	15.3	14.9
Cycle Q Clear(g_c), s	5.7	6.5	5.0	5.4	6.7	11.2	11.9	21.1	4.1	9.0	15.3	14.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	612	268	220	865	267	419	1893	579	333	1766	540
V/C Ratio(X)	0.75	0.37	0.29	0.74	0.39	0.62	0.86	0.62	0.15	0.83	0.50	0.49
Avail Cap(c_a), veh/h	582	1965	860	582	1500	463	582	2841	870	582	2832	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.3	36.7	36.1	47.5	37.0	38.9	44.1	24.2	19.2	45.6	24.5	24.3
Incr Delay (d2), s/veh	1.9	0.8	1.2	1.8	1.0	7.9	7.4	0.7	0.2	2.0	0.5	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.5	1.7	2.1	2.5	4.3	4.8	7.2	1.3	3.5	5.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	37.4	37.3	49.3	38.0	46.7	51.6	24.9	19.5	47.6	24.9	25.7
LnGrp LOS	D	D	D	D	D	D	D	C	B	D	C	C
Approach Vol, veh/h		479			665			1630			1426	
Approach Delay, s/veh		41.6			43.0			30.5			29.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	45.8	13.2	25.6	16.6	48.7	12.9	25.9
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.0	19.5	* 64	19.5	64.0
Max Q Clear Time (g_c+I1), s	13.9	17.3	7.7	13.2	11.0	23.1	7.4	8.5
Green Ext Time (p_c), s	0.1	17.0	0.1	5.9	0.1	19.8	0.1	3.4

Intersection Summary	
HCM 6th Ctrl Delay	33.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



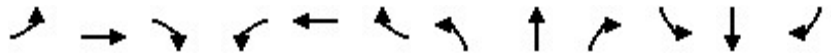
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	186	2	15	341	444	6	179	45	175	27	72
Future Volume (veh/h)	304	186	2	15	341	444	6	179	45	175	27	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	323	198	2	18	406	529	7	218	55	194	30	80
Peak Hour Factor	0.94	0.94	0.94	0.84	0.84	0.84	0.82	0.82	0.82	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	338	1950	20	21	672	557	9	247	62	259	451	383
Arrive On Green	0.19	0.54	0.54	0.01	0.36	0.36	0.01	0.17	0.17	0.08	0.24	0.24
Sat Flow, veh/h	1781	3604	36	1781	1870	1550	1781	1441	364	3456	1870	1585
Grp Volume(v), veh/h	323	98	102	18	406	529	7	0	273	194	30	80
Grp Sat Flow(s),veh/h/ln	1781	1777	1864	1781	1870	1550	1781	0	1805	1728	1870	1585
Q Serve(g_s), s	18.4	2.7	2.7	1.0	18.3	34.1	0.4	0.0	15.2	5.7	1.3	4.1
Cycle Q Clear(g_c), s	18.4	2.7	2.7	1.0	18.3	34.1	0.4	0.0	15.2	5.7	1.3	4.1
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	338	961	1008	21	672	557	9	0	310	259	451	383
V/C Ratio(X)	0.96	0.10	0.10	0.85	0.60	0.95	0.74	0.00	0.88	0.75	0.07	0.21
Avail Cap(c_a), veh/h	338	1125	1180	345	1186	983	338	0	1145	656	1181	1001
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.2	11.5	11.5	50.7	26.9	32.0	51.0	0.0	41.6	46.6	30.1	31.2
Incr Delay (d2), s/veh	37.0	0.0	0.0	27.5	0.3	7.0	34.2	0.0	3.3	1.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	0.9	1.0	0.6	7.5	12.9	0.3	0.0	6.7	2.4	0.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.2	11.5	11.5	78.2	27.3	39.0	85.2	0.0	44.8	48.2	30.1	31.3
LnGrp LOS	E	B	B	E	C	D	F	A	D	D	C	C
Approach Vol, veh/h		523			953			280			304	
Approach Delay, s/veh		52.7			34.7			45.8			42.0	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	41.8	6.0	29.9	6.3	60.5	13.2	22.7
Change Period (Y+Rc), s	5.5	* 4.9	5.5	* 5.1	* 5.1	* 4.9	5.5	* 5.1
Max Green Setting (Gmax), s	19.5	* 65	19.5	* 65	* 20	* 65	19.5	* 65
Max Q Clear Time (g_c+I1), s	20.4	36.1	2.4	6.1	3.0	4.7	7.7	17.2
Green Ext Time (p_c), s	0.0	0.8	0.0	0.1	0.0	0.3	0.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	41.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



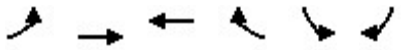
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	113	129	84	318	217	456	1398	64	89	487	58
Future Volume (veh/h)	256	113	129	84	318	217	456	1398	64	89	487	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	261	115	132	95	361	247	518	1589	73	100	547	65
Peak Hour Factor	0.98	0.98	0.98	0.88	0.88	0.88	0.88	0.88	0.88	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	343	1210	376	159	653	291	598	1843	565	165	1204	374
Arrive On Green	0.10	0.24	0.24	0.05	0.18	0.18	0.17	0.36	0.36	0.05	0.24	0.24
Sat Flow, veh/h	3456	5106	1585	3456	3554	1585	3456	5106	1565	3456	5106	1585
Grp Volume(v), veh/h	261	115	132	95	361	247	518	1589	73	100	547	65
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1585	1728	1702	1565	1728	1702	1585
Q Serve(g_s), s	6.0	1.4	5.7	2.2	7.5	12.3	11.9	23.6	2.6	2.3	7.5	2.7
Cycle Q Clear(g_c), s	6.0	1.4	5.7	2.2	7.5	12.3	11.9	23.6	2.6	2.3	7.5	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	343	1210	376	159	653	291	598	1843	565	165	1204	374
V/C Ratio(X)	0.76	0.10	0.35	0.60	0.55	0.85	0.87	0.86	0.13	0.60	0.45	0.17
Avail Cap(c_a), veh/h	824	2079	645	824	1443	644	824	3915	1200	824	3909	1213
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	24.3	26.0	38.3	30.3	32.3	32.9	24.2	17.5	38.2	26.7	24.9
Incr Delay (d2), s/veh	1.3	0.0	0.2	1.3	0.3	2.7	5.7	0.5	0.0	1.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.5	1.9	0.9	2.9	4.5	5.0	8.2	0.8	0.9	2.7	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	24.4	26.2	39.6	30.6	34.9	38.5	24.7	17.5	39.5	26.8	25.0
LnGrp LOS	D	C	C	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h		508			703			2180			712	
Approach Delay, s/veh		31.4			33.3			27.8			28.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	36.9	9.3	26.2	19.6	26.7	13.6	21.8
Change Period (Y+Rc), s	5.5	* 7.4	5.5	* 6.8	5.5	* 7.4	5.5	6.8
Max Green Setting (Gmax), s	19.5	* 63	19.5	* 33	19.5	* 63	19.5	33.2
Max Q Clear Time (g_c+I1), s	14.3	25.6	4.2	7.7	13.9	9.5	8.0	14.3
Green Ext Time (p_c), s	0.0	3.9	0.0	0.2	0.2	1.1	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



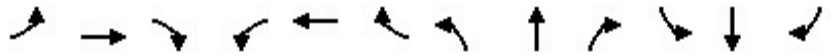
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	197	89	5	5	91
Future Volume (veh/h)	63	197	89	5	5	91
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	226	99	6	6	118
Peak Hour Factor	0.87	0.87	0.90	0.90	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	85	1369	396	177	275	245
Arrive On Green	0.05	0.39	0.11	0.11	0.15	0.15
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	72	226	99	6	6	118
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	1.0	1.0	0.6	0.1	0.1	1.6
Cycle Q Clear(g_c), s	1.0	1.0	0.6	0.1	0.1	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	85	1369	396	177	275	245
V/C Ratio(X)	0.85	0.17	0.25	0.03	0.02	0.48
Avail Cap(c_a), veh/h	1461	9590	9605	4284	2534	2255
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.3	4.8	9.7	9.5	8.6	9.2
Incr Delay (d2), s/veh	8.4	0.0	0.1	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.1	0.0	0.0	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.7	4.8	9.8	9.5	8.6	9.8
LnGrp LOS	B	A	A	A	A	A
Approach Vol, veh/h		298	105		124	
Approach Delay, s/veh		8.4	9.8		9.7	
Approach LOS		A	A		A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.5	8.2		9.2		14.7
Change Period (Y+Rc), s	* 5.4	* 5.5		5.5		* 5.5
Max Green Setting (Gmax), s	* 2.8	* 65		34.0		* 65
Max Q Clear Time (g_c+I1), s	3.0	2.6		3.6		3.0
Green Ext Time (p_c), s	0.0	0.2		0.1		0.4

Intersection Summary	
HCM 6th Ctrl Delay	9.0
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



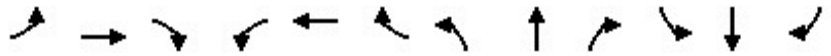
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	194	6	37	366	278	4	856	46	95	502	85
Future Volume (veh/h)	73	194	6	37	366	278	4	856	46	95	502	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	228	7	41	407	309	4	941	51	116	612	104
Peak Hour Factor	0.85	0.85	0.85	0.90	0.90	0.90	0.91	0.91	0.91	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	491	416	53	434	368	39	820	44	141	979	925
Arrive On Green	0.06	0.26	0.26	0.03	0.23	0.23	0.02	0.47	0.47	0.08	0.52	0.52
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1758	95	1781	1870	1585
Grp Volume(v), veh/h	86	228	7	41	407	309	4	0	992	116	612	104
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1853	1781	1870	1585
Q Serve(g_s), s	6.5	14.0	0.4	3.1	29.1	25.4	0.3	0.0	63.6	8.8	31.6	4.0
Cycle Q Clear(g_c), s	6.5	14.0	0.4	3.1	29.1	25.4	0.3	0.0	63.6	8.8	31.6	4.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	107	491	416	53	434	368	39	0	864	141	979	925
V/C Ratio(X)	0.80	0.46	0.02	0.78	0.94	0.84	0.10	0.00	1.15	0.82	0.63	0.11
Avail Cap(c_a), veh/h	268	491	416	268	455	386	268	0	864	320	979	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.3	42.3	37.3	65.7	51.4	50.0	65.4	0.0	36.4	61.9	23.0	12.7
Incr Delay (d2), s/veh	5.2	0.3	0.0	8.7	26.2	13.7	0.4	0.0	80.1	4.5	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	6.2	0.2	1.5	16.2	11.0	0.1	0.0	45.5	4.0	13.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.5	42.5	37.3	74.5	77.6	63.7	65.8	0.0	116.5	66.4	24.0	12.7
LnGrp LOS	E	D	D	E	E	E	E	A	F	E	C	B
Approach Vol, veh/h		321			757			996			832	
Approach Delay, s/veh		49.4			71.8			116.3			28.5	
Approach LOS		D			E			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	38.4	7.5	77.8	8.5	42.6	15.3	70.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 6.4	4.5	6.8	4.5	6.4
Max Green Setting (Gmax), s	20.5	33.2	20.5	* 64	20.5	33.2	24.5	63.6
Max Q Clear Time (g_c+I1), s	8.5	31.1	2.3	33.6	5.1	16.0	10.8	65.6
Green Ext Time (p_c), s	0.0	0.5	0.0	2.2	0.0	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	72.2
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	259	0	36	640	34	3	324	16	23	245	76
Future Volume (veh/h)	87	259	0	36	640	34	3	324	16	23	245	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	278	0	40	711	38	3	360	18	26	275	85
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	739	0	52	635	34	3	376	19	26	279	86
Arrive On Green	0.06	0.39	0.00	0.03	0.36	0.36	0.21	0.21	0.21	0.22	0.22	0.22
Sat Flow, veh/h	1781	1870	0	1781	1759	94	15	1752	88	121	1278	395
Grp Volume(v), veh/h	94	278	0	40	0	749	381	0	0	386	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1853	1854	0	0	1793	0	0
Q Serve(g_s), s	9.1	18.5	0.0	3.9	0.0	63.2	35.6	0.0	0.0	37.6	0.0	0.0
Cycle Q Clear(g_c), s	9.1	18.5	0.0	3.9	0.0	63.2	35.6	0.0	0.0	37.6	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	0.01		0.05	0.07		0.22
Lane Grp Cap(c), veh/h	112	739	0	52	0	669	398	0	0	391	0	0
V/C Ratio(X)	0.84	0.38	0.00	0.78	0.00	1.12	0.96	0.00	0.00	0.99	0.00	0.00
Avail Cap(c_a), veh/h	259	739	0	208	0	669	402	0	0	391	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	81.2	37.7	0.0	84.5	0.0	56.0	68.0	0.0	0.0	68.3	0.0	0.0
Incr Delay (d2), s/veh	6.1	0.1	0.0	8.9	0.0	72.8	33.3	0.0	0.0	41.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	8.3	0.0	1.9	0.0	41.9	20.1	0.0	0.0	21.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.2	37.8	0.0	93.4	0.0	128.8	101.2	0.0	0.0	110.2	0.0	0.0
LnGrp LOS	F	D	A	F	A	F	F	A	A	F	A	A
Approach Vol, veh/h		372			789			381			386	
Approach Delay, s/veh		50.3			127.0			101.2			110.2	
Approach LOS		D			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.6	70.0		45.0	9.6	76.0		44.6
Change Period (Y+Rc), s	4.5	6.8		6.8	4.5	* 6.8		7.0
Max Green Setting (Gmax), s	25.5	63.2		38.2	20.5	* 64		38.0
Max Q Clear Time (g_c+I1), s	11.1	65.2		39.6	5.9	20.5		37.6
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.8		0.1

Intersection Summary		
HCM 6th Ctrl Delay	103.7	
HCM 6th LOS	F	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	19.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	13	0	170	1	451	15	61	326	0
Future Vol, veh/h	1	0	0	13	0	170	1	451	15	61	326	0
Peak Hour Factor	0.70	0.70	0.70	0.84	0.84	0.84	0.96	0.96	0.96	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	15	0	202	1	470	16	77	413	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.3	12	20.4	21.1
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	7%	16%
Vol Thru, %	97%	0%	0%	84%
Vol Right, %	3%	0%	93%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	467	1	183	387
LT Vol	1	1	13	61
Through Vol	451	0	0	326
RT Vol	15	0	170	0
Lane Flow Rate	486	1	218	490
Geometry Grp	1	1	1	1
Degree of Util (X)	0.713	0.003	0.35	0.724
Departure Headway (Hd)	5.279	7.191	5.786	5.32
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	686	494	619	681
Service Time	3.322	5.285	3.845	3.362
HCM Lane V/C Ratio	0.708	0.002	0.352	0.72
HCM Control Delay	20.4	10.3	12	21.1
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	6	0	1.6	6.2



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	196	22	94	497	349	72
Future Volume (veh/h)	196	22	94	497	349	72
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	280	31	108	571	397	82
Peak Hour Factor	0.70	0.70	0.87	0.87	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	356	317	136	904	508	431
Arrive On Green	0.20	0.20	0.08	0.48	0.27	0.27
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	280	31	108	571	397	82
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	5.1	0.5	2.0	7.7	6.7	1.4
Cycle Q Clear(g_c), s	5.1	0.5	2.0	7.7	6.7	1.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	356	317	136	904	508	431
V/C Ratio(X)	0.79	0.10	0.80	0.63	0.78	0.19
Avail Cap(c_a), veh/h	1846	1643	1067	3525	3509	2974
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	11.1	15.5	6.5	11.5	9.5
Incr Delay (d2), s/veh	1.5	0.0	3.9	0.3	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.1	0.7	0.8	1.6	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.4	11.2	19.4	6.8	12.5	9.6
LnGrp LOS	B	B	B	A	B	A
Approach Vol, veh/h	311			679	479	
Approach Delay, s/veh	14.1			8.8	12.0	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.2	15.4			22.6	11.5
Change Period (Y+Rc), s	* 4.6	* 6.1			* 6.1	4.7
Max Green Setting (Gmax), s	* 26	* 64			* 64	35.3
Max Q Clear Time (g_c+I1), s	4.0	8.7			9.7	7.1
Green Ext Time (p_c), s	0.0	0.6			0.8	0.1

Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	146.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	215	51	19	699	400	73
Future Vol, veh/h	215	51	19	699	400	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	86	86	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	347	82	22	813	435	79

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1332	475	514	0	-	0
Stage 1	475	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 170	590	1052	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 166	590	1052	-	-	-
Mov Cap-2 Maneuver	~ 166	-	-	-	-	-
Stage 1	613	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 606	0.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1052	-	193	-	-
HCM Lane V/C Ratio	0.021	-	2.223	-	-
HCM Control Delay (s)	8.5	-	$ 606	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	34.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	42	41	108	870	0	429	296
Future Volume (veh/h)	42	41	108	870	0	429	296
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	53	52	123	989		452	312
Peak Hour Factor	0.79	0.79	0.88	0.88		0.95	0.95
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	201	230	155	1889		933	508
Arrive On Green	0.06	0.06	0.09	0.53		0.26	0.26
Sat Flow, veh/h	3456	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	53	52	123	989		452	312
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777		1777	1585
Q Serve(g_s), s	0.4	0.9	2.0	5.5		3.2	5.0
Cycle Q Clear(g_c), s	0.4	0.9	2.0	5.5		3.2	5.0
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	201	230	155	1889		933	508
V/C Ratio(X)	0.26	0.23	0.79	0.52		0.48	0.61
Avail Cap(c_a), veh/h	6233	2996	1149	6280		6245	2877
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	13.6	11.4	13.5	4.6		9.4	8.7
Incr Delay (d2), s/veh	0.3	0.2	3.5	0.1		0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.6	0.0		0.6	0.9
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	13.9	11.6	17.0	4.7		9.6	9.1
LnGrp LOS	B	B	B	A		A	A
Approach Vol, veh/h	105			1112		764	
Approach Delay, s/veh	12.7			6.0		9.4	
Approach LOS	B			A		A	

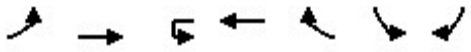
Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	8.1	14.8		7.3		23.0	
Change Period (Y+Rc), s	5.5	* 6.9		5.5		* 6.9	
Max Green Setting (Gmax), s	19.5	* 53		54.5		* 53	
Max Q Clear Time (g_c+I1), s	4.0	7.0		2.9		7.5	
Green Ext Time (p_c), s	0.0	0.9		0.1		2.0	

Intersection Summary	
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	486	410	0	426	109	31	263
Future Volume (veh/h)	486	410	0	426	109	31	263
Initial Q (Qb), veh	0	0		0	0	0	0
Ped-Bike Adj(A_pbT)	1.00				1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870		1870	1870	1870	1870
Adj Flow Rate, veh/h	534	451		520	133	37	313
Peak Hour Factor	0.91	0.91		0.82	0.82	0.84	0.84
Percent Heavy Veh, %	2	2		2	2	2	2
Cap, veh/h	575	2091		659	294	399	355
Arrive On Green	0.32	0.59		0.19	0.19	0.22	0.22
Sat Flow, veh/h	1781	3647		3647	1585	1781	1585
Grp Volume(v), veh/h	534	451		520	133	37	313
Grp Sat Flow(s),veh/h/ln	1781	1777		1777	1585	1781	1585
Q Serve(g_s), s	18.8	3.9		9.1	4.8	1.1	12.4
Cycle Q Clear(g_c), s	18.8	3.9		9.1	4.8	1.1	12.4
Prop In Lane	1.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	575	2091		659	294	399	355
V/C Ratio(X)	0.93	0.22		0.79	0.45	0.09	0.88
Avail Cap(c_a), veh/h	817	3466		3461	1544	945	841
HCM Platoon Ratio	1.00	1.00		1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00		1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	6.3		25.3	23.5	20.0	24.4
Incr Delay (d2), s/veh	11.0	0.0		0.8	0.4	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.9		3.3	1.6	0.4	4.2
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	32.2	6.3		26.1	23.9	20.0	27.3
LnGrp LOS	C	A		C	C	C	C
Approach Vol, veh/h		985		653		350	
Approach Delay, s/veh		20.4		25.6		26.5	
Approach LOS		C		C		C	

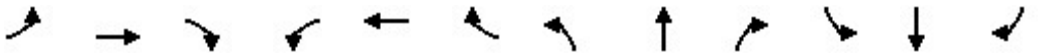
Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	26.2	18.8				45.0	20.0
Change Period (Y+Rc), s	* 5.2	* 6.7				* 6.7	5.5
Max Green Setting (Gmax), s	* 36	* 63				* 63	34.5
Max Q Clear Time (g_c+I1), s	20.8	11.1				5.9	14.4
Green Ext Time (p_c), s	0.2	1.0				0.8	0.2

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	401	0	353	0	1148	966	0	583	359
Future Volume (veh/h)	0	0	0	401	0	353	0	1148	966	0	583	359
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				448	40	420	0	1171	0	0	678	0
Peak Hour Factor				0.84	0.84	0.84	0.98	0.98	0.98	0.86	0.86	0.86
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				547	42	442	0	2143		0	2143	
Arrive On Green				0.31	0.31	0.31	0.00	0.60	0.00	0.00	0.60	0.00
Sat Flow, veh/h				1781	137	1441	0	3741	0	0	3741	0
Grp Volume(v), veh/h				448	0	460	0	1171	0	0	678	0
Grp Sat Flow(s),veh/h/ln				1781	0	1579	0	1777	0	0	1777	0
Q Serve(g_s), s				25.6	0.0	31.4	0.0	21.5	0.0	0.0	10.3	0.0
Cycle Q Clear(g_c), s				25.6	0.0	31.4	0.0	21.5	0.0	0.0	10.3	0.0
Prop In Lane				1.00		0.91	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				547	0	484	0	2143		0	2143	
V/C Ratio(X)				0.82	0.00	0.95	0.00	0.55		0.00	0.32	
Avail Cap(c_a), veh/h				568	0	504	0	2143		0	2143	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				35.3	0.0	37.3	0.0	12.9	0.0	0.0	10.7	0.0
Incr Delay (d2), s/veh				8.3	0.0	26.9	0.0	1.0	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.2	0.0	15.5	0.0	7.8	0.0	0.0	3.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				43.6	0.0	64.2	0.0	13.9	0.0	0.0	11.1	0.0
LnGrp LOS				D	A	E	A	B		A	B	
Approach Vol, veh/h					908			1171	A		678	A
Approach Delay, s/veh					54.0			13.9			11.1	
Approach LOS					D			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	71.3		71.3		38.7			
Change Period (Y+Rc), s	* 5		5.0		4.9			
Max Green Setting (Gmax), s	* 66		65.0		35.1			
Max Q Clear Time (g_c+I1), s	12.3		23.5		33.4			
Green Ext Time (p_c), s	1.5		2.9		0.4			

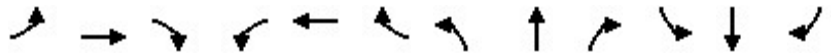
Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	534	0	585	0	0	0	0	1571	715	0	744	231
Future Volume (veh/h)	534	0	585	0	0	0	0	1571	715	0	744	231
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	832	0	438				0	1689	0	0	800	0
Peak Hour Factor	0.87	0.87	0.87				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	2
Cap, veh/h	1047	0	464				0	3123		0	2174	
Arrive On Green	0.29	0.00	0.29				0.00	0.61	0.00	0.00	0.61	0.00
Sat Flow, veh/h	3563	0	1580				0	5443	0	0	3647	1585
Grp Volume(v), veh/h	832	0	438				0	1689	0	0	800	0
Grp Sat Flow(s),veh/h/ln	1781	0	1580				0	1702	0	0	1777	1585
Q Serve(g_s), s	23.7	0.0	29.8				0.0	21.1	0.0	0.0	12.4	0.0
Cycle Q Clear(g_c), s	23.7	0.0	29.8				0.0	21.1	0.0	0.0	12.4	0.0
Prop In Lane	1.00		1.00				0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	1047	0	464				0	3123		0	2174	
V/C Ratio(X)	0.79	0.00	0.94				0.00	0.54		0.00	0.37	
Avail Cap(c_a), veh/h	1121	0	497				0	3123		0	2174	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	35.8	0.0	38.0				0.0	12.4	0.0	0.0	10.7	0.0
Incr Delay (d2), s/veh	3.4	0.0	25.3				0.0	0.7	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	14.6				0.0	7.2	0.0	0.0	4.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.2	0.0	63.3				0.0	13.1	0.0	0.0	11.2	0.0
LnGrp LOS	D	A	E				A	B		A	B	
Approach Vol, veh/h		1270						1689	A		800	A
Approach Delay, s/veh		47.5						13.1			11.2	
Approach LOS		D						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	72.3	37.7	72.3
Change Period (Y+Rc), s	* 5	* 5.4	5.0
Max Green Setting (Gmax), s	* 66	* 35	65.0
Max Q Clear Time (g_c+I1), s	14.4	31.8	23.1
Green Ext Time (p_c), s	1.8	0.5	5.0

Intersection Summary	
HCM 6th Ctrl Delay	24.3
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	781	224	109	1047	677	96
Future Volume (veh/h)	781	224	109	1047	677	96
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	849	0	124	1190	967	137
Peak Hour Factor	0.92	0.92	0.88	0.88	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1912		159	2796	1079	495
Arrive On Green	0.37	0.00	0.09	0.55	0.31	0.31
Sat Flow, veh/h	5443	0	1781	5274	3456	1585
Grp Volume(v), veh/h	849	0	124	1190	967	137
Grp Sat Flow(s),veh/h/ln	1702	0	1781	1702	1728	1585
Q Serve(g_s), s	7.6	0.0	4.1	8.3	16.2	3.9
Cycle Q Clear(g_c), s	7.6	0.0	4.1	8.3	16.2	3.9
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1912		159	2796	1079	495
V/C Ratio(X)	0.44		0.78	0.43	0.90	0.28
Avail Cap(c_a), veh/h	5473		585	5473	2080	954
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	27.0	8.1	19.9	15.7
Incr Delay (d2), s/veh	0.3	0.0	3.1	0.2	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	1.7	2.1	5.6	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.6	0.0	30.2	8.3	21.0	15.8
LnGrp LOS	B		C	A	C	B
Approach Vol, veh/h	849	A		1314	1104	
Approach Delay, s/veh	14.6			10.4	20.4	
Approach LOS	B			B	C	

Timer - Assigned Phs	2		5	6	8
Phs Duration (G+Y+Rc), s	38.2		10.5	27.7	22.4
Change Period (Y+Rc), s	5.0		* 5.1	5.0	3.5
Max Green Setting (Gmax), s	65.0		* 20	65.0	36.5
Max Q Clear Time (g_c+I1), s	10.3		6.1	9.6	18.2
Green Ext Time (p_c), s	21.1		0.0	13.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	394	0	310	0	1660	1740	0	783	567
Future Volume (veh/h)	0	0	0	394	0	310	0	1660	1740	0	783	567
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				464	0	365	0	1694	0	0	816	0
Peak Hour Factor				0.85	0.85	0.85	0.98	0.98	0.98	0.96	0.96	0.96
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				850	0	390	0	3384		0	2355	
Arrive On Green				0.25	0.00	0.25	0.00	0.66	0.00	0.00	0.66	0.00
Sat Flow, veh/h				3456	0	1585	0	5274	2790	0	3647	1585
Grp Volume(v), veh/h				464	0	365	0	1694	0	0	816	0
Grp Sat Flow(s),veh/h/ln				1728	0	1585	0	1702	1395	0	1777	1585
Q Serve(g_s), s				14.6	0.0	28.2	0.0	20.9	0.0	0.0	12.6	0.0
Cycle Q Clear(g_c), s				14.6	0.0	28.2	0.0	20.9	0.0	0.0	12.6	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				850	0	390	0	3384		0	2355	
V/C Ratio(X)				0.55	0.00	0.94	0.00	0.50		0.00	0.35	
Avail Cap(c_a), veh/h				1333	0	611	0	3384		0	2355	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				41.0	0.0	46.2	0.0	10.6	0.0	0.0	9.2	0.0
Incr Delay (d2), s/veh				0.2	0.0	12.2	0.0	0.5	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.3	0.0	12.4	0.0	7.1	0.0	0.0	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				41.2	0.0	58.4	0.0	11.2	0.0	0.0	9.6	0.0
LnGrp LOS				D	A	E	A	B		A	A	
Approach Vol, veh/h					829			1694	A		816	A
Approach Delay, s/veh					48.8			11.2			9.6	
Approach LOS					D			B			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	87.4		87.4		37.6			
Change Period (Y+Rc), s	4.6		4.6		6.8			
Max Green Setting (Gmax), s	65.4		65.4		48.2			
Max Q Clear Time (g_c+I1), s	14.6		22.9		30.2			
Green Ext Time (p_c), s	1.9		5.0		0.6			

Intersection Summary		
HCM 6th Ctrl Delay		20.1
HCM 6th LOS		C

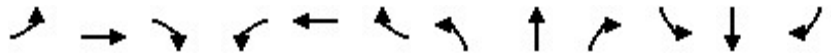
Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL2	EBL	EBT	EBR	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	702	0	130	702	736	127	1958	464	7	1065	114
Future Volume (vph)	702	0	130	702	736	127	1958	464	7	1065	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	6.8	4.6		4.6			4.6	4.0
Lane Util. Factor		0.91	0.86	0.91	0.88		0.86			0.95	1.00
Frpb, ped/bikes		1.00	0.99	0.98	1.00		1.00			1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.89	0.85	0.85		0.97			1.00	0.85
Flt Protected		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1610	2811	1411	2787		6187			3539	1540
Flt Permitted		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1610	2811	1411	2787		6187			3539	1540
Peak-hour factor, PHF	0.97	0.92	0.97	0.97	0.89	0.92	0.98	0.92	0.98	0.87	0.87
Adj. Flow (vph)	724	0	134	724	827	138	1998	504	7	1224	131
RTOR Reduction (vph)	0	0	27	27	16	0	0	0	0	0	0
Lane Group Flow (vph)	0	724	469	335	949	0	2509	0	0	1224	131
Confl. Peds. (#/hr)	11			11	3				3		11
Confl. Bikes (#/hr)									8		5
Turn Type	Split	Split	NA	Perm	Prot		NA			NA	Free
Protected Phases	4	4	4		2!		6!			2	
Permitted Phases				4	2						Free
Actuated Green, G (s)		48.2	48.2	48.2	65.4		65.4			65.4	125.0
Effective Green, g (s)		48.2	48.2	48.2	65.4		65.4			65.4	125.0
Actuated g/C Ratio		0.39	0.39	0.39	0.52		0.52			0.52	1.00
Clearance Time (s)		6.8	6.8	6.8	4.6		4.6			4.6	
Vehicle Extension (s)		1.0	1.0	1.0	1.0		1.0			1.0	
Lane Grp Cap (vph)		620	1083	544	1458		3237			1851	1540
v/s Ratio Prot		c0.45	0.17		0.34		c0.41			0.35	
v/s Ratio Perm				0.24							0.09
v/c Ratio		1.17	0.43	0.62	0.65		0.77			0.66	0.09
Uniform Delay, d1		38.4	28.3	30.9	21.5		23.9			21.7	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00			1.18	1.00
Incremental Delay, d2		92.1	0.1	1.5	2.3		1.9			1.8	0.1
Delay (s)		130.5	28.4	32.4	23.8		25.8			27.4	0.1
Level of Service		F	C	C	C		C			C	A
Approach Delay (s)			76.0				25.8			24.7	
Approach LOS			E				C			C	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	119.1%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	605	173	42	42	124	716	59	1128	19	390	1129	263
Future Volume (veh/h)	605	173	42	42	124	716	59	1128	19	390	1129	263
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	624	178	43	45	133	770	61	1163	20	406	1176	274
Peak Hour Factor	0.97	0.97	0.97	0.93	0.93	0.93	0.97	0.97	0.97	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	582	1608	366	81	453	1171	104	1338	23	464	1855	570
Arrive On Green	0.17	0.39	0.39	0.02	0.24	0.24	0.03	0.26	0.26	0.13	0.36	0.36
Sat Flow, veh/h	3456	4149	945	3563	1870	3077	3456	5168	89	3456	5106	1569
Grp Volume(v), veh/h	624	144	77	45	133	770	61	766	417	406	1176	274
Grp Sat Flow(s),veh/h/ln	1728	1702	1690	1781	1870	1539	1728	1702	1852	1728	1702	1569
Q Serve(g_s), s	19.5	3.1	3.4	1.4	6.7	24.1	2.0	24.9	24.9	13.3	22.0	15.6
Cycle Q Clear(g_c), s	19.5	3.1	3.4	1.4	6.7	24.1	2.0	24.9	24.9	13.3	22.0	15.6
Prop In Lane	1.00		0.56	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	582	1319	655	81	453	1171	104	882	480	464	1855	570
V/C Ratio(X)	1.07	0.11	0.12	0.55	0.29	0.66	0.59	0.87	0.87	0.87	0.63	0.48
Avail Cap(c_a), veh/h	582	1883	935	600	1043	2141	582	1909	1039	732	2837	872
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	22.7	22.7	55.9	35.8	30.0	55.4	41.0	41.0	49.1	30.5	28.4
Incr Delay (d2), s/veh	57.9	0.0	0.0	2.2	0.1	0.2	2.0	1.1	1.9	4.5	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	1.2	1.3	0.7	3.0	8.5	0.9	10.2	11.3	5.9	8.6	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	106.0	22.7	22.8	58.1	35.9	30.3	57.4	42.1	42.9	53.6	30.6	28.6
LnGrp LOS	F	C	C	E	D	C	E	D	D	D	C	C
Approach Vol, veh/h		845			948			1244			1856	
Approach Delay, s/veh		84.2			32.4			43.1			35.4	
Approach LOS		F			C			D			D	

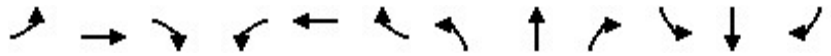
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	47.7	25.0	34.0	21.0	35.7	8.1	50.9
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 6	5.5	* 5.7	5.5	* 6
Max Green Setting (Gmax), s	19.5	* 64	19.5	* 65	24.5	* 65	19.5	* 64
Max Q Clear Time (g_c+I1), s	14.0	24.0	21.5	26.1	15.3	26.9	3.4	5.4
Green Ext Time (p_c), s	0.0	3.1	0.0	1.0	0.2	2.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	45.2
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



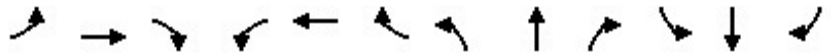
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	305	498	232	181	354	115	124	448	54	175	864	128
Future Volume (veh/h)	305	498	232	181	354	115	124	448	54	175	864	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	332	541	252	218	427	139	133	482	58	199	982	145
Peak Hour Factor	0.92	0.92	0.92	0.83	0.83	0.83	0.93	0.93	0.93	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	411	808	362	297	1040	309	466	1706	515	277	1249	184
Arrive On Green	0.12	0.24	0.24	0.09	0.20	0.20	0.13	0.33	0.33	0.08	0.28	0.28
Sat Flow, veh/h	3456	3411	1530	3456	5106	1519	3456	5106	1543	3456	4473	658
Grp Volume(v), veh/h	332	540	253	218	427	139	133	482	58	199	747	380
Grp Sat Flow(s),veh/h/ln	1728	1702	1536	1728	1702	1519	1728	1702	1543	1728	1702	1727
Q Serve(g_s), s	8.0	12.2	12.8	5.2	6.2	6.8	2.9	5.9	2.2	4.8	17.2	17.3
Cycle Q Clear(g_c), s	8.0	12.2	12.8	5.2	6.2	6.8	2.9	5.9	2.2	4.8	17.2	17.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	411	807	364	297	1040	309	466	1706	515	277	951	482
V/C Ratio(X)	0.81	0.67	0.70	0.73	0.41	0.45	0.29	0.28	0.11	0.72	0.79	0.79
Avail Cap(c_a), veh/h	791	1367	617	791	2051	610	791	3861	1167	791	2574	1306
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	29.5	29.7	38.0	29.5	29.7	33.1	20.9	19.6	38.2	28.3	28.4
Incr Delay (d2), s/veh	1.4	0.4	0.9	1.3	0.1	0.4	0.1	0.0	0.0	1.3	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	4.7	4.5	2.2	2.4	2.4	1.2	2.2	0.7	2.0	6.5	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	29.8	30.6	39.3	29.6	30.1	33.3	20.9	19.7	39.5	28.9	29.5
LnGrp LOS	D	C	C	D	C	C	C	C	B	D	C	C
Approach Vol, veh/h		1125			784			673			1326	
Approach Delay, s/veh		32.4			32.4			23.2			30.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	29.4	15.6	23.2	12.3	34.0	12.8	26.0
Change Period (Y+Rc), s	5.5	* 5.6	5.5	5.8	5.5	* 5.6	5.5	5.8
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.2	19.5	* 64	19.5	34.2
Max Q Clear Time (g_c+I1), s	14.9	19.3	10.0	8.8	6.8	7.9	7.2	14.8
Green Ext Time (p_c), s	0.1	2.5	0.2	1.0	0.1	1.1	0.1	1.7

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	32	176	59	24	60	214	2777	22	52	2148	97
Future Volume (veh/h)	191	32	176	59	24	60	214	2777	22	52	2148	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.96	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	212	36	196	71	29	72	228	2954	23	60	2469	111
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	43	256	178	46	115	280	2798	22	77	2530	779
Arrive On Green	0.16	0.16	0.16	0.10	0.10	0.10	0.08	0.54	0.54	0.04	0.50	0.50
Sat Flow, veh/h	1533	260	1568	1781	462	1148	3456	5226	41	1781	5106	1572
Grp Volume(v), veh/h	248	0	196	71	0	101	228	1921	1056	60	2469	111
Grp Sat Flow(s),veh/h/ln	1794	0	1568	1781	0	1611	1728	1702	1862	1781	1702	1572
Q Serve(g_s), s	17.6	0.0	15.7	4.9	0.0	7.9	8.5	70.2	70.2	4.4	61.9	5.0
Cycle Q Clear(g_c), s	17.6	0.0	15.7	4.9	0.0	7.9	8.5	70.2	70.2	4.4	61.9	5.0
Prop In Lane	0.85		1.00	1.00		0.71	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	293	0	256	178	0	161	280	1823	997	77	2530	779
V/C Ratio(X)	0.85	0.00	0.77	0.40	0.00	0.63	0.82	1.05	1.06	0.78	0.98	0.14
Avail Cap(c_a), veh/h	472	0	413	469	0	424	525	1823	997	274	2539	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	0.0	52.4	55.3	0.0	56.6	59.3	30.5	30.5	62.1	32.3	18.0
Incr Delay (d2), s/veh	4.0	0.0	1.8	0.5	0.0	1.5	2.2	37.0	45.4	6.2	12.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	0.0	6.3	2.2	0.0	3.3	3.7	35.6	41.3	2.1	26.6	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	0.0	54.2	55.8	0.0	58.1	61.5	67.5	75.8	68.3	45.0	18.0
LnGrp LOS	E	A	D	E	A	E	E	F	F	E	D	B
Approach Vol, veh/h		444			172			3205			2640	
Approach Delay, s/veh		55.9			57.2			69.8			44.4	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.7	69.8		26.9	10.5	75.1		18.6
Change Period (Y+Rc), s	* 5.1	* 4.9		5.5	* 4.8	* 4.9		5.5
Max Green Setting (Gmax), s	* 20	* 65		34.5	* 20	* 65		34.5
Max Q Clear Time (g_c+I1), s	10.5	63.9		19.6	6.4	72.2		9.9
Green Ext Time (p_c), s	0.1	1.0		0.6	0.0	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	58.1
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	315	0	312	0	2676	458	0	1313	1099
Future Volume (veh/h)	0	0	0	315	0	312	0	2676	458	0	1313	1099
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				354	0	351	0	2909	0	0	1382	0
Peak Hour Factor				0.89	0.89	0.89	0.92	0.92	0.92	0.95	0.95	0.95
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				506	0	408	0	4178		0	3802	
Arrive On Green				0.15	0.00	0.15	0.00	0.74	0.00	0.00	0.74	0.00
Sat Flow, veh/h				3456	0	2790	0	5611	1585	0	5274	2790
Grp Volume(v), veh/h				354	0	351	0	2909	0	0	1382	0
Grp Sat Flow(s),veh/h/ln				1728	0	1395	0	1870	1585	0	1702	1395
Q Serve(g_s), s				10.7	0.0	13.5	0.0	30.2	0.0	0.0	10.4	0.0
Cycle Q Clear(g_c), s				10.7	0.0	13.5	0.0	30.2	0.0	0.0	10.4	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				506	0	408	0	4178		0	3802	
V/C Ratio(X)				0.70	0.00	0.86	0.00	0.70		0.00	0.36	
Avail Cap(c_a), veh/h				1037	0	837	0	4178		0	3802	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.7	0.0	45.9	0.0	7.4	0.0	0.0	4.9	0.0
Incr Delay (d2), s/veh				0.7	0.0	2.1	0.0	1.0	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	0.0	4.8	0.0	8.9	0.0	0.0	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				45.3	0.0	48.0	0.0	8.4	0.0	0.0	5.2	0.0
LnGrp LOS				D	A	D	A	A		A	A	
Approach Vol, veh/h					705			2909	A		1382	A
Approach Delay, s/veh					46.6			8.4			5.2	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	86.9		86.9		23.1			
Change Period (Y+Rc), s	* 5		5.0		7.0			
Max Green Setting (Gmax), s	* 65		65.0		33.0			
Max Q Clear Time (g_c+I1), s	12.4		32.2		15.5			
Green Ext Time (p_c), s	3.7		13.3		0.6			

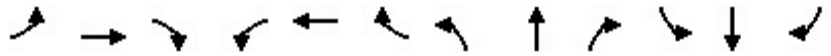
Intersection Summary		
HCM 6th Ctrl Delay	12.9	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1163	0	327	0	0	0	0	2007	432	0	1285	347
Future Volume (veh/h)	1163	0	327	0	0	0	0	2007	432	0	1285	347
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	1292	0	363				0	2205	0	0	1325	0
Peak Hour Factor	0.90	0.90	0.90				0.91	0.91	0.91	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1393	0	774				0	4631		0	3473	
Arrive On Green	0.28	0.00	0.28				0.00	0.62	0.00	0.00	0.62	0.00
Sat Flow, veh/h	5023	0	2790				0	7481	1585	0	5611	1585
Grp Volume(v), veh/h	1292	0	363				0	2205	0	0	1325	0
Grp Sat Flow(s),veh/h/ln	1674	0	1395				0	1870	1585	0	1870	1585
Q Serve(g_s), s	27.5	0.0	11.9				0.0	17.5	0.0	0.0	13.0	0.0
Cycle Q Clear(g_c), s	27.5	0.0	11.9				0.0	17.5	0.0	0.0	13.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1393	0	774				0	4631		0	3473	
V/C Ratio(X)	0.93	0.00	0.47				0.00	0.48		0.00	0.38	
Avail Cap(c_a), veh/h	1521	0	845				0	4631		0	3473	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	38.7	0.0	33.0				0.0	11.3	0.0	0.0	10.5	0.0
Incr Delay (d2), s/veh	9.3	0.0	0.2				0.0	0.4	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	4.0				0.0	6.4	0.0	0.0	4.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	0.0	33.2				0.0	11.7	0.0	0.0	10.8	0.0
LnGrp LOS	D	A	C				A	B		A	B	
Approach Vol, veh/h		1655						2205	A		1325	A
Approach Delay, s/veh		44.7						11.7			10.8	
Approach LOS		D						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	72.8	37.2	72.8
Change Period (Y+Rc), s	* 4.7	6.7	4.7
Max Green Setting (Gmax), s	* 66	33.3	65.3
Max Q Clear Time (g_c+I1), s	15.0	29.5	19.5
Green Ext Time (p_c), s	3.5	1.0	7.9

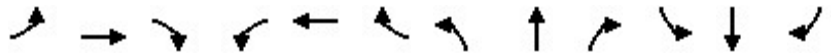
Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	422	347	107	211	244	252	121	1656	228	241	1151	245
Future Volume (veh/h)	422	347	107	211	244	252	121	1656	228	241	1151	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	431	354	109	237	234	309	132	1800	248	265	1265	269
Peak Hour Factor	0.98	0.98	0.98	0.89	0.89	0.89	0.92	0.92	0.92	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	870	381	299	351	580	193	2435	592	324	2126	658
Arrive On Green	0.14	0.24	0.24	0.08	0.19	0.19	0.06	0.38	0.38	0.09	0.42	0.42
Sat Flow, veh/h	3456	3554	1555	3563	1870	3096	3456	6434	1564	3456	5106	1579
Grp Volume(v), veh/h	431	354	109	237	234	309	132	1800	248	265	1265	269
Grp Sat Flow(s),veh/h/ln	1728	1777	1555	1781	1870	1548	1728	1609	1564	1728	1702	1579
Q Serve(g_s), s	14.0	9.6	6.5	7.5	13.3	10.3	4.3	27.6	13.4	8.6	22.0	13.7
Cycle Q Clear(g_c), s	14.0	9.6	6.5	7.5	13.3	10.3	4.3	27.6	13.4	8.6	22.0	13.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	488	870	381	299	351	580	193	2435	592	324	2126	658
V/C Ratio(X)	0.88	0.41	0.29	0.79	0.67	0.53	0.68	0.74	0.42	0.82	0.59	0.41
Avail Cap(c_a), veh/h	589	1058	463	607	555	919	589	3608	877	589	2872	888
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	36.3	35.1	51.5	43.2	42.0	53.1	30.7	26.3	50.9	25.9	23.5
Incr Delay (d2), s/veh	11.6	0.5	0.6	1.8	3.7	1.3	2.6	0.3	0.3	1.9	0.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	4.2	2.5	3.4	6.5	4.0	1.9	10.2	5.0	3.7	8.5	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.8	36.7	35.7	53.3	46.9	43.3	55.7	31.0	26.6	52.9	26.5	24.3
LnGrp LOS	E	D	D	D	D	D	E	C	C	D	C	C
Approach Vol, veh/h		894			780			2180			1799	
Approach Delay, s/veh		47.7			47.4			32.0			30.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	53.5	21.7	27.5	16.2	49.1	15.1	34.0
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	* 6
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.0	19.5	* 64	19.5	* 34
Max Q Clear Time (g_c+I1), s	6.3	24.0	16.0	15.3	10.6	29.6	9.5	11.6
Green Ext Time (p_c), s	0.2	23.5	0.2	4.3	0.1	13.7	0.1	3.9

Intersection Summary	
HCM 6th Ctrl Delay	36.0
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	308	593	226	208	359	235	303	939	197	292	1230	118
Future Volume (veh/h)	308	593	226	208	359	235	303	939	197	292	1230	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	380	732	279	267	460	301	340	1055	221	301	1268	122
Peak Hour Factor	0.81	0.81	0.81	0.78	0.78	0.78	0.89	0.89	0.89	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	372	939	416	303	1248	386	372	1659	513	336	1607	496
Arrive On Green	0.12	0.29	0.29	0.10	0.27	0.27	0.12	0.36	0.36	0.11	0.35	0.35
Sat Flow, veh/h	3110	3198	1418	3110	4595	1423	3110	4595	1419	3110	4595	1419
Grp Volume(v), veh/h	380	732	279	267	460	301	340	1055	221	301	1268	122
Grp Sat Flow(s),veh/h/ln	1555	1599	1418	1555	1532	1423	1555	1532	1419	1555	1532	1419
Q Serve(g_s), s	19.5	34.2	28.2	13.8	13.2	31.9	17.6	31.1	19.2	15.6	40.4	10.0
Cycle Q Clear(g_c), s	19.5	34.2	28.2	13.8	13.2	31.9	17.6	31.1	19.2	15.6	40.4	10.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	372	939	416	303	1248	386	372	1659	513	336	1607	496
V/C Ratio(X)	1.02	0.78	0.67	0.88	0.37	0.78	0.91	0.64	0.43	0.89	0.79	0.25
Avail Cap(c_a), veh/h	372	1255	556	372	1248	386	372	1814	560	372	1808	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.8	52.8	50.7	72.7	48.1	54.9	71.0	43.2	39.4	71.8	47.6	37.7
Incr Delay (d2), s/veh	52.5	3.5	3.8	16.2	0.6	12.9	26.1	1.0	1.2	20.6	2.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	14.0	10.3	6.1	5.1	12.6	8.3	11.7	6.8	7.1	15.5	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	124.3	56.3	54.5	88.9	48.7	67.8	97.1	44.2	40.6	92.5	50.4	38.3
LnGrp LOS	F	E	D	F	D	E	F	D	D	F	D	D
Approach Vol, veh/h		1391			1028			1616			1691	
Approach Delay, s/veh		74.5			64.8			54.8			57.0	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	62.9	25.0	50.3	23.1	64.7	21.4	53.9
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	19.5	* 64	19.5	34.0	19.5	* 64	19.5	64.0
Max Q Clear Time (g_c+I1), s	19.5	42.4	21.5	33.9	17.6	33.1	15.8	36.2
Green Ext Time (p_c), s	0.0	14.6	0.0	0.1	0.1	16.5	0.1	11.7

Intersection Summary	
HCM 6th Ctrl Delay	62.0
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



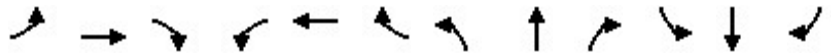
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	304	15	63	207	251	4	53	41	609	150	349
Future Volume (veh/h)	76	304	15	63	207	251	4	53	41	609	150	349
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	83	330	16	66	218	264	5	69	53	648	160	371
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.77	0.77	0.77	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	776	37	83	383	324	7	108	83	775	617	523
Arrive On Green	0.06	0.23	0.23	0.05	0.20	0.20	0.00	0.11	0.11	0.22	0.33	0.33
Sat Flow, veh/h	1781	3446	166	1781	1870	1585	1781	981	754	3456	1870	1585
Grp Volume(v), veh/h	83	170	176	66	218	264	5	0	122	648	160	371
Grp Sat Flow(s),veh/h/ln	1781	1777	1836	1781	1870	1585	1781	0	1735	1728	1870	1585
Q Serve(g_s), s	2.4	4.3	4.3	1.9	5.5	8.3	0.1	0.0	3.5	9.3	3.3	10.7
Cycle Q Clear(g_c), s	2.4	4.3	4.3	1.9	5.5	8.3	0.1	0.0	3.5	9.3	3.3	10.7
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	106	400	413	83	383	324	7	0	190	775	617	523
V/C Ratio(X)	0.79	0.42	0.43	0.80	0.57	0.81	0.70	0.00	0.64	0.84	0.26	0.71
Avail Cap(c_a), veh/h	665	2215	2288	679	2335	1979	665	0	2166	1290	2324	1970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	17.3	17.3	24.7	18.7	19.8	26.0	0.0	22.3	19.3	12.8	15.3
Incr Delay (d2), s/veh	4.8	0.3	0.3	6.5	0.5	1.9	36.7	0.0	1.3	1.0	0.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.4	1.4	0.8	1.9	2.7	0.1	0.0	1.3	3.2	1.1	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.0	17.6	17.6	31.1	19.2	21.7	62.6	0.0	23.6	20.3	12.9	16.0
LnGrp LOS	C	B	B	C	B	C	E	A	C	C	B	B
Approach Vol, veh/h		429			548			127			1179	
Approach Delay, s/veh		19.8			21.8			25.1			17.9	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	15.6	5.7	22.3	7.5	16.7	17.2	10.8
Change Period (Y+Rc), s	5.5	* 4.9	5.5	* 5.1	* 5.1	* 4.9	5.5	* 5.1
Max Green Setting (Gmax), s	19.5	* 65	19.5	* 65	* 20	* 65	19.5	* 65
Max Q Clear Time (g_c+I1), s	4.4	10.3	2.1	12.7	3.9	6.3	11.3	5.5
Green Ext Time (p_c), s	0.0	0.4	0.0	0.4	0.0	0.5	0.4	0.2

Intersection Summary	
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



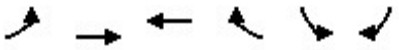
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	161	465	373	111	141	145	210	538	84	265	1633	131
Future Volume (veh/h)	161	465	373	111	141	145	210	538	84	265	1633	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	183	528	424	122	155	159	228	585	91	288	1775	142
Peak Hour Factor	0.88	0.88	0.88	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	239	1409	437	176	915	403	284	1864	571	344	1952	606
Arrive On Green	0.07	0.28	0.28	0.05	0.26	0.26	0.08	0.37	0.37	0.10	0.38	0.38
Sat Flow, veh/h	3456	5106	1585	3456	3554	1565	3456	5106	1565	3456	5106	1585
Grp Volume(v), veh/h	183	528	424	122	155	159	228	585	91	288	1775	142
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1777	1565	1728	1702	1565	1728	1702	1585
Q Serve(g_s), s	6.3	10.1	31.9	4.2	4.1	10.1	7.8	9.9	4.7	9.9	39.7	7.3
Cycle Q Clear(g_c), s	6.3	10.1	31.9	4.2	4.1	10.1	7.8	9.9	4.7	9.9	39.7	7.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	239	1409	437	176	915	403	284	1864	571	344	1952	606
V/C Ratio(X)	0.77	0.37	0.97	0.69	0.17	0.39	0.80	0.31	0.16	0.84	0.91	0.23
Avail Cap(c_a), veh/h	558	1409	437	558	977	430	558	2652	813	558	2648	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	35.3	43.2	56.4	34.8	37.0	54.4	27.5	25.8	53.4	35.3	25.3
Incr Delay (d2), s/veh	1.9	0.1	34.9	1.8	0.0	0.2	2.0	0.0	0.0	2.9	3.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	4.0	16.0	1.8	1.7	3.7	3.3	3.8	1.7	4.2	15.7	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.2	35.4	78.1	58.2	34.8	37.3	56.5	27.5	25.9	56.3	38.7	25.4
LnGrp LOS	E	D	E	E	C	D	E	C	C	E	D	C
Approach Vol, veh/h		1135			436			904			2205	
Approach Delay, s/veh		54.9			42.3			34.6			40.1	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.5	51.5	11.6	40.1	15.4	53.6	13.8	37.9
Change Period (Y+Rc), s	5.5	* 7.4	5.5	* 6.8	5.5	* 7.4	5.5	6.8
Max Green Setting (Gmax), s	12.0	* 63	19.5	* 33	19.5	* 63	19.5	33.2
Max Q Clear Time (g_c+I1), s	11.9	11.9	6.2	33.9	9.8	41.7	8.3	12.1
Green Ext Time (p_c), s	0.1	1.2	0.1	0.0	0.1	4.4	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	42.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



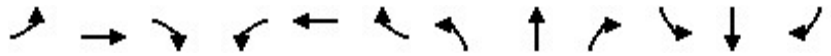
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	119	310	177	1	5	65
Future Volume (veh/h)	119	310	177	1	5	65
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	142	369	239	1	7	90
Peak Hour Factor	0.84	0.84	0.74	0.74	0.72	0.72
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	179	1617	536	239	231	206
Arrive On Green	0.10	0.46	0.15	0.15	0.13	0.13
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	142	369	239	1	7	90
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	2.1	1.7	1.6	0.0	0.1	1.4
Cycle Q Clear(g_c), s	2.1	1.7	1.6	0.0	0.1	1.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	179	1617	536	239	231	206
V/C Ratio(X)	0.79	0.23	0.45	0.00	0.03	0.44
Avail Cap(c_a), veh/h	1318	8650	8663	3864	2286	2034
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.7	4.4	10.2	9.6	10.1	10.6
Incr Delay (d2), s/veh	3.0	0.0	0.2	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.3	0.0	0.0	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.7	4.4	10.5	9.6	10.1	11.2
LnGrp LOS	B	A	B	A	B	B
Approach Vol, veh/h		511	240		97	
Approach Delay, s/veh		7.3	10.5		11.1	
Approach LOS		A	B		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.1	9.5		8.9		17.6
Change Period (Y+Rc), s	* 5.4	* 5.5		5.5		* 5.5
Max Green Setting (Gmax), s	* 2.8	* 65		34.0		* 65
Max Q Clear Time (g_c+I1), s	4.1	3.6		3.4		3.7
Green Ext Time (p_c), s	0.0	0.4		0.1		0.7

Intersection Summary	
HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



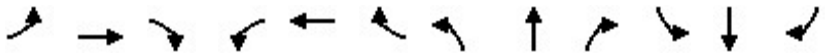
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	419	6	41	225	120	3	337	70	277	947	75
Future Volume (veh/h)	85	419	6	41	225	120	3	337	70	277	947	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	89	441	6	51	281	150	3	370	77	295	1007	80
Peak Hour Factor	0.95	0.95	0.95	0.80	0.80	0.80	0.91	0.91	0.91	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	468	397	66	420	356	43	535	111	319	957	910
Arrive On Green	0.06	0.25	0.25	0.04	0.22	0.22	0.02	0.36	0.36	0.18	0.51	0.51
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1502	312	1781	1870	1585
Grp Volume(v), veh/h	89	441	6	51	281	150	3	0	447	295	1007	80
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1814	1781	1870	1585
Q Serve(g_s), s	6.2	28.9	0.4	3.6	17.2	10.1	0.2	0.0	26.3	20.4	64.0	2.8
Cycle Q Clear(g_c), s	6.2	28.9	0.4	3.6	17.2	10.1	0.2	0.0	26.3	20.4	64.0	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	111	468	397	66	420	356	43	0	646	319	957	910
V/C Ratio(X)	0.80	0.94	0.02	0.78	0.67	0.42	0.07	0.00	0.69	0.92	1.05	0.09
Avail Cap(c_a), veh/h	292	496	421	292	496	421	292	0	922	349	957	910
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.9	46.0	35.3	59.7	44.3	41.5	59.7	0.0	34.4	50.5	30.6	12.0
Incr Delay (d2), s/veh	4.9	25.3	0.0	7.1	1.7	0.3	0.3	0.0	0.5	27.4	44.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	16.0	0.1	1.7	7.8	3.8	0.1	0.0	11.0	11.1	37.1	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.8	71.3	35.3	66.8	46.0	41.8	60.0	0.0	34.9	77.9	74.5	12.0
LnGrp LOS	E	E	D	E	D	D	E	A	C	E	F	B
Approach Vol, veh/h		536			482			450			1382	
Approach Delay, s/veh		69.5			46.9			35.1			71.6	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	34.9	7.5	70.4	9.1	38.1	26.9	51.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 6.4	4.5	6.8	4.5	6.4
Max Green Setting (Gmax), s	20.5	33.2	20.5	* 64	20.5	33.2	24.5	63.6
Max Q Clear Time (g_c+I1), s	8.2	19.2	2.2	66.0	5.6	30.9	22.4	28.3
Green Ext Time (p_c), s	0.0	0.9	0.0	0.0	0.0	0.4	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	61.3
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	684	0	57	334	40	3	302	58	37	340	59
Future Volume (veh/h)	72	684	0	57	334	40	3	302	58	37	340	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	743	0	67	393	47	4	364	70	42	382	66
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.83	0.83	0.83	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	688	0	84	590	71	4	332	64	34	313	54
Arrive On Green	0.05	0.37	0.00	0.05	0.36	0.36	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1870	0	1781	1635	196	17	1510	290	156	1418	245
Grp Volume(v), veh/h	78	743	0	67	0	440	438	0	0	490	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1830	1817	0	0	1818	0	0
Q Serve(g_s), s	7.5	63.6	0.0	6.4	0.0	35.0	38.0	0.0	0.0	38.2	0.0	0.0
Cycle Q Clear(g_c), s	7.5	63.6	0.0	6.4	0.0	35.0	38.0	0.0	0.0	38.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.11	0.01		0.16	0.09		0.13
Lane Grp Cap(c), veh/h	96	688	0	84	0	660	399	0	0	401	0	0
V/C Ratio(X)	0.82	1.08	0.00	0.80	0.00	0.67	1.10	0.00	0.00	1.22	0.00	0.00
Avail Cap(c_a), veh/h	263	688	0	211	0	669	399	0	0	401	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	81.0	54.7	0.0	81.7	0.0	46.5	67.5	0.0	0.0	67.4	0.0	0.0
Incr Delay (d2), s/veh	6.2	58.2	0.0	6.5	0.0	2.0	74.0	0.0	0.0	119.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	39.8	0.0	3.1	0.0	15.8	25.3	0.0	0.0	30.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.2	112.9	0.0	88.1	0.0	48.5	141.5	0.0	0.0	187.2	0.0	0.0
LnGrp LOS	F	F	A	F	A	D	F	A	A	F	A	A
Approach Vol, veh/h		821			507			438			490	
Approach Delay, s/veh		110.5			53.8			141.5			187.2	
Approach LOS		F			D			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.8	69.2		45.0	12.6	70.4		45.0
Change Period (Y+Rc), s	4.5	6.8		6.8	4.5	* 6.8		7.0
Max Green Setting (Gmax), s	25.5	63.2		38.2	20.5	* 64		38.0
Max Q Clear Time (g_c+I1), s	9.5	37.0		40.2	8.4	65.6		40.0
Green Ext Time (p_c), s	0.0	1.4		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	120.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	20.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	0	23	0	46	2	398	0	152	418	4
Future Vol, veh/h	2	2	0	23	0	46	2	398	0	152	418	4
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.91	0.91	0.91	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	3	0	33	0	66	2	437	0	163	449	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.9	10.3	15.3	26.1
HCM LOS	A	B	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	50%	33%	26%
Vol Thru, %	99%	50%	0%	73%
Vol Right, %	0%	0%	67%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	400	4	69	574
LT Vol	2	2	23	152
Through Vol	398	2	0	418
RT Vol	0	0	46	4
Lane Flow Rate	440	6	99	617
Geometry Grp	1	1	1	1
Degree of Util (X)	0.602	0.011	0.166	0.821
Departure Headway (Hd)	4.933	6.798	6.063	4.79
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	721	529	595	747
Service Time	3.029	4.805	4.063	2.878
HCM Lane V/C Ratio	0.61	0.011	0.166	0.826
HCM Control Delay	15.3	9.9	10.3	26.1
HCM Lane LOS	C	A	B	D
HCM 95th-tile Q	4.1	0	0.6	8.9



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	144	101	20	420	464	163
Future Volume (veh/h)	144	101	20	420	464	163
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	176	123	24	500	516	181
Peak Hour Factor	0.82	0.82	0.84	0.84	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	265	236	32	946	637	540
Arrive On Green	0.15	0.15	0.02	0.51	0.34	0.34
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	176	123	24	500	516	181
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	2.9	2.2	0.4	5.6	7.9	2.7
Cycle Q Clear(g_c), s	2.9	2.2	0.4	5.6	7.9	2.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	265	236	32	946	637	540
V/C Ratio(X)	0.66	0.52	0.75	0.53	0.81	0.34
Avail Cap(c_a), veh/h	2010	1789	1162	3839	3821	3238
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	12.3	15.3	5.2	9.4	7.7
Incr Delay (d2), s/veh	1.1	0.7	11.9	0.2	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.5	0.2	0.2	1.4	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.6	12.9	27.2	5.4	10.3	7.8
LnGrp LOS	B	B	C	A	B	A
Approach Vol, veh/h	299			524	697	
Approach Delay, s/veh	13.4			6.4	9.7	
Approach LOS	B			A	A	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	5.2	16.8			21.9	9.4
Change Period (Y+Rc), s	* 4.6	* 6.1			* 6.1	4.7
Max Green Setting (Gmax), s	* 26	* 64			* 64	35.3
Max Q Clear Time (g_c+I1), s	2.4	9.9			7.6	4.9
Green Ext Time (p_c), s	0.0	0.8			0.7	0.1

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	84.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	126	34	58	542	670	215
Future Vol, veh/h	126	34	58	542	670	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	56	56	98	98	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	225	61	59	553	728	234

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1516	845	962	0	-	0
Stage 1	845	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 131	363	715	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 120	363	715	-	-	-
Mov Cap-2 Maneuver	~ 120	-	-	-	-	-
Stage 1	386	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 545	1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	715	-	140	-	-
HCM Lane V/C Ratio	0.083	-	2.041	-	-
HCM Control Delay (s)	10.5	-	$ 545	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.3	-	22.9	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	601	107	60	622	0	770	51
Future Volume (veh/h)	601	107	60	622	0	770	51
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	724	129	65	669		819	54
Peak Hour Factor	0.83	0.83	0.93	0.93		0.94	0.94
Percent Heavy Veh, %	2	2	2	2		2	2
Cap, veh/h	886	478	80	1645		1043	872
Arrive On Green	0.26	0.26	0.04	0.46		0.29	0.29
Sat Flow, veh/h	3456	1585	1781	3647		3647	1585
Grp Volume(v), veh/h	724	129	65	669		819	54
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777		1777	1585
Q Serve(g_s), s	8.7	2.7	1.6	5.5		9.3	0.7
Cycle Q Clear(g_c), s	8.7	2.7	1.6	5.5		9.3	0.7
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	886	478	80	1645		1043	872
V/C Ratio(X)	0.82	0.27	0.81	0.41		0.79	0.06
Avail Cap(c_a), veh/h	4263	2027	786	4296		4271	2312
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	15.5	11.7	20.9	7.8		14.3	4.6
Incr Delay (d2), s/veh	0.7	0.1	7.2	0.1		0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	2.7	0.7	1.1		2.6	0.3
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	16.2	11.8	28.1	7.9		14.8	4.6
LnGrp LOS	B	B	C	A		B	A
Approach Vol, veh/h	853			734		873	
Approach Delay, s/veh	15.5			9.7		14.2	
Approach LOS	B			A		B	

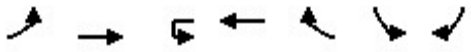
Timer - Assigned Phs	1	2		4		6	
Phs Duration (G+Y+Rc), s	7.5	19.9		16.8		27.4	
Change Period (Y+Rc), s	5.5	* 6.9		5.5		* 6.9	
Max Green Setting (Gmax), s	19.5	* 53		54.5		* 53	
Max Q Clear Time (g_c+I1), s	3.6	11.3		10.7		7.5	
Green Ext Time (p_c), s	0.0	1.6		0.6		1.3	

Intersection Summary	
HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	422	812	0	379	96	104	433
Future Volume (veh/h)	422	812	0	379	96	104	433
Initial Q (Qb), veh	0	0		0	0	0	0
Ped-Bike Adj(A_pbT)	1.00				1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870		1870	1870	1870	1870
Adj Flow Rate, veh/h	491	944		403	102	114	476
Peak Hour Factor	0.86	0.86		0.94	0.94	0.91	0.91
Percent Heavy Veh, %	2	2		2	2	2	2
Cap, veh/h	528	1824		520	232	573	510
Arrive On Green	0.30	0.51		0.15	0.15	0.32	0.32
Sat Flow, veh/h	1781	3647		3647	1585	1781	1585
Grp Volume(v), veh/h	491	944		403	102	114	476
Grp Sat Flow(s),veh/h/ln	1781	1777		1777	1585	1781	1585
Q Serve(g_s), s	19.8	13.0		8.1	4.3	3.4	21.5
Cycle Q Clear(g_c), s	19.8	13.0		8.1	4.3	3.4	21.5
Prop In Lane	1.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	528	1824		520	232	573	510
V/C Ratio(X)	0.93	0.52		0.77	0.44	0.20	0.93
Avail Cap(c_a), veh/h	718	3048		3043	1357	831	740
HCM Platoon Ratio	1.00	1.00		1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00		1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	11.9		30.4	28.8	18.2	24.3
Incr Delay (d2), s/veh	13.2	0.1		0.9	0.5	0.1	12.1
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	3.9		3.1	1.5	1.2	8.5
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	38.5	12.0		31.3	29.3	18.2	36.4
LnGrp LOS	D	B		C	C	B	D
Approach Vol, veh/h		1435		505		590	
Approach Delay, s/veh		21.1		30.9		32.9	
Approach LOS		C		C		C	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	27.1	17.5			44.6	29.3
Change Period (Y+Rc), s	* 5.2	* 6.7			* 6.7	5.5
Max Green Setting (Gmax), s	* 38	* 63			* 63	34.5
Max Q Clear Time (g_c+I1), s	21.8	10.1			15.0	23.5
Green Ext Time (p_c), s	0.1	0.7			1.9	0.3

Intersection Summary	
HCM 6th Ctrl Delay	25.8
HCM 6th LOS	C

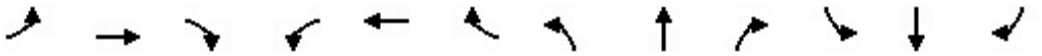
Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix D

Analysis Worksheets for
Cumulative (2035) Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1120	0	300	0	1230	1080	0	1460	650
Future Volume (veh/h)	0	0	0	1120	0	300	0	1230	1080	0	1460	650
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				772	624	326	0	1337	0	0	1587	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				979	634	331	0	1531		0	1531	
Arrive On Green				0.55	0.55	0.55	0.00	0.30	0.00	0.00	0.30	0.00
Sat Flow, veh/h				1781	1154	603	0	5274	1585	0	5274	1585
Grp Volume(v), veh/h				772	0	950	0	1337	0	0	1587	0
Grp Sat Flow(s),veh/h/ln				1781	0	1757	0	1702	1585	0	1702	1585
Q Serve(g_s), s				22.6	0.0	34.9	0.0	16.3	0.0	0.0	19.7	0.0
Cycle Q Clear(g_c), s				22.6	0.0	34.9	0.0	16.3	0.0	0.0	19.7	0.0
Prop In Lane				1.00		0.34	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				979	0	965	0	1531		0	1531	
V/C Ratio(X)				0.79	0.00	0.98	0.00	0.87		0.00	1.04	
Avail Cap(c_a), veh/h				979	0	965	0	1531		0	1531	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				11.8	0.0	14.5	0.0	21.8	0.0	0.0	23.0	0.0
Incr Delay (d2), s/veh				4.0	0.0	25.0	0.0	5.7	0.0	0.0	33.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.3	0.0	17.7	0.0	6.4	0.0	0.0	11.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				15.8	0.0	39.5	0.0	27.5	0.0	0.0	56.0	0.0
LnGrp LOS				B	A	D	A	C		A	F	
Approach Vol, veh/h					1722			1337	A		1587	A
Approach Delay, s/veh					28.9			27.5			56.0	
Approach LOS					C			C			E	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	24.7		24.7		41.0			
Change Period (Y+Rc), s	* 5		5.0		4.9			
Max Green Setting (Gmax), s	* 20		19.0		36.1			
Max Q Clear Time (g_c+I1), s	21.7		18.3		36.9			
Green Ext Time (p_c), s	0.0		0.3		0.0			

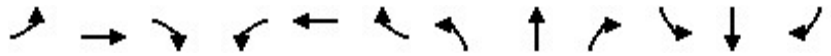
Intersection Summary		
HCM 6th Ctrl Delay	37.7	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	0	1170	0	0	0	0	1670	420	0	2010	480
Future Volume (veh/h)	310	0	1170	0	0	0	0	1670	420	0	2010	480
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	225	0	1392				0	1815	0	0	2185	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	2
Cap, veh/h	784	0	1394				0	2322		0	2322	
Arrive On Green	0.44	0.00	0.44				0.00	0.45	0.00	0.00	0.45	0.00
Sat Flow, veh/h	1781	0	3166				0	5443	0	0	5274	1585
Grp Volume(v), veh/h	225	0	1392				0	1815	0	0	2185	0
Grp Sat Flow(s),veh/h/ln	1781	0	1583				0	1702	0	0	1702	1585
Q Serve(g_s), s	8.0	0.0	43.5				0.0	29.8	0.0	0.0	40.4	0.0
Cycle Q Clear(g_c), s	8.0	0.0	43.5				0.0	29.8	0.0	0.0	40.4	0.0
Prop In Lane	1.00		1.00				0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	784	0	1394				0	2322		0	2322	
V/C Ratio(X)	0.29	0.00	1.00				0.00	0.78		0.00	0.94	
Avail Cap(c_a), veh/h	784	0	1394				0	2372		0	2398	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	17.8	0.0	27.7				0.0	22.8	0.0	0.0	25.7	0.0
Incr Delay (d2), s/veh	0.1	0.0	23.7				0.0	1.6	0.0	0.0	8.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	20.1				0.0	11.1	0.0	0.0	16.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.8	0.0	51.4				0.0	24.4	0.0	0.0	33.7	0.0
LnGrp LOS	B	A	D				A	C		A	C	
Approach Vol, veh/h		1617						1815	A		2185	A
Approach Delay, s/veh		46.8						24.4			33.7	
Approach LOS		D						C			C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	50.0	49.0	50.0
Change Period (Y+Rc), s	* 5	* 5.4	5.0
Max Green Setting (Gmax), s	* 47	* 44	46.0
Max Q Clear Time (g_c+I1), s	42.4	45.5	31.8
Green Ext Time (p_c), s	2.6	0.0	4.6

Intersection Summary	
HCM 6th Ctrl Delay	34.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2110	1220	420	1910	450	70
Future Volume (veh/h)	2110	1220	420	1910	450	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2293	0	457	2076	489	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2809		353	4005	537	246
Arrive On Green	0.55	0.00	0.20	0.78	0.16	0.16
Sat Flow, veh/h	5443	0	1781	5274	3456	1585
Grp Volume(v), veh/h	2293	0	457	2076	489	76
Grp Sat Flow(s),veh/h/ln	1702	0	1781	1702	1728	1585
Q Serve(g_s), s	51.7	0.0	27.9	20.8	19.6	6.0
Cycle Q Clear(g_c), s	51.7	0.0	27.9	20.8	19.6	6.0
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2809		353	4005	537	246
V/C Ratio(X)	0.82		1.30	0.52	0.91	0.31
Avail Cap(c_a), veh/h	2879		353	4075	711	326
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	56.5	5.5	58.6	52.8
Incr Delay (d2), s/veh	2.1	0.0	152.8	0.2	11.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.1	0.0	27.2	5.8	9.3	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.0	0.0	209.4	5.7	69.9	53.1
LnGrp LOS	C		F	A	E	D
Approach Vol, veh/h	2293	A		2533	565	
Approach Delay, s/veh	28.0			42.5	67.6	
Approach LOS	C			D	E	

Timer - Assigned Phs	2			5	6	8
Phs Duration (G+Y+Rc), s	115.6			33.0	82.6	25.4
Change Period (Y+Rc), s	5.0			* 5.1	5.0	3.5
Max Green Setting (Gmax), s	112.5			* 28	79.5	29.0
Max Q Clear Time (g_c+I1), s	22.8			29.9	53.7	21.6
Green Ext Time (p_c), s	62.7			0.0	23.9	0.3

Intersection Summary		
HCM 6th Ctrl Delay		39.0
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1570	0	370	0	1300	840	0	950	360
Future Volume (veh/h)	0	0	0	1570	0	370	0	1300	840	0	950	360
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				1707	0	402	0	1413	0	0	1033	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1732	0	795	0	1667		0	1667	
Arrive On Green				0.50	0.00	0.50	0.00	0.33	0.00	0.00	0.33	0.00
Sat Flow, veh/h				3456	0	1585	0	5274	2790	0	5274	1585
Grp Volume(v), veh/h				1707	0	402	0	1413	0	0	1033	0
Grp Sat Flow(s),veh/h/ln				1728	0	1585	0	1702	1395	0	1702	1585
Q Serve(g_s), s				25.7	0.0	9.0	0.0	13.6	0.0	0.0	9.0	0.0
Cycle Q Clear(g_c), s				25.7	0.0	9.0	0.0	13.6	0.0	0.0	9.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1732	0	795	0	1667		0	1667	
V/C Ratio(X)				0.99	0.00	0.51	0.00	0.85		0.00	0.62	
Avail Cap(c_a), veh/h				1732	0	795	0	1874		0	1874	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				13.0	0.0	8.8	0.0	16.6	0.0	0.0	15.0	0.0
Incr Delay (d2), s/veh				18.2	0.0	0.5	0.0	3.1	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.9	0.0	2.5	0.0	4.6	0.0	0.0	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.1	0.0	9.3	0.0	19.7	0.0	0.0	15.3	0.0
LnGrp LOS				C	A	A	A	B		A	B	
Approach Vol, veh/h					2109			1413	A		1033	A
Approach Delay, s/veh					27.0			19.7			15.3	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	21.9		21.9		31.0			
Change Period (Y+Rc), s	4.6		4.6		4.5			
Max Green Setting (Gmax), s	19.4		19.4		26.5			
Max Q Clear Time (g_c+I1), s	15.6		11.0		27.7			
Green Ext Time (p_c), s	1.6		1.9		0.0			

Intersection Summary		
HCM 6th Ctrl Delay		22.1
HCM 6th LOS		C

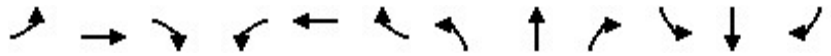
Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL2	EBL	EBT	EBR	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	500	10	950	1270	100	30	1510	530	80	1770	230
Future Volume (vph)	500	10	950	1270	100	30	1510	530	80	1770	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	6.8	4.5		4.6			4.6	4.0
Lane Util. Factor		0.91	0.86	0.91	0.88		0.86			0.91	1.00
Frpb, ped/bikes		1.00	0.99	0.98	1.00		0.99			1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.94	0.85	0.85		0.96			1.00	0.85
Flt Protected		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1610	3006	1418	2787		6100			5085	1545
Flt Permitted		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1610	3006	1418	2787		6100			5085	1545
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	543	11	1033	1380	109	33	1641	576	87	1924	250
RTOR Reduction (vph)	0	0	1	30	72	0	5	0	0	0	0
Lane Group Flow (vph)	0	553	1654	729	70	0	2299	0	0	1924	250
Confl. Peds. (#/hr)	6			6	3				3		6
Confl. Bikes (#/hr)									2		3
Turn Type	Split	Split	NA	Perm	Prot		NA			NA	Free
Protected Phases	4	4	4		5		6			2	
Permitted Phases				4							Free
Actuated Green, G (s)		55.2	55.2	55.2	6.3		42.4			53.2	119.8
Effective Green, g (s)		55.2	55.2	55.2	6.3		42.4			53.2	119.8
Actuated g/C Ratio		0.46	0.46	0.46	0.05		0.35			0.44	1.00
Clearance Time (s)		6.8	6.8	6.8	4.5		4.6			4.6	
Vehicle Extension (s)		1.0	1.0	1.0	3.0		1.0			1.0	
Lane Grp Cap (vph)		741	1385	653	146		2158			2258	1545
v/s Ratio Prot		0.34	c0.55		0.03		c0.38			c0.38	
v/s Ratio Perm				0.51							0.16
v/c Ratio		0.75	1.19	1.12	0.48		1.16dr			0.85	0.16
Uniform Delay, d1		26.5	32.3	32.3	55.2		38.7			29.8	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		3.6	94.7	71.9	2.5		39.6			3.2	0.2
Delay (s)		30.1	127.0	104.2	57.6		78.3			33.0	0.2
Level of Service		C	F	F	E		E			C	A
Approach Delay (s)			103.1				78.3			29.2	
Approach LOS			F				E			C	

Intersection Summary			
HCM 2000 Control Delay	73.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	119.8	Sum of lost time (s)	15.9
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	170	30	50	250	430	40	1420	80	910	1950	740
Future Volume (veh/h)	230	170	30	50	250	430	40	1420	80	910	1950	740
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	250	185	33	54	272	467	43	1543	87	989	2120	804
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	863	147	93	341	1382	76	1692	95	895	2958	903
Arrive On Green	0.04	0.20	0.20	0.03	0.18	0.18	0.02	0.34	0.34	0.26	0.58	0.58
Sat Flow, veh/h	3456	4373	743	3563	1870	3077	3456	4943	279	3456	5106	1558
Grp Volume(v), veh/h	250	142	76	54	272	467	43	1063	567	989	2120	804
Grp Sat Flow(s),veh/h/ln	1728	1702	1711	1781	1870	1539	1728	1702	1817	1728	1702	1558
Q Serve(g_s), s	5.3	4.5	4.8	1.9	18.0	12.9	1.6	38.6	38.6	33.5	38.6	58.0
Cycle Q Clear(g_c), s	5.3	4.5	4.8	1.9	18.0	12.9	1.6	38.6	38.6	33.5	38.6	58.0
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	142	672	338	93	341	1382	76	1165	622	895	2958	903
V/C Ratio(X)	1.77	0.21	0.23	0.58	0.80	0.34	0.57	0.91	0.91	1.11	0.72	0.89
Avail Cap(c_a), veh/h	142	737	370	204	442	1548	131	1420	758	895	3235	987
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.1	43.5	43.6	62.3	50.6	23.8	62.7	40.7	40.7	48.0	19.6	23.7
Incr Delay (d2), s/veh	372.1	0.1	0.1	2.1	5.7	0.1	2.5	7.2	12.3	63.3	0.6	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	1.9	2.0	0.9	8.8	4.6	0.7	16.9	18.9	21.8	14.1	21.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	434.1	43.6	43.8	64.4	56.3	23.9	65.2	47.9	53.0	111.3	20.1	32.7
LnGrp LOS	F	D	D	E	E	C	E	D	D	F	C	C
Approach Vol, veh/h		468			793			1673			3913	
Approach Delay, s/veh		252.2			37.8			50.1			45.8	
Approach LOS		F			D			D			D	

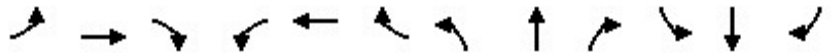
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	80.7	10.8	29.6	39.0	50.0	8.9	31.5
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 6	5.5	* 5.7	5.5	* 6
Max Green Setting (Gmax), s	4.3	* 82	5.3	* 31	33.5	* 54	7.4	* 28
Max Q Clear Time (g_c+I1), s	3.6	60.0	7.3	20.0	35.5	40.6	3.9	6.8
Green Ext Time (p_c), s	0.0	7.4	0.0	0.8	0.0	3.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	60.0
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	960	540	790	1430	130	1270	1500	480	180	1040	620
Future Volume (veh/h)	260	960	540	790	1430	130	1270	1500	480	180	1040	620
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	283	1043	587	859	1554	141	1380	1630	522	196	1130	674
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	779	357	393	1486	454	798	2211	685	241	925	425
Arrive On Green	0.05	0.23	0.23	0.11	0.29	0.29	0.23	0.43	0.43	0.07	0.27	0.27
Sat Flow, veh/h	3456	3404	1560	3456	5106	1560	3456	5106	1582	3456	3404	1563
Grp Volume(v), veh/h	283	1043	587	859	1554	141	1380	1630	522	196	1130	674
Grp Sat Flow(s),veh/h/ln	1728	1702	1560	1728	1702	1560	1728	1702	1582	1728	1702	1563
Q Serve(g_s), s	7.5	33.2	33.2	16.5	42.2	10.2	33.5	38.6	40.5	8.1	39.4	39.4
Cycle Q Clear(g_c), s	7.5	33.2	33.2	16.5	42.2	10.2	33.5	38.6	40.5	8.1	39.4	39.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	179	779	357	393	1486	454	798	2211	685	241	925	425
V/C Ratio(X)	1.58	1.34	1.64	2.18	1.05	0.31	1.73	0.74	0.76	0.81	1.22	1.59
Avail Cap(c_a), veh/h	179	779	357	393	1486	454	798	2211	685	265	925	425
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.8	55.9	55.9	64.3	51.4	40.1	55.8	34.2	34.8	66.5	52.8	52.8
Incr Delay (d2), s/veh	287.4	160.8	301.7	541.3	36.3	0.1	333.1	1.2	4.5	14.4	109.5	275.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	31.3	42.7	36.7	22.4	3.9	51.2	15.6	15.9	4.0	30.4	47.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	356.2	216.7	357.6	605.6	87.7	40.2	388.8	35.4	39.3	81.0	162.3	327.9
LnGrp LOS	F	F	F	F	F	D	F	D	D	F	F	F
Approach Vol, veh/h		1913			2554			3532			2000	
Approach Delay, s/veh		280.6			259.2			174.1			210.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	39.0	45.0	13.0	48.0	15.6	68.4	22.0	39.0
Change Period (Y+Rc), s	5.5	* 5.6	5.5	5.8	5.5	* 5.6	5.5	5.8
Max Green Setting (Gmax), s	33.5	* 39	7.5	42.2	11.1	* 62	16.5	33.2
Max Q Clear Time (g_c+I1), s	35.5	41.4	9.5	44.2	10.1	42.5	18.5	35.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	223.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	10	320	40	20	30	350	2780	10	150	3800	80
Future Volume (veh/h)	110	10	320	40	20	30	350	2780	10	150	3800	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	174	240	43	22	33	380	3022	11	163	4130	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	203	295	94	35	53	256	2618	10	120	2498	756
Arrive On Green	0.19	0.19	0.19	0.05	0.05	0.05	0.07	0.50	0.50	0.07	0.49	0.49
Sat Flow, veh/h	748	1085	1575	1781	673	1009	3456	5252	19	1781	5106	1545
Grp Volume(v), veh/h	294	0	240	43	0	55	380	1957	1076	163	4130	87
Grp Sat Flow(s),veh/h/ln	1833	0	1575	1781	0	1682	1728	1702	1867	1781	1702	1545
Q Serve(g_s), s	16.6	0.0	15.6	2.5	0.0	3.4	7.9	53.2	53.2	7.2	52.2	3.3
Cycle Q Clear(g_c), s	16.6	0.0	15.6	2.5	0.0	3.4	7.9	53.2	53.2	7.2	52.2	3.3
Prop In Lane	0.41		1.00	1.00		0.60	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	343	0	295	94	0	89	256	1697	931	120	2498	756
V/C Ratio(X)	0.86	0.00	0.81	0.46	0.00	0.62	1.49	1.15	1.16	1.36	1.65	0.12
Avail Cap(c_a), veh/h	550	0	472	534	0	504	256	1697	931	120	2498	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	0.0	41.6	49.1	0.0	49.5	49.4	26.8	26.8	49.8	27.3	14.8
Incr Delay (d2), s/veh	4.2	0.0	2.5	1.3	0.0	2.6	238.2	76.3	82.3	204.9	295.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	6.2	1.1	0.0	1.5	11.8	37.1	42.3	9.9	87.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	0.0	44.0	50.4	0.0	52.1	287.6	103.0	109.0	254.7	323.2	14.8
LnGrp LOS	D	A	D	D	A	D	F	F	F	F	F	B
Approach Vol, veh/h		534			98			3413			4380	
Approach Delay, s/veh		45.2			51.3			125.5			314.5	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	57.1		25.5	12.0	58.1		11.1
Change Period (Y+Rc), s	* 5.1	* 4.9		5.5	* 4.8	* 4.9		5.5
Max Green Setting (Gmax), s	* 7.9	* 52		32.0	* 7.2	* 53		32.0
Max Q Clear Time (g_c+I1), s	9.9	54.2		18.6	9.2	55.2		5.4
Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	0.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	217.8
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	500	0	450	0	2490	350	0	2520	1720
Future Volume (veh/h)	0	0	0	500	0	450	0	2490	350	0	2520	1720
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				543	0	489	0	2707	0	0	2739	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				774	0	625	0	3549		0	3229	
Arrive On Green				0.22	0.00	0.22	0.00	0.63	0.00	0.00	0.63	0.00
Sat Flow, veh/h				3456	0	2790	0	5611	1585	0	5274	2790
Grp Volume(v), veh/h				543	0	489	0	2707	0	0	2739	0
Grp Sat Flow(s),veh/h/ln				1728	0	1395	0	1870	1585	0	1702	1395
Q Serve(g_s), s				9.6	0.0	10.9	0.0	22.7	0.0	0.0	28.1	0.0
Cycle Q Clear(g_c), s				9.6	0.0	10.9	0.0	22.7	0.0	0.0	28.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				774	0	625	0	3549		0	3229	
V/C Ratio(X)				0.70	0.00	0.78	0.00	0.76		0.00	0.85	
Avail Cap(c_a), veh/h				914	0	738	0	5368		0	4862	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.6	0.0	24.2	0.0	8.6	0.0	0.0	9.6	0.0
Incr Delay (d2), s/veh				2.0	0.0	4.7	0.0	0.1	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.9	0.0	3.8	0.0	5.6	0.0	0.0	6.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				25.6	0.0	28.8	0.0	8.8	0.0	0.0	10.2	0.0
LnGrp LOS				C	A	C	A	A		A	B	
Approach Vol, veh/h					1032			2707	A		2739	A
Approach Delay, s/veh					27.1			8.8			10.2	
Approach LOS					C			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	46.8		46.8		19.3			
Change Period (Y+Rc), s	* 5		5.0		4.5			
Max Green Setting (Gmax), s	* 63		63.0		17.5			
Max Q Clear Time (g_c+I1), s	24.7		30.1		12.9			
Green Ext Time (p_c), s	11.9		11.7		1.9			

Intersection Summary		
HCM 6th Ctrl Delay	12.3	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1200	0	600	0	0	0	0	2270	560	0	2140	450
Future Volume (veh/h)	1200	0	600	0	0	0	0	2270	560	0	2140	450
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	1304	0	652				0	2467	0	0	2326	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1688	0	937				0	3619		0	2715	
Arrive On Green	0.34	0.00	0.34				0.00	0.48	0.00	0.00	0.48	0.00
Sat Flow, veh/h	5023	0	2790				0	7481	1585	0	5611	1585
Grp Volume(v), veh/h	1304	0	652				0	2467	0	0	2326	0
Grp Sat Flow(s),veh/h/ln	1674	0	1395				0	1870	1585	0	1870	1585
Q Serve(g_s), s	11.9	0.0	10.3				0.0	13.0	0.0	0.0	18.7	0.0
Cycle Q Clear(g_c), s	11.9	0.0	10.3				0.0	13.0	0.0	0.0	18.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1688	0	937				0	3619		0	2715	
V/C Ratio(X)	0.77	0.00	0.70				0.00	0.68		0.00	0.86	
Avail Cap(c_a), veh/h	1820	0	1011				0	4059		0	3000	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	15.2	0.0	14.7				0.0	10.2	0.0	0.0	11.6	0.0
Incr Delay (d2), s/veh	2.0	0.0	1.9				0.0	0.3	0.0	0.0	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	3.0				0.0	3.5	0.0	0.0	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	0.0	16.6				0.0	10.4	0.0	0.0	13.9	0.0
LnGrp LOS	B	A	B				A	B		A	B	
Approach Vol, veh/h		1956						2467	A		2326	A
Approach Delay, s/veh		17.0						10.4			13.9	
Approach LOS		B						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	29.4	21.7	29.4
Change Period (Y+Rc), s	* 4.7	4.5	4.7
Max Green Setting (Gmax), s	* 28	18.5	27.3
Max Q Clear Time (g_c+I1), s	15.0	13.9	20.7
Green Ext Time (p_c), s	6.6	3.3	4.0

Intersection Summary	
HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	310	130	370	330	140	100	1710	110	230	2170	320
Future Volume (veh/h)	250	310	130	370	330	140	100	1710	110	230	2170	320
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	272	337	141	402	359	152	109	1859	120	250	2359	348
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	688	301	327	712	291	115	2807	690	305	2507	771
Arrive On Green	0.10	0.19	0.19	0.09	0.19	0.19	0.03	0.44	0.44	0.09	0.49	0.49
Sat Flow, veh/h	3456	3554	1553	3563	3741	1528	3456	6434	1581	3456	5106	1571
Grp Volume(v), veh/h	272	337	141	402	359	152	109	1859	120	250	2359	348
Grp Sat Flow(s),veh/h/ln	1728	1777	1553	1781	1870	1528	1728	1609	1581	1728	1702	1571
Q Serve(g_s), s	9.3	10.1	9.6	11.0	10.3	10.7	3.8	27.4	5.5	8.5	52.4	17.4
Cycle Q Clear(g_c), s	9.3	10.1	9.6	11.0	10.3	10.7	3.8	27.4	5.5	8.5	52.4	17.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	688	301	327	712	291	115	2807	690	305	2507	771
V/C Ratio(X)	0.83	0.49	0.47	1.23	0.50	0.52	0.94	0.66	0.17	0.82	0.94	0.45
Avail Cap(c_a), veh/h	505	1145	500	327	999	408	115	2807	690	363	2510	772
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	43.1	42.9	54.4	43.5	43.6	57.8	26.8	20.6	53.7	28.8	19.9
Incr Delay (d2), s/veh	3.8	0.8	1.7	127.1	0.9	2.5	66.1	0.5	0.1	10.2	8.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	4.5	3.9	10.7	4.9	4.3	2.7	10.0	2.1	4.0	21.4	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	43.9	44.5	181.5	44.4	46.1	123.9	27.3	20.7	63.9	37.0	20.8
LnGrp LOS	E	D	D	F	D	D	F	C	C	E	D	C
Approach Vol, veh/h		750			913			2088			2957	
Approach Delay, s/veh		48.8			105.1			32.0			37.4	
Approach LOS		D			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	64.6	16.9	28.8	16.1	58.1	16.5	29.2
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	* 6
Max Green Setting (Gmax), s	4.0	* 59	17.5	32.0	12.6	* 50	11.0	* 39
Max Q Clear Time (g_c+I1), s	5.8	54.4	11.3	12.7	10.5	29.4	13.0	12.1
Green Ext Time (p_c), s	0.0	4.5	0.1	4.5	0.0	10.9	0.0	4.1

Intersection Summary	
HCM 6th Ctrl Delay	46.2
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



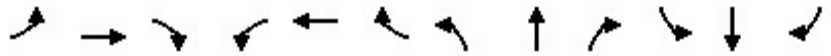
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	490	80	600	940	250	530	1380	100	260	970	260
Future Volume (veh/h)	170	490	80	600	940	250	530	1380	100	260	970	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	185	533	87	652	1022	272	576	1500	109	283	1054	283
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	619	271	664	1536	475	582	1553	475	296	1132	345
Arrive On Green	0.07	0.19	0.19	0.21	0.33	0.33	0.19	0.34	0.34	0.10	0.25	0.25
Sat Flow, veh/h	3110	3198	1400	3110	4595	1423	3110	4595	1406	3110	4595	1401
Grp Volume(v), veh/h	185	533	87	652	1022	272	576	1500	109	283	1054	283
Grp Sat Flow(s),veh/h/ln	1555	1599	1400	1555	1532	1423	1555	1532	1406	1555	1532	1401
Q Serve(g_s), s	8.4	23.0	7.6	29.8	27.2	22.5	26.4	45.8	7.9	12.9	32.0	27.2
Cycle Q Clear(g_c), s	8.4	23.0	7.6	29.8	27.2	22.5	26.4	45.8	7.9	12.9	32.0	27.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	619	271	664	1536	475	582	1553	475	296	1132	345
V/C Ratio(X)	0.82	0.86	0.32	0.98	0.67	0.57	0.99	0.97	0.23	0.96	0.93	0.82
Avail Cap(c_a), veh/h	316	672	294	664	1536	475	582	1554	476	296	1132	345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.2	55.7	49.5	55.9	40.7	39.1	57.9	46.5	33.9	64.3	52.6	50.8
Incr Delay (d2), s/veh	7.7	11.7	1.4	30.1	1.9	3.9	34.8	15.6	0.5	40.0	13.8	15.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	10.1	2.7	14.2	10.3	8.2	13.0	19.1	2.7	6.7	13.4	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.9	67.4	50.9	86.0	42.6	43.0	92.7	62.1	34.4	104.3	66.4	66.7
LnGrp LOS	E	E	D	F	D	D	F	E	C	F	E	E
Approach Vol, veh/h		805			1946			2185			1620	
Approach Delay, s/veh		66.9			57.2			68.7			73.1	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.2	41.0	15.9	53.7	19.1	54.1	36.0	33.6
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	26.7	* 35	14.5	46.0	13.6	* 48	30.5	30.0
Max Q Clear Time (g_c+I1), s	28.4	34.0	10.4	29.2	14.9	47.8	31.8	25.0
Green Ext Time (p_c), s	0.0	0.8	0.0	12.6	0.0	0.5	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	66.2
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



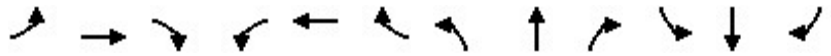
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	520	30	250	590	1290	10	790	90	470	230	120
Future Volume (veh/h)	580	520	30	250	590	1290	10	790	90	470	230	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	630	565	33	272	641	1402	11	859	98	511	250	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	1392	81	316	1942	595	13	495	57	218	1266	565
Arrive On Green	0.12	0.41	0.41	0.09	0.38	0.38	0.01	0.30	0.30	0.06	0.36	0.36
Sat Flow, veh/h	1781	3412	199	3456	5106	1564	1781	1648	188	3456	3554	1585
Grp Volume(v), veh/h	630	294	304	272	641	1402	11	0	957	511	250	130
Grp Sat Flow(s),veh/h/ln	1781	1777	1835	1728	1702	1564	1781	0	1837	1728	1777	1585
Q Serve(g_s), s	17.5	17.6	17.7	11.7	13.4	57.2	0.9	0.0	45.2	9.5	7.3	8.6
Cycle Q Clear(g_c), s	17.5	17.6	17.7	11.7	13.4	57.2	0.9	0.0	45.2	9.5	7.3	8.6
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	207	725	748	316	1942	595	13	0	552	218	1266	565
V/C Ratio(X)	3.04	0.41	0.41	0.86	0.33	2.36	0.84	0.00	1.73	2.34	0.20	0.23
Avail Cap(c_a), veh/h	207	725	748	423	1942	595	83	0	552	218	1266	565
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.5	31.6	31.6	67.4	33.0	46.6	74.6	0.0	52.6	70.5	33.5	33.9
Incr Delay (d2), s/veh	930.6	0.1	0.1	10.4	0.0	615.7	37.9	0.0	337.8	617.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	61.3	7.3	7.6	5.5	5.4	123.2	0.6	0.0	72.0	22.9	3.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	997.0	31.7	31.7	77.7	33.1	662.3	112.5	0.0	390.4	688.0	33.5	34.0
LnGrp LOS	F	C	C	E	C	F	F	A	F	F	C	C
Approach Vol, veh/h		1228			2315			968			891	
Approach Delay, s/veh		527.0			419.4			387.2			408.9	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	62.1	6.6	58.7	18.9	66.2	15.0	50.3
Change Period (Y+Rc), s	5.5	* 4.9	5.5	* 5.1	* 5.1	* 4.9	5.5	* 5.1
Max Green Setting (Gmax), s	17.5	* 57	7.0	* 47	* 18	* 57	9.5	* 45
Max Q Clear Time (g_c+I1), s	19.5	59.2	2.9	10.6	13.7	19.7	11.5	47.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.1	0.8	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	436.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



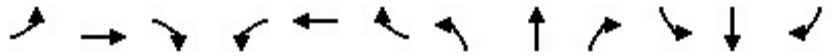
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	470	490	240	90	1180	460	970	2170	130	200	1060	310
Future Volume (veh/h)	470	490	240	90	1180	460	970	2170	130	200	1060	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	511	533	261	98	1283	500	1054	2359	141	217	1152	337
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	1539	478	142	1168	363	798	2206	676	179	1291	401
Arrive On Green	0.11	0.30	0.30	0.04	0.23	0.23	0.23	0.43	0.43	0.05	0.25	0.25
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1565	3456	5106	1585
Grp Volume(v), veh/h	511	533	261	98	1283	500	1054	2359	141	217	1152	337
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1565	1728	1702	1585
Q Serve(g_s), s	16.5	11.8	20.0	4.1	33.2	33.2	33.5	62.7	8.2	7.5	31.6	29.3
Cycle Q Clear(g_c), s	16.5	11.8	20.0	4.1	33.2	33.2	33.5	62.7	8.2	7.5	31.6	29.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	1539	478	142	1168	363	798	2206	676	179	1291	401
V/C Ratio(X)	1.30	0.35	0.55	0.69	1.10	1.38	1.32	1.07	0.21	1.21	0.89	0.84
Avail Cap(c_a), veh/h	393	1539	478	202	1168	363	798	2206	676	179	1291	401
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.3	39.5	42.4	68.7	56.0	56.0	55.8	41.2	25.7	68.8	52.3	51.4
Incr Delay (d2), s/veh	152.7	0.0	0.7	2.2	57.4	186.9	153.2	40.8	0.1	136.9	7.9	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.4	4.8	7.6	1.8	19.9	31.6	31.0	32.8	2.9	6.6	13.9	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	217.0	39.6	43.1	70.9	113.4	242.8	209.0	82.0	25.8	205.7	60.2	65.4
LnGrp LOS	F	D	D	E	F	F	F	F	C	F	E	E
Approach Vol, veh/h		1305			1881			3554			1706	
Approach Delay, s/veh		109.8			145.6			117.4			79.8	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	70.1	11.5	50.5	39.0	44.1	22.0	40.0
Change Period (Y+Rc), s	5.5	* 7.4	5.5	* 6.8	5.5	* 7.4	5.5	6.8
Max Green Setting (Gmax), s	7.5	* 63	8.5	* 41	33.5	* 37	16.5	33.2
Max Q Clear Time (g_c+I1), s	9.5	64.7	6.1	22.0	35.5	33.6	18.5	35.2
Green Ext Time (p_c), s	0.0	0.0	0.0	1.1	0.0	1.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	114.9
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	430	50	70	420	140	110	310	80	40	80	140
Future Volume (veh/h)	130	430	50	70	420	140	110	310	80	40	80	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	467	54	76	457	152	120	337	87	43	87	152
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	795	355	117	634	283	188	419	355	114	344	291
Arrive On Green	0.09	0.22	0.22	0.07	0.18	0.18	0.11	0.22	0.22	0.06	0.18	0.18
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	141	467	54	76	457	152	120	337	87	43	87	152
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.9	5.8	1.4	2.1	6.0	4.3	3.2	8.5	2.2	1.1	2.0	4.3
Cycle Q Clear(g_c), s	3.9	5.8	1.4	2.1	6.0	4.3	3.2	8.5	2.2	1.1	2.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	795	355	117	634	283	188	419	355	114	344	291
V/C Ratio(X)	0.85	0.59	0.15	0.65	0.72	0.54	0.64	0.81	0.25	0.38	0.25	0.52
Avail Cap(c_a), veh/h	165	1798	802	180	1769	789	826	867	735	934	980	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	17.2	15.5	22.6	19.2	18.5	21.3	18.2	15.8	22.3	17.3	18.3
Incr Delay (d2), s/veh	31.4	0.3	0.1	6.0	0.6	0.6	1.3	1.4	0.1	0.8	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.8	0.4	0.9	2.0	1.5	1.3	3.4	0.7	0.5	0.8	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.6	17.5	15.5	28.7	19.8	19.1	22.6	19.6	15.9	23.1	17.5	18.8
LnGrp LOS	D	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		662			685			544			282	
Approach Delay, s/veh		25.0			20.6			19.7			19.0	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	14.3	10.6	14.6	7.7	16.6	8.7	16.6
Change Period (Y+Rc), s	* 5.4	* 5.5	5.4	* 5.5	4.5	* 5.5	5.5	* 5.5
Max Green Setting (Gmax), s	* 4.6	* 25	23.0	* 26	5.0	* 25	26.0	* 23
Max Q Clear Time (g_c+I1), s	5.9	8.0	5.2	6.3	4.1	7.8	3.1	10.5
Green Ext Time (p_c), s	0.0	0.8	0.0	0.2	0.0	0.8	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



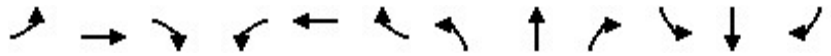
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	320	20	140	760	330	10	1620	210	100	1180	520
Future Volume (veh/h)	240	320	20	140	760	330	10	1620	210	100	1180	520
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	261	348	22	152	826	359	11	1761	228	109	1283	565
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	597	506	176	609	516	39	1220	544	134	1409	774
Arrive On Green	0.09	0.32	0.32	0.10	0.33	0.33	0.02	0.34	0.34	0.08	0.40	0.40
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	261	348	22	152	826	359	11	1761	228	109	1283	565
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.5	21.1	1.3	11.4	44.2	26.8	0.8	46.6	15.0	8.2	46.3	38.4
Cycle Q Clear(g_c), s	12.5	21.1	1.3	11.4	44.2	26.8	0.8	46.6	15.0	8.2	46.3	38.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	164	597	506	176	609	516	39	1220	544	134	1409	774
V/C Ratio(X)	1.59	0.58	0.04	0.87	1.36	0.70	0.28	1.44	0.42	0.81	0.91	0.73
Avail Cap(c_a), veh/h	164	597	506	221	609	516	249	1220	544	322	1409	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.6	38.6	31.9	60.3	45.8	39.9	65.3	44.6	34.2	61.8	38.7	27.6
Incr Delay (d2), s/veh	292.7	1.0	0.0	20.9	170.7	3.4	1.4	204.1	0.2	4.5	8.9	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	9.4	0.5	6.0	48.2	10.4	0.4	53.9	5.6	3.7	20.5	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	354.3	39.6	31.9	81.2	216.5	43.3	66.7	248.6	34.4	66.3	47.6	30.6
LnGrp LOS	F	D	C	F	F	D	E	F	C	E	D	C
Approach Vol, veh/h		631			1337			2000			1957	
Approach Delay, s/veh		169.5			154.6			223.2			43.7	
Approach LOS		F			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	51.0	7.5	60.2	17.9	50.1	14.7	53.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 6.4	4.5	6.8	4.5	6.4
Max Green Setting (Gmax), s	12.5	44.2	19.0	* 53	16.8	39.9	24.5	46.6
Max Q Clear Time (g_c+I1), s	14.5	46.2	2.8	48.3	13.4	23.1	10.2	48.6
Green Ext Time (p_c), s	0.0	0.0	0.0	2.6	0.0	1.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	142.7
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



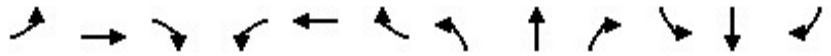
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	370	10	80	920	220	10	940	50	130	720	340
Future Volume (veh/h)	280	370	10	80	920	220	10	940	50	130	720	340
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	304	402	11	87	1000	239	11	1022	54	141	783	370
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	914	25	107	673	161	13	778	41	101	647	305
Arrive On Green	0.10	0.50	0.50	0.06	0.46	0.46	0.01	0.23	0.23	0.06	0.28	0.28
Sat Flow, veh/h	1781	1812	50	1781	1459	349	1781	3433	181	1781	2344	1105
Grp Volume(v), veh/h	304	0	413	87	0	1239	11	529	547	141	593	560
Grp Sat Flow(s),veh/h/ln	1781	0	1861	1781	0	1808	1781	1777	1838	1781	1777	1672
Q Serve(g_s), s	15.5	0.0	21.2	7.2	0.0	69.2	0.9	34.0	34.0	8.5	41.4	41.4
Cycle Q Clear(g_c), s	15.5	0.0	21.2	7.2	0.0	69.2	0.9	34.0	34.0	8.5	41.4	41.4
Prop In Lane	1.00		0.03	1.00		0.19	1.00		0.10	1.00		0.66
Lane Grp Cap(c), veh/h	184	0	939	107	0	834	13	403	417	101	490	461
V/C Ratio(X)	1.65	0.00	0.44	0.81	0.00	1.49	0.84	1.31	1.31	1.40	1.21	1.21
Avail Cap(c_a), veh/h	184	0	939	177	0	834	59	403	417	101	490	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.3	0.0	23.7	69.7	0.0	40.4	74.4	58.0	58.0	70.7	54.3	54.3
Incr Delay (d2), s/veh	316.2	0.0	0.1	5.5	0.0	225.0	37.8	157.7	157.3	227.8	112.1	114.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.0	0.0	8.9	3.4	0.0	80.7	0.6	32.3	33.4	10.2	33.0	31.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	383.4	0.0	23.8	75.2	0.0	265.4	112.2	215.7	215.3	298.5	166.4	169.1
LnGrp LOS	F	A	C	E	A	F	F	F	F	F	F	F
Approach Vol, veh/h		717			1326			1087			1294	
Approach Delay, s/veh		176.3			252.9			214.4			181.9	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	76.0	5.6	48.4	13.5	82.5	13.0	41.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 7	4.5	* 6.8	4.5	7.0
Max Green Setting (Gmax), s	15.5	69.2	5.0	* 38	14.9	* 70	8.5	34.0
Max Q Clear Time (g_c+I1), s	17.5	71.2	2.9	43.4	9.2	23.2	10.5	36.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	210.3
HCM 6th LOS	F

Notes

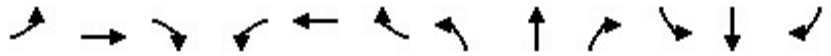
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	10	190	20	20	170	180	1050	20	50	900	120
Future Volume (veh/h)	190	10	190	20	20	170	180	1050	20	50	900	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	11	207	22	22	185	196	1141	22	54	978	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	384	326	45	282	239	277	1425	636	143	1425	636
Arrive On Green	0.08	0.21	0.21	0.03	0.15	0.15	0.08	0.40	0.40	0.08	0.40	0.40
Sat Flow, veh/h	3456	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	207	11	207	22	22	185	196	1141	22	54	978	130
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.7	0.3	7.5	0.8	0.6	7.0	3.5	17.7	0.5	1.8	14.2	3.3
Cycle Q Clear(g_c), s	3.7	0.3	7.5	0.8	0.6	7.0	3.5	17.7	0.5	1.8	14.2	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	277	384	326	45	282	239	277	1425	636	143	1425	636
V/C Ratio(X)	0.75	0.03	0.64	0.49	0.08	0.77	0.71	0.80	0.03	0.38	0.69	0.20
Avail Cap(c_a), veh/h	277	539	457	143	539	457	277	1763	786	513	2503	1116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	19.8	22.7	30.0	22.8	25.5	28.0	16.5	11.4	27.3	15.5	12.2
Incr Delay (d2), s/veh	10.7	0.0	2.1	7.9	0.1	5.3	8.1	2.2	0.0	1.7	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.1	2.6	0.4	0.3	2.7	1.5	5.8	0.2	0.7	4.4	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	19.9	24.7	37.9	22.9	30.8	36.1	18.7	11.4	28.9	16.1	12.4
LnGrp LOS	D	B	C	D	C	C	D	B	B	C	B	B
Approach Vol, veh/h		425			229			1359			1162	
Approach Delay, s/veh		31.5			30.7			21.1			16.2	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	29.6	6.1	17.3	9.5	29.6	9.5	13.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	44.0	5.0	18.0	18.0	31.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.5	16.2	2.8	9.5	3.8	19.7	5.7	9.0
Green Ext Time (p_c), s	0.0	7.1	0.0	0.5	0.1	5.4	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	21.4
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	120	110	60	250	50	240	1400	80	30	1020	200
Future Volume (veh/h)	400	120	110	60	250	50	240	1400	80	30	1020	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	435	130	120	65	272	54	261	1522	87	33	1109	217
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	469	245	226	84	280	56	328	1606	716	53	1371	612
Arrive On Green	0.14	0.27	0.27	0.05	0.18	0.18	0.10	0.45	0.45	0.03	0.39	0.39
Sat Flow, veh/h	3456	895	826	1781	1515	301	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	435	0	250	65	0	326	261	1522	87	33	1109	217
Grp Sat Flow(s),veh/h/ln	1728	0	1722	1781	0	1816	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.5	0.0	12.4	3.6	0.0	17.9	7.4	41.1	3.2	1.8	27.9	9.8
Cycle Q Clear(g_c), s	12.5	0.0	12.4	3.6	0.0	17.9	7.4	41.1	3.2	1.8	27.9	9.8
Prop In Lane	1.00		0.48	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	469	0	471	84	0	335	328	1606	716	53	1371	612
V/C Ratio(X)	0.93	0.00	0.53	0.78	0.00	0.97	0.79	0.95	0.12	0.62	0.81	0.35
Avail Cap(c_a), veh/h	469	0	471	119	0	335	690	1724	769	89	1371	612
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	0.0	30.9	47.2	0.0	40.6	44.4	26.3	15.9	48.0	27.5	21.9
Incr Delay (d2), s/veh	24.7	0.0	0.6	18.2	0.0	41.5	1.7	10.9	0.0	11.1	3.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	4.8	2.0	0.0	11.7	3.1	17.4	1.0	0.9	11.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.5	0.0	31.5	65.5	0.0	82.1	46.0	37.2	15.9	59.1	30.9	22.0
LnGrp LOS	E	A	C	E	A	F	D	D	B	E	C	C
Approach Vol, veh/h		685			391			1870			1359	
Approach Delay, s/veh		54.4			79.3			37.4			30.2	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	44.8	18.1	23.2	7.5	51.4	9.2	32.1
Change Period (Y+Rc), s	* 4.6	* 6.1	4.5	* 4.7	4.5	* 6.1	4.5	* 4.7
Max Green Setting (Gmax), s	* 28	* 33	13.6	* 19	5.0	* 49	6.7	* 25
Max Q Clear Time (g_c+I1), s	19.4	29.9	14.5	19.9	3.8	43.1	5.6	14.4
Green Ext Time (p_c), s	0.1	1.1	0.0	0.0	0.0	2.1	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	41.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	30	140	80	20	290	120	1840	90	240	1090	170
Future Volume (veh/h)	360	30	140	80	20	290	120	1840	90	240	1090	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	391	33	152	87	22	315	130	2000	98	261	1185	185
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	24	111	172	44	190	152	1469	655	184	1533	684
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.09	0.41	0.41	0.10	0.43	0.43
Sat Flow, veh/h	1174	99	456	1436	363	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	576	0	0	109	0	315	130	2000	98	261	1185	185
Grp Sat Flow(s),veh/h/ln	1730	0	0	1799	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	36.5	0.0	0.0	8.5	0.0	18.0	10.8	62.0	5.8	15.5	42.7	11.3
Cycle Q Clear(g_c), s	36.5	0.0	0.0	8.5	0.0	18.0	10.8	62.0	5.8	15.5	42.7	11.3
Prop In Lane	0.68		0.26	0.80		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	421	0	0	216	0	190	152	1469	655	184	1533	684
V/C Ratio(X)	1.37	0.00	0.00	0.51	0.00	1.66	0.86	1.36	0.15	1.42	0.77	0.27
Avail Cap(c_a), veh/h	421	0	0	216	0	190	178	1469	655	184	1533	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	0.0	0.0	61.8	0.0	66.0	67.7	44.0	27.5	67.3	36.4	27.5
Incr Delay (d2), s/veh	180.5	0.0	0.0	1.9	0.0	317.5	28.1	167.2	0.1	216.9	2.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	37.0	0.0	0.0	4.0	0.0	24.1	6.0	59.7	2.2	17.9	18.1	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	237.2	0.0	0.0	63.7	0.0	383.5	95.8	211.2	27.6	284.1	38.9	27.7
LnGrp LOS	F	A	A	E	A	F	F	F	C	F	D	C
Approach Vol, veh/h		576			424			2228			1631	
Approach Delay, s/veh		237.2			301.3			196.4			76.9	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	20.0	66.5		41.0	17.3	69.2		22.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	15.5	62.0		36.5	15.0	62.5		18.0
Max Q Clear Time (g_c+I1), s	17.5	64.0		38.5	12.8	44.7		20.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	7.8		0.0

Intersection Summary		
HCM 6th Ctrl Delay	170.3	
HCM 6th LOS	F	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	480	250	430	2130	1260	1280
Future Volume (veh/h)	480	250	430	2130	1260	1280
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	522	272	467	2315	1370	1391
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	593	655	430	2527	1484	934
Arrive On Green	0.17	0.17	0.24	0.71	0.42	0.42
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	522	272	467	2315	1370	1391
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	15.6	12.8	25.5	57.0	38.6	44.1
Cycle Q Clear(g_c), s	15.6	12.8	25.5	57.0	38.6	44.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	593	655	430	2527	1484	934
V/C Ratio(X)	0.88	0.42	1.09	0.92	0.92	1.49
Avail Cap(c_a), veh/h	1391	1021	430	2537	1484	934
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	22.0	40.1	12.6	29.2	18.0
Incr Delay (d2), s/veh	1.7	0.2	68.5	5.7	9.8	226.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	18.5	16.9	16.6	82.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.4	22.1	108.5	18.3	38.9	244.1
LnGrp LOS	D	C	F	B	D	F
Approach Vol, veh/h	794			2782	2761	
Approach Delay, s/veh	36.8			33.5	142.3	
Approach LOS	D			C	F	

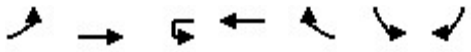
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	31.0	51.0		23.6		82.0
Change Period (Y+Rc), s	5.5	* 6.9		5.5		* 6.9
Max Green Setting (Gmax), s	25.5	* 44		42.5		* 75
Max Q Clear Time (g_c+I1), s	27.5	46.1		17.6		59.0
Green Ext Time (p_c), s	0.0	0.0		0.5		6.5

Intersection Summary	
HCM 6th Ctrl Delay	81.3
HCM 6th LOS	F

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1000	1600	0	1860	360	80	630
Future Volume (veh/h)	1000	1600	0	1860	360	80	630
Initial Q (Qb), veh	0	0		0	0	0	0
Ped-Bike Adj(A_pbT)	1.00				1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870		1870	1870	1870	1870
Adj Flow Rate, veh/h	1087	1739		2022	391	87	685
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2		2	2	2	2
Cap, veh/h	917	2684		1618	722	291	259
Arrive On Green	0.27	0.76		0.46	0.46	0.16	0.16
Sat Flow, veh/h	3456	3647		3647	1585	1781	1585
Grp Volume(v), veh/h	1087	1739		2022	391	87	685
Grp Sat Flow(s),veh/h/ln	1728	1777		1777	1585	1781	1585
Q Serve(g_s), s	39.8	35.2		68.3	26.8	6.4	24.5
Cycle Q Clear(g_c), s	39.8	35.2		68.3	26.8	6.4	24.5
Prop In Lane	1.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	917	2684		1618	722	291	259
V/C Ratio(X)	1.19	0.65		1.25	0.54	0.30	2.65
Avail Cap(c_a), veh/h	917	2684		1618	722	291	259
HCM Platoon Ratio	1.00	1.00		1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00		1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	8.8		40.9	29.5	55.2	62.8
Incr Delay (d2), s/veh	94.5	0.4		117.6	0.5	0.2	751.7
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.6	10.7		54.2	9.8	2.8	63.6
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	149.6	9.2		158.5	30.0	55.4	814.4
LnGrp LOS	F	A		F	C	E	F
Approach Vol, veh/h		2826		2413		772	
Approach Delay, s/veh		63.2		137.7		728.9	
Approach LOS		E		F		F	

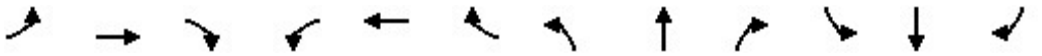
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	45.0	75.0			120.0	30.0
Change Period (Y+Rc), s	* 5.2	* 6.7			* 6.7	5.5
Max Green Setting (Gmax), s	* 40	* 68			* 1E2	24.5
Max Q Clear Time (g_c+I1), s	41.8	70.3			37.2	26.5
Green Ext Time (p_c), s	0.0	0.0			4.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	178.6
HCM 6th LOS	F

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	590	0	490	0	1300	1670	0	960	620
Future Volume (veh/h)	0	0	0	590	0	490	0	1300	1670	0	960	620
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				587	76	533	0	1413	0	0	1043	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				727	81	570	0	1848		0	1848	
Arrive On Green				0.41	0.41	0.41	0.00	0.36	0.00	0.00	0.36	0.00
Sat Flow, veh/h				1781	199	1397	0	5274	1585	0	5274	1585
Grp Volume(v), veh/h				587	0	609	0	1413	0	0	1043	0
Grp Sat Flow(s),veh/h/ln				1781	0	1596	0	1702	1585	0	1702	1585
Q Serve(g_s), s				12.5	0.0	15.7	0.0	10.5	0.0	0.0	7.1	0.0
Cycle Q Clear(g_c), s				12.5	0.0	15.7	0.0	10.5	0.0	0.0	7.1	0.0
Prop In Lane				1.00		0.88	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				727	0	652	0	1848		0	1848	
V/C Ratio(X)				0.81	0.00	0.93	0.00	0.76		0.00	0.56	
Avail Cap(c_a), veh/h				727	0	652	0	2666		0	2749	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				11.2	0.0	12.2	0.0	12.1	0.0	0.0	11.0	0.0
Incr Delay (d2), s/veh				6.2	0.0	20.5	0.0	0.4	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.9	0.0	7.8	0.0	2.7	0.0	0.0	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				17.5	0.0	32.7	0.0	12.6	0.0	0.0	11.1	0.0
LnGrp LOS				B	A	C	A	B		A	B	
Approach Vol, veh/h					1196			1413	A		1043	A
Approach Delay, s/veh					25.2			12.6			11.1	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8							
Phs Duration (G+Y+Rc), s	20.6		20.6		22.5							
Change Period (Y+Rc), s	* 5		5.0		4.9							
Max Green Setting (Gmax), s	* 23		22.5		17.6							
Max Q Clear Time (g_c+I1), s	9.1		12.5		17.7							
Green Ext Time (p_c), s	2.3		3.0		0.0							

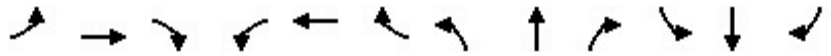
Intersection Summary		
HCM 6th Ctrl Delay	16.3	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	0	820	0	0	0	0	2320	890	0	1050	300
Future Volume (veh/h)	580	0	820	0	0	0	0	2320	890	0	1050	300
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	948	0	550				0	2522	0	0	1141	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	2
Cap, veh/h	1255	0	557				0	2810		0	2810	
Arrive On Green	0.35	0.00	0.35				0.00	0.55	0.00	0.00	0.55	0.00
Sat Flow, veh/h	3563	0	1581				0	5443	0	0	5274	1585
Grp Volume(v), veh/h	948	0	550				0	2522	0	0	1141	0
Grp Sat Flow(s),veh/h/ln	1781	0	1581				0	1702	0	0	1702	1585
Q Serve(g_s), s	25.1	0.0	36.9				0.0	46.8	0.0	0.0	13.8	0.0
Cycle Q Clear(g_c), s	25.1	0.0	36.9				0.0	46.8	0.0	0.0	13.8	0.0
Prop In Lane	1.00		1.00				0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	1255	0	557				0	2810		0	2810	
V/C Ratio(X)	0.76	0.00	0.99				0.00	0.90		0.00	0.41	
Avail Cap(c_a), veh/h	1255	0	557				0	3922		0	3946	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	30.5	0.0	34.3				0.0	21.3	0.0	0.0	13.9	0.0
Incr Delay (d2), s/veh	2.4	0.0	34.8				0.0	1.9	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	19.1				0.0	16.7	0.0	0.0	4.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	0.0	69.1				0.0	23.2	0.0	0.0	13.9	0.0
LnGrp LOS	C	A	E				A	C		A	B	
Approach Vol, veh/h		1498						2522	A		1141	A
Approach Delay, s/veh		46.2						23.2			13.9	
Approach LOS		D						C			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	63.7	43.0	63.7
Change Period (Y+Rc), s	* 5	* 5.4	5.0
Max Green Setting (Gmax), s	* 83	* 38	82.0
Max Q Clear Time (g_c+I1), s	15.8	38.9	48.8
Green Ext Time (p_c), s	2.9	0.0	9.9

Intersection Summary	
HCM 6th Ctrl Delay	27.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1840	250	210	2410	690	290
Future Volume (veh/h)	1840	250	210	2410	690	290
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2000	0	228	2620	750	315
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2382		261	3413	826	379
Arrive On Green	0.47	0.00	0.15	0.67	0.24	0.24
Sat Flow, veh/h	5443	0	1781	5274	3456	1585
Grp Volume(v), veh/h	2000	0	228	2620	750	315
Grp Sat Flow(s),veh/h/ln	1702	0	1781	1702	1728	1585
Q Serve(g_s), s	31.6	0.0	11.5	32.1	19.4	17.4
Cycle Q Clear(g_c), s	31.6	0.0	11.5	32.1	19.4	17.4
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2382		261	3413	826	379
V/C Ratio(X)	0.84		0.87	0.77	0.91	0.83
Avail Cap(c_a), veh/h	2420		265	3463	1093	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	38.4	10.4	34.0	33.2
Incr Delay (d2), s/veh	3.1	0.0	24.6	1.3	7.6	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.7	0.0	6.6	9.2	8.5	7.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.6	0.0	63.0	11.6	41.7	40.0
LnGrp LOS	C		E	B	D	D
Approach Vol, veh/h	2000	A		2848	1065	
Approach Delay, s/veh	24.6			15.7	41.2	
Approach LOS	C			B	D	

Timer - Assigned Phs	2			5	6	8
Phs Duration (G+Y+Rc), s	66.5			18.6	47.9	25.5
Change Period (Y+Rc), s	5.0			* 5.1	5.0	3.5
Max Green Setting (Gmax), s	62.4			* 14	43.6	29.1
Max Q Clear Time (g_c+I1), s	34.1			13.5	33.6	21.4
Green Ext Time (p_c), s	27.1			0.0	9.3	0.6

Intersection Summary	
HCM 6th Ctrl Delay	23.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	790	0	450	0	1860	1750	0	1130	620
Future Volume (veh/h)	0	0	0	790	0	450	0	1860	1750	0	1130	620
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				859	0	489	0	2022	0	0	1228	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1200	0	550	0	2275		0	2275	
Arrive On Green				0.35	0.00	0.35	0.00	0.45	0.00	0.00	0.45	0.00
Sat Flow, veh/h				3456	0	1585	0	5274	2790	0	5274	1585
Grp Volume(v), veh/h				859	0	489	0	2022	0	0	1228	0
Grp Sat Flow(s),veh/h/ln				1728	0	1585	0	1702	1395	0	1702	1585
Q Serve(g_s), s				9.5	0.0	12.8	0.0	16.0	0.0	0.0	7.7	0.0
Cycle Q Clear(g_c), s				9.5	0.0	12.8	0.0	16.0	0.0	0.0	7.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1200	0	550	0	2275		0	2275	
V/C Ratio(X)				0.72	0.00	0.89	0.00	0.89		0.00	0.54	
Avail Cap(c_a), veh/h				1221	0	560	0	2374		0	2374	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				12.4	0.0	13.5	0.0	11.2	0.0	0.0	8.9	0.0
Incr Delay (d2), s/veh				2.0	0.0	15.9	0.0	4.2	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.2	0.0	6.0	0.0	4.5	0.0	0.0	1.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				14.4	0.0	29.4	0.0	15.4	0.0	0.0	9.0	0.0
LnGrp LOS				B	A	C	A	B		A	A	
Approach Vol, veh/h					1348			2022	A		1228	A
Approach Delay, s/veh					19.9			15.4			9.0	
Approach LOS					B			B			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	24.1		24.1		19.7			
Change Period (Y+Rc), s	4.6		4.6		4.5			
Max Green Setting (Gmax), s	20.4		20.4		15.5			
Max Q Clear Time (g_c+I1), s	18.0		9.7		14.8			
Green Ext Time (p_c), s	1.6		2.6		0.5			

Intersection Summary		
HCM 6th Ctrl Delay		15.0
HCM 6th LOS		B

Notes

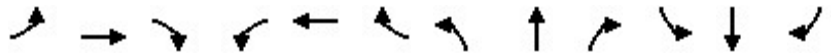
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL2	EBL	EBT	EBR	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	900	10	160	960	740	130	2020	460	10	1350	140
Future Volume (vph)	900	10	160	960	740	130	2020	460	10	1350	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	6.8	4.5		4.6			4.6	4.0
Lane Util. Factor		0.91	0.86	0.91	0.88		0.86			0.91	1.00
Frpb, ped/bikes		1.00	0.98	0.98	1.00		1.00			1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.89	0.85	0.85		0.97			1.00	0.85
Flt Protected		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1610	2799	1409	2787		6201			5085	1540
Flt Permitted		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1610	2799	1409	2787		6201			5085	1540
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	978	11	174	1043	804	141	2196	500	11	1467	152
RTOR Reduction (vph)	0	0	26	38	59	0	1	0	0	0	0
Lane Group Flow (vph)	0	979	680	483	886	0	2706	0	0	1467	152
Confl. Peds. (#/hr)	11			11	3				3		11
Confl. Bikes (#/hr)									8		5
Turn Type	Split	Split	NA	Perm	Prot		NA			NA	Free
Protected Phases	4	4	4		5		6			2	
Permitted Phases				4							Free
Actuated Green, G (s)		37.2	37.2	37.2	26.5		40.4			71.4	120.0
Effective Green, g (s)		37.2	37.2	37.2	26.5		40.4			71.4	120.0
Actuated g/C Ratio		0.31	0.31	0.31	0.22		0.34			0.60	1.00
Clearance Time (s)		6.8	6.8	6.8	4.5		4.6			4.6	
Vehicle Extension (s)		1.0	1.0	1.0	3.0		1.0			1.0	
Lane Grp Cap (vph)		499	867	436	615		2087			3025	1540
v/s Ratio Prot		c0.61	0.24		c0.32		c0.44			0.29	
v/s Ratio Perm				0.34							0.10
v/c Ratio		1.96	1.12dr	1.11	1.44		1.30			0.48	0.10
Uniform Delay, d1		41.4	37.8	41.4	46.8		39.8			13.8	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		440.1	4.3	75.7	207.3		137.2			0.0	0.1
Delay (s)		481.5	42.1	117.1	254.0		177.0			13.9	0.1
Level of Service		F	D	F	F		F			B	A
Approach Delay (s)			254.8				177.0			12.6	
Approach LOS			F				F			B	

Intersection Summary			
HCM 2000 Control Delay	174.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.9
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	690	300	40	170	190	700	70	1270	20	510	1660	310
Future Volume (veh/h)	690	300	40	170	190	700	70	1270	20	510	1660	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	750	326	43	185	207	761	76	1380	22	554	1804	337
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	538	1399	180	235	405	1215	118	1501	24	600	2192	675
Arrive On Green	0.16	0.31	0.31	0.07	0.22	0.22	0.03	0.29	0.29	0.17	0.43	0.43
Sat Flow, veh/h	3456	4573	588	3563	1870	3071	3456	5175	83	3456	5106	1572
Grp Volume(v), veh/h	750	241	128	185	207	761	76	908	494	554	1804	337
Grp Sat Flow(s),veh/h/ln	1728	1702	1756	1781	1870	1535	1728	1702	1854	1728	1702	1572
Q Serve(g_s), s	21.5	7.3	7.6	7.1	13.5	27.8	3.0	35.7	35.7	21.8	43.1	21.5
Cycle Q Clear(g_c), s	21.5	7.3	7.6	7.1	13.5	27.8	3.0	35.7	35.7	21.8	43.1	21.5
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	538	1042	537	235	405	1215	118	987	538	600	2192	675
V/C Ratio(X)	1.39	0.23	0.24	0.79	0.51	0.63	0.64	0.92	0.92	0.92	0.82	0.50
Avail Cap(c_a), veh/h	538	1042	537	436	406	1217	130	1119	609	663	2444	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.3	35.8	35.9	63.5	47.7	34.2	65.9	47.5	47.5	56.2	34.8	28.6
Incr Delay (d2), s/veh	188.5	0.0	0.1	2.2	0.5	0.8	6.2	10.5	17.0	17.0	1.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.3	3.0	3.2	3.2	6.2	10.2	1.4	16.2	18.6	10.7	17.4	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	246.8	35.8	36.0	65.7	48.1	34.9	72.0	58.0	64.4	73.2	36.7	28.8
LnGrp LOS	F	D	D	E	D	C	E	E	E	E	D	C
Approach Vol, veh/h		1119			1153			1478			2695	
Approach Delay, s/veh		177.3			42.2			60.8			43.2	
Approach LOS		F			D			E			D	

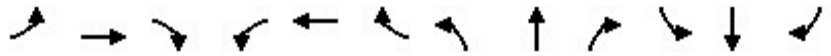
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	65.0	27.0	35.9	29.5	45.8	14.6	48.3
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 6	5.5	* 5.7	5.5	* 6
Max Green Setting (Gmax), s	5.3	* 66	21.5	* 30	26.5	* 45	16.9	* 34
Max Q Clear Time (g_c+I1), s	15.0	45.1	23.5	29.8	23.8	37.7	9.1	9.6
Green Ext Time (p_c), s	0.0	5.3	0.0	0.1	0.2	2.4	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	70.4
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	590	1430	760	970	970	210	1220	950	440	180	1520	420
Future Volume (veh/h)	590	1430	760	970	970	210	1220	950	440	180	1520	420
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	641	1554	826	1054	1054	228	1326	1033	478	196	1652	457
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	541	920	416	369	1127	336	679	2034	616	241	1078	292
Arrive On Green	0.16	0.27	0.27	0.11	0.22	0.22	0.20	0.40	0.40	0.07	0.27	0.27
Sat Flow, veh/h	3456	3404	1539	3456	5106	1522	3456	5106	1547	3456	3966	1074
Grp Volume(v), veh/h	641	1554	826	1054	1054	228	1326	1033	478	196	1413	696
Grp Sat Flow(s),veh/h/ln	1728	1702	1539	1728	1702	1522	1728	1702	1547	1728	1702	1636
Q Serve(g_s), s	22.7	39.2	39.2	15.5	29.4	19.9	28.5	22.1	39.0	8.1	39.4	39.4
Cycle Q Clear(g_c), s	22.7	39.2	39.2	15.5	29.4	19.9	28.5	22.1	39.0	8.1	39.4	39.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	541	920	416	369	1127	336	679	2034	616	241	925	445
V/C Ratio(X)	1.18	1.69	1.99	2.85	0.94	0.68	1.95	0.51	0.78	0.81	1.53	1.57
Avail Cap(c_a), veh/h	541	920	416	369	1127	336	679	2034	616	274	925	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.2	52.9	52.9	64.8	55.5	51.8	58.3	32.9	38.0	66.5	52.8	52.8
Incr Delay (d2), s/veh	100.8	314.6	452.0	841.4	13.8	4.5	433.9	0.1	5.6	13.3	242.8	265.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.3	56.5	67.0	49.9	13.7	7.9	53.1	8.9	15.3	4.0	47.6	48.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	161.9	367.5	504.9	906.1	69.3	56.3	492.1	33.0	43.6	79.8	295.6	318.3
LnGrp LOS	F	F	F	F	E	E	F	C	D	E	F	F
Approach Vol, veh/h		3021			2336			2837			2305	
Approach Delay, s/veh		361.5			445.6			249.4			284.1	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	45.0	28.2	37.8	15.6	63.4	21.0	45.0
Change Period (Y+Rc), s	5.5	* 5.6	5.5	5.8	5.5	* 5.6	5.5	5.8
Max Green Setting (Gmax), s	28.5	* 39	22.7	32.0	11.5	* 56	15.5	39.2
Max Q Clear Time (g_c+I1), s	30.5	41.4	24.7	31.4	10.1	41.0	17.5	41.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	332.9
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	30	180	60	20	60	360	3220	20	70	2860	120
Future Volume (veh/h)	190	30	180	60	20	60	360	3220	20	70	2860	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.96	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	33	196	65	22	65	391	3500	22	76	3109	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	41	258	173	39	116	280	2630	16	84	2380	732
Arrive On Green	0.16	0.16	0.16	0.10	0.10	0.10	0.08	0.50	0.50	0.05	0.47	0.47
Sat Flow, veh/h	1546	247	1568	1781	404	1195	3456	5235	33	1781	5106	1571
Grp Volume(v), veh/h	240	0	196	65	0	87	391	2273	1249	76	3109	130
Grp Sat Flow(s),veh/h/ln	1793	0	1568	1781	0	1599	1728	1702	1864	1781	1702	1571
Q Serve(g_s), s	14.2	0.0	13.1	3.8	0.0	5.7	8.9	55.2	55.2	4.7	51.2	5.3
Cycle Q Clear(g_c), s	14.2	0.0	13.1	3.8	0.0	5.7	8.9	55.2	55.2	4.7	51.2	5.3
Prop In Lane	0.86		1.00	1.00		0.75	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	295	0	258	173	0	155	280	1710	937	84	2380	732
V/C Ratio(X)	0.81	0.00	0.76	0.38	0.00	0.56	1.40	1.33	1.33	0.90	1.31	0.18
Avail Cap(c_a), veh/h	522	0	457	519	0	466	280	1710	937	84	2380	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	0.0	43.8	46.5	0.0	47.4	50.5	27.3	27.3	52.1	29.3	17.1
Incr Delay (d2), s/veh	2.1	0.0	1.7	0.5	0.0	1.2	198.8	152.2	157.4	64.9	141.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	5.2	1.7	0.0	2.3	11.5	56.1	62.8	3.5	50.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	0.0	45.5	47.0	0.0	48.5	249.3	179.5	184.8	116.9	170.4	17.1
LnGrp LOS	D	A	D	D	A	D	F	F	F	F	F	B
Approach Vol, veh/h		436			152			3913			3315	
Approach Delay, s/veh		45.9			47.9			188.1			163.1	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	56.1		23.6	10.0	60.1		16.2
Change Period (Y+Rc), s	* 5.1	* 4.9		5.5	* 4.8	* 4.9		5.5
Max Green Setting (Gmax), s	* 8.9	* 51		32.0	* 5.2	* 55		32.0
Max Q Clear Time (g_c+I1), s	10.9	53.2		16.2	6.7	57.2		7.7
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	166.9
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	320	0	450	0	2990	530	0	1800	1270
Future Volume (veh/h)	0	0	0	320	0	450	0	2990	530	0	1800	1270
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				348	0	489	0	3250	0	0	1957	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				782	0	631	0	3592		0	3269	
Arrive On Green				0.23	0.00	0.23	0.00	0.64	0.00	0.00	0.64	0.00
Sat Flow, veh/h				3456	0	2790	0	5611	1585	0	5274	2790
Grp Volume(v), veh/h				348	0	489	0	3250	0	0	1957	0
Grp Sat Flow(s),veh/h/ln				1728	0	1395	0	1870	1585	0	1702	1395
Q Serve(g_s), s				6.2	0.0	11.7	0.0	35.2	0.0	0.0	15.9	0.0
Cycle Q Clear(g_c), s				6.2	0.0	11.7	0.0	35.2	0.0	0.0	15.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				782	0	631	0	3592		0	3269	
V/C Ratio(X)				0.45	0.00	0.77	0.00	0.90		0.00	0.60	
Avail Cap(c_a), veh/h				1093	0	882	0	3810		0	3445	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.7	0.0	25.8	0.0	10.9	0.0	0.0	7.5	0.0
Incr Delay (d2), s/veh				0.4	0.0	2.9	0.0	3.2	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	3.9	0.0	10.2	0.0	0.0	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.1	0.0	28.7	0.0	14.2	0.0	0.0	7.6	0.0
LnGrp LOS				C	A	C	A	B		A	A	
Approach Vol, veh/h					837			3250	A		1957	A
Approach Delay, s/veh					26.8			14.2			7.6	
Approach LOS					C			B			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	50.5		50.5		20.6			
Change Period (Y+Rc), s	* 5		5.0		4.5			
Max Green Setting (Gmax), s	* 48		48.0		22.5			
Max Q Clear Time (g_c+I1), s	37.2		17.9		13.7			
Green Ext Time (p_c), s	8.3		6.1		2.4			

Intersection Summary		
HCM 6th Ctrl Delay		13.8
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1160	0	330	0	0	0	0	2860	520	0	1260	380
Future Volume (veh/h)	1160	0	330	0	0	0	0	2860	520	0	1260	380
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	1261	0	359				0	3109	0	0	1370	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1698	0	943				0	3614		0	2711	
Arrive On Green	0.34	0.00	0.34				0.00	0.48	0.00	0.00	0.48	0.00
Sat Flow, veh/h	5023	0	2790				0	7481	1585	0	5611	1585
Grp Volume(v), veh/h	1261	0	359				0	3109	0	0	1370	0
Grp Sat Flow(s),veh/h/ln	1674	0	1395				0	1870	1585	0	1870	1585
Q Serve(g_s), s	11.4	0.0	5.0				0.0	18.9	0.0	0.0	8.6	0.0
Cycle Q Clear(g_c), s	11.4	0.0	5.0				0.0	18.9	0.0	0.0	8.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1698	0	943				0	3614		0	2711	
V/C Ratio(X)	0.74	0.00	0.38				0.00	0.86		0.00	0.51	
Avail Cap(c_a), veh/h	2001	0	1112				0	3737		0	2759	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	15.0	0.0	12.9				0.0	11.8	0.0	0.0	9.1	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.3				0.0	2.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	1.4				0.0	5.6	0.0	0.0	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.3	0.0	13.2				0.0	13.8	0.0	0.0	9.1	0.0
LnGrp LOS	B	A	B				A	B		A	A	
Approach Vol, veh/h		1620						3109	A		1370	A
Approach Delay, s/veh		15.6						13.8			9.1	
Approach LOS		B						B			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	29.6	21.9	29.6
Change Period (Y+Rc), s	* 4.7	4.5	4.7
Max Green Setting (Gmax), s	* 26	20.5	25.3
Max Q Clear Time (g_c+I1), s	20.9	13.4	10.6
Green Ext Time (p_c), s	3.9	4.0	3.3

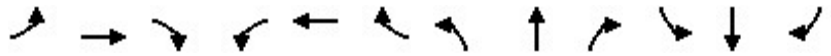
Intersection Summary	
HCM 6th Ctrl Delay	13.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	550	540	130	210	380	250	140	1820	270	250	1360	250
Future Volume (veh/h)	550	540	130	210	380	250	140	1820	270	250	1360	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	598	587	141	228	478	228	152	1978	293	272	1478	272
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	386	925	405	300	871	361	162	2017	490	342	1867	577
Arrive On Green	0.11	0.26	0.26	0.08	0.23	0.23	0.05	0.31	0.31	0.10	0.37	0.37
Sat Flow, veh/h	3456	3554	1556	3563	3741	1552	3456	6434	1563	3456	5106	1579
Grp Volume(v), veh/h	598	587	141	228	478	228	152	1978	293	272	1478	272
Grp Sat Flow(s),veh/h/ln	1728	1777	1556	1781	1870	1552	1728	1609	1563	1728	1702	1579
Q Serve(g_s), s	10.5	13.7	6.9	5.9	10.6	12.4	4.1	28.6	14.9	7.2	24.3	12.4
Cycle Q Clear(g_c), s	10.5	13.7	6.9	5.9	10.6	12.4	4.1	28.6	14.9	7.2	24.3	12.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	386	925	405	300	871	361	162	2017	490	342	1867	577
V/C Ratio(X)	1.55	0.63	0.35	0.76	0.55	0.63	0.94	0.98	0.60	0.79	0.79	0.47
Avail Cap(c_a), veh/h	386	1215	532	398	1275	529	162	2017	490	497	1930	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	30.8	28.2	42.1	31.7	32.4	44.6	32.0	27.2	41.4	26.6	22.8
Incr Delay (d2), s/veh	259.0	1.1	0.8	3.9	0.9	3.1	52.5	15.6	1.6	3.3	2.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	5.9	2.6	2.7	4.8	4.9	2.9	12.4	5.6	3.1	9.4	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	300.7	31.8	29.0	46.0	32.6	35.5	97.1	47.6	28.9	44.6	29.2	24.0
LnGrp LOS	F	C	C	D	C	D	F	D	C	D	C	C
Approach Vol, veh/h		1326			934			2423			2022	
Approach Delay, s/veh		152.8			36.6			48.4			30.6	
Approach LOS		F			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	40.1	16.0	27.9	14.8	35.2	13.4	30.5
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	* 6
Max Green Setting (Gmax), s	4.4	* 36	10.5	32.0	13.5	* 26	10.5	* 32
Max Q Clear Time (g_c+I1), s	6.1	26.3	12.5	14.4	9.2	30.6	7.9	15.7
Green Ext Time (p_c), s	0.0	8.1	0.0	6.0	0.1	0.0	0.1	5.7

Intersection Summary	
HCM 6th Ctrl Delay	62.0
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	410	1270	300	500	670	490	300	1000	200	460	1540	130
Future Volume (veh/h)	410	1270	300	500	670	490	300	1000	200	460	1540	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	446	1380	326	543	728	533	326	1087	217	500	1674	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	474	1081	480	375	1407	436	247	1242	383	354	1401	432
Arrive On Green	0.15	0.34	0.34	0.12	0.31	0.31	0.08	0.27	0.27	0.11	0.30	0.30
Sat Flow, veh/h	3110	3198	1419	3110	4595	1424	3110	4595	1417	3110	4595	1418
Grp Volume(v), veh/h	446	1380	326	543	728	533	326	1087	217	500	1674	141
Grp Sat Flow(s),veh/h/ln	1555	1599	1419	1555	1532	1424	1555	1532	1417	1555	1532	1418
Q Serve(g_s), s	20.6	49.0	28.6	17.5	18.9	44.4	11.5	32.8	19.1	16.5	44.2	11.1
Cycle Q Clear(g_c), s	20.6	49.0	28.6	17.5	18.9	44.4	11.5	32.8	19.1	16.5	44.2	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	474	1081	480	375	1407	436	247	1242	383	354	1401	432
V/C Ratio(X)	0.94	1.28	0.68	1.45	0.52	1.22	1.32	0.87	0.57	1.41	1.20	0.33
Avail Cap(c_a), veh/h	474	1081	480	375	1407	436	247	1249	385	354	1401	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	48.0	41.3	63.8	41.5	50.3	66.7	50.6	45.6	64.3	50.4	38.9
Incr Delay (d2), s/veh	26.8	131.8	4.9	215.5	1.0	119.2	170.2	7.6	3.1	201.8	95.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	38.6	10.4	18.0	7.2	29.8	10.3	13.1	6.9	16.3	28.7	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.6	179.8	46.2	279.2	42.5	169.5	237.0	58.2	48.7	266.0	145.4	39.8
LnGrp LOS	F	F	D	F	D	F	F	E	D	F	F	D
Approach Vol, veh/h		2152			1804			1630			2315	
Approach Delay, s/veh		140.5			151.3			92.7			165.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	50.0	27.6	50.4	22.0	45.0	23.0	55.0
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	11.5	* 44	22.1	44.4	16.5	* 39	17.5	49.0
Max Q Clear Time (g_c+I1), s	13.5	46.2	22.6	46.4	18.5	34.8	19.5	51.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	140.3
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



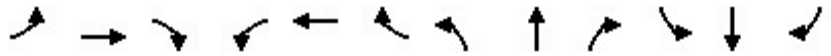
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	520	30	150	550	590	20	270	250	1430	730	610
Future Volume (veh/h)	130	520	30	150	550	590	20	270	250	1430	730	610
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	565	33	163	598	641	22	293	272	1554	793	663
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	859	50	188	1229	382	27	233	216	1022	1923	858
Arrive On Green	0.06	0.25	0.25	0.05	0.24	0.24	0.02	0.26	0.26	0.30	0.54	0.54
Sat Flow, veh/h	1781	3407	199	3456	5106	1585	1781	893	829	3456	3554	1585
Grp Volume(v), veh/h	141	294	304	163	598	641	22	0	565	1554	793	663
Grp Sat Flow(s),veh/h/ln	1781	1777	1829	1728	1702	1585	1781	0	1721	1728	1777	1585
Q Serve(g_s), s	9.5	22.3	22.4	7.0	15.1	36.2	1.9	0.0	39.2	44.5	19.8	49.6
Cycle Q Clear(g_c), s	9.5	22.3	22.4	7.0	15.1	36.2	1.9	0.0	39.2	44.5	19.8	49.6
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	113	448	461	188	1229	382	27	0	449	1022	1923	858
V/C Ratio(X)	1.25	0.66	0.66	0.87	0.49	1.68	0.80	0.00	1.26	1.52	0.41	0.77
Avail Cap(c_a), veh/h	113	448	461	188	1229	382	72	0	449	1022	1923	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.5	50.4	50.5	70.6	49.1	57.1	73.8	0.0	55.6	53.0	20.4	27.2
Incr Delay (d2), s/veh	167.7	2.8	2.8	30.6	0.1	317.3	17.7	0.0	133.7	239.0	0.1	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	10.0	10.3	3.8	6.3	47.8	1.0	0.0	33.3	52.7	8.0	18.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	238.2	53.2	53.2	101.2	49.2	374.4	91.6	0.0	189.3	291.9	20.4	31.2
LnGrp LOS	F	D	D	F	D	F	F	A	F	F	C	C
Approach Vol, veh/h		739			1402			587			3010	
Approach Delay, s/veh		88.5			203.9			185.7			163.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	41.1	7.8	86.5	13.3	42.8	50.0	44.3
Change Period (Y+Rc), s	5.5	* 4.9	5.5	* 5.1	* 5.1	* 4.9	5.5	* 5.1
Max Green Setting (Gmax), s	9.5	* 36	6.1	* 77	* 8.2	* 38	44.5	* 39
Max Q Clear Time (g_c+I1), s	11.5	38.2	3.9	51.6	9.0	24.4	46.5	41.2
Green Ext Time (p_c), s	0.0	0.0	0.0	2.0	0.0	0.8	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	165.7
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



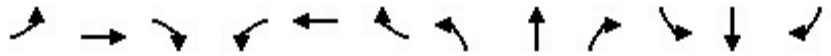
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	610	1270	630	190	550	320	450	1030	80	370	2680	220
Future Volume (veh/h)	610	1270	630	190	550	320	450	1030	80	370	2680	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	663	1380	685	207	598	348	489	1120	87	402	2913	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	1517	471	155	1165	357	298	1813	556	448	2034	631
Arrive On Green	0.11	0.30	0.30	0.04	0.23	0.23	0.09	0.35	0.35	0.13	0.40	0.40
Sat Flow, veh/h	3456	5106	1585	3456	5106	1564	3456	5106	1565	3456	5106	1585
Grp Volume(v), veh/h	663	1380	685	207	598	348	489	1120	87	402	2913	239
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1564	1728	1702	1565	1728	1702	1585
Q Serve(g_s), s	16.5	37.8	43.1	6.5	14.9	32.0	12.5	26.3	5.5	16.6	57.8	15.5
Cycle Q Clear(g_c), s	16.5	37.8	43.1	6.5	14.9	32.0	12.5	26.3	5.5	16.6	57.8	15.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	1517	471	155	1165	357	298	1813	556	448	2034	631
V/C Ratio(X)	1.69	0.91	1.45	1.34	0.51	0.98	1.64	0.62	0.16	0.90	1.43	0.38
Avail Cap(c_a), veh/h	393	1517	471	155	1165	357	298	1813	556	588	2034	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.3	49.1	51.0	69.3	49.0	55.6	66.3	38.7	32.0	62.2	43.6	30.9
Incr Delay (d2), s/veh	320.1	8.3	216.3	188.8	0.2	40.7	303.9	0.5	0.0	11.8	197.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.5	16.5	44.6	6.9	6.1	16.2	17.9	10.6	2.0	7.8	60.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	384.4	57.4	267.3	258.1	49.1	96.3	370.2	39.1	32.0	74.0	241.0	31.1
LnGrp LOS	F	E	F	F	D	F	F	D	C	E	F	C
Approach Vol, veh/h		2728			1153			1696			3554	
Approach Delay, s/veh		189.6			100.9			134.2			208.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.3	58.9	12.0	49.9	18.0	65.2	22.0	39.9
Change Period (Y+Rc), s	5.5	* 7.4	5.5	* 6.8	5.5	* 7.4	5.5	6.8
Max Green Setting (Gmax), s	24.7	* 46	6.5	* 43	12.5	* 58	16.5	33.0
Max Q Clear Time (g_c+I1), s	18.6	28.3	8.5	45.1	14.5	59.8	18.5	34.0
Green Ext Time (p_c), s	0.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	175.3
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



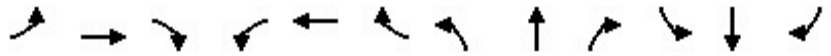
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	660	100	70	420	30	50	100	80	140	310	220
Future Volume (veh/h)	280	660	100	70	420	30	50	100	80	140	310	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	304	717	109	76	457	33	54	109	87	152	337	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	352	1140	509	105	597	266	111	302	256	207	406	344
Arrive On Green	0.20	0.32	0.32	0.06	0.17	0.17	0.06	0.16	0.16	0.12	0.22	0.22
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	304	717	109	76	457	33	54	109	87	152	337	239
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	10.1	10.5	3.1	2.6	7.5	1.1	1.8	3.2	3.0	5.1	10.5	8.5
Cycle Q Clear(g_c), s	10.1	10.5	3.1	2.6	7.5	1.1	1.8	3.2	3.0	5.1	10.5	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	352	1140	509	105	597	266	111	302	256	207	406	344
V/C Ratio(X)	0.86	0.63	0.21	0.72	0.77	0.12	0.49	0.36	0.34	0.74	0.83	0.70
Avail Cap(c_a), veh/h	453	1896	846	215	1374	613	668	702	595	756	793	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	17.7	15.2	28.3	24.4	21.7	27.8	22.9	22.8	26.2	22.9	22.1
Incr Delay (d2), s/veh	10.9	0.2	0.1	8.9	0.8	0.1	1.2	0.3	0.3	1.9	1.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	3.4	1.0	1.2	2.7	0.4	0.8	1.3	1.1	2.1	4.5	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	17.9	15.3	37.2	25.1	21.7	29.0	23.2	23.1	28.1	24.6	23.1
LnGrp LOS	C	B	B	D	C	C	C	C	C	C	C	C
Approach Vol, veh/h		1130			566			250			728	
Approach Delay, s/veh		22.2			26.6			24.4			24.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.5	15.8	9.2	18.8	8.1	25.2	12.6	15.4
Change Period (Y+Rc), s	* 5.4	* 5.5	5.4	* 5.5	4.5	* 5.5	5.5	* 5.5
Max Green Setting (Gmax), s	16	* 24	23.0	* 26	7.4	* 33	26.0	* 23
Max Q Clear Time (g_c+I1), s	12.1	9.5	3.8	12.5	4.6	12.5	7.1	5.2
Green Ext Time (p_c), s	0.0	0.8	0.0	0.7	0.0	1.4	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



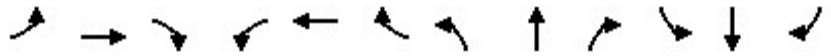
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	500	830	20	180	380	200	10	960	170	300	1680	290
Future Volume (veh/h)	500	830	20	180	380	200	10	960	170	300	1680	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	543	902	22	196	413	217	11	1043	185	326	1826	315
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	632	536	113	458	388	36	997	445	303	1530	931
Arrive On Green	0.16	0.34	0.34	0.06	0.24	0.24	0.02	0.28	0.28	0.17	0.43	0.43
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	543	902	22	196	413	217	11	1043	185	326	1826	315
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	23.5	50.7	1.4	9.5	32.1	18.0	0.9	42.1	14.3	25.5	64.6	15.4
Cycle Q Clear(g_c), s	23.5	50.7	1.4	9.5	32.1	18.0	0.9	42.1	14.3	25.5	64.6	15.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	279	632	536	113	458	388	36	997	445	303	1530	931
V/C Ratio(X)	1.95	1.43	0.04	1.74	0.90	0.56	0.31	1.05	0.42	1.08	1.19	0.34
Avail Cap(c_a), veh/h	279	632	536	113	458	388	226	997	445	303	1530	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.3	49.7	33.3	70.3	54.9	49.6	72.5	53.9	43.9	62.2	42.7	15.9
Incr Delay (d2), s/veh	438.5	201.2	0.0	365.9	20.4	1.1	1.8	41.2	0.2	73.6	93.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	44.3	57.8	0.5	15.7	17.1	7.0	0.4	23.7	5.5	17.3	46.4	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	501.7	250.8	33.3	436.1	75.3	50.7	74.3	95.1	44.2	135.8	136.3	16.0
LnGrp LOS	F	F	C	F	E	D	E	F	D	F	F	B
Approach Vol, veh/h		1467			826			1239			2467	
Approach Delay, s/veh		340.4			154.5			87.3			120.9	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	43.5	7.5	71.0	14.0	57.5	30.0	48.5
Change Period (Y+Rc), s	4.5	6.8	4.5	* 6.4	4.5	6.8	4.5	6.4
Max Green Setting (Gmax), s	23.5	36.7	19.0	* 49	9.5	50.7	25.5	42.1
Max Q Clear Time (g_c+I1), s	25.5	34.1	2.9	66.6	11.5	52.7	27.5	44.1
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	172.3
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



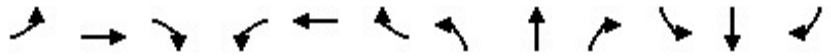
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	970	10	100	420	140	10	740	100	240	890	240
Future Volume (veh/h)	310	970	10	100	420	140	10	740	100	240	890	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	337	1054	11	109	457	152	11	804	109	261	967	261
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	880	9	89	469	156	13	669	91	195	872	235
Arrive On Green	0.18	0.48	0.48	0.05	0.35	0.35	0.01	0.21	0.21	0.11	0.32	0.32
Sat Flow, veh/h	1781	1848	19	1781	1338	445	1781	3144	426	1781	2768	745
Grp Volume(v), veh/h	337	0	1065	109	0	609	11	454	459	261	620	608
Grp Sat Flow(s),veh/h/ln	1781	0	1867	1781	0	1784	1781	1777	1794	1781	1777	1736
Q Serve(g_s), s	26.4	0.0	71.6	7.5	0.0	50.7	0.9	32.0	32.0	16.5	47.4	47.4
Cycle Q Clear(g_c), s	26.4	0.0	71.6	7.5	0.0	50.7	0.9	32.0	32.0	16.5	47.4	47.4
Prop In Lane	1.00		0.01	1.00		0.25	1.00		0.24	1.00		0.43
Lane Grp Cap(c), veh/h	313	0	889	89	0	625	13	378	382	195	560	547
V/C Ratio(X)	1.08	0.00	1.20	1.23	0.00	0.97	0.84	1.20	1.20	1.34	1.11	1.11
Avail Cap(c_a), veh/h	313	0	889	89	0	625	59	378	382	195	560	547
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.0	0.0	39.4	71.4	0.0	48.2	74.6	59.2	59.2	66.9	51.5	51.5
Incr Delay (d2), s/veh	73.2	0.0	100.1	168.6	0.0	29.4	37.9	113.5	113.4	181.5	70.6	73.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.9	0.0	55.0	7.5	0.0	26.5	0.6	25.8	26.0	17.1	31.1	30.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	135.2	0.0	139.5	240.0	0.0	77.6	112.5	172.7	172.6	248.5	122.1	124.5
LnGrp LOS	F	A	F	F	A	E	F	F	F	F	F	F
Approach Vol, veh/h		1402			718			924			1489	
Approach Delay, s/veh		138.5			102.3			171.9			145.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.9	59.5	5.6	54.4	12.0	78.4	21.0	39.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 7	4.5	* 6.8	4.5	7.0
Max Green Setting (Gmax), s	26.4	52.3	5.0	* 44	7.5	* 72	16.5	32.0
Max Q Clear Time (g_c+I1), s	28.4	52.7	2.9	49.4	9.5	73.6	18.5	34.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	141.8
HCM 6th LOS	F

Notes

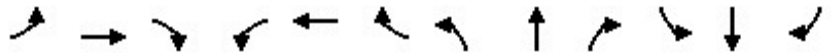
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	10	190	20	10	30	180	920	10	280	980	200
Future Volume (veh/h)	130	10	190	20	10	30	180	920	10	280	980	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	11	207	22	11	33	196	1000	11	304	1065	217
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	302	256	44	221	187	252	1250	558	355	1699	758
Arrive On Green	0.07	0.16	0.16	0.02	0.12	0.12	0.07	0.35	0.35	0.20	0.48	0.48
Sat Flow, veh/h	3456	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	141	11	207	22	11	33	196	1000	11	304	1065	217
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.7	0.3	8.6	0.8	0.4	1.3	3.8	17.4	0.3	11.3	15.3	5.7
Cycle Q Clear(g_c), s	2.7	0.3	8.6	0.8	0.4	1.3	3.8	17.4	0.3	11.3	15.3	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	302	256	44	221	187	252	1250	558	355	1699	758
V/C Ratio(X)	0.60	0.04	0.81	0.49	0.05	0.18	0.78	0.80	0.02	0.86	0.63	0.29
Avail Cap(c_a), veh/h	252	491	416	130	491	416	252	1607	717	468	2282	1018
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	24.3	27.7	33.0	26.8	27.2	31.2	20.0	14.5	26.5	13.3	10.8
Incr Delay (d2), s/veh	3.5	0.0	6.1	8.3	0.1	0.4	14.2	2.3	0.0	11.5	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.2	3.4	0.4	0.2	0.5	1.9	6.2	0.1	5.2	4.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	24.3	33.8	41.2	26.9	27.7	45.4	22.3	14.5	38.0	13.7	11.0
LnGrp LOS	C	C	C	D	C	C	D	C	B	D	B	B
Approach Vol, veh/h		359			66			1207			1586	
Approach Delay, s/veh		33.8			32.1			26.0			18.0	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	37.3	6.2	15.5	18.2	28.6	9.2	12.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	44.0	5.0	18.0	18.0	31.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.8	17.3	2.8	10.6	13.3	19.4	4.7	3.3
Green Ext Time (p_c), s	0.0	8.2	0.0	0.4	0.4	4.7	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	23.1
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	480	240	250	80	130	30	70	1060	60	50	1340	360
Future Volume (veh/h)	480	240	250	80	130	30	70	1060	60	50	1340	360
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	522	261	272	87	141	33	76	1152	65	54	1457	391
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	591	263	275	108	299	70	122	1520	678	70	1531	683
Arrive On Green	0.17	0.31	0.31	0.06	0.20	0.20	0.04	0.43	0.43	0.04	0.43	0.43
Sat Flow, veh/h	3456	839	874	1781	1466	343	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	522	0	533	87	0	174	76	1152	65	54	1457	391
Grp Sat Flow(s),veh/h/ln	1728	0	1713	1781	0	1809	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	18.5	0.0	38.8	6.0	0.0	10.6	2.7	34.3	3.1	3.8	49.5	23.3
Cycle Q Clear(g_c), s	18.5	0.0	38.8	6.0	0.0	10.6	2.7	34.3	3.1	3.8	49.5	23.3
Prop In Lane	1.00		0.51	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	591	0	538	108	0	369	122	1520	678	70	1531	683
V/C Ratio(X)	0.88	0.00	0.99	0.80	0.00	0.47	0.62	0.76	0.10	0.77	0.95	0.57
Avail Cap(c_a), veh/h	715	0	538	108	0	369	552	1948	869	142	1653	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.6	0.0	42.7	58.0	0.0	43.9	59.5	30.3	21.4	59.6	34.3	26.9
Incr Delay (d2), s/veh	11.0	0.0	36.2	34.1	0.0	0.9	1.9	0.9	0.0	16.5	11.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.0	20.8	3.7	0.0	4.9	1.2	13.7	1.1	2.0	22.0	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	78.9	92.1	0.0	44.8	61.5	31.2	21.4	76.0	46.1	27.4
LnGrp LOS	E	A	E	F	A	D	E	C	C	E	D	C
Approach Vol, veh/h		1055			261			1293			1902	
Approach Delay, s/veh		70.4			60.6			32.5			43.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	60.0	25.9	30.2	9.4	59.6	12.1	44.0
Change Period (Y+Rc), s	* 4.6	* 6.1	4.5	* 4.7	4.5	* 6.1	4.5	* 4.7
Max Green Setting (Gmax), s	* 28	* 58	25.9	* 21	10.0	* 69	7.6	* 39
Max Q Clear Time (g_c+I1), s	14.7	51.5	20.5	12.6	5.8	36.3	8.0	40.8
Green Ext Time (p_c), s	0.0	2.4	0.9	0.5	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	47.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	30	130	100	30	260	140	1270	80	300	1790	330
Future Volume (veh/h)	190	30	130	100	30	260	140	1270	80	300	1790	330
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	33	141	109	33	283	152	1380	87	326	1946	359
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	170	27	116	171	52	195	137	1419	633	310	1765	787
Arrive On Green	0.18	0.18	0.18	0.12	0.12	0.12	0.08	0.40	0.40	0.17	0.50	0.50
Sat Flow, veh/h	929	148	633	1383	419	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	381	0	0	142	0	283	152	1380	87	326	1946	359
Grp Sat Flow(s),veh/h/ln	1710	0	0	1801	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	27.5	0.0	0.0	11.3	0.0	18.5	11.5	57.2	5.2	26.1	74.5	22.1
Cycle Q Clear(g_c), s	27.5	0.0	0.0	11.3	0.0	18.5	11.5	57.2	5.2	26.1	74.5	22.1
Prop In Lane	0.54		0.37	0.77		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	0	222	0	195	137	1419	633	310	1765	787
V/C Ratio(X)	1.22	0.00	0.00	0.64	0.00	1.45	1.11	0.97	0.14	1.05	1.10	0.46
Avail Cap(c_a), veh/h	313	0	0	222	0	195	137	1419	633	310	1765	787
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	0.0	0.0	62.6	0.0	65.8	69.2	44.2	28.6	62.0	37.8	24.6
Incr Delay (d2), s/veh	122.5	0.0	0.0	6.0	0.0	227.8	110.6	17.7	0.1	65.4	55.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.6	0.0	0.0	5.6	0.0	19.9	9.3	27.2	1.9	17.0	43.3	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	183.8	0.0	0.0	68.6	0.0	293.5	179.8	61.9	28.7	127.3	93.0	25.0
LnGrp LOS	F	A	A	E	A	F	F	E	C	F	F	C
Approach Vol, veh/h		381			425			1619			2631	
Approach Delay, s/veh		183.8			218.4			71.2			88.0	
Approach LOS		F			F			E			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.6	64.4		32.0	16.0	79.0		23.0
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	26.1	59.9		27.5	11.5	74.5		18.5
Max Q Clear Time (g_c+I1), s	28.1	59.2		29.5	13.5	76.5		20.5
Green Ext Time (p_c), s	0.0	0.5		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	100.8
HCM 6th LOS	F



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1480	380	250	1480	2030	560
Future Volume (veh/h)	1480	380	250	1480	2030	560
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1609	413	272	1609	2207	609
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1163	687	172	2064	1590	709
Arrive On Green	0.34	0.34	0.10	0.58	0.45	0.45
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	1609	413	272	1609	2207	609
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	50.5	30.0	14.5	52.0	67.1	51.7
Cycle Q Clear(g_c), s	50.5	30.0	14.5	52.0	67.1	51.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	1163	687	172	2064	1590	709
V/C Ratio(X)	1.38	0.60	1.58	0.78	1.39	0.86
Avail Cap(c_a), veh/h	1163	687	172	2071	1590	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	32.6	67.8	24.1	41.5	37.2
Incr Delay (d2), s/veh	177.8	1.0	286.7	1.8	178.7	9.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	50.4	27.1	20.1	20.3	66.8	20.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	227.5	33.6	354.5	25.9	220.2	47.1
LnGrp LOS	F	C	F	C	F	D
Approach Vol, veh/h	2022			1881	2816	
Approach Delay, s/veh	187.9			73.4	182.7	
Approach LOS	F			E	F	

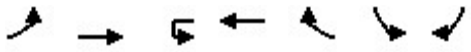
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	20.0	74.0		56.0		94.0
Change Period (Y+Rc), s	5.5	* 6.9		5.5		* 6.9
Max Green Setting (Gmax), s	14.5	* 67		50.5		* 87
Max Q Clear Time (g_c+I1), s	16.5	69.1		52.5		54.0
Green Ext Time (p_c), s	0.0	0.0		0.0		4.0

Intersection Summary	
HCM 6th Ctrl Delay	153.7
HCM 6th LOS	F

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1300	2110	0	1590	450	230	990
Future Volume (veh/h)	1300	2110	0	1590	450	230	990
Initial Q (Qb), veh	0	0		0	0	0	0
Ped-Bike Adj(A_pbT)	1.00				1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870		1870	1870	1870	1870
Adj Flow Rate, veh/h	1413	2293		1728	489	250	1076
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2		2	2	2	2
Cap, veh/h	1055	2424		1215	542	422	375
Arrive On Green	0.31	0.68		0.34	0.34	0.24	0.24
Sat Flow, veh/h	3456	3647		3647	1585	1781	1585
Grp Volume(v), veh/h	1413	2293		1728	489	250	1076
Grp Sat Flow(s),veh/h/ln	1728	1777		1777	1585	1781	1585
Q Serve(g_s), s	45.8	86.8		51.3	44.0	18.7	35.5
Cycle Q Clear(g_c), s	45.8	86.8		51.3	44.0	18.7	35.5
Prop In Lane	1.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	1055	2424		1215	542	422	375
V/C Ratio(X)	1.34	0.95		1.42	0.90	0.59	2.87
Avail Cap(c_a), veh/h	1055	2424		1215	542	422	375
HCM Platoon Ratio	1.00	1.00		1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00		1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	21.4		49.3	47.0	50.8	57.3
Incr Delay (d2), s/veh	159.1	8.7		194.7	17.8	1.5	848.1
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	42.2	32.8		54.5	19.2	8.3	102.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	211.2	30.0		244.0	64.8	52.4	905.3
LnGrp LOS	F	C		F	E	D	F
Approach Vol, veh/h		3706		2217		1326	
Approach Delay, s/veh		99.1		204.5		744.5	
Approach LOS		F		F		F	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	51.0	58.0			109.0	41.0
Change Period (Y+Rc), s	* 5.2	* 6.7			* 6.7	5.5
Max Green Setting (Gmax), s	* 46	* 51			* 93	35.5
Max Q Clear Time (g_c+I1), s	47.8	53.3			88.8	37.5
Green Ext Time (p_c), s	0.0	0.0			2.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	249.4
HCM 6th LOS	F

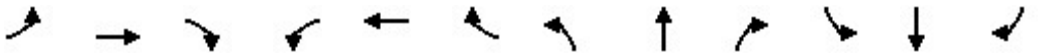
Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix E

Analysis Worksheets for
Cumulative (2035) plus Proposed Project Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1120	0	300	0	1230	1080	0	1460	650
Future Volume (veh/h)	0	0	0	1120	0	300	0	1230	1080	0	1460	650
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				772	624	326	0	1337	0	0	1587	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				979	634	331	0	1531		0	1531	
Arrive On Green				0.55	0.55	0.55	0.00	0.30	0.00	0.00	0.30	0.00
Sat Flow, veh/h				1781	1154	603	0	5274	1585	0	5274	1585
Grp Volume(v), veh/h				772	0	950	0	1337	0	0	1587	0
Grp Sat Flow(s),veh/h/ln				1781	0	1757	0	1702	1585	0	1702	1585
Q Serve(g_s), s				22.6	0.0	34.9	0.0	16.3	0.0	0.0	19.7	0.0
Cycle Q Clear(g_c), s				22.6	0.0	34.9	0.0	16.3	0.0	0.0	19.7	0.0
Prop In Lane				1.00		0.34	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				979	0	965	0	1531		0	1531	
V/C Ratio(X)				0.79	0.00	0.98	0.00	0.87		0.00	1.04	
Avail Cap(c_a), veh/h				979	0	965	0	1531		0	1531	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				11.8	0.0	14.5	0.0	21.8	0.0	0.0	23.0	0.0
Incr Delay (d2), s/veh				4.0	0.0	25.0	0.0	5.7	0.0	0.0	33.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.3	0.0	17.7	0.0	6.4	0.0	0.0	11.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				15.8	0.0	39.5	0.0	27.5	0.0	0.0	56.0	0.0
LnGrp LOS				B	A	D	A	C		A	F	
Approach Vol, veh/h					1722			1337	A		1587	A
Approach Delay, s/veh					28.9			27.5			56.0	
Approach LOS					C			C			E	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	24.7		24.7		41.0			
Change Period (Y+Rc), s	* 5		5.0		4.9			
Max Green Setting (Gmax), s	* 20		19.0		36.1			
Max Q Clear Time (g_c+I1), s	21.7		18.3		36.9			
Green Ext Time (p_c), s	0.0		0.3		0.0			

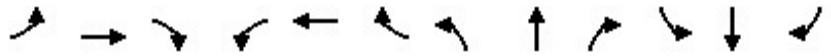
Intersection Summary		
HCM 6th Ctrl Delay	37.7	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	0	1170	0	0	0	0	1670	420	0	2010	480
Future Volume (veh/h)	310	0	1170	0	0	0	0	1670	420	0	2010	480
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	225	0	1392				0	1815	0	0	2185	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	2
Cap, veh/h	784	0	1394				0	2322		0	2322	
Arrive On Green	0.44	0.00	0.44				0.00	0.45	0.00	0.00	0.45	0.00
Sat Flow, veh/h	1781	0	3166				0	5443	0	0	5274	1585
Grp Volume(v), veh/h	225	0	1392				0	1815	0	0	2185	0
Grp Sat Flow(s),veh/h/ln	1781	0	1583				0	1702	0	0	1702	1585
Q Serve(g_s), s	8.0	0.0	43.5				0.0	29.8	0.0	0.0	40.4	0.0
Cycle Q Clear(g_c), s	8.0	0.0	43.5				0.0	29.8	0.0	0.0	40.4	0.0
Prop In Lane	1.00		1.00				0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	784	0	1394				0	2322		0	2322	
V/C Ratio(X)	0.29	0.00	1.00				0.00	0.78		0.00	0.94	
Avail Cap(c_a), veh/h	784	0	1394				0	2372		0	2398	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	17.8	0.0	27.7				0.0	22.8	0.0	0.0	25.7	0.0
Incr Delay (d2), s/veh	0.1	0.0	23.7				0.0	1.6	0.0	0.0	8.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	20.1				0.0	11.1	0.0	0.0	16.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.8	0.0	51.4				0.0	24.4	0.0	0.0	33.7	0.0
LnGrp LOS	B	A	D				A	C		A	C	
Approach Vol, veh/h		1617						1815	A		2185	A
Approach Delay, s/veh		46.8						24.4			33.7	
Approach LOS		D						C			C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	50.0	49.0	50.0
Change Period (Y+Rc), s	* 5	* 5.4	5.0
Max Green Setting (Gmax), s	* 47	* 44	46.0
Max Q Clear Time (g_c+I1), s	42.4	45.5	31.8
Green Ext Time (p_c), s	2.6	0.0	4.6

Intersection Summary	
HCM 6th Ctrl Delay	34.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2110	1220	420	1910	450	70
Future Volume (veh/h)	2110	1220	420	1910	450	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2293	0	457	2076	489	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2809		353	4005	537	246
Arrive On Green	0.55	0.00	0.20	0.78	0.16	0.16
Sat Flow, veh/h	5443	0	1781	5274	3456	1585
Grp Volume(v), veh/h	2293	0	457	2076	489	76
Grp Sat Flow(s),veh/h/ln	1702	0	1781	1702	1728	1585
Q Serve(g_s), s	51.7	0.0	27.9	20.8	19.6	6.0
Cycle Q Clear(g_c), s	51.7	0.0	27.9	20.8	19.6	6.0
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2809		353	4005	537	246
V/C Ratio(X)	0.82		1.30	0.52	0.91	0.31
Avail Cap(c_a), veh/h	2879		353	4075	711	326
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	56.5	5.5	58.6	52.8
Incr Delay (d2), s/veh	2.1	0.0	152.8	0.2	11.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.1	0.0	27.2	5.8	9.3	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.0	0.0	209.4	5.7	69.9	53.1
LnGrp LOS	C		F	A	E	D
Approach Vol, veh/h	2293	A		2533	565	
Approach Delay, s/veh	28.0			42.5	67.6	
Approach LOS	C			D	E	

Timer - Assigned Phs	2			5	6	8
Phs Duration (G+Y+Rc), s	115.6			33.0	82.6	25.4
Change Period (Y+Rc), s	5.0			* 5.1	5.0	3.5
Max Green Setting (Gmax), s	112.5			* 28	79.5	29.0
Max Q Clear Time (g_c+I1), s	22.8			29.9	53.7	21.6
Green Ext Time (p_c), s	62.7			0.0	23.9	0.3

Intersection Summary		
HCM 6th Ctrl Delay	39.0	
HCM 6th LOS	D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	1570	0	370	0	1302	859	0	951	360
Future Volume (veh/h)	0	0	0	1570	0	370	0	1302	859	0	951	360
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				1707	0	402	0	1415	0	0	1034	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1732	0	794	0	1668		0	1668	
Arrive On Green				0.50	0.00	0.50	0.00	0.33	0.00	0.00	0.33	0.00
Sat Flow, veh/h				3456	0	1585	0	5274	2790	0	5274	1585
Grp Volume(v), veh/h				1707	0	402	0	1415	0	0	1034	0
Grp Sat Flow(s),veh/h/ln				1728	0	1585	0	1702	1395	0	1702	1585
Q Serve(g_s), s				25.7	0.0	9.0	0.0	13.6	0.0	0.0	9.0	0.0
Cycle Q Clear(g_c), s				25.7	0.0	9.0	0.0	13.6	0.0	0.0	9.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1732	0	794	0	1668		0	1668	
V/C Ratio(X)				0.99	0.00	0.51	0.00	0.85		0.00	0.62	
Avail Cap(c_a), veh/h				1732	0	794	0	1873		0	1873	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				13.0	0.0	8.8	0.0	16.6	0.0	0.0	15.0	0.0
Incr Delay (d2), s/veh				18.2	0.0	0.5	0.0	3.2	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.9	0.0	2.5	0.0	4.6	0.0	0.0	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.2	0.0	9.3	0.0	19.7	0.0	0.0	15.3	0.0
LnGrp LOS				C	A	A	A	B		A	B	
Approach Vol, veh/h					2109			1415	A		1034	A
Approach Delay, s/veh					27.1			19.7			15.3	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	21.9		21.9		31.0			
Change Period (Y+Rc), s	4.6		4.6		4.5			
Max Green Setting (Gmax), s	19.4		19.4		26.5			
Max Q Clear Time (g_c+I1), s	15.6		11.0		27.7			
Green Ext Time (p_c), s	1.6		1.9		0.0			

Intersection Summary		
HCM 6th Ctrl Delay	22.1	
HCM 6th LOS	C	

Notes

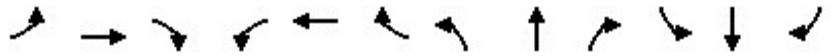
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL2	EBL	EBT	EBR	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	500	10	950	1276	100	30	1531	530	80	1771	230
Future Volume (vph)	500	10	950	1276	100	30	1531	530	80	1771	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	6.8	4.5		4.6			4.6	4.0
Lane Util. Factor		0.91	0.86	0.91	0.88		0.86			0.91	1.00
Frpb, ped/bikes		1.00	0.99	0.98	1.00		0.99			1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.94	0.85	0.85		0.96			1.00	0.85
Flt Protected		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1610	3002	1418	2787		6103			5085	1545
Flt Permitted		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1610	3002	1418	2787		6103			5085	1545
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	543	11	1033	1387	109	33	1664	576	87	1925	250
RTOR Reduction (vph)	0	0	1	30	72	0	5	0	0	0	0
Lane Group Flow (vph)	0	553	1671	719	70	0	2322	0	0	1925	250
Confl. Peds. (#/hr)	6			6	3				3		6
Confl. Bikes (#/hr)									2		3
Turn Type	Split	Split	NA	Perm	Prot		NA			NA	Free
Protected Phases	4	4	4		5		6			2	
Permitted Phases				4							Free
Actuated Green, G (s)		55.2	55.2	55.2	6.3		42.4			53.2	119.8
Effective Green, g (s)		55.2	55.2	55.2	6.3		42.4			53.2	119.8
Actuated g/C Ratio		0.46	0.46	0.46	0.05		0.35			0.44	1.00
Clearance Time (s)		6.8	6.8	6.8	4.5		4.6			4.6	
Vehicle Extension (s)		1.0	1.0	1.0	3.0		1.0			1.0	
Lane Grp Cap (vph)		741	1383	653	146		2159			2258	1545
v/s Ratio Prot		0.34	c0.56		0.03		c0.38			c0.38	
v/s Ratio Perm				0.51							0.16
v/c Ratio		0.75	1.21	1.10	0.48		1.16dr			0.85	0.16
Uniform Delay, d1		26.5	32.3	32.3	55.2		38.7			29.8	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		3.6	100.7	66.3	2.5		43.4			3.2	0.2
Delay (s)		30.1	133.0	98.6	57.6		82.1			33.0	0.2
Level of Service		C	F	F	E		F			C	A
Approach Delay (s)			105.2				82.1			29.2	
Approach LOS			F				F			C	

Intersection Summary			
HCM 2000 Control Delay	75.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	119.8	Sum of lost time (s)	15.9
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	170	30	50	250	451	40	1420	80	917	1950	740
Future Volume (veh/h)	230	170	30	50	250	451	40	1420	80	917	1950	740
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	250	185	33	54	272	490	43	1543	87	997	2120	804
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	863	147	93	341	1382	76	1692	95	894	2958	903
Arrive On Green	0.04	0.20	0.20	0.03	0.18	0.18	0.02	0.34	0.34	0.26	0.58	0.58
Sat Flow, veh/h	3456	4373	743	3563	1870	3077	3456	4943	279	3456	5106	1558
Grp Volume(v), veh/h	250	142	76	54	272	490	43	1063	567	997	2120	804
Grp Sat Flow(s),veh/h/ln	1728	1702	1711	1781	1870	1539	1728	1702	1817	1728	1702	1558
Q Serve(g_s), s	5.3	4.5	4.8	1.9	18.0	13.7	1.6	38.6	38.6	33.5	38.7	58.1
Cycle Q Clear(g_c), s	5.3	4.5	4.8	1.9	18.0	13.7	1.6	38.6	38.6	33.5	38.7	58.1
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	142	672	338	93	341	1382	76	1165	622	894	2958	903
V/C Ratio(X)	1.77	0.21	0.23	0.58	0.80	0.35	0.57	0.91	0.91	1.11	0.72	0.89
Avail Cap(c_a), veh/h	142	736	370	204	442	1548	131	1420	758	894	3235	987
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.1	43.5	43.6	62.3	50.6	24.0	62.7	40.7	40.7	48.0	19.6	23.7
Incr Delay (d2), s/veh	372.2	0.1	0.1	2.1	5.7	0.1	2.5	7.2	12.3	66.8	0.6	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	1.9	2.0	0.9	8.8	4.8	0.7	16.9	18.9	22.2	14.1	21.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	434.3	43.6	43.8	64.4	56.3	24.1	65.2	47.9	53.0	114.7	20.1	32.7
LnGrp LOS	F	D	D	E	E	C	E	D	D	F	C	C
Approach Vol, veh/h		468			816			1673			3921	
Approach Delay, s/veh		252.3			37.5			50.1			46.8	
Approach LOS		F			D			D			D	

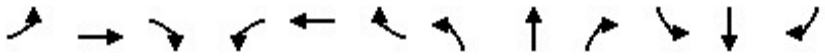
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	80.7	10.8	29.6	39.0	50.0	8.9	31.5
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 6	5.5	* 5.7	5.5	* 6
Max Green Setting (Gmax), s	4.3	* 82	5.3	* 31	33.5	* 54	7.4	* 28
Max Q Clear Time (g_c+I1), s	3.6	60.1	7.3	20.0	35.5	40.6	3.9	6.8
Green Ext Time (p_c), s	0.0	7.4	0.0	0.8	0.0	3.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	60.5
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



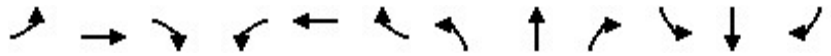
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	960	540	790	1430	130	1270	1500	480	180	1040	620
Future Volume (veh/h)	260	960	540	790	1430	130	1270	1500	480	180	1040	620
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	283	1043	587	859	1554	141	1380	1630	522	196	1130	674
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	779	357	393	1486	454	798	2211	685	241	925	425
Arrive On Green	0.05	0.23	0.23	0.11	0.29	0.29	0.23	0.43	0.43	0.07	0.27	0.27
Sat Flow, veh/h	3456	3404	1560	3456	5106	1560	3456	5106	1582	3456	3404	1563
Grp Volume(v), veh/h	283	1043	587	859	1554	141	1380	1630	522	196	1130	674
Grp Sat Flow(s),veh/h/ln	1728	1702	1560	1728	1702	1560	1728	1702	1582	1728	1702	1563
Q Serve(g_s), s	7.5	33.2	33.2	16.5	42.2	10.2	33.5	38.6	40.5	8.1	39.4	39.4
Cycle Q Clear(g_c), s	7.5	33.2	33.2	16.5	42.2	10.2	33.5	38.6	40.5	8.1	39.4	39.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	179	779	357	393	1486	454	798	2211	685	241	925	425
V/C Ratio(X)	1.58	1.34	1.64	2.18	1.05	0.31	1.73	0.74	0.76	0.81	1.22	1.59
Avail Cap(c_a), veh/h	179	779	357	393	1486	454	798	2211	685	265	925	425
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.8	55.9	55.9	64.3	51.4	40.1	55.8	34.2	34.8	66.5	52.8	52.8
Incr Delay (d2), s/veh	287.4	160.8	301.7	541.3	36.3	0.1	333.1	1.2	4.5	14.4	109.5	275.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	31.3	42.7	36.7	22.4	3.9	51.2	15.6	15.9	4.0	30.4	47.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	356.2	216.7	357.6	605.6	87.7	40.2	388.8	35.4	39.3	81.0	162.3	327.9
LnGrp LOS	F	F	F	F	F	D	F	D	D	F	F	F
Approach Vol, veh/h		1913			2554			3532			2000	
Approach Delay, s/veh		280.6			259.2			174.1			210.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	39.0	45.0	13.0	48.0	15.6	68.4	22.0	39.0
Change Period (Y+Rc), s	5.5	* 5.6	5.5	5.8	5.5	* 5.6	5.5	5.8
Max Green Setting (Gmax), s	33.5	* 39	7.5	42.2	11.1	* 62	16.5	33.2
Max Q Clear Time (g_c+I1), s	35.5	41.4	9.5	44.2	10.1	42.5	18.5	35.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	223.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	10	320	40	20	30	350	2789	10	150	3803	80
Future Volume (veh/h)	110	10	320	40	20	30	350	2789	10	150	3803	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	174	240	43	22	33	380	3032	11	163	4134	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	203	295	94	35	53	256	2618	9	120	2498	756
Arrive On Green	0.19	0.19	0.19	0.05	0.05	0.05	0.07	0.50	0.50	0.07	0.49	0.49
Sat Flow, veh/h	748	1085	1575	1781	673	1009	3456	5252	19	1781	5106	1545
Grp Volume(v), veh/h	294	0	240	43	0	55	380	1964	1079	163	4134	87
Grp Sat Flow(s),veh/h/ln	1833	0	1575	1781	0	1682	1728	1702	1867	1781	1702	1545
Q Serve(g_s), s	16.6	0.0	15.6	2.5	0.0	3.4	7.9	53.2	53.2	7.2	52.2	3.3
Cycle Q Clear(g_c), s	16.6	0.0	15.6	2.5	0.0	3.4	7.9	53.2	53.2	7.2	52.2	3.3
Prop In Lane	0.41		1.00	1.00		0.60	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	343	0	295	94	0	89	256	1697	931	120	2498	756
V/C Ratio(X)	0.86	0.00	0.81	0.46	0.00	0.62	1.49	1.16	1.16	1.36	1.66	0.12
Avail Cap(c_a), veh/h	550	0	472	534	0	504	256	1697	931	120	2498	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	0.0	41.6	49.1	0.0	49.5	49.4	26.8	26.8	49.8	27.3	14.8
Incr Delay (d2), s/veh	4.2	0.0	2.5	1.3	0.0	2.6	238.2	77.9	83.8	204.9	296.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	6.2	1.1	0.0	1.5	11.8	37.5	42.7	9.9	87.5	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	0.0	44.0	50.4	0.0	52.1	287.6	104.6	110.5	254.7	323.9	14.8
LnGrp LOS	D	A	D	D	A	D	F	F	F	F	F	B
Approach Vol, veh/h		534			98			3423			4384	
Approach Delay, s/veh		45.2			51.3			126.8			315.2	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	57.1		25.5	12.0	58.1		11.1
Change Period (Y+Rc), s	* 5.1	* 4.9		5.5	* 4.8	* 4.9		5.5
Max Green Setting (Gmax), s	* 7.9	* 52		32.0	* 7.2	* 53		32.0
Max Q Clear Time (g_c+I1), s	9.9	54.2		18.6	9.2	55.2		5.4
Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	0.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	218.6
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	500	0	450	0	2499	350	0	2523	1720
Future Volume (veh/h)	0	0	0	500	0	450	0	2499	350	0	2523	1720
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				543	0	489	0	2716	0	0	2742	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				774	0	624	0	3551		0	3231	
Arrive On Green				0.22	0.00	0.22	0.00	0.63	0.00	0.00	0.63	0.00
Sat Flow, veh/h				3456	0	2790	0	5611	1585	0	5274	2790
Grp Volume(v), veh/h				543	0	489	0	2716	0	0	2742	0
Grp Sat Flow(s),veh/h/ln				1728	0	1395	0	1870	1585	0	1702	1395
Q Serve(g_s), s				9.6	0.0	10.9	0.0	22.8	0.0	0.0	28.2	0.0
Cycle Q Clear(g_c), s				9.6	0.0	10.9	0.0	22.8	0.0	0.0	28.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				774	0	624	0	3551		0	3231	
V/C Ratio(X)				0.70	0.00	0.78	0.00	0.76		0.00	0.85	
Avail Cap(c_a), veh/h				912	0	737	0	5359		0	4853	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.7	0.0	24.2	0.0	8.7	0.0	0.0	9.6	0.0
Incr Delay (d2), s/veh				2.0	0.0	4.7	0.0	0.2	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.9	0.0	3.8	0.0	5.7	0.0	0.0	6.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				25.7	0.0	28.9	0.0	8.8	0.0	0.0	10.3	0.0
LnGrp LOS				C	A	C	A	A		A	B	
Approach Vol, veh/h					1032			2716	A		2742	A
Approach Delay, s/veh					27.2			8.8			10.3	
Approach LOS					C			A			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	46.9		46.9		19.3			
Change Period (Y+Rc), s	* 5		5.0		4.5			
Max Green Setting (Gmax), s	* 63		63.0		17.5			
Max Q Clear Time (g_c+I1), s	24.8		30.2		12.9			
Green Ext Time (p_c), s	11.9		11.7		1.9			

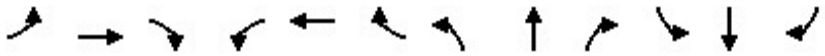
Intersection Summary								
HCM 6th Ctrl Delay		12.4						
HCM 6th LOS		B						

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1200	0	600	0	0	0	0	2279	560	0	2143	450
Future Volume (veh/h)	1200	0	600	0	0	0	0	2279	560	0	2143	450
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	1304	0	652				0	2477	0	0	2329	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1687	0	937				0	3621		0	2716	
Arrive On Green	0.34	0.00	0.34				0.00	0.48	0.00	0.00	0.48	0.00
Sat Flow, veh/h	5023	0	2790				0	7481	1585	0	5611	1585
Grp Volume(v), veh/h	1304	0	652				0	2477	0	0	2329	0
Grp Sat Flow(s),veh/h/ln	1674	0	1395				0	1870	1585	0	1870	1585
Q Serve(g_s), s	11.9	0.0	10.3				0.0	13.0	0.0	0.0	18.7	0.0
Cycle Q Clear(g_c), s	11.9	0.0	10.3				0.0	13.0	0.0	0.0	18.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1687	0	937				0	3621		0	2716	
V/C Ratio(X)	0.77	0.00	0.70				0.00	0.68		0.00	0.86	
Avail Cap(c_a), veh/h	1819	0	1010				0	4056		0	2998	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	15.2	0.0	14.7				0.0	10.2	0.0	0.0	11.6	0.0
Incr Delay (d2), s/veh	2.0	0.0	1.9				0.0	0.3	0.0	0.0	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	3.0				0.0	3.6	0.0	0.0	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	0.0	16.6				0.0	10.5	0.0	0.0	13.9	0.0
LnGrp LOS	B	A	B				A	B		A	B	
Approach Vol, veh/h		1956						2477	A		2329	A
Approach Delay, s/veh		17.0						10.5			13.9	
Approach LOS		B						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	29.4	21.7	29.4
Change Period (Y+Rc), s	* 4.7	4.5	4.7
Max Green Setting (Gmax), s	* 28	18.5	27.3
Max Q Clear Time (g_c+I1), s	15.0	13.9	20.7
Green Ext Time (p_c), s	6.6	3.3	4.0

Intersection Summary	
HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	310	130	370	330	140	100	1719	110	230	2173	320
Future Volume (veh/h)	250	310	130	370	330	140	100	1719	110	230	2173	320
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	272	337	141	402	359	152	109	1868	120	250	2362	348
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	688	301	327	712	291	115	2807	690	305	2507	771
Arrive On Green	0.10	0.19	0.19	0.09	0.19	0.19	0.03	0.44	0.44	0.09	0.49	0.49
Sat Flow, veh/h	3456	3554	1553	3563	3741	1528	3456	6434	1581	3456	5106	1571
Grp Volume(v), veh/h	272	337	141	402	359	152	109	1868	120	250	2362	348
Grp Sat Flow(s),veh/h/ln	1728	1777	1553	1781	1870	1528	1728	1609	1581	1728	1702	1571
Q Serve(g_s), s	9.3	10.1	9.7	11.0	10.3	10.7	3.8	27.6	5.5	8.5	52.5	17.4
Cycle Q Clear(g_c), s	9.3	10.1	9.7	11.0	10.3	10.7	3.8	27.6	5.5	8.5	52.5	17.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	688	301	327	712	291	115	2807	690	305	2507	771
V/C Ratio(X)	0.83	0.49	0.47	1.23	0.50	0.52	0.94	0.67	0.17	0.82	0.94	0.45
Avail Cap(c_a), veh/h	505	1145	500	327	999	408	115	2807	690	363	2510	772
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	43.1	42.9	54.4	43.5	43.6	57.8	26.8	20.6	53.7	28.9	19.9
Incr Delay (d2), s/veh	3.8	0.8	1.7	127.1	0.9	2.5	66.1	0.5	0.1	10.2	8.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	4.5	3.9	10.7	4.9	4.3	2.7	10.1	2.1	4.0	21.5	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	43.9	44.5	181.5	44.4	46.1	123.9	27.4	20.7	63.9	37.2	20.8
LnGrp LOS	E	D	D	F	D	D	F	C	C	E	D	C
Approach Vol, veh/h		750			913			2097			2960	
Approach Delay, s/veh		48.8			105.1			32.0			37.5	
Approach LOS		D			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	64.6	16.9	28.8	16.1	58.1	16.5	29.2
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	* 6
Max Green Setting (Gmax), s	4.0	* 59	17.5	32.0	12.6	* 50	11.0	* 39
Max Q Clear Time (g_c+I1), s	5.8	54.5	11.3	12.7	10.5	29.6	13.0	12.1
Green Ext Time (p_c), s	0.0	4.3	0.1	4.5	0.0	10.9	0.0	4.1

Intersection Summary	
HCM 6th Ctrl Delay	46.2
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



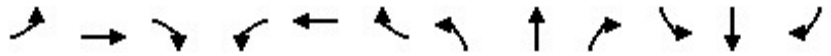
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	498	80	600	964	259	530	1380	100	263	970	260
Future Volume (veh/h)	170	498	80	600	964	259	530	1380	100	263	970	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	185	541	87	652	1048	282	576	1500	109	286	1054	283
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	623	273	663	1541	477	580	1551	474	296	1130	345
Arrive On Green	0.07	0.19	0.19	0.21	0.34	0.34	0.19	0.34	0.34	0.10	0.25	0.25
Sat Flow, veh/h	3110	3198	1400	3110	4595	1423	3110	4595	1406	3110	4595	1401
Grp Volume(v), veh/h	185	541	87	652	1048	282	576	1500	109	286	1054	283
Grp Sat Flow(s),veh/h/ln	1555	1599	1400	1555	1532	1423	1555	1532	1406	1555	1532	1401
Q Serve(g_s), s	8.4	23.4	7.6	29.9	28.1	23.5	26.4	45.9	8.0	13.1	32.1	27.3
Cycle Q Clear(g_c), s	8.4	23.4	7.6	29.9	28.1	23.5	26.4	45.9	8.0	13.1	32.1	27.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	623	273	663	1541	477	580	1551	474	296	1130	345
V/C Ratio(X)	0.82	0.87	0.32	0.98	0.68	0.59	0.99	0.97	0.23	0.97	0.93	0.82
Avail Cap(c_a), veh/h	315	671	294	663	1541	477	580	1552	475	296	1130	345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.4	55.8	49.4	56.0	41.0	39.4	58.1	46.6	34.0	64.5	52.8	51.0
Incr Delay (d2), s/veh	7.7	12.3	1.4	30.6	2.0	4.2	35.3	15.9	0.5	43.1	14.0	16.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	10.3	2.7	14.2	10.6	8.6	13.0	19.2	2.8	6.9	13.5	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.1	68.1	50.8	86.6	43.0	43.6	93.3	62.5	34.5	107.6	66.8	67.0
LnGrp LOS	E	E	D	F	D	D	F	E	C	F	E	E
Approach Vol, veh/h		813			1982			2185			1623	
Approach Delay, s/veh		67.4			57.4			69.2			74.0	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.2	41.0	15.9	54.0	19.1	54.1	36.0	33.9
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	26.7	* 35	14.5	46.0	13.6	* 48	30.5	30.0
Max Q Clear Time (g_c+I1), s	28.4	34.1	10.4	30.1	15.1	47.9	31.9	25.4
Green Ext Time (p_c), s	0.0	0.8	0.0	12.3	0.0	0.3	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	66.6
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



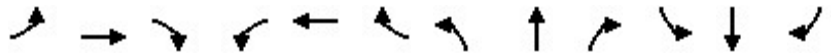
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	521	30	252	592	1290	10	790	91	470	230	120
Future Volume (veh/h)	580	521	30	252	592	1290	10	790	91	470	230	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	630	566	33	274	643	1402	11	859	99	511	250	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	1390	81	318	1942	595	13	495	57	218	1266	565
Arrive On Green	0.12	0.41	0.41	0.09	0.38	0.38	0.01	0.30	0.30	0.06	0.36	0.36
Sat Flow, veh/h	1781	3413	199	3456	5106	1564	1781	1646	190	3456	3554	1585
Grp Volume(v), veh/h	630	294	305	274	643	1402	11	0	958	511	250	130
Grp Sat Flow(s),veh/h/ln	1781	1777	1835	1728	1702	1564	1781	0	1836	1728	1777	1585
Q Serve(g_s), s	17.5	17.7	17.8	11.8	13.4	57.2	0.9	0.0	45.2	9.5	7.3	8.6
Cycle Q Clear(g_c), s	17.5	17.7	17.8	11.8	13.4	57.2	0.9	0.0	45.2	9.5	7.3	8.6
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	207	724	747	318	1942	595	13	0	552	218	1266	565
V/C Ratio(X)	3.04	0.41	0.41	0.86	0.33	2.36	0.84	0.00	1.74	2.34	0.20	0.23
Avail Cap(c_a), veh/h	207	724	747	423	1942	595	83	0	552	218	1266	565
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.5	31.7	31.7	67.3	33.0	46.6	74.6	0.0	52.6	70.5	33.5	33.9
Incr Delay (d2), s/veh	930.6	0.1	0.1	10.6	0.0	615.7	37.9	0.0	338.7	617.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	61.3	7.4	7.6	5.5	5.4	123.2	0.6	0.0	72.2	22.9	3.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	997.0	31.8	31.8	77.9	33.1	662.3	112.5	0.0	391.3	688.0	33.5	34.0
LnGrp LOS	F	C	C	E	C	F	F	A	F	F	C	C
Approach Vol, veh/h		1229			2319			969			891	
Approach Delay, s/veh		526.6			418.8			388.2			408.9	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	62.1	6.6	58.7	18.9	66.2	15.0	50.3
Change Period (Y+Rc), s	5.5	* 4.9	5.5	* 5.1	* 5.1	* 4.9	5.5	* 5.1
Max Green Setting (Gmax), s	17.5	* 57	7.0	* 47	* 18	* 57	9.5	* 45
Max Q Clear Time (g_c+I1), s	19.5	59.2	2.9	10.6	13.8	19.8	11.5	47.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.1	0.8	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	436.2
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



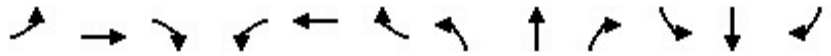
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	470	493	240	90	1189	460	970	2170	130	200	1060	310
Future Volume (veh/h)	470	493	240	90	1189	460	970	2170	130	200	1060	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	511	536	261	98	1292	500	1054	2359	141	217	1152	337
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	1539	478	142	1168	363	798	2206	676	179	1291	401
Arrive On Green	0.11	0.30	0.30	0.04	0.23	0.23	0.23	0.43	0.43	0.05	0.25	0.25
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1565	3456	5106	1585
Grp Volume(v), veh/h	511	536	261	98	1292	500	1054	2359	141	217	1152	337
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1565	1728	1702	1585
Q Serve(g_s), s	16.5	11.9	20.0	4.1	33.2	33.2	33.5	62.7	8.2	7.5	31.6	29.3
Cycle Q Clear(g_c), s	16.5	11.9	20.0	4.1	33.2	33.2	33.5	62.7	8.2	7.5	31.6	29.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	1539	478	142	1168	363	798	2206	676	179	1291	401
V/C Ratio(X)	1.30	0.35	0.55	0.69	1.11	1.38	1.32	1.07	0.21	1.21	0.89	0.84
Avail Cap(c_a), veh/h	393	1539	478	202	1168	363	798	2206	676	179	1291	401
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.3	39.6	42.4	68.7	56.0	56.0	55.8	41.2	25.7	68.8	52.3	51.4
Incr Delay (d2), s/veh	152.7	0.0	0.7	2.2	60.3	186.9	153.2	40.8	0.1	136.9	7.9	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.4	4.8	7.6	1.8	20.2	31.6	31.0	32.8	2.9	6.6	13.9	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	217.0	39.6	43.1	70.9	116.3	242.8	209.0	82.0	25.8	205.7	60.2	65.4
LnGrp LOS	F	D	D	E	F	F	F	F	C	F	E	E
Approach Vol, veh/h		1308			1890			3554			1706	
Approach Delay, s/veh		109.6			147.4			117.4			79.8	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	70.1	11.5	50.5	39.0	44.1	22.0	40.0
Change Period (Y+Rc), s	5.5	* 7.4	5.5	* 6.8	5.5	* 7.4	5.5	6.8
Max Green Setting (Gmax), s	7.5	* 63	8.5	* 41	33.5	* 37	16.5	33.2
Max Q Clear Time (g_c+I1), s	9.5	64.7	6.1	22.0	35.5	33.6	18.5	35.2
Green Ext Time (p_c), s	0.0	0.0	0.0	1.1	0.0	1.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	115.3
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



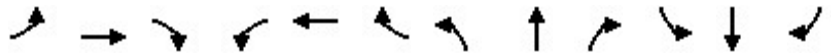
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	430	50	70	420	140	110	310	80	40	80	180
Future Volume (veh/h)	143	430	50	70	420	140	110	310	80	40	80	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	155	467	54	76	457	152	120	337	87	43	87	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	795	355	117	634	283	188	419	355	114	344	291
Arrive On Green	0.09	0.22	0.22	0.07	0.18	0.18	0.11	0.22	0.22	0.06	0.18	0.18
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	155	467	54	76	457	152	120	337	87	43	87	196
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.3	5.8	1.4	2.1	6.0	4.3	3.2	8.5	2.2	1.1	2.0	5.7
Cycle Q Clear(g_c), s	4.3	5.8	1.4	2.1	6.0	4.3	3.2	8.5	2.2	1.1	2.0	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	795	355	117	634	283	188	419	355	114	344	291
V/C Ratio(X)	0.94	0.59	0.15	0.65	0.72	0.54	0.64	0.81	0.25	0.38	0.25	0.67
Avail Cap(c_a), veh/h	165	1798	802	180	1769	789	826	867	735	934	980	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	17.2	15.5	22.6	19.2	18.5	21.3	18.2	15.8	22.3	17.3	18.9
Incr Delay (d2), s/veh	51.5	0.3	0.1	6.0	0.6	0.6	1.3	1.4	0.1	0.8	0.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	1.8	0.4	0.9	2.0	1.5	1.3	3.4	0.7	0.5	0.8	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.9	17.5	15.5	28.7	19.8	19.1	22.6	19.6	15.9	23.1	17.5	19.9
LnGrp LOS	E	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		676			685			544			326	
Approach Delay, s/veh		30.2			20.6			19.7			19.6	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	14.3	10.6	14.6	7.7	16.6	8.7	16.6
Change Period (Y+Rc), s	* 5.4	* 5.5	5.4	* 5.5	4.5	* 5.5	5.5	* 5.5
Max Green Setting (Gmax), s	* 4.6	* 25	23.0	* 26	5.0	* 25	26.0	* 23
Max Q Clear Time (g_c+I1), s	6.3	8.0	5.2	7.7	4.1	7.8	3.1	10.5
Green Ext Time (p_c), s	0.0	0.8	0.0	0.3	0.0	0.8	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



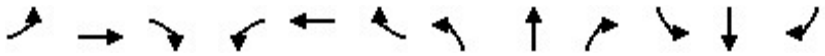
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	321	20	145	765	330	10	1620	212	100	1180	520
Future Volume (veh/h)	240	321	20	145	765	330	10	1620	212	100	1180	520
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	261	349	22	158	832	359	11	1761	230	109	1283	565
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	591	501	182	609	516	39	1220	544	134	1409	774
Arrive On Green	0.09	0.32	0.32	0.10	0.33	0.33	0.02	0.34	0.34	0.08	0.40	0.40
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	261	349	22	158	832	359	11	1761	230	109	1283	565
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.5	21.3	1.3	11.9	44.2	26.8	0.8	46.6	15.1	8.2	46.3	38.4
Cycle Q Clear(g_c), s	12.5	21.3	1.3	11.9	44.2	26.8	0.8	46.6	15.1	8.2	46.3	38.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	164	591	501	182	609	516	39	1220	544	134	1409	774
V/C Ratio(X)	1.59	0.59	0.04	0.87	1.37	0.70	0.28	1.44	0.42	0.81	0.91	0.73
Avail Cap(c_a), veh/h	164	591	501	221	609	516	249	1220	544	322	1409	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.6	39.0	32.2	60.0	45.8	39.9	65.3	44.6	34.2	61.8	38.7	27.6
Incr Delay (d2), s/veh	292.7	1.1	0.0	22.8	175.0	3.4	1.4	204.1	0.2	4.5	8.9	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	9.5	0.5	6.3	49.0	10.4	0.4	53.9	5.6	3.7	20.5	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	354.3	40.1	32.2	82.8	220.7	43.3	66.7	248.6	34.4	66.3	47.6	30.6
LnGrp LOS	F	D	C	F	F	D	E	F	C	E	D	C
Approach Vol, veh/h		632			1349			2002			1957	
Approach Delay, s/veh		169.6			157.4			223.0			43.7	
Approach LOS		F			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	51.0	7.5	60.2	18.3	49.7	14.7	53.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 6.4	4.5	6.8	4.5	6.4
Max Green Setting (Gmax), s	12.5	44.2	19.0	* 53	16.8	39.9	24.5	46.6
Max Q Clear Time (g_c+I1), s	14.5	46.2	2.8	48.3	13.9	23.3	10.2	48.6
Green Ext Time (p_c), s	0.0	0.0	0.0	2.6	0.0	1.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	143.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	370	10	80	920	221	10	943	50	132	729	350
Future Volume (veh/h)	283	370	10	80	920	221	10	943	50	132	729	350
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	308	402	11	87	1000	240	11	1025	54	143	792	380
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	914	25	107	672	161	13	778	41	101	643	308
Arrive On Green	0.10	0.50	0.50	0.06	0.46	0.46	0.01	0.23	0.23	0.06	0.28	0.28
Sat Flow, veh/h	1781	1812	50	1781	1458	350	1781	3434	181	1781	2332	1115
Grp Volume(v), veh/h	308	0	413	87	0	1240	11	530	549	143	603	569
Grp Sat Flow(s),veh/h/ln	1781	0	1861	1781	0	1807	1781	1777	1838	1781	1777	1670
Q Serve(g_s), s	15.5	0.0	21.2	7.2	0.0	69.2	0.9	34.0	34.0	8.5	41.4	41.4
Cycle Q Clear(g_c), s	15.5	0.0	21.2	7.2	0.0	69.2	0.9	34.0	34.0	8.5	41.4	41.4
Prop In Lane	1.00		0.03	1.00		0.19	1.00		0.10	1.00		0.67
Lane Grp Cap(c), veh/h	184	0	939	107	0	834	13	403	417	101	490	461
V/C Ratio(X)	1.67	0.00	0.44	0.81	0.00	1.49	0.84	1.32	1.32	1.42	1.23	1.24
Avail Cap(c_a), veh/h	184	0	939	177	0	834	59	403	417	101	490	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.3	0.0	23.7	69.7	0.0	40.4	74.4	58.0	58.0	70.7	54.3	54.3
Incr Delay (d2), s/veh	325.6	0.0	0.1	5.5	0.0	225.6	37.8	159.2	158.8	235.7	120.2	123.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.5	0.0	8.9	3.4	0.0	80.8	0.6	32.5	33.6	10.4	34.1	32.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	392.9	0.0	23.8	75.2	0.0	266.0	112.2	217.2	216.8	306.5	174.5	177.7
LnGrp LOS	F	A	C	E	A	F	F	F	F	F	F	F
Approach Vol, veh/h		721			1327			1090			1315	
Approach Delay, s/veh		181.4			253.5			215.9			190.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	76.0	5.6	48.4	13.5	82.5	13.0	41.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 7	4.5	* 6.8	4.5	7.0
Max Green Setting (Gmax), s	15.5	69.2	5.0	* 38	14.9	* 70	8.5	34.0
Max Q Clear Time (g_c+I1), s	17.5	71.2	2.9	43.4	9.2	23.2	10.5	36.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	214.0
HCM 6th LOS	F

Notes

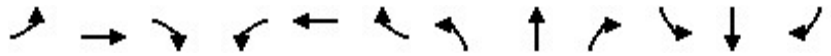
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	10	190	20	20	170	180	1057	20	50	921	125
Future Volume (veh/h)	192	10	190	20	20	170	180	1057	20	50	921	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	209	11	207	22	22	185	196	1149	22	54	1001	136
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	384	325	45	282	239	276	1430	638	142	1430	638
Arrive On Green	0.08	0.21	0.21	0.03	0.15	0.15	0.08	0.40	0.40	0.08	0.40	0.40
Sat Flow, veh/h	3456	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	209	11	207	22	22	185	196	1149	22	54	1001	136
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.7	0.3	7.5	0.8	0.6	7.0	3.5	17.9	0.5	1.8	14.7	3.5
Cycle Q Clear(g_c), s	3.7	0.3	7.5	0.8	0.6	7.0	3.5	17.9	0.5	1.8	14.7	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	384	325	45	282	239	276	1430	638	142	1430	638
V/C Ratio(X)	0.76	0.03	0.64	0.49	0.08	0.77	0.71	0.80	0.03	0.38	0.70	0.21
Avail Cap(c_a), veh/h	276	537	455	142	537	455	276	1758	784	512	2495	1113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	19.9	22.8	30.1	22.9	25.6	28.1	16.5	11.3	27.4	15.6	12.2
Incr Delay (d2), s/veh	11.5	0.0	2.1	7.9	0.1	5.3	8.3	2.3	0.0	1.7	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.1	2.6	0.4	0.3	2.7	1.6	5.9	0.2	0.7	4.6	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.7	19.9	24.8	38.0	23.0	30.9	36.4	18.8	11.4	29.0	16.2	12.4
LnGrp LOS	D	B	C	D	C	C	D	B	B	C	B	B
Approach Vol, veh/h		427			229			1367			1191	
Approach Delay, s/veh		32.0			30.8			21.2			16.4	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	29.7	6.1	17.4	9.5	29.7	9.5	14.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	44.0	5.0	18.0	18.0	31.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.5	16.7	2.8	9.5	3.8	19.9	5.7	9.0
Green Ext Time (p_c), s	0.0	7.3	0.0	0.5	0.1	5.3	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C



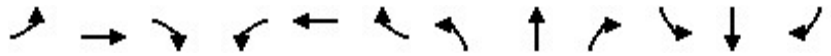
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	120	110	60	250	58	240	1412	80	56	1055	200
Future Volume (veh/h)	400	120	110	60	250	58	240	1412	80	56	1055	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	435	130	120	65	272	63	261	1535	87	61	1147	217
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	456	237	219	84	264	61	327	1607	717	78	1424	635
Arrive On Green	0.13	0.26	0.26	0.05	0.18	0.18	0.09	0.45	0.45	0.04	0.40	0.40
Sat Flow, veh/h	3456	895	826	1781	1469	340	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	435	0	250	65	0	335	261	1535	87	61	1147	217
Grp Sat Flow(s),veh/h/ln	1728	0	1722	1781	0	1809	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.9	0.0	12.9	3.7	0.0	18.5	7.6	42.9	3.3	3.5	29.4	9.8
Cycle Q Clear(g_c), s	12.9	0.0	12.9	3.7	0.0	18.5	7.6	42.9	3.3	3.5	29.4	9.8
Prop In Lane	1.00		0.48	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	456	0	456	84	0	325	327	1607	717	78	1424	635
V/C Ratio(X)	0.95	0.00	0.55	0.78	0.00	1.03	0.80	0.96	0.12	0.78	0.81	0.34
Avail Cap(c_a), veh/h	456	0	456	116	0	325	671	1677	748	86	1424	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	0.0	32.6	48.5	0.0	42.2	45.7	27.2	16.4	48.7	27.3	21.4
Incr Delay (d2), s/veh	30.5	0.0	0.8	19.6	0.0	58.1	1.7	12.5	0.0	32.7	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	0.0	5.1	2.1	0.0	13.4	3.2	18.6	1.1	2.2	11.8	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.8	0.0	33.4	68.1	0.0	100.4	47.4	39.7	16.4	81.4	30.6	21.6
LnGrp LOS	E	A	C	E	A	F	D	D	B	F	C	C
Approach Vol, veh/h		685			400			1883			1425	
Approach Delay, s/veh		59.7			95.1			39.7			31.4	
Approach LOS		E			F			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	47.4	18.1	23.2	9.0	52.7	9.3	32.0
Change Period (Y+Rc), s	* 4.6	* 6.1	4.5	* 4.7	4.5	* 6.1	4.5	* 4.7
Max Green Setting (Gmax), s	* 28	* 33	13.6	* 19	5.0	* 49	6.7	* 25
Max Q Clear Time (g_c+I1), s	9.6	31.4	14.9	20.5	5.5	44.9	5.7	14.9
Green Ext Time (p_c), s	0.1	0.7	0.0	0.0	0.0	1.7	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	45.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	494	30	201	80	20	290	140	1840	90	240	1090	215
Future Volume (veh/h)	494	30	201	80	20	290	140	1840	90	240	1090	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	537	33	218	87	22	315	152	2000	98	261	1185	234
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	18	116	172	44	190	174	1469	655	184	1490	664
Arrive On Green	0.24	0.24	0.24	0.12	0.12	0.12	0.10	0.41	0.41	0.10	0.42	0.42
Sat Flow, veh/h	1176	72	477	1436	363	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	788	0	0	109	0	315	152	2000	98	261	1185	234
Grp Sat Flow(s),veh/h/ln	1726	0	0	1799	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	36.5	0.0	0.0	8.5	0.0	18.0	12.6	62.0	5.8	15.5	43.6	15.1
Cycle Q Clear(g_c), s	36.5	0.0	0.0	8.5	0.0	18.0	12.6	62.0	5.8	15.5	43.6	15.1
Prop In Lane	0.68		0.28	0.80		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	420	0	0	216	0	190	174	1469	655	184	1490	664
V/C Ratio(X)	1.88	0.00	0.00	0.51	0.00	1.66	0.88	1.36	0.15	1.42	0.80	0.35
Avail Cap(c_a), veh/h	420	0	0	216	0	190	178	1469	655	184	1490	664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	0.0	0.0	61.8	0.0	66.0	66.8	44.0	27.5	67.3	38.0	29.7
Incr Delay (d2), s/veh	403.5	0.0	0.0	1.9	0.0	317.5	34.7	167.2	0.1	216.9	3.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	62.9	0.0	0.0	4.0	0.0	24.1	7.3	59.7	2.2	17.9	18.6	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	460.2	0.0	0.0	63.7	0.0	383.5	101.5	211.2	27.6	284.1	41.0	30.0
LnGrp LOS	F	A	A	E	A	F	F	F	C	F	D	C
Approach Vol, veh/h		788			424			2250			1680	
Approach Delay, s/veh		460.2			301.3			195.8			77.3	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	20.0	66.5		41.0	19.1	67.4		22.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	15.5	62.0		36.5	15.0	62.5		18.0
Max Q Clear Time (g_c+I1), s	17.5	64.0		38.5	14.6	45.6		20.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	7.7		0.0

Intersection Summary		
HCM 6th Ctrl Delay	206.3	
HCM 6th LOS	F	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	480	277	510	2184	1278	1280
Future Volume (veh/h)	480	277	510	2184	1278	1280
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	522	301	554	2374	1389	1391
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	593	655	430	2526	1484	934
Arrive On Green	0.17	0.17	0.24	0.71	0.42	0.42
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	522	301	554	2374	1389	1391
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	15.6	14.5	25.5	61.4	39.5	44.1
Cycle Q Clear(g_c), s	15.6	14.5	25.5	61.4	39.5	44.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	593	655	430	2526	1484	934
V/C Ratio(X)	0.88	0.46	1.29	0.94	0.94	1.49
Avail Cap(c_a), veh/h	1390	1020	430	2537	1484	934
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	22.5	40.1	13.3	29.4	18.0
Incr Delay (d2), s/veh	1.7	0.2	146.4	7.6	11.3	226.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	27.8	18.7	17.2	82.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.4	22.6	186.4	20.9	40.7	244.0
LnGrp LOS	D	C	F	C	D	F
Approach Vol, veh/h	823			2928	2780	
Approach Delay, s/veh	36.5			52.2	142.4	
Approach LOS	D			D	F	

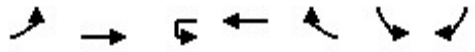
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	31.0	51.0		23.6		82.0
Change Period (Y+Rc), s	5.5	* 6.9		5.5		* 6.9
Max Green Setting (Gmax), s	25.5	* 44		42.5		* 75
Max Q Clear Time (g_c+I1), s	27.5	46.1		17.6		63.4
Green Ext Time (p_c), s	0.0	0.0		0.6		5.8

Intersection Summary	
HCM 6th Ctrl Delay	88.6
HCM 6th LOS	F

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1021	1633	0	1871	360	80	637
Future Volume (veh/h)	1021	1633	0	1871	360	80	637
Initial Q (Qb), veh	0	0		0	0	0	0
Ped-Bike Adj(A_pbT)	1.00				1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870		1870	1870	1870	1870
Adj Flow Rate, veh/h	1110	1775		2034	391	87	692
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2		2	2	2	2
Cap, veh/h	917	2684		1618	722	291	259
Arrive On Green	0.27	0.76		0.46	0.46	0.16	0.16
Sat Flow, veh/h	3456	3647		3647	1585	1781	1585
Grp Volume(v), veh/h	1110	1775		2034	391	87	692
Grp Sat Flow(s),veh/h/ln	1728	1777		1777	1585	1781	1585
Q Serve(g_s), s	39.8	36.6		68.3	26.8	6.4	24.5
Cycle Q Clear(g_c), s	39.8	36.6		68.3	26.8	6.4	24.5
Prop In Lane	1.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	917	2684		1618	722	291	259
V/C Ratio(X)	1.21	0.66		1.26	0.54	0.30	2.67
Avail Cap(c_a), veh/h	917	2684		1618	722	291	259
HCM Platoon Ratio	1.00	1.00		1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00		1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	9.0		40.9	29.5	55.2	62.8
Incr Delay (d2), s/veh	105.0	0.5		120.9	0.5	0.2	763.8
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	60.0	11.2		54.9	9.8	2.8	64.5
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	160.1	9.5		161.7	30.0	55.4	826.5
LnGrp LOS	F	A		F	C	E	F
Approach Vol, veh/h		2885		2425		779	
Approach Delay, s/veh		67.4		140.5		740.4	
Approach LOS		E		F		F	

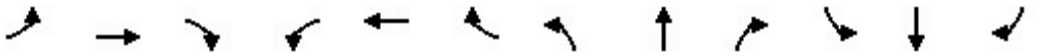
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	45.0	75.0			120.0	30.0
Change Period (Y+Rc), s	* 5.2	* 6.7			* 6.7	5.5
Max Green Setting (Gmax), s	* 40	* 68			* 1E2	24.5
Max Q Clear Time (g_c+I1), s	41.8	70.3			38.6	26.5
Green Ext Time (p_c), s	0.0	0.0			4.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	182.6
HCM 6th LOS	F

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	590	0	490	0	1300	1670	0	960	620
Future Volume (veh/h)	0	0	0	590	0	490	0	1300	1670	0	960	620
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				587	76	533	0	1413	0	0	1043	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				727	81	570	0	1848		0	1848	
Arrive On Green				0.41	0.41	0.41	0.00	0.36	0.00	0.00	0.36	0.00
Sat Flow, veh/h				1781	199	1397	0	5274	1585	0	5274	1585
Grp Volume(v), veh/h				587	0	609	0	1413	0	0	1043	0
Grp Sat Flow(s),veh/h/ln				1781	0	1596	0	1702	1585	0	1702	1585
Q Serve(g_s), s				12.5	0.0	15.7	0.0	10.5	0.0	0.0	7.1	0.0
Cycle Q Clear(g_c), s				12.5	0.0	15.7	0.0	10.5	0.0	0.0	7.1	0.0
Prop In Lane				1.00		0.88	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				727	0	652	0	1848		0	1848	
V/C Ratio(X)				0.81	0.00	0.93	0.00	0.76		0.00	0.56	
Avail Cap(c_a), veh/h				727	0	652	0	2666		0	2749	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				11.2	0.0	12.2	0.0	12.1	0.0	0.0	11.0	0.0
Incr Delay (d2), s/veh				6.2	0.0	20.5	0.0	0.4	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.9	0.0	7.8	0.0	2.7	0.0	0.0	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				17.5	0.0	32.7	0.0	12.6	0.0	0.0	11.1	0.0
LnGrp LOS				B	A	C	A	B		A	B	
Approach Vol, veh/h					1196			1413	A		1043	A
Approach Delay, s/veh					25.2			12.6			11.1	
Approach LOS					C			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	20.6		20.6		22.5			
Change Period (Y+Rc), s	* 5		5.0		4.9			
Max Green Setting (Gmax), s	* 23		22.5		17.6			
Max Q Clear Time (g_c+I1), s	9.1		12.5		17.7			
Green Ext Time (p_c), s	2.3		3.0		0.0			

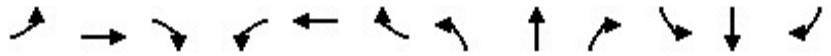
Intersection Summary	
HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	0	820	0	0	0	0	2320	890	0	1050	300
Future Volume (veh/h)	580	0	820	0	0	0	0	2320	890	0	1050	300
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	948	0	550				0	2522	0	0	1141	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	2
Cap, veh/h	1255	0	557				0	2810		0	2810	
Arrive On Green	0.35	0.00	0.35				0.00	0.55	0.00	0.00	0.55	0.00
Sat Flow, veh/h	3563	0	1581				0	5443	0	0	5274	1585
Grp Volume(v), veh/h	948	0	550				0	2522	0	0	1141	0
Grp Sat Flow(s),veh/h/ln	1781	0	1581				0	1702	0	0	1702	1585
Q Serve(g_s), s	25.1	0.0	36.9				0.0	46.8	0.0	0.0	13.8	0.0
Cycle Q Clear(g_c), s	25.1	0.0	36.9				0.0	46.8	0.0	0.0	13.8	0.0
Prop In Lane	1.00		1.00				0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	1255	0	557				0	2810		0	2810	
V/C Ratio(X)	0.76	0.00	0.99				0.00	0.90		0.00	0.41	
Avail Cap(c_a), veh/h	1255	0	557				0	3922		0	3946	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	30.5	0.0	34.3				0.0	21.3	0.0	0.0	13.9	0.0
Incr Delay (d2), s/veh	2.4	0.0	34.8				0.0	1.9	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	19.1				0.0	16.7	0.0	0.0	4.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	0.0	69.1				0.0	23.2	0.0	0.0	13.9	0.0
LnGrp LOS	C	A	E				A	C		A	B	
Approach Vol, veh/h		1498						2522	A		1141	A
Approach Delay, s/veh		46.2						23.2			13.9	
Approach LOS		D						C			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	63.7	43.0	63.7
Change Period (Y+Rc), s	* 5	* 5.4	5.0
Max Green Setting (Gmax), s	* 83	* 38	82.0
Max Q Clear Time (g_c+I1), s	15.8	38.9	48.8
Green Ext Time (p_c), s	2.9	0.0	9.9

Intersection Summary	
HCM 6th Ctrl Delay	27.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1840	250	210	2410	690	290
Future Volume (veh/h)	1840	250	210	2410	690	290
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2000	0	228	2620	750	315
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2382		261	3413	826	379
Arrive On Green	0.47	0.00	0.15	0.67	0.24	0.24
Sat Flow, veh/h	5443	0	1781	5274	3456	1585
Grp Volume(v), veh/h	2000	0	228	2620	750	315
Grp Sat Flow(s),veh/h/ln	1702	0	1781	1702	1728	1585
Q Serve(g_s), s	31.6	0.0	11.5	32.1	19.4	17.4
Cycle Q Clear(g_c), s	31.6	0.0	11.5	32.1	19.4	17.4
Prop In Lane		0.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2382		261	3413	826	379
V/C Ratio(X)	0.84		0.87	0.77	0.91	0.83
Avail Cap(c_a), veh/h	2420		265	3463	1093	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	38.4	10.4	34.0	33.2
Incr Delay (d2), s/veh	3.1	0.0	24.6	1.3	7.6	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	6.6	9.2	8.5	7.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.6	0.0	63.0	11.6	41.7	40.0
LnGrp LOS	C		E	B	D	D
Approach Vol, veh/h	2000	A		2848	1065	
Approach Delay, s/veh	24.6			15.7	41.2	
Approach LOS	C			B	D	

Timer - Assigned Phs	2			5	6	8
Phs Duration (G+Y+Rc), s	66.5			18.6	47.9	25.5
Change Period (Y+Rc), s	5.0			* 5.1	5.0	3.5
Max Green Setting (Gmax), s	62.4			* 14	43.6	29.1
Max Q Clear Time (g_c+I1), s	34.1			13.5	33.6	21.4
Green Ext Time (p_c), s	27.1			0.0	9.3	0.6

Intersection Summary	
HCM 6th Ctrl Delay	23.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	790	0	450	0	1862	1762	0	1133	620
Future Volume (veh/h)	0	0	0	790	0	450	0	1862	1762	0	1133	620
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				859	0	489	0	2024	0	0	1232	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				1200	0	550	0	2275		0	2275	
Arrive On Green				0.35	0.00	0.35	0.00	0.45	0.00	0.00	0.45	0.00
Sat Flow, veh/h				3456	0	1585	0	5274	2790	0	5274	1585
Grp Volume(v), veh/h				859	0	489	0	2024	0	0	1232	0
Grp Sat Flow(s),veh/h/ln				1728	0	1585	0	1702	1395	0	1702	1585
Q Serve(g_s), s				9.5	0.0	12.8	0.0	16.0	0.0	0.0	7.7	0.0
Cycle Q Clear(g_c), s				9.5	0.0	12.8	0.0	16.0	0.0	0.0	7.7	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1200	0	550	0	2275		0	2275	
V/C Ratio(X)				0.72	0.00	0.89	0.00	0.89		0.00	0.54	
Avail Cap(c_a), veh/h				1220	0	560	0	2373		0	2373	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				12.5	0.0	13.5	0.0	11.2	0.0	0.0	8.9	0.0
Incr Delay (d2), s/veh				2.0	0.0	15.9	0.0	4.3	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.2	0.0	6.0	0.0	4.5	0.0	0.0	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				14.4	0.0	29.4	0.0	15.5	0.0	0.0	9.0	0.0
LnGrp LOS				B	A	C	A	B		A	A	
Approach Vol, veh/h					1348			2024	A		1232	A
Approach Delay, s/veh					19.9			15.5			9.0	
Approach LOS					B			B			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	24.2		24.2		19.7			
Change Period (Y+Rc), s	4.6		4.6		4.5			
Max Green Setting (Gmax), s	20.4		20.4		15.5			
Max Q Clear Time (g_c+I1), s	18.0		9.7		14.8			
Green Ext Time (p_c), s	1.6		2.6		0.5			

Intersection Summary		
HCM 6th Ctrl Delay		15.0
HCM 6th LOS		B

Notes

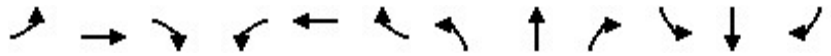
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL2	EBL	EBT	EBR	WBR	WBR2	NBT	NBR	NBR2	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	900	10	160	981	740	130	2034	460	10	1353	140
Future Volume (vph)	900	10	160	981	740	130	2034	460	10	1353	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	6.8	4.5		4.6			4.6	4.0
Lane Util. Factor		0.91	0.86	0.91	0.88		0.86			0.91	1.00
Frpb, ped/bikes		1.00	0.98	0.98	1.00		1.00			1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.89	0.85	0.85		0.97			1.00	0.85
Flt Protected		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1610	2797	1409	2787		6202			5085	1540
Flt Permitted		0.95	1.00	1.00	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1610	2797	1409	2787		6202			5085	1540
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	978	11	174	1066	804	141	2211	500	11	1471	152
RTOR Reduction (vph)	0	0	26	38	59	0	1	0	0	0	0
Lane Group Flow (vph)	0	979	691	495	886	0	2721	0	0	1471	152
Confl. Peds. (#/hr)	11			11	3				3		11
Confl. Bikes (#/hr)									8		5
Turn Type	Split	Split	NA	Perm	Prot		NA			NA	Free
Protected Phases	4	4	4		5		6			2	
Permitted Phases				4							Free
Actuated Green, G (s)		37.2	37.2	37.2	26.5		40.4			71.4	120.0
Effective Green, g (s)		37.2	37.2	37.2	26.5		40.4			71.4	120.0
Actuated g/C Ratio		0.31	0.31	0.31	0.22		0.34			0.60	1.00
Clearance Time (s)		6.8	6.8	6.8	4.5		4.6			4.6	
Vehicle Extension (s)		1.0	1.0	1.0	3.0		1.0			1.0	
Lane Grp Cap (vph)		499	867	436	615		2088			3025	1540
v/s Ratio Prot		c0.61	0.25		c0.32		c0.44			0.29	
v/s Ratio Perm				0.35							0.10
v/c Ratio		1.96	1.15dr	1.14	1.44		1.30			0.49	0.10
Uniform Delay, d1		41.4	37.9	41.4	46.8		39.8			13.8	0.0
Progression Factor		1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		440.1	4.8	85.6	207.3		140.1			0.0	0.1
Delay (s)		481.5	42.8	127.0	254.0		179.9			13.9	0.1
Level of Service		F	D	F	F		F			B	A
Approach Delay (s)			255.6				179.9			12.6	
Approach LOS			F				F			B	

Intersection Summary			
HCM 2000 Control Delay	175.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.9
Intersection Capacity Utilization	113.8%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	690	300	40	170	190	714	70	1270	20	534	1660	310
Future Volume (veh/h)	690	300	40	170	190	714	70	1270	20	534	1660	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	750	326	43	185	207	776	76	1380	22	580	1804	337
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	531	1382	178	235	401	1230	118	1497	24	623	2224	685
Arrive On Green	0.15	0.30	0.30	0.07	0.21	0.21	0.03	0.29	0.29	0.18	0.44	0.44
Sat Flow, veh/h	3456	4572	588	3563	1870	3070	3456	5175	83	3456	5106	1572
Grp Volume(v), veh/h	750	241	128	185	207	776	76	908	494	580	1804	337
Grp Sat Flow(s),veh/h/ln	1728	1702	1756	1781	1870	1535	1728	1702	1854	1728	1702	1572
Q Serve(g_s), s	21.5	7.4	7.7	7.2	13.7	28.6	3.0	36.2	36.2	23.1	43.1	21.6
Cycle Q Clear(g_c), s	21.5	7.4	7.7	7.2	13.7	28.6	3.0	36.2	36.2	23.1	43.1	21.6
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	531	1029	531	235	401	1230	118	985	536	623	2224	685
V/C Ratio(X)	1.41	0.23	0.24	0.79	0.52	0.63	0.64	0.92	0.92	0.93	0.81	0.49
Avail Cap(c_a), veh/h	531	1029	531	430	401	1230	128	1105	601	654	2412	743
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	36.7	36.8	64.4	48.5	34.3	66.7	48.2	48.2	56.5	34.5	28.4
Incr Delay (d2), s/veh	196.6	0.0	0.1	2.2	0.5	0.8	6.6	11.0	17.7	19.0	1.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.7	3.1	3.3	3.3	6.3	10.5	1.4	16.5	19.0	11.5	17.4	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	255.8	36.7	36.8	66.6	49.1	35.1	73.3	59.2	65.8	75.5	36.3	28.6
LnGrp LOS	F	D	D	E	D	D	E	E	E	E	D	C
Approach Vol, veh/h		1119			1168			1478			2721	
Approach Delay, s/veh		183.5			42.6			62.1			43.7	
Approach LOS		F			D			E			D	

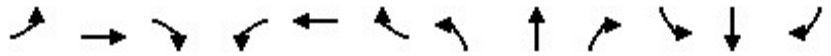
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	66.6	27.0	36.0	30.7	46.2	14.7	48.3
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 6	5.5	* 5.7	5.5	* 6
Max Green Setting (Gmax), s	5.3	* 66	21.5	* 30	26.5	* 45	16.9	* 34
Max Q Clear Time (g_c+I1), s	5.0	45.1	23.5	30.6	25.1	38.2	9.2	9.7
Green Ext Time (p_c), s	0.0	5.3	0.0	0.0	0.1	2.3	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	71.8
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



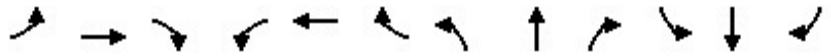
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	590	1430	760	970	970	210	1220	950	440	180	1520	420
Future Volume (veh/h)	590	1430	760	970	970	210	1220	950	440	180	1520	420
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	641	1554	826	1054	1054	228	1326	1033	478	196	1652	457
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	541	920	416	369	1127	336	679	2034	616	241	1078	292
Arrive On Green	0.16	0.27	0.27	0.11	0.22	0.22	0.20	0.40	0.40	0.07	0.27	0.27
Sat Flow, veh/h	3456	3404	1539	3456	5106	1522	3456	5106	1547	3456	3966	1074
Grp Volume(v), veh/h	641	1554	826	1054	1054	228	1326	1033	478	196	1413	696
Grp Sat Flow(s),veh/h/ln	1728	1702	1539	1728	1702	1522	1728	1702	1547	1728	1702	1636
Q Serve(g_s), s	22.7	39.2	39.2	15.5	29.4	19.9	28.5	22.1	39.0	8.1	39.4	39.4
Cycle Q Clear(g_c), s	22.7	39.2	39.2	15.5	29.4	19.9	28.5	22.1	39.0	8.1	39.4	39.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	541	920	416	369	1127	336	679	2034	616	241	925	445
V/C Ratio(X)	1.18	1.69	1.99	2.85	0.94	0.68	1.95	0.51	0.78	0.81	1.53	1.57
Avail Cap(c_a), veh/h	541	920	416	369	1127	336	679	2034	616	274	925	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.2	52.9	52.9	64.8	55.5	51.8	58.3	32.9	38.0	66.5	52.8	52.8
Incr Delay (d2), s/veh	100.8	314.6	452.0	841.4	13.8	4.5	433.9	0.1	5.6	13.3	242.8	265.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.3	56.5	67.0	49.9	13.7	7.9	53.1	8.9	15.3	4.0	47.6	48.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	161.9	367.5	504.9	906.1	69.3	56.3	492.1	33.0	43.6	79.8	295.6	318.3
LnGrp LOS	F	F	F	F	E	E	F	C	D	E	F	F
Approach Vol, veh/h		3021			2336			2837			2305	
Approach Delay, s/veh		361.5			445.6			249.4			284.1	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	45.0	28.2	37.8	15.6	63.4	21.0	45.0
Change Period (Y+Rc), s	5.5	* 5.6	5.5	5.8	5.5	* 5.6	5.5	5.8
Max Green Setting (Gmax), s	28.5	* 39	22.7	32.0	11.5	* 56	15.5	39.2
Max Q Clear Time (g_c+I1), s	30.5	41.4	24.7	31.4	10.1	41.0	17.5	41.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	332.9
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	30	180	60	20	60	360	3226	20	70	2870	120
Future Volume (veh/h)	190	30	180	60	20	60	360	3226	20	70	2870	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.96	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	33	196	65	22	65	391	3507	22	76	3120	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	41	258	173	39	116	280	2631	16	84	2380	732
Arrive On Green	0.16	0.16	0.16	0.10	0.10	0.10	0.08	0.50	0.50	0.05	0.47	0.47
Sat Flow, veh/h	1546	247	1568	1781	404	1195	3456	5235	33	1781	5106	1571
Grp Volume(v), veh/h	240	0	196	65	0	87	391	2278	1251	76	3120	130
Grp Sat Flow(s),veh/h/ln	1793	0	1568	1781	0	1599	1728	1702	1864	1781	1702	1571
Q Serve(g_s), s	14.2	0.0	13.1	3.8	0.0	5.7	8.9	55.2	55.2	4.7	51.2	5.3
Cycle Q Clear(g_c), s	14.2	0.0	13.1	3.8	0.0	5.7	8.9	55.2	55.2	4.7	51.2	5.3
Prop In Lane	0.86		1.00	1.00		0.75	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	295	0	258	173	0	155	280	1710	937	84	2380	732
V/C Ratio(X)	0.81	0.00	0.76	0.38	0.00	0.56	1.40	1.33	1.34	0.90	1.31	0.18
Avail Cap(c_a), veh/h	522	0	457	519	0	466	280	1710	937	84	2380	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	0.0	43.8	46.5	0.0	47.4	50.5	27.3	27.3	52.1	29.3	17.1
Incr Delay (d2), s/veh	2.1	0.0	1.7	0.5	0.0	1.2	198.8	153.3	158.6	64.9	143.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	5.2	1.7	0.0	2.3	11.5	56.4	63.1	3.5	50.4	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	0.0	45.5	47.0	0.0	48.5	249.3	180.6	185.9	116.9	172.4	17.1
LnGrp LOS	D	A	D	D	A	D	F	F	F	F	F	B
Approach Vol, veh/h		436			152			3920			3326	
Approach Delay, s/veh		45.9			47.9			189.2			165.1	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	56.1		23.6	10.0	60.1		16.2
Change Period (Y+Rc), s	* 5.1	* 4.9		5.5	* 4.8	* 4.9		5.5
Max Green Setting (Gmax), s	* 8.9	* 51		32.0	* 5.2	* 55		32.0
Max Q Clear Time (g_c+I1), s	10.9	53.2		16.2	6.7	57.2		7.7
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	168.2
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	320	0	450	0	2996	530	0	1810	1270
Future Volume (veh/h)	0	0	0	320	0	450	0	2996	530	0	1810	1270
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				348	0	489	0	3257	0	0	1967	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				781	0	631	0	3594		0	3271	
Arrive On Green				0.23	0.00	0.23	0.00	0.64	0.00	0.00	0.64	0.00
Sat Flow, veh/h				3456	0	2790	0	5611	1585	0	5274	2790
Grp Volume(v), veh/h				348	0	489	0	3257	0	0	1967	0
Grp Sat Flow(s),veh/h/ln				1728	0	1395	0	1870	1585	0	1702	1395
Q Serve(g_s), s				6.2	0.0	11.7	0.0	35.4	0.0	0.0	16.0	0.0
Cycle Q Clear(g_c), s				6.2	0.0	11.7	0.0	35.4	0.0	0.0	16.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				781	0	631	0	3594		0	3271	
V/C Ratio(X)				0.45	0.00	0.78	0.00	0.91		0.00	0.60	
Avail Cap(c_a), veh/h				1091	0	881	0	3803		0	3440	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.7	0.0	25.9	0.0	11.0	0.0	0.0	7.5	0.0
Incr Delay (d2), s/veh				0.4	0.0	2.9	0.0	3.3	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	3.9	0.0	10.3	0.0	0.0	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.1	0.0	28.8	0.0	14.3	0.0	0.0	7.7	0.0
LnGrp LOS				C	A	C	A	B		A	A	
Approach Vol, veh/h					837			3257	A		1967	A
Approach Delay, s/veh					26.8			14.3			7.7	
Approach LOS					C			B			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	50.6		50.6		20.6			
Change Period (Y+Rc), s	* 5		5.0		4.5			
Max Green Setting (Gmax), s	* 48		48.0		22.5			
Max Q Clear Time (g_c+I1), s	37.4		18.0		13.7			
Green Ext Time (p_c), s	8.2		6.2		2.4			

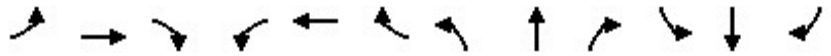
Intersection Summary		
HCM 6th Ctrl Delay		13.9
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1160	0	330	0	0	0	0	2866	520	0	1270	380
Future Volume (veh/h)	1160	0	330	0	0	0	0	2866	520	0	1270	380
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	1261	0	359				0	3115	0	0	1380	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	0	2	2
Cap, veh/h	1698	0	943				0	3616		0	2712	
Arrive On Green	0.34	0.00	0.34				0.00	0.48	0.00	0.00	0.48	0.00
Sat Flow, veh/h	5023	0	2790				0	7481	1585	0	5611	1585
Grp Volume(v), veh/h	1261	0	359				0	3115	0	0	1380	0
Grp Sat Flow(s),veh/h/ln	1674	0	1395				0	1870	1585	0	1870	1585
Q Serve(g_s), s	11.4	0.0	5.0				0.0	19.0	0.0	0.0	8.7	0.0
Cycle Q Clear(g_c), s	11.4	0.0	5.0				0.0	19.0	0.0	0.0	8.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	1698	0	943				0	3616		0	2712	
V/C Ratio(X)	0.74	0.00	0.38				0.00	0.86		0.00	0.51	
Avail Cap(c_a), veh/h	2000	0	1111				0	3735		0	2758	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	15.1	0.0	12.9				0.0	11.8	0.0	0.0	9.1	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.3				0.0	2.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	1.4				0.0	5.6	0.0	0.0	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.3	0.0	13.2				0.0	13.9	0.0	0.0	9.2	0.0
LnGrp LOS	B	A	B				A	B		A	A	
Approach Vol, veh/h		1620						3115	A		1380	A
Approach Delay, s/veh		15.6						13.9			9.2	
Approach LOS		B						B			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	29.6	21.9	29.6
Change Period (Y+Rc), s	* 4.7	4.5	4.7
Max Green Setting (Gmax), s	* 26	20.5	25.3
Max Q Clear Time (g_c+I1), s	21.0	13.4	10.7
Green Ext Time (p_c), s	3.9	4.0	3.3

Intersection Summary	
HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	550	540	130	210	380	250	140	1826	270	250	1370	250
Future Volume (veh/h)	550	540	130	210	380	250	140	1826	270	250	1370	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	598	587	141	228	478	228	152	1985	293	272	1489	272
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	386	925	405	300	871	361	162	2020	491	342	1870	578
Arrive On Green	0.11	0.26	0.26	0.08	0.23	0.23	0.05	0.31	0.31	0.10	0.37	0.37
Sat Flow, veh/h	3456	3554	1556	3563	3741	1552	3456	6434	1563	3456	5106	1579
Grp Volume(v), veh/h	598	587	141	228	478	228	152	1985	293	272	1489	272
Grp Sat Flow(s),veh/h/ln	1728	1777	1556	1781	1870	1552	1728	1609	1563	1728	1702	1579
Q Serve(g_s), s	10.5	13.8	6.9	5.9	10.6	12.4	4.1	28.8	14.9	7.2	24.5	12.4
Cycle Q Clear(g_c), s	10.5	13.8	6.9	5.9	10.6	12.4	4.1	28.8	14.9	7.2	24.5	12.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	386	925	405	300	871	361	162	2020	491	342	1870	578
V/C Ratio(X)	1.55	0.63	0.35	0.76	0.55	0.63	0.94	0.98	0.60	0.79	0.80	0.47
Avail Cap(c_a), veh/h	386	1214	531	398	1274	528	162	2020	491	496	1929	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	30.8	28.3	42.1	31.7	32.4	44.7	32.0	27.2	41.4	26.7	22.8
Incr Delay (d2), s/veh	259.6	1.1	0.8	3.9	0.9	3.1	52.7	16.1	1.6	3.3	2.7	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	5.9	2.6	2.7	4.8	4.9	2.9	12.6	5.6	3.1	9.6	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	301.3	31.9	29.0	46.0	32.6	35.5	97.4	48.1	28.8	44.7	29.4	24.0
LnGrp LOS	F	C	C	D	C	D	F	D	C	D	C	C
Approach Vol, veh/h		1326			934			2430			2033	
Approach Delay, s/veh		153.1			36.6			48.8			30.7	
Approach LOS		F			D			D			C	

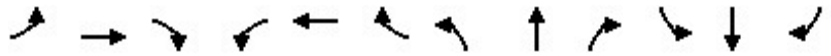
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	40.2	16.0	27.9	14.8	35.3	13.4	30.5
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	* 6
Max Green Setting (Gmax), s	4.4	* 36	10.5	32.0	13.5	* 26	10.5	* 32
Max Q Clear Time (g_c+I1), s	6.1	26.5	12.5	14.4	9.2	30.8	7.9	15.8
Green Ext Time (p_c), s	0.0	7.9	0.0	6.0	0.1	0.0	0.1	5.7

Intersection Summary	
HCM 6th Ctrl Delay	62.2
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



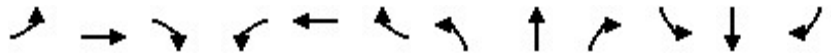
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	410	1296	300	500	685	496	300	1000	200	470	1540	130
Future Volume (veh/h)	410	1296	300	500	685	496	300	1000	200	470	1540	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	446	1409	326	543	745	539	326	1087	217	511	1674	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	474	1081	480	375	1407	436	247	1242	383	354	1401	432
Arrive On Green	0.15	0.34	0.34	0.12	0.31	0.31	0.08	0.27	0.27	0.11	0.30	0.30
Sat Flow, veh/h	3110	3198	1419	3110	4595	1424	3110	4595	1417	3110	4595	1418
Grp Volume(v), veh/h	446	1409	326	543	745	539	326	1087	217	511	1674	141
Grp Sat Flow(s),veh/h/ln	1555	1599	1419	1555	1532	1424	1555	1532	1417	1555	1532	1418
Q Serve(g_s), s	20.6	49.0	28.6	17.5	19.5	44.4	11.5	32.8	19.1	16.5	44.2	11.1
Cycle Q Clear(g_c), s	20.6	49.0	28.6	17.5	19.5	44.4	11.5	32.8	19.1	16.5	44.2	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	474	1081	480	375	1407	436	247	1242	383	354	1401	432
V/C Ratio(X)	0.94	1.30	0.68	1.45	0.53	1.24	1.32	0.87	0.57	1.44	1.20	0.33
Avail Cap(c_a), veh/h	474	1081	480	375	1407	436	247	1249	385	354	1401	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	48.0	41.3	63.8	41.6	50.3	66.7	50.6	45.6	64.3	50.4	38.9
Incr Delay (d2), s/veh	26.8	143.5	4.9	215.5	1.1	124.8	170.2	7.6	3.1	215.1	95.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	40.4	10.4	18.0	7.4	30.4	10.3	13.1	6.9	17.0	28.7	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.6	191.5	46.2	279.2	42.7	175.1	237.0	58.2	48.7	279.4	145.4	39.8
LnGrp LOS	F	F	D	F	D	F	F	E	D	F	F	D
Approach Vol, veh/h		2181			1827			1630			2326	
Approach Delay, s/veh		148.5			152.1			92.7			168.4	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	50.0	27.6	50.4	22.0	45.0	23.0	55.0
Change Period (Y+Rc), s	5.5	* 5.8	5.5	6.0	5.5	* 5.8	5.5	6.0
Max Green Setting (Gmax), s	11.5	* 44	22.1	44.4	16.5	* 39	17.5	49.0
Max Q Clear Time (g_c+I1), s	13.5	46.2	22.6	46.4	18.5	34.8	19.5	51.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	143.7
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



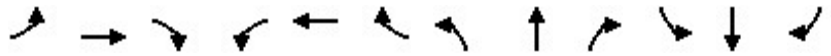
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	523	30	151	552	590	20	270	253	1430	730	610
Future Volume (veh/h)	130	523	30	151	552	590	20	270	253	1430	730	610
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	568	33	164	600	641	22	293	275	1554	793	663
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	859	50	188	1229	382	27	231	217	1022	1923	858
Arrive On Green	0.06	0.25	0.25	0.05	0.24	0.24	0.02	0.26	0.26	0.30	0.54	0.54
Sat Flow, veh/h	1781	3408	198	3456	5106	1585	1781	887	833	3456	3554	1585
Grp Volume(v), veh/h	141	296	305	164	600	641	22	0	568	1554	793	663
Grp Sat Flow(s),veh/h/ln	1781	1777	1829	1728	1702	1585	1781	0	1720	1728	1777	1585
Q Serve(g_s), s	9.5	22.5	22.5	7.1	15.2	36.2	1.9	0.0	39.2	44.5	19.8	49.6
Cycle Q Clear(g_c), s	9.5	22.5	22.5	7.1	15.2	36.2	1.9	0.0	39.2	44.5	19.8	49.6
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	113	448	461	188	1229	382	27	0	448	1022	1923	858
V/C Ratio(X)	1.25	0.66	0.66	0.87	0.49	1.68	0.80	0.00	1.27	1.52	0.41	0.77
Avail Cap(c_a), veh/h	113	448	461	188	1229	382	72	0	448	1022	1923	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.5	50.5	50.5	70.6	49.1	57.1	73.8	0.0	55.6	53.0	20.4	27.2
Incr Delay (d2), s/veh	167.7	2.9	2.8	31.7	0.1	317.3	17.7	0.0	136.7	239.0	0.1	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	10.0	10.3	3.9	6.3	47.8	1.0	0.0	33.6	52.7	8.0	18.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	238.2	53.3	53.4	102.2	49.2	374.4	91.6	0.0	192.3	291.9	20.4	31.2
LnGrp LOS	F	D	D	F	D	F	F	A	F	F	C	C
Approach Vol, veh/h		742			1405			590			3010	
Approach Delay, s/veh		88.5			203.8			188.6			163.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	41.1	7.8	86.5	13.3	42.8	50.0	44.3
Change Period (Y+Rc), s	5.5	* 4.9	5.5	* 5.1	* 5.1	* 4.9	5.5	* 5.1
Max Green Setting (Gmax), s	9.5	* 36	6.1	* 77	* 8.2	* 38	44.5	* 39
Max Q Clear Time (g_c+I1), s	11.5	38.2	3.9	51.6	9.1	24.5	46.5	41.2
Green Ext Time (p_c), s	0.0	0.0	0.0	2.0	0.0	0.8	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	166.0
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



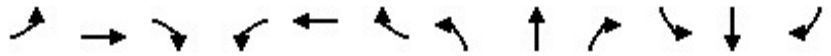
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	610	1281	630	190	556	320	450	1030	80	370	2680	220
Future Volume (veh/h)	610	1281	630	190	556	320	450	1030	80	370	2680	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	663	1392	685	207	604	348	489	1120	87	402	2913	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	1517	471	155	1165	357	298	1813	556	448	2034	631
Arrive On Green	0.11	0.30	0.30	0.04	0.23	0.23	0.09	0.35	0.35	0.13	0.40	0.40
Sat Flow, veh/h	3456	5106	1585	3456	5106	1564	3456	5106	1565	3456	5106	1585
Grp Volume(v), veh/h	663	1392	685	207	604	348	489	1120	87	402	2913	239
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1564	1728	1702	1565	1728	1702	1585
Q Serve(g_s), s	16.5	38.2	43.1	6.5	15.0	32.0	12.5	26.3	5.5	16.6	57.8	15.5
Cycle Q Clear(g_c), s	16.5	38.2	43.1	6.5	15.0	32.0	12.5	26.3	5.5	16.6	57.8	15.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	1517	471	155	1165	357	298	1813	556	448	2034	631
V/C Ratio(X)	1.69	0.92	1.45	1.34	0.52	0.98	1.64	0.62	0.16	0.90	1.43	0.38
Avail Cap(c_a), veh/h	393	1517	471	155	1165	357	298	1813	556	588	2034	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.3	49.3	51.0	69.3	49.0	55.6	66.3	38.7	32.0	62.2	43.6	30.9
Incr Delay (d2), s/veh	320.1	9.0	216.3	188.8	0.2	40.7	303.9	0.5	0.0	11.8	197.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.5	16.8	44.6	6.9	6.2	16.2	17.9	10.6	2.0	7.8	60.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	384.4	58.3	267.3	258.1	49.2	96.3	370.2	39.1	32.0	74.0	241.0	31.1
LnGrp LOS	F	E	F	F	D	F	F	D	C	E	F	C
Approach Vol, veh/h		2740			1159			1696			3554	
Approach Delay, s/veh		189.5			100.7			134.2			208.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.3	58.9	12.0	49.9	18.0	65.2	22.0	39.9
Change Period (Y+Rc), s	5.5	* 7.4	5.5	* 6.8	5.5	* 7.4	5.5	6.8
Max Green Setting (Gmax), s	24.7	* 46	6.5	* 43	12.5	* 58	16.5	33.0
Max Q Clear Time (g_c+I1), s	18.6	28.3	8.5	45.1	14.5	59.8	18.5	34.0
Green Ext Time (p_c), s	0.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	175.2
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



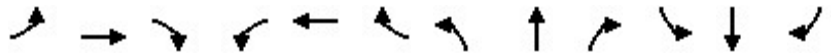
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	325	660	100	70	420	30	50	100	80	140	310	246
Future Volume (veh/h)	325	660	100	70	420	30	50	100	80	140	310	246
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	353	717	109	76	457	33	54	109	87	152	337	267
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1226	547	102	589	263	108	298	253	204	402	341
Arrive On Green	0.22	0.34	0.34	0.06	0.17	0.17	0.06	0.16	0.16	0.11	0.21	0.21
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	353	717	109	76	457	33	54	109	87	152	337	267
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	12.5	10.7	3.1	2.7	8.0	1.2	1.9	3.4	3.2	5.4	11.2	10.3
Cycle Q Clear(g_c), s	12.5	10.7	3.1	2.7	8.0	1.2	1.9	3.4	3.2	5.4	11.2	10.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	1226	547	102	589	263	108	298	253	204	402	341
V/C Ratio(X)	0.89	0.58	0.20	0.74	0.78	0.13	0.50	0.37	0.34	0.75	0.84	0.78
Avail Cap(c_a), veh/h	428	1791	799	203	1298	579	632	663	562	714	750	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	17.4	14.9	30.1	25.9	23.1	29.5	24.3	24.2	27.8	24.4	24.0
Incr Delay (d2), s/veh	18.0	0.2	0.1	10.1	0.8	0.1	1.3	0.3	0.3	2.0	1.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	3.5	1.1	1.3	3.0	0.4	0.8	1.4	1.1	2.3	4.8	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	17.6	15.0	40.2	26.8	23.1	30.9	24.6	24.5	29.9	26.2	25.5
LnGrp LOS	D	B	B	D	C	C	C	C	C	C	C	C
Approach Vol, veh/h		1179			566			250			756	
Approach Delay, s/veh		24.8			28.3			25.9			26.7	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	16.2	9.3	19.4	8.2	27.9	12.9	15.8
Change Period (Y+Rc), s	* 5.4	* 5.5	5.4	* 5.5	4.5	* 5.5	5.5	* 5.5
Max Green Setting (Gmax), s	4.6	* 24	23.0	* 26	7.4	* 33	26.0	* 23
Max Q Clear Time (g_c+I1), s	14.5	10.0	3.9	13.2	4.7	12.7	7.4	5.4
Green Ext Time (p_c), s	0.0	0.8	0.0	0.8	0.0	1.4	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	26.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



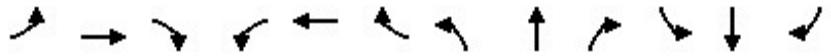
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	500	835	20	183	383	200	10	960	175	300	1680	290
Future Volume (veh/h)	500	835	20	183	383	200	10	960	175	300	1680	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	543	908	22	199	416	217	11	1043	190	326	1826	315
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	632	536	113	458	388	36	997	445	303	1530	931
Arrive On Green	0.16	0.34	0.34	0.06	0.24	0.24	0.02	0.28	0.28	0.17	0.43	0.43
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	543	908	22	199	416	217	11	1043	190	326	1826	315
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	23.5	50.7	1.4	9.5	32.4	18.0	0.9	42.1	14.7	25.5	64.6	15.4
Cycle Q Clear(g_c), s	23.5	50.7	1.4	9.5	32.4	18.0	0.9	42.1	14.7	25.5	64.6	15.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	279	632	536	113	458	388	36	997	445	303	1530	931
V/C Ratio(X)	1.95	1.44	0.04	1.76	0.91	0.56	0.31	1.05	0.43	1.08	1.19	0.34
Avail Cap(c_a), veh/h	279	632	536	113	458	388	226	997	445	303	1530	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.3	49.7	33.3	70.3	55.0	49.6	72.5	53.9	44.1	62.2	42.7	15.9
Incr Delay (d2), s/veh	438.5	205.3	0.0	377.3	21.5	1.1	1.8	41.2	0.2	73.6	93.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	44.3	58.6	0.5	16.0	17.4	7.0	0.4	23.7	5.6	17.3	46.4	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	501.7	254.9	33.3	447.6	76.5	50.7	74.3	95.1	44.3	135.8	136.3	16.0
LnGrp LOS	F	F	C	F	E	D	E	F	D	F	F	B
Approach Vol, veh/h		1473			832			1244			2467	
Approach Delay, s/veh		342.6			158.5			87.2			120.9	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	43.5	7.5	71.0	14.0	57.5	30.0	48.5
Change Period (Y+Rc), s	4.5	6.8	4.5	* 6.4	4.5	6.8	4.5	6.4
Max Green Setting (Gmax), s	23.5	36.7	19.0	* 49	9.5	50.7	25.5	42.1
Max Q Clear Time (g_c+I1), s	25.5	34.4	2.9	66.6	11.5	52.7	27.5	44.1
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	173.4
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



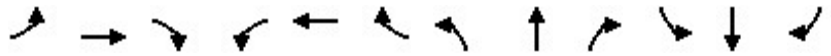
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	970	10	100	420	143	10	751	100	242	896	246
Future Volume (veh/h)	320	970	10	100	420	143	10	751	100	242	896	246
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	348	1054	11	109	457	155	11	816	109	263	974	267
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	880	9	89	466	158	13	670	90	195	869	237
Arrive On Green	0.18	0.48	0.48	0.05	0.35	0.35	0.01	0.21	0.21	0.11	0.32	0.32
Sat Flow, veh/h	1781	1848	19	1781	1331	451	1781	3151	421	1781	2758	753
Grp Volume(v), veh/h	348	0	1065	109	0	612	11	460	465	263	626	615
Grp Sat Flow(s),veh/h/ln	1781	0	1867	1781	0	1782	1781	1777	1795	1781	1777	1735
Q Serve(g_s), s	26.4	0.0	71.6	7.5	0.0	51.1	0.9	32.0	32.0	16.5	47.4	47.4
Cycle Q Clear(g_c), s	26.4	0.0	71.6	7.5	0.0	51.1	0.9	32.0	32.0	16.5	47.4	47.4
Prop In Lane	1.00		0.01	1.00		0.25	1.00		0.23	1.00		0.43
Lane Grp Cap(c), veh/h	313	0	889	89	0	625	13	378	382	195	560	547
V/C Ratio(X)	1.11	0.00	1.20	1.23	0.00	0.98	0.84	1.22	1.22	1.35	1.12	1.12
Avail Cap(c_a), veh/h	313	0	889	89	0	625	59	378	382	195	560	547
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.0	0.0	39.4	71.4	0.0	48.3	74.6	59.2	59.2	66.9	51.5	51.5
Incr Delay (d2), s/veh	84.8	0.0	100.1	168.6	0.0	30.8	37.9	119.6	119.4	185.7	74.9	77.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.9	0.0	55.0	7.5	0.0	26.9	0.6	26.4	26.7	17.4	31.8	31.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	146.8	0.0	139.5	240.0	0.0	79.1	112.5	178.8	178.6	252.6	126.4	129.1
LnGrp LOS	F	A	F	F	A	E	F	F	F	F	F	F
Approach Vol, veh/h		1413			721			936			1504	
Approach Delay, s/veh		141.3			103.4			177.9			149.6	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.9	59.5	5.6	54.4	12.0	78.4	21.0	39.0
Change Period (Y+Rc), s	4.5	6.8	4.5	* 7	4.5	* 6.8	4.5	7.0
Max Green Setting (Gmax), s	26.4	52.3	5.0	* 44	7.5	* 72	16.5	32.0
Max Q Clear Time (g_c+I1), s	28.4	53.1	2.9	49.4	9.5	73.6	18.5	34.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	145.5
HCM 6th LOS	F

Notes

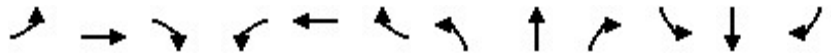
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	10	190	20	10	30	180	944	10	280	994	203
Future Volume (veh/h)	135	10	190	20	10	30	180	944	10	280	994	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	11	207	22	11	33	196	1026	11	304	1080	221
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	301	255	44	221	187	248	1268	565	354	1719	767
Arrive On Green	0.07	0.16	0.16	0.02	0.12	0.12	0.07	0.36	0.36	0.20	0.48	0.48
Sat Flow, veh/h	3456	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	147	11	207	22	11	33	196	1026	11	304	1080	221
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.9	0.3	8.8	0.8	0.4	1.3	3.9	18.2	0.3	11.5	15.7	5.8
Cycle Q Clear(g_c), s	2.9	0.3	8.8	0.8	0.4	1.3	3.9	18.2	0.3	11.5	15.7	5.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	234	301	255	44	221	187	248	1268	565	354	1719	767
V/C Ratio(X)	0.63	0.04	0.81	0.50	0.05	0.18	0.79	0.81	0.02	0.86	0.63	0.29
Avail Cap(c_a), veh/h	248	484	410	128	484	410	248	1584	707	461	2248	1003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	24.6	28.2	33.5	27.2	27.6	31.8	20.2	14.5	26.9	13.3	10.8
Incr Delay (d2), s/veh	4.6	0.0	6.4	8.3	0.1	0.4	15.6	2.6	0.0	12.1	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.2	3.5	0.4	0.2	0.5	2.0	6.5	0.1	5.4	4.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.1	24.7	34.5	41.8	27.3	28.1	47.3	22.9	14.5	39.0	13.7	11.0
LnGrp LOS	D	C	C	D	C	C	D	C	B	D	B	B
Approach Vol, veh/h		365			66			1233			1605	
Approach Delay, s/veh		34.9			32.5			26.7			18.1	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	38.1	6.2	15.7	18.3	29.3	9.2	12.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	44.0	5.0	18.0	18.0	31.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.9	17.7	2.8	10.8	13.5	20.2	4.9	3.3
Green Ext Time (p_c), s	0.0	8.3	0.0	0.4	0.4	4.6	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C



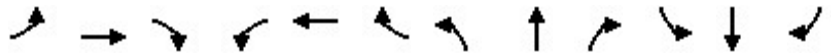
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	480	240	250	80	130	59	70	1099	60	67	1363	360
Future Volume (veh/h)	480	240	250	80	130	59	70	1099	60	67	1363	360
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	522	261	272	87	141	64	76	1195	65	73	1482	391
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	590	261	272	107	244	111	121	1492	665	93	1550	691
Arrive On Green	0.17	0.31	0.31	0.06	0.20	0.20	0.04	0.42	0.42	0.05	0.44	0.44
Sat Flow, veh/h	3456	839	874	1781	1218	553	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	522	0	533	87	0	205	76	1195	65	73	1482	391
Grp Sat Flow(s),veh/h/ln	1728	0	1713	1781	0	1771	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	18.6	0.0	39.3	6.1	0.0	13.2	2.7	37.1	3.1	5.1	51.0	23.3
Cycle Q Clear(g_c), s	18.6	0.0	39.3	6.1	0.0	13.2	2.7	37.1	3.1	5.1	51.0	23.3
Prop In Lane	1.00		0.51	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	590	0	533	107	0	355	121	1492	665	93	1550	691
V/C Ratio(X)	0.88	0.00	1.00	0.81	0.00	0.58	0.63	0.80	0.10	0.79	0.96	0.57
Avail Cap(c_a), veh/h	708	0	533	107	0	355	547	1930	861	141	1637	730
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	43.5	58.7	0.0	45.7	60.1	32.0	22.2	59.2	34.5	26.7
Incr Delay (d2), s/veh	11.3	0.0	39.1	35.9	0.0	2.3	2.0	1.4	0.0	14.9	12.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	21.4	3.8	0.0	6.1	1.2	15.0	1.1	2.6	22.8	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.5	0.0	82.6	94.6	0.0	48.0	62.1	33.5	22.2	74.1	47.2	27.2
LnGrp LOS	E	A	F	F	A	D	E	C	C	E	D	C
Approach Vol, veh/h		1055			292			1336			1946	
Approach Delay, s/veh		72.6			61.9			34.5			44.2	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	61.2	26.1	30.0	11.1	59.1	12.1	44.0
Change Period (Y+Rc), s	* 4.6	* 6.1	4.5	* 4.7	4.5	* 6.1	4.5	* 4.7
Max Green Setting (Gmax), s	* 26	* 58	25.9	* 21	10.0	* 69	7.6	* 39
Max Q Clear Time (g_c+I1), s	4.7	53.0	20.6	15.2	7.1	39.1	8.1	41.3
Green Ext Time (p_c), s	0.0	2.1	0.9	0.5	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	49.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	278	30	170	100	30	260	208	1270	80	300	1790	479
Future Volume (veh/h)	278	30	170	100	30	260	208	1270	80	300	1790	479
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	302	33	185	109	33	283	226	1380	87	326	1946	521
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	20	112	171	52	195	137	1419	633	310	1765	787
Arrive On Green	0.18	0.18	0.18	0.12	0.12	0.12	0.08	0.40	0.40	0.17	0.50	0.50
Sat Flow, veh/h	994	109	609	1383	419	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	520	0	0	142	0	283	226	1380	87	326	1946	521
Grp Sat Flow(s),veh/h/ln	1711	0	0	1801	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	27.5	0.0	0.0	11.3	0.0	18.5	11.5	57.2	5.2	26.1	74.5	37.0
Cycle Q Clear(g_c), s	27.5	0.0	0.0	11.3	0.0	18.5	11.5	57.2	5.2	26.1	74.5	37.0
Prop In Lane	0.58		0.36	0.77		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	0	222	0	195	137	1419	633	310	1765	787
V/C Ratio(X)	1.66	0.00	0.00	0.64	0.00	1.45	1.65	0.97	0.14	1.05	1.10	0.66
Avail Cap(c_a), veh/h	314	0	0	222	0	195	137	1419	633	310	1765	787
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	0.0	0.0	62.6	0.0	65.8	69.2	44.2	28.6	62.0	37.8	28.3
Incr Delay (d2), s/veh	309.8	0.0	0.0	6.0	0.0	227.8	324.9	17.7	0.1	65.4	55.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	68.9	0.0	0.0	5.6	0.0	19.9	17.4	27.2	1.9	17.0	43.3	13.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	371.0	0.0	0.0	68.6	0.0	293.5	394.2	61.9	28.7	127.3	93.0	30.4
LnGrp LOS	F	A	A	E	A	F	F	E	C	F	F	C
Approach Vol, veh/h		520			425			1693			2793	
Approach Delay, s/veh		371.0			218.4			104.6			85.4	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.6	64.4		32.0	16.0	79.0		23.0
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	26.1	59.9		27.5	11.5	74.5		18.5
Max Q Clear Time (g_c+I1), s	28.1	59.2		29.5	13.5	76.5		20.5
Green Ext Time (p_c), s	0.0	0.5		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	129.1
HCM 6th LOS	F



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1480	469	302	1516	2090	560
Future Volume (veh/h)	1480	469	302	1516	2090	560
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1609	510	328	1648	2272	609
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1163	687	172	2064	1590	709
Arrive On Green	0.34	0.34	0.10	0.58	0.45	0.45
Sat Flow, veh/h	3456	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	1609	510	328	1648	2272	609
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1777	1777	1585
Q Serve(g_s), s	50.5	40.3	14.5	54.4	67.1	51.7
Cycle Q Clear(g_c), s	50.5	40.3	14.5	54.4	67.1	51.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	1163	687	172	2064	1590	709
V/C Ratio(X)	1.38	0.74	1.90	0.80	1.43	0.86
Avail Cap(c_a), veh/h	1163	687	172	2071	1590	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	35.5	67.8	24.6	41.5	37.2
Incr Delay (d2), s/veh	177.8	3.8	428.1	2.1	196.8	9.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	50.4	34.0	26.9	21.3	70.8	20.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	227.5	39.4	495.9	26.7	238.3	47.1
LnGrp LOS	F	D	F	C	F	D
Approach Vol, veh/h	2119			1976	2881	
Approach Delay, s/veh	182.2			104.6	197.9	
Approach LOS	F			F	F	

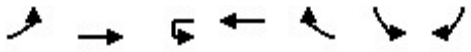
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.0	74.0		56.0		94.0
Change Period (Y+Rc), s	5.5	* 6.9		5.5		* 6.9
Max Green Setting (Gmax), s	24.5	* 67		50.5		* 87
Max Q Clear Time (g_c+I1), s	16.5	69.1		52.5		56.4
Green Ext Time (p_c), s	0.0	0.0		0.0		4.2

Intersection Summary	
HCM 6th Ctrl Delay	166.7
HCM 6th LOS	F

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1314	2132	0	1627	450	230	1013
Future Volume (veh/h)	1314	2132	0	1627	450	230	1013
Initial Q (Qb), veh	0	0		0	0	0	0
Ped-Bike Adj(A_pbT)	1.00				1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870		1870	1870	1870	1870
Adj Flow Rate, veh/h	1428	2317		1768	489	250	1101
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2		2	2	2	2
Cap, veh/h	1055	2424		1215	542	422	375
Arrive On Green	0.31	0.68		0.34	0.34	0.24	0.24
Sat Flow, veh/h	3456	3647		3647	1585	1781	1585
Grp Volume(v), veh/h	1428	2317		1768	489	250	1101
Grp Sat Flow(s),veh/h/ln	1728	1777		1777	1585	1781	1585
Q Serve(g_s), s	45.8	89.4		51.3	44.0	18.7	35.5
Cycle Q Clear(g_c), s	45.8	89.4		51.3	44.0	18.7	35.5
Prop In Lane	1.00				1.00	1.00	1.00
Lane Grp Cap(c), veh/h	1055	2424		1215	542	422	375
V/C Ratio(X)	1.35	0.96		1.45	0.90	0.59	2.93
Avail Cap(c_a), veh/h	1055	2424		1215	542	422	375
HCM Platoon Ratio	1.00	1.00		1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00		1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	21.8		49.3	47.0	50.8	57.3
Incr Delay (d2), s/veh	165.3	9.9		209.3	17.8	1.5	878.0
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	43.1	34.1		56.9	19.2	8.3	105.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	217.4	31.7		258.6	64.8	52.4	935.2
LnGrp LOS	F	C		F	E	D	F
Approach Vol, veh/h		3745		2257		1351	
Approach Delay, s/veh		102.5		216.6		771.8	
Approach LOS		F		F		F	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	51.0	58.0			109.0	41.0
Change Period (Y+Rc), s	* 5.2	* 6.7			* 6.7	5.5
Max Green Setting (Gmax), s	* 46	* 51			* 93	35.5
Max Q Clear Time (g_c+I1), s	47.8	53.3			91.4	37.5
Green Ext Time (p_c), s	0.0	0.0			1.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	260.5
HCM 6th LOS	F

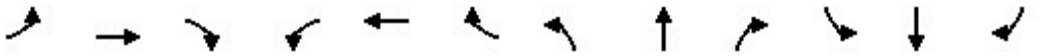
Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix F

Analysis Worksheets for Mitigated Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	259	0	36	640	34	3	324	16	23	245	76
Future Volume (veh/h)	87	259	0	36	640	34	3	324	16	23	245	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	278	0	40	711	38	3	360	18	26	275	85
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	810	0	50	698	37	4	408	20	31	337	104
Arrive On Green	0.06	0.43	0.00	0.03	0.40	0.40	0.00	0.23	0.23	0.02	0.25	0.25
Sat Flow, veh/h	1781	1870	0	1781	1759	94	1781	1766	88	1781	1371	424
Grp Volume(v), veh/h	94	278	0	40	0	749	3	0	378	26	0	360
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1853	1781	0	1854	1781	0	1794
Q Serve(g_s), s	4.1	7.8	0.0	1.7	0.0	31.1	0.1	0.0	15.4	1.1	0.0	14.8
Cycle Q Clear(g_c), s	4.1	7.8	0.0	1.7	0.0	31.1	0.1	0.0	15.4	1.1	0.0	14.8
Prop In Lane	1.00		0.00	1.00		0.05	1.00		0.05	1.00		0.24
Lane Grp Cap(c), veh/h	114	810	0	50	0	736	4	0	428	31	0	441
V/C Ratio(X)	0.83	0.34	0.00	0.81	0.00	1.02	0.70	0.00	0.88	0.84	0.00	0.82
Avail Cap(c_a), veh/h	114	810	0	114	0	736	114	0	570	114	0	441
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.3	14.8	0.0	37.9	0.0	23.6	39.1	0.0	29.1	38.4	0.0	27.9
Incr Delay (d2), s/veh	35.5	0.1	0.0	10.8	0.0	37.8	54.6	0.0	10.1	19.6	0.0	10.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.7	0.0	0.8	0.0	18.8	0.1	0.0	7.2	0.6	0.0	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.7	14.9	0.0	48.7	0.0	61.5	93.7	0.0	39.2	58.0	0.0	38.5
LnGrp LOS	E	B	A	D	A	F	F	A	D	E	A	D
Approach Vol, veh/h		372			789			381			386	
Approach Delay, s/veh		29.3			60.8			39.6			39.8	
Approach LOS		C			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	37.9	4.7	26.3	6.7	40.7	5.9	25.1
Change Period (Y+Rc), s	4.5	6.8	4.5	* 7	4.5	* 6.8	4.5	7.0
Max Green Setting (Gmax), s	5.0	31.1	5.0	* 16	5.0	* 32	5.0	24.1
Max Q Clear Time (g_c+I1), s	6.1	33.1	2.1	16.8	3.7	9.8	3.1	17.4
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	46.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



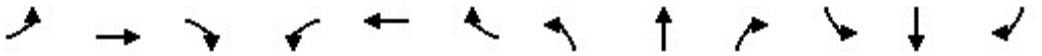
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	215	51	19	699	400	73
Future Volume (veh/h)	215	51	19	699	400	73
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	347	82	22	813	435	79
Peak Hour Factor	0.62	0.62	0.86	0.86	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	2
Cap, veh/h	405	96	47	984	627	114
Arrive On Green	0.29	0.29	0.03	0.53	0.41	0.41
Sat Flow, veh/h	1404	332	1781	1870	1540	280
Grp Volume(v), veh/h	430	0	22	813	0	514
Grp Sat Flow(s),veh/h/ln	1740	0	1781	1870	0	1820
Q Serve(g_s), s	11.3	0.0	0.6	17.7	0.0	11.3
Cycle Q Clear(g_c), s	11.3	0.0	0.6	17.7	0.0	11.3
Prop In Lane	0.81	0.19	1.00			0.15
Lane Grp Cap(c), veh/h	502	0	47	984	0	740
V/C Ratio(X)	0.86	0.00	0.47	0.83	0.00	0.69
Avail Cap(c_a), veh/h	657	0	195	2419	0	1986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	23.3	9.6	0.0	11.9
Incr Delay (d2), s/veh	8.7	0.0	7.0	1.8	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	0.3	3.9	0.0	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.0	0.0	30.3	11.5	0.0	13.1
LnGrp LOS	C	A	C	B	A	B
Approach Vol, veh/h	430			835	514	
Approach Delay, s/veh	25.0			12.0	13.1	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		30.0		18.5	5.8	24.2
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		62.7		18.3	5.3	52.9
Max Q Clear Time (g_c+I1), s		19.7		13.3	2.6	13.3
Green Ext Time (p_c), s		5.8		0.7	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	684	0	57	334	40	3	302	58	37	340	59
Future Volume (veh/h)	72	684	0	57	334	40	3	302	58	37	340	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	743	0	67	393	47	4	364	70	42	382	66
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.83	0.83	0.83	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	790	0	86	678	81	6	398	76	53	447	77
Arrive On Green	0.06	0.42	0.00	0.05	0.41	0.41	0.00	0.26	0.26	0.03	0.29	0.29
Sat Flow, veh/h	1781	1870	0	1781	1635	196	1781	1524	293	1781	1554	268
Grp Volume(v), veh/h	78	743	0	67	0	440	4	0	434	42	0	448
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1830	1781	0	1818	1781	0	1822
Q Serve(g_s), s	4.1	36.4	0.0	3.6	0.0	17.7	0.2	0.0	22.1	2.2	0.0	22.2
Cycle Q Clear(g_c), s	4.1	36.4	0.0	3.6	0.0	17.7	0.2	0.0	22.1	2.2	0.0	22.2
Prop In Lane	1.00		0.00	1.00		0.11	1.00		0.16	1.00		0.15
Lane Grp Cap(c), veh/h	100	790	0	86	0	759	6	0	474	53	0	524
V/C Ratio(X)	0.78	0.94	0.00	0.78	0.00	0.58	0.71	0.00	0.92	0.79	0.00	0.86
Avail Cap(c_a), veh/h	242	932	0	196	0	857	196	0	571	196	0	614
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.5	26.4	0.0	44.9	0.0	21.6	47.6	0.0	34.3	46.0	0.0	32.1
Incr Delay (d2), s/veh	4.9	14.6	0.0	5.5	0.0	0.3	46.2	0.0	16.2	9.3	0.0	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	17.1	0.0	1.6	0.0	6.7	0.2	0.0	11.0	1.1	0.0	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.3	41.1	0.0	50.5	0.0	21.9	93.8	0.0	50.4	55.3	0.0	41.1
LnGrp LOS	D	D	A	D	A	C	F	A	D	E	A	D
Approach Vol, veh/h		821			507			438			490	
Approach Delay, s/veh		41.9			25.7			50.8			42.3	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	46.4	4.8	34.5	9.1	47.1	7.3	31.9
Change Period (Y+Rc), s	4.5	6.8	4.5	* 7	4.5	* 6.8	4.5	7.0
Max Green Setting (Gmax), s	13.0	44.7	10.5	* 32	10.5	* 48	10.5	30.0
Max Q Clear Time (g_c+I1), s	6.1	19.7	2.2	24.2	5.6	38.4	4.2	24.1
Green Ext Time (p_c), s	0.0	1.4	0.0	1.0	0.0	2.0	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	40.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



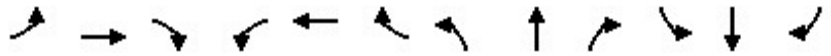
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	126	34	58	542	670	215
Future Volume (veh/h)	126	34	58	542	670	215
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	225	61	59	553	728	234
Peak Hour Factor	0.56	0.56	0.98	0.98	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	2
Cap, veh/h	260	70	84	1291	792	255
Arrive On Green	0.19	0.19	0.05	0.69	0.58	0.58
Sat Flow, veh/h	1361	369	1781	1870	1356	436
Grp Volume(v), veh/h	287	0	59	553	0	962
Grp Sat Flow(s),veh/h/ln	1736	0	1781	1870	0	1792
Q Serve(g_s), s	12.1	0.0	2.5	9.8	0.0	36.5
Cycle Q Clear(g_c), s	12.1	0.0	2.5	9.8	0.0	36.5
Prop In Lane	0.78	0.21	1.00			0.24
Lane Grp Cap(c), veh/h	331	0	84	1291	0	1047
V/C Ratio(X)	0.87	0.00	0.71	0.43	0.00	0.92
Avail Cap(c_a), veh/h	419	0	125	1548	0	1251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	35.6	5.2	0.0	14.2
Incr Delay (d2), s/veh	14.4	0.0	10.4	0.2	0.0	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	1.2	2.0	0.0	12.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.1	0.0	45.9	5.4	0.0	24.0
LnGrp LOS	D	A	D	A	A	C
Approach Vol, veh/h	287			612	962	
Approach Delay, s/veh	44.1			9.3	24.0	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		56.8		19.0	8.1	48.8
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		62.7		18.3	5.3	52.9
Max Q Clear Time (g_c+I1), s		11.8		14.1	4.5	38.5
Green Ext Time (p_c), s		3.3		0.4	0.0	5.7

Intersection Summary	
HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

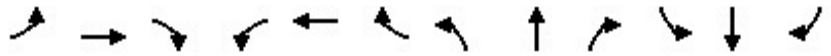
User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	494	30	201	80	20	290	140	1840	90	240	1090	215
Future Volume (veh/h)	494	30	201	80	20	290	140	1840	90	240	1090	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	537	33	218	87	22	315	152	2000	98	261	1185	234
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	581	34	226	111	104	344	185	2117	657	287	1677	1014
Arrive On Green	0.17	0.16	0.16	0.06	0.06	0.06	0.10	0.41	0.41	0.16	0.47	0.47
Sat Flow, veh/h	3456	213	1405	1781	1870	1585	1781	5106	1585	1781	3554	1585
Grp Volume(v), veh/h	537	0	251	87	22	315	152	2000	98	261	1185	234
Grp Sat Flow(s),veh/h/ln	1728	0	1617	1781	1870	1585	1781	1702	1585	1781	1777	1585
Q Serve(g_s), s	13.8	0.0	13.8	4.3	1.0	5.0	7.5	33.9	3.5	12.9	23.7	5.6
Cycle Q Clear(g_c), s	13.8	0.0	13.8	4.3	1.0	5.0	7.5	33.9	3.5	12.9	23.7	5.6
Prop In Lane	1.00		0.87	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	581	0	261	111	104	344	185	2117	657	287	1677	1014
V/C Ratio(X)	0.92	0.00	0.96	0.78	0.21	0.92	0.82	0.94	0.15	0.91	0.71	0.23
Avail Cap(c_a), veh/h	581	0	261	143	104	344	222	2126	660	287	1677	1014
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.8	0.0	37.4	41.5	40.5	34.4	39.4	25.3	16.4	37.0	18.8	6.8
Incr Delay (d2), s/veh	20.8	0.0	45.3	18.8	1.0	28.2	18.2	9.6	0.1	30.4	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	0.0	8.6	2.5	0.5	9.2	4.0	13.5	1.2	7.6	8.5	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	0.0	82.7	60.3	41.5	62.6	57.7	34.9	16.5	67.5	20.2	6.9
LnGrp LOS	E	A	F	E	D	E	E	C	B	E	C	A
Approach Vol, veh/h		788			424			2250			1680	
Approach Delay, s/veh		65.6			61.1			35.6			25.7	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	41.7	10.1	19.0	13.9	46.9	19.6	9.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	14.5	37.4	7.2	12.9	11.2	40.7	15.1	5.0
Max Q Clear Time (g_c+I1), s	15.8	35.9	6.3	15.8	9.5	25.7	15.8	7.0
Green Ext Time (p_c), s	0.0	1.4	0.0	0.0	0.1	7.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	39.1
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	278	30	170	100	30	260	208	1270	80	300	1790	479
Future Volume (veh/h)	278	30	170	100	30	260	208	1270	80	300	1790	479
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	302	33	185	109	33	283	226	1380	87	326	1946	521
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	18	101	125	87	395	235	2501	776	361	1992	1043
Arrive On Green	0.10	0.07	0.07	0.07	0.05	0.05	0.13	0.49	0.49	0.20	0.56	0.56
Sat Flow, veh/h	3456	246	1377	1781	1870	1585	1781	5106	1585	1781	3554	1585
Grp Volume(v), veh/h	302	0	218	109	33	283	226	1380	87	326	1946	521
Grp Sat Flow(s),veh/h/ln	1728	0	1623	1781	1870	1585	1781	1702	1585	1781	1777	1585
Q Serve(g_s), s	9.5	0.0	8.1	6.7	1.9	5.1	13.9	20.8	3.3	19.6	58.5	18.4
Cycle Q Clear(g_c), s	9.5	0.0	8.1	6.7	1.9	5.1	13.9	20.8	3.3	19.6	58.5	18.4
Prop In Lane	1.00		0.85	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	336	0	120	125	87	395	235	2501	776	361	1992	1043
V/C Ratio(X)	0.90	0.00	1.82	0.87	0.38	0.72	0.96	0.55	0.11	0.90	0.98	0.50
Avail Cap(c_a), veh/h	336	0	120	125	87	395	235	2501	776	507	1995	1044
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	0.0	50.9	50.6	50.9	37.7	47.4	19.6	15.1	42.8	23.5	9.6
Incr Delay (d2), s/veh	25.4	0.0	401.3	44.7	2.7	6.1	47.9	0.3	0.1	15.1	15.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	16.6	4.5	0.9	7.6	8.9	7.3	1.2	9.6	24.4	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.5	0.0	452.2	95.4	53.6	43.8	95.3	19.9	15.2	57.9	38.5	10.0
LnGrp LOS	E	A	F	F	D	D	F	B	B	E	D	A
Approach Vol, veh/h		520			425			1693			2793	
Approach Delay, s/veh		232.8			57.8			29.7			35.4	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.8	58.3	12.2	12.6	19.0	66.1	15.2	9.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.3	44.9	7.7	8.1	14.5	61.7	10.7	5.1
Max Q Clear Time (g_c+I1), s	21.6	22.8	8.7	10.1	15.9	60.5	11.5	7.1
Green Ext Time (p_c), s	0.7	9.5	0.0	0.0	0.0	1.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.3
HCM 6th LOS	D

Appendix G

Analysis Worksheets for Signal Warrants

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing Conditions AM
Intersection: Grant Line Rd AND Kiefer Blvd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

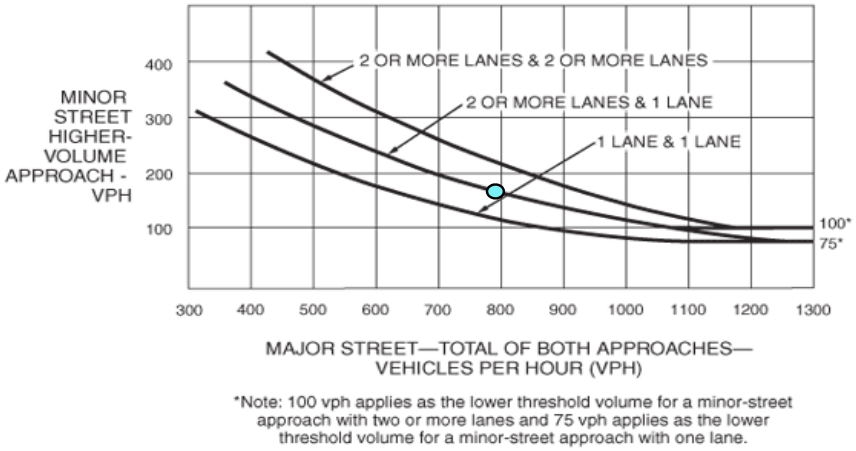
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND — No
2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND — Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches. — Yes

PART B SATISFIED **YES**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	793	
Highest Approache - Minor Street	179	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

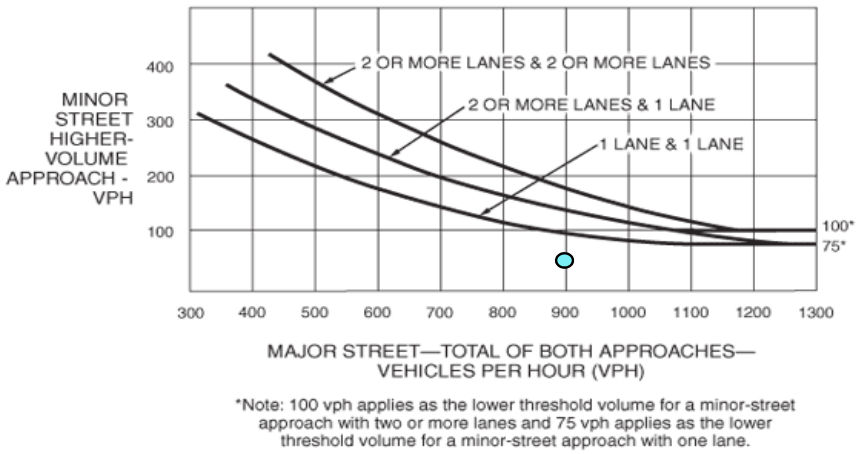
Scenario: Existing Conditions PM
Intersection: Grant Line Rd AND Kiefer Blvd
Comments:

	PART A or PART B	SATISFIED	**NO**
PART A (All parts 1, 2, and 3 below must be satisfied)		SATISFIED	**NO**
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND			No
2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND			No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.			Yes
PART B		SATISFIED	**NO**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	900	
Highest Approache - Minor Street	56	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing plus Proposed Project Conditions AM
Intersection: Grant Line Rd AND Kiefer Blvd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

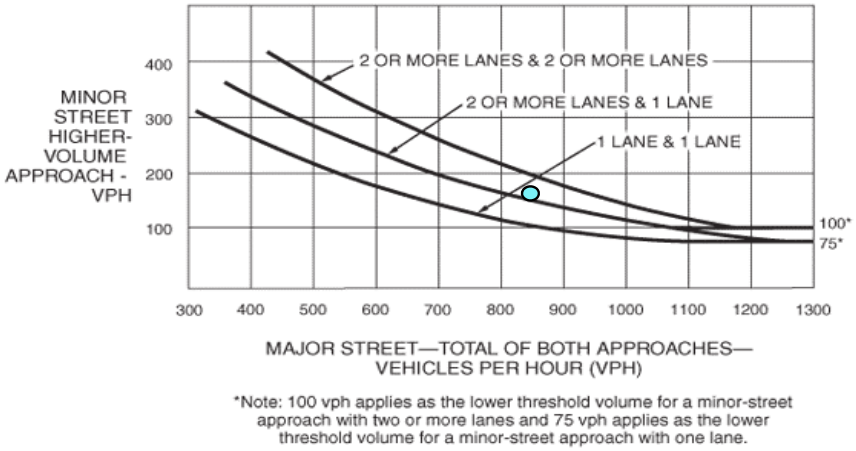
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **YES**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	854	
Highest Approach - Minor Street	183	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

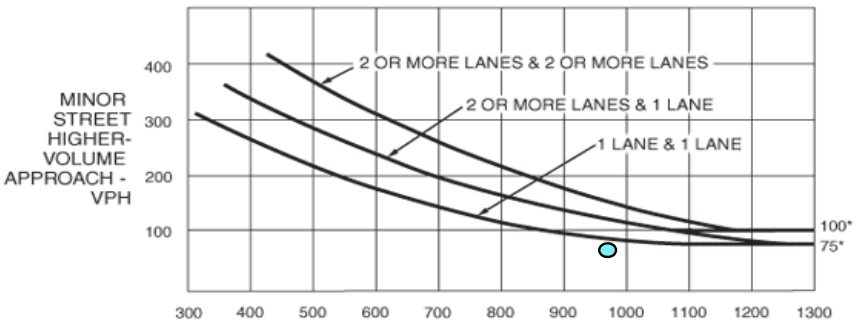
Scenario: Existing plus Proposed Project Conditions PM
Intersection: Grant Line Rd AND Kiefer Blvd
Comments:

	PART A or PART B	SATISFIED	**NO**
PART A (All parts 1, 2, and 3 below must be satisfied)		SATISFIED	**NO**
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND			No
2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND			No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.			Yes
PART B		SATISFIED	**NO**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	974	
Highest Approach - Minor Street	69	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

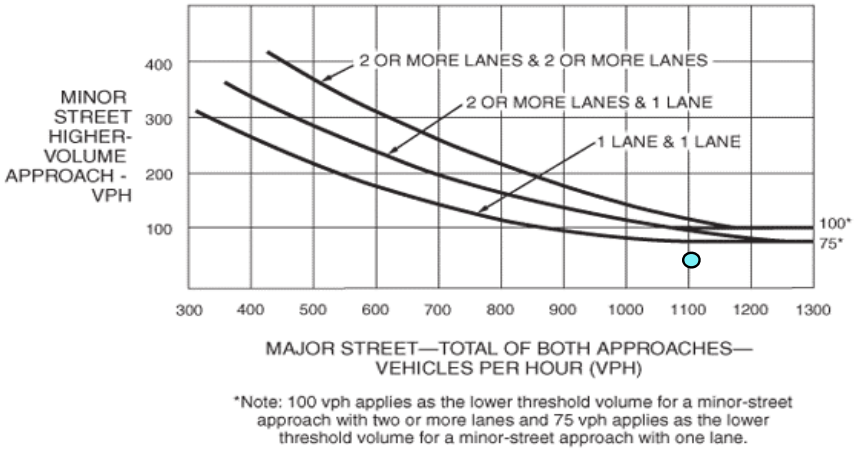
Scenario: Existing Conditions AM
Intersection: Grant Line Rd AND Raymer Way
Comments:

	PART A or PART B	SATISFIED	**NO**
PART A (All parts 1, 2, and 3 below must be satisfied)		SATISFIED	**NO**
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND			No
2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND			No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.			Yes
PART B		SATISFIED	**NO**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1119	
Highest Approache - Minor Street	50	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

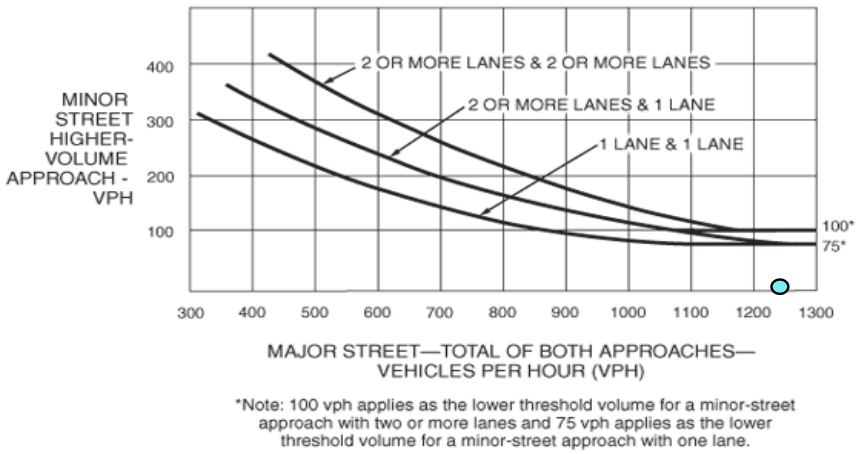
Scenario: Existing Conditions PM
Intersection: Grant Line Rd AND Raymer Way
Comments:

	PART A or PART B	SATISFIED	**NO**
PART A (All parts 1, 2, and 3 below must be satisfied)		SATISFIED	**NO**
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND			No
2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND			No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.			Yes
PART B		SATISFIED	**NO**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	1244	
Highest Approache - Minor Street	18	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

Scenario: Existing plus Proposed Project Conditions AM
Intersection: Grant Line Rd AND Kiefer Blvd
Comments:

	PART A or PART B	SATISFIED	**YES**

PART A
(All parts 1, 2, and 3 below must be satisfied) SATISFIED **NO**

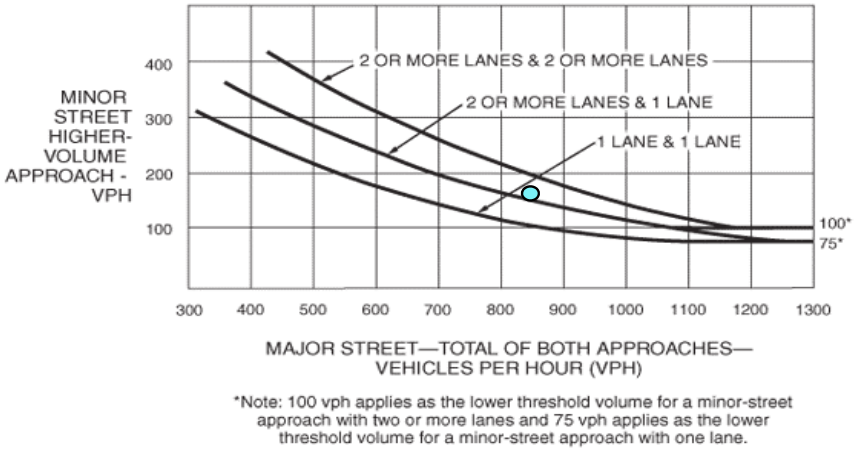
1.	The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND	No
2.	The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND	Yes
3.	The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.	Yes

PART B SATISFIED **YES**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	854	
Highest Approach - Minor Street	183	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Traffic Signal Warrants Worksheet
Warrant 3: Peak Hour
Source: MUTCD 2014 California Supplement

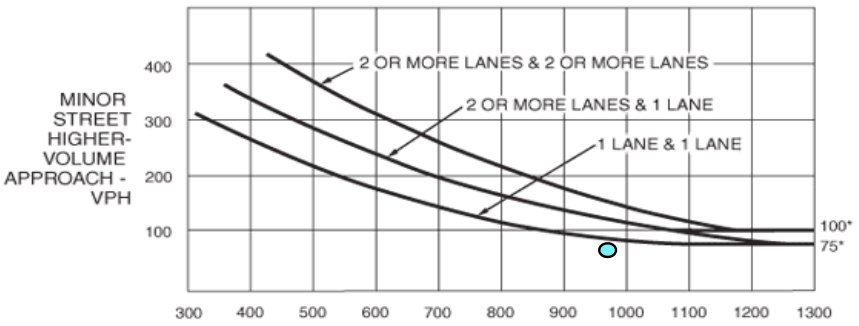
Scenario: Existing plus Proposed Project Conditions PM
Intersection: Grant Line Rd AND Kiefer Blvd
Comments:

	PART A or PART B	SATISFIED	**NO**
PART A (All parts 1, 2, and 3 below must be satisfied)		SATISFIED	**NO**
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle hours for a two-lane approach; AND			No
2. The volume on the same minor street approach equals or exceeds 75 vph for one moving lane of traffic or 100 vph for two moving lanes; AND			No
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersection with four or more approaches or 650 vph for intersection with less than four approaches.			Yes
PART B		SATISFIED	**NO**

APPROACH LANES	One	2 or More
Both Approaches - Major Street	974	
Highest Approach - Minor Street	69	

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above applicable curves in MUTCD Figure 4C-3.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley»Horn

Memorandum

To: George Carpenter
Grantline Road, LLC
c/o Winn Communities

From: Chris Gregerson, P.E., T.E., PTOE, PTP
Matt Weir, P.E., T.E., PTOE, RSP_1

Re: The Preserve
Vehicle Miles Traveled (VMT) Evaluation

Date: August 16, 2021

As requested, we have prepared this memorandum to document our evaluation of Vehicle Miles Traveled (VMT) for your residential development project located just west of the Raymer Way intersection with Grant Line Road in Rancho Cordova.

Overview

The primary purpose of this evaluation was to document the Vehicle Miles Traveled (VMT) per capita for The Preserve residential development and compare it to the VMT per capita value calculated for the City of Rancho Cordova, Sacramento County, and the SACOG region. Kimley-Horn understands that the proposed Project consists of 436 single-family detached units on the vacant parcels. A VMT analysis is required to determine if the addition of the proposed project results in a significant impact for CEQA purposes.

VMT Analysis Methodology

A CEQA VMT analysis was completed using the City's version of SACOG's SACSIM19 travel demand model for consistency of evaluation with the calculated values for the SACOG region. In addition, the analysis was tour-based, meaning that the analysis fully accounts for the entire trip length, including the length outside of the model area. While generally tour-based approaches include trips that are linked to trips that start or end at the project, for consistency with direction provided by City staff, the VMT analysis documented in this memorandum only estimates VMT based on all trips that have one end in a project location. This clarification means that intermediate trips, such as those occurring after someone has left the project area, such as a trip to pick-up lunch while at work, are not included in this analysis. Furthermore, consistent with the California Governor's Office of Planning and Research (OPR) guidelines[1] only automobile trips are considered as a part of this analysis. Heavy vehicle trips and alternative mode trips are not included in VMT analyses.

Kimley-Horn used the City's recently developed travel demand model with a base year of 2016 to perform the VMT analysis. A Traffic Analysis Zone (TAZ) representing the project area with no other land use was used to isolate the proposed project from all surrounding land uses. The 436 residential units were added to the project's TAZ to represent the project. Using the socioeconomic characteristics of developments in the immediate vicinity of the project to develop a profile of the households and persons expected to live in the proposed project, a population of 1,333 was estimated for the proposed project. Using the output trip table from the travel demand model, automobile trips either starting or ending in the proposed project were selected. These trips were factored based on the auto occupancy; single occupancy trips were multiplied by one, two-person vehicle trips were multiplied by 0.5, and three or more person trips

[1] *Technical Advisory on Evaluating Transportation Impacts in CEQA*.

were multiplied by 0.3, in a manner consistent with the methodology outlined by SACOG in its recent VMT analysis guidelines[2]. Each trip was multiplied by the model-determined distance based on the model's skim matrix determining the distance between each TAZ during the peak periods to determine that trip's VMT. Each trip's VMT was totaled to determine the total internal-internal VMT related to the proposed project.

External-internal and internal-external VMT was also calculated based on the methodologies outlined in SACOG's guidelines. A script file provided by SACOG and included in their model for VMT post-processing was run, which determined the VMT for trips that either start or end outside of the model area by TAZ. As the project was separated into its own TAZ, the VMT for the project's TAZ was added to the internal-internal total VMT to determine the total VMT associated with the proposed project. This VMT was then divided by the population of the project to determine a VMT per capita associated with the proposed project. This value was then compared to the Regional VMT Threshold for Residential land use types (15-percent below the Regional Average) to determine whether the project results in a significant impact.

VMT Analysis Results

Using the methodology described above, the VMT per Capita for the proposed Project was calculated. As shown Table 1 below, the proposed Project results in a VMT per capita value of 23.3.

Table 1 – Existing VMT Analysis Results Summary for the Proposed Project

Trip Type	Internal VMT	External VMT	Total VMT
Origin	15,157	610	15,767
Destination	14,677	604	15,281
Total	29,834	1,214	31,048
		Total Population	1,333
		VMT per Capita	**23.3**

In order to place the Project's VMT per Capita value in context, the average VMT per Capita was calculated for the entire SACOG region. The VMT per capita average for the SACOG region was calculated using the same methodology that was used to calculate the Project's average VMT per capita.

As shown Table 2 below, the average VMT per capita in the SACOG region is 23.2. Using the state's guidance, absent other substantial evidence, thresholds should be set 15-percent below the average VMT per capita. Thus, based on the analysis summarized in the tables below, the threshold for the SACOG region would be 19.7 VMT per capita, respectively.

Table 2 – Existing VMT Analysis Results Summary for the SACOG Region

Trip Type	Internal VMT	External VMT	Total VMT
Origin	18,765,997	8,788,214	27,554,210
Destination	18,765,997	8,788,214	27,554,210
Total	37,531,994	17,576,427	55,108,421
		Total Population	2,376,311
		VMT per Capita	**23.2**

Based on the analysis provided above, the project is expected to result in a finding of a significant impact based on the SACOG regional threshold as the project exceeds the threshold by approximately 15-percent.

[2] *VMT computation Procedures (DRAFT)*. Sacramento Area Council of Governments (SACOG). September 30, 2020.

VMT Mitigation Strategies

In an attempt to mitigate the Project's significant impact to less than significant, SACOG's SB 743 guidance document[3] was used to help determine what mitigation strategies would be appropriate for the Project and how much those strategies would reduce the Project's VMT per Capita. SACOG's guidance relies heavily on the information provided by the California Air Pollution Control Officers Association (CAPCOA) guidance document for quantifying VMT reduction measures[4] and both documents were used to determine the strategies that could be implemented to reduce the Project's VMT per Capita.

Based on the CAPCOA guidance, the maximum VMT reduction that can be reasonably be obtained for Projects in a suburban setting is 15-percent, but this includes reductions related to commute trips. After a review of the mitigation strategies, many of the proposed strategies were found to not be applicable for the project as they are based on projects in urban locations or are applicable only to non-residential projects. The mitigation strategies that were considered include those related to parking, reducing work commute trips, or are related to transit. As the Project is located in a developing area with only vacant land and other residential communities surrounding it, there are limited alternatives to driving for work or shopping needs and no restrictions are placed on parking. In addition, the limited access to transit and the inability to implement strategies related to employment and commuting further restricts the Project's ability to reduce its VMT per Capita.

The two feasible mitigation strategies the Project is implementing include constructing a portion of the regional trail system that is planned in the vicinity of the Project and providing monetary support for transit related services through the City of Rancho Cordova's Transit Related Services Special Tax.

The Transit Related Services Special Tax will fund transportation services as determined appropriate by the City Council. Supplemental transportation services may include, but are not limited to, the following:

- Transit Shuttle – shuttle for residents and/or employees between residential areas, employment centers, shopping and service centers and light rail stations and/or other public transit options.
- Guaranteed Ride Home – free taxi rides and rental cars for ride sharers in case of an emergency.
- Transit Subsidies – financial assistance to encourage residents and employees to use transit or other alternative transportation measures.
- Transportation Plans for employers and/or resident groups – plans which guide employers and resident groups on the implementation of trip reduction programs, such as ride share matching or other similar programs.
- Education Programs – various programs such as education of transit options, home office set up, alternative commute opportunities.
- Infrastructure Support – additional bike racks and lockers, transportation alternative and ride share informational boards/kiosks, and transit facilities.
- Transportation Coordinator Training and Support – instruction in mobility (transportation alternatives) for residential groups and work site coordinators.
- Bicycle and Alternative Fuel Vehicle Incentives – incentives for purchasing new bicycles or alternative fuel vehicles.

Based on the CAPCOA guidance, these two measures combined would provide a maximum VMT reduction of 4.5-percent, but the reduction realized would likely be lower. Even with the maximum reduction applied, the VMT per Capita for the project would continue to exceed the regional threshold and therefore the impact would remain significant and unavoidable.

[3] *Senate Bill 743 Implementation Tools*. Sacramento Area Council of Governments (SACOG). June 2020.
[4] *Quantifying Greenhouse Gas Mitigation Measures*. California Air Pollution Control Officers Association. August 2010.

Kimley»Horn

Memorandum

To: George Carpenter
Grantline Road, LLC
c/o Winn Communities

From: Chris Gregerson, P.E., T.E., PTOE, PTP
Matt Weir, P.E., T.E., PTOE, RSP_1

Re: The Preserve
Supplemental Analysis for Six Additional Units

Date: February 8, 2021

As requested, we have prepared this memorandum to document the effect of adding six (6) additional units to the Proposed Project. These findings are compared against the Level of Service (LOS) and Vehicle Miles Traveled (VMT) analyses completed previously for your residential development project located west of the Raymer Way intersection with Grant Line Road in Rancho Cordova.

Overview

The primary purpose of this evaluation is to document the effect of adding six (6) additional units to the Proposed Project. Kimley-Horn understands that the Proposed Project previously consisted of 434 single-family detached units on three vacant parcels. The six (6) additional units results in a revised total of 440 single-family detached units.

Trip Generation

To determine the number of additional trips that result from the addition of the Proposed Project (six additional units), a trip generation comparison was completed. The number of trips anticipated to be generated by the Proposed Project was approximated using data included in the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE). As shown in **Table 1**, the six additional units are estimated to generate 50 additional new daily trips, with four additional trips occurring during the AM peak-hour and five additional trips occurring during the PM peak-hour.

Table 1 – Trip Generation Summary

Land Use (ITE Code)	Size (Dwelling Units)	Daily Trips	AM Peak-Hour					PM Peak-Hour				
			Total Trips	In		Out		Total Trips	In		Out	
				%	Trips	%	Trips		%	Trips	%	Trips
Single-Family Detached Housing (210)[1]	434	4,014	313	25%	78	75%	235	416	63%	262	37%	154
Single-Family Detached Housing (210)[1]	440	4,064	317	25%	79	75%	238	421	63%	265	37%	156
New Project Trips		**50**	**4**		**1**		**3**	**5**		**3**		**2**

[1] *Trip generation based on Institute of Transporation Engineers (ITE), Trip Generation Manual, (10th Edition) equations for Single-Family Detached Housing (Land Use Code 210)*
Daily: Ln(T) = 0.92Ln(X) + 2.71
AM Peak Hour: T = 0.71(X) + 4.80
PM Peak Hour: Ln(T) = 0.96Ln(X) + 0.2
Where: T = trips generated, X = dwelling units

Level of Service (LOS) Analysis Comparison

The following guidelines were used when evaluating whether the Proposed Project results in a LOS deficiency:

Roadways/Signalized Intersections: A project is considered to have a significant effect if it would:

- result in a roadway or a signalized intersection operating at an acceptable LOS to deteriorate to an unacceptable LOS; or
- increase the V/C ratio by more than 0.05 at a roadway or at a signalized intersection that is operating at an unacceptable LOS without the project.

Unsignalized Intersections: A project is considered to have a significant effect if it would:

- result in an unsignalized intersection movement/approach operating at an acceptable LOS to deteriorate to an unacceptable LOS, and also cause the intersection to meet a traffic signal warrant; or
- for an unsignalized intersection that meets a signal warrant, increase the delay by more than 5 seconds at a movement/approach that is operating at an unacceptable LOS without the project.

Previously, the addition of the Proposed Project to the Existing (2019) Conditions resulted in a deficiency at two (2) study intersections. The addition of the Proposed Project to Cumulative (2035) Conditions resulted in a deficiency at three (3) study intersections. The addition of the Proposed Project did not result in a deficiency at any of the study roadway segments for Existing (2019) or Cumulative (2035) Conditions.

A review was undertaken to determine whether the six (6) project units would result in additional deficiencies. Only intersections and roadway segments that were identified as being close to becoming deficient or were already deficient without the addition of the project, were included in this supplemental review. Specifically, if an intersection was within five (5) seconds of delay to becoming deficient or if a roadway segment had a volume to capacity ratio (V/C ratio) within 0.05 of capacity or was already over capacity it was included in the review.

The additional 50 daily trips, with four new trips occurring during the AM peak-hour, and five new trips occurring during the PM peak-hour, were distributed to the selected study intersections and roadway segments based on the previously developed Existing (2019) and Cumulative (2035) trip distributions. It was determined that the additional trips did not result in any intersections or roadway segments currently operating acceptably to become deficient, nor did the additional trips result in any intersections or roadway segments currently operating at deficient levels to exceed the guidelines described above.

VMT Analysis Conclusions Comparison

As shown in **Table 2** below, the proposed Project resulted in a VMT per capita value of 23.3.

Table 2 – Existing VMT Analysis Results Summary for the Proposed Project

Trip Type	Internal VMT	External VMT	Total VMT
Origin	15,157	610	15,767
Destination	14,677	604	15,281
Total	29,834	1,214	31,048
		Total Population	1,333
		VMT per Capita	**23.3**

In order to place the Project's VMT per Capita value in context, the average VMT per Capita was calculated for the City of Rancho Cordova, Sacramento County, and the entire SACOG region.

Based on the previously completed analysis, the project is expected to result in a finding of a significant impact only if the City's threshold were to be based on Sacramento County or SACOG regional data as the project would exceed the threshold based on these data sources. However, the project would be expected to result in a finding of less than significant impact if the City's threshold were to be based on only City of Rancho Cordova data.

As the character of the additional six units would be consistent in terms of size and socioeconomic distribution of the residents of the other 434 units in the Proposed Project, it is reasonable to assume that the distribution and length of trips resulting from the additional units would be consistent with the rest of the units comprising the Proposed Project because the City's travel demand model is used to complete the VMT analysis. The trips generated, distributed, and assigned to the model roadway network would only increase in magnitude with the additional units and the pattern of the trips would remain consistent. While the additional six units would increase the total daily VMT generated by the Proposed Project, there would be a commensurate increase in the Proposed Project's population leading to a VMT per capita value that is consistent with the analysis performed previously.

Conclusions

As noted above, the six units are estimated to generate 50 additional new daily trips, with four additional new trips occurring during the AM peak-hour, and five additional new trips occurring during the PM peak-hour. It was determined that the additional trips do not result in any intersections or roadway segments currently operating acceptably to become deficient, nor did the additional trips result in any intersections or roadway segments currently operating at deficient levels to exceed the guidelines described above. In addition, while the additional six units would increase the total daily VMT generated by the Proposed Project, there would be a commensurate increase in the Proposed Project's population leading to a VMT per capita value that is consistent with the analysis performed previously.

Kimley»Horn

Memorandum

To: Albert Stricker, P.E.
Public Works Director, City of Rancho Cordova

From: Chris Gregerson, P.E., T.E., PTOE, PTP
Matt Weir, P.E., T.E., PTOE, RSP_1

Re: The Preserve
Centennial Drive Considerations

Date: August 16, 2021

Project Understanding

We understand that the City is currently assessing the potential of removing the extension of Centennial Drive to Grant Line Road/Capital SouthEast Connector (thereby removing the link between Rio Del Oro and Grant Line Road/the Capital SouthEast Connector). This memorandum summarizes the efforts that have been undertaken to date to analyze the removal of the extension of Centennial Drive.

Travel Demand Modeling

The initial effort occurred in April 2019 and was documented in a memorandum completed by Kimley-Horn[1]. At that time, the City provided their currently adopted Travel Demand Model (TDM) for the Forecast Year (2035) and provided two roadway network modifications to be assumed as a part of this effort[2]. The two network modifications were as follows:

1) Douglas Road – reduced from 6 lanes to 4 lanes between Rancho Cordova Parkway and Grant Line Road
2) Rancho Cordova Parkway – reduced from 6 lanes to 4 lanes between Chrysanthy Boulevard and Villagio Drive

Two versions of the model were run once these roadway network modifications were completed. The first version of the model did not have any modifications to Centennial Drive and it was assumed to connect between Americanos Boulevard and Grant Line Road. A second version of the model was run with Centennial Drive between Americanos Boulevard and Grant Line Road removed and the centroid connector that previously connected to this portion of Centennial Drive was moved to connect directly to Grant Line Road. The resulting volumes from the two model runs were compared and a difference was taken between the model run without the Centennial Drive connection and the model run with the Centennial Drive connection. The volume difference is displayed graphically in **Exhibit 1**. As shown in **Exhibit 1**, the largest daily volume increase is along White Rock Road immediately west of Grant Line Road while the largest daily volume decrease is along Centennial Drive immediately west of Americanos Boulevard. Minimal daily volume differences occur along Sunrise Boulevard and Rancho Cordova Parkway.

Roadway Segment Volumes and Levels of Service (LOS)

In addition to the volume comparison, a Level of Service (LOS) analysis was completed for select roadways in the vicinity of Centennial Drive, both with and without the Centennial Drive connection between Americanos Boulevard and Grant Line Road. The results of the LOS analysis are shown in **Table**

[1] *The Preserve DRAFT Centennial Drive Assessment*. Kimley-Horn. April 9, 2019.
[2] Email from Mark Thomas, City of Rancho Cordova, March 25, 2019.

1, below. As shown in Table 1, no roadway is expected to operate unacceptably (LOS E or worse) either with or without the Centennial Drive connection between Americanos Boulevard and Grant Line Road.

Table 1 – Roadway Segment Analysis Results

ID	Roadway	Segment		2035 with Centennial Drive					2035 without Centennial Drive				
		From	To	Travel Lanes	Facility Type	Daily Volume	Volume / Capacity Ratio	Level of Service	Travel Lanes	Facility Type	Daily Volume	Volume / Capacity Ratio	Level of Service
1	Douglas Rd	Mather Blvd	Sunrise Blvd	6	Arterial M	36,880	0.68	B	6	Arterial M	36,840	0.68	B
2	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	4	Arterial M	17,550	0.49	A	4	Arterial M	18,230	0.51	A
3	Douglas Rd	Americanos Blvd	Grant Line Rd	4	Arterial M	15,770	0.44	A	4	Arterial M	17,250	0.48	A
4	White Rock Rd	Sunrise Blvd	Rancho Cordova Pkwy	6	Arterial M	31,510	0.58	A	6	Arterial M	32,080	0.59	A
5	White Rock Rd	Americanos Blvd	Grant Line Rd	6	Arterial M	22,940	0.42	A	6	Arterial M	27,500	0.51	A
6	White Rock Rd	Grant Line Rd	Prairie City Rd	4	Expressway	59,900	0.83	D	4	Expressway	52,540	0.73	C
7	Sunrise Blvd	White Rock Rd	Douglas Rd	6	Arterial M	47,780	0.88	C	6	Arterial M	47,760	0.88	C
8	Grant Line Rd	White Rock Rd	Douglas Rd	4	Expressway	48,230	0.67	B	4	Expressway	51,600	0.72	C
9	Rancho Cordova Pkwy	White Rock Rd	Rio Del Oro Pkwy	6	Arterial M	33,170	0.61	B	6	Arterial M	33,170	0.61	B
10	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Douglas Rd	4	Arterial M	17,680	0.49	A	4	Arterial M	17,790	0.49	A
11	Americanos Blvd	International Rd	Centennial Dr	2	Arterial M	11,170	0.62	B	2	Arterial M	8,330	0.46	A
12	Americanos Blvd	Centennial Dr	Douglas Rd	2	Arterial M	10,070	0.56	A	2	Arterial M	10,240	0.57	A

Note: **Bold** represents unacceptable operations.

The number of lanes assumed for each roadway segment were taken directly from the City's TDM with the exception of Segment #6 and Segment #8 (White Rock Road between Grant Line Road and Prairie City Road, and Grant Line Road between White Rock Road and Douglas Road). While these roadway segments are assumed to be six (6) lanes in the model, they were analyzed as four-lane expressways, consistent with guidelines for the Capital SouthEast Connector.

Roadway Segment Volumes and Levels of Service (LOS) Follow Up

On July 22, 2019, Kimley-Horn met with City Staff where they requested a follow up roadway segment analysis for Baseline and Cumulative conditions based on the Rio del Oro traffic study. The No Project and Plus Project scenarios for Baseline and Cumulative Conditions from the traffic study, as well as the volumes and LOS when the rerouted volumes are taken into account based on the removal of Centennial Drive, are summarized in Exhibit 2 and Exhibit 3, respectively. As shown in Exhibit 2 and Exhibit 3, no additional impacts that haven't been previously identified were shown as a result of the removal of the Centennial Drive extension. In addition, one impact was removed in the Cumulative scenario as a result of the removal of the Centennial Drive extension.

Vehicle Miles Traveled (VMT) Assessment

In addition to the roadway segment analysis, a Vehicle Miles Traveled assessment was also completed. The regional (SACOG) VMT totaled for the two model runs, with and without the Centennial Drive extension. The assessment indicated that VMT was reduced by 6,820 without the Centennial, however it should be noted that the difference reflects a 0.008-percent difference in regional VMT. As the model used to perform this analysis includes an iterative process for assigning traffic to the model network there is inherent randomness introduced and thus this difference should be considered as indication that the removal of Centennial Drive results in a negligible difference to regional VMT.

Physical Constraints

The adopted South Sacramento Habitat Conservation Plan (SSHCP) has created conflicts with both the previously planned development of Heritage Falls and the potential construction of Centennial Drive. A review was completed in June 2019 that looked at alternative alignments for Centennial Drive that would run south of the current Centennial Drive alignment, cross the Rio Del Oro preserve and extend through the proposed Project to Grant Line Road. This was documented in a memorandum that was submitted to

the City[3]. The following reasons were cited as to why these alternative alignments were deemed infeasible:

1. The needed road crossing of the Rio Del Oro preserve is not allowed under the project's Biological Opinion and would require an amendment. The environmental consultant to the Rio Del Oro developers indicates that the developers have made it clear on several occasions that they are not interested in amending or revisiting the Biological Opinion, which was controversial and took many years to obtain.

2. Agency approval of an additional crossing through the Rio Del Oro preserve is speculative at best. This stretch of the Rio Del Oro preserve is full of resources and is a linkage preserve intended as a wildlife corridor. It seems unlikely that the USFWS would support an additional crossing.
3. The City's threshold for a collector road with frontage is fewer than 8,000 daily vehicles. The travel demand model states that the estimated traffic volume in the future along Centennial Drive would be 10,250 daily vehicles which would disallow front on driveway access. The high volume of thru-traffic would create a crossing hazard separating the existing neighborhoods of North Douglas and the future The Preserve neighborhood south of the Centennial extension from the planned park and open space amenities in conflict with the design concept for the project. The mere possibility of the future connection to Rio Del Oro would interfere with project design whether or not the connection was ever completed.

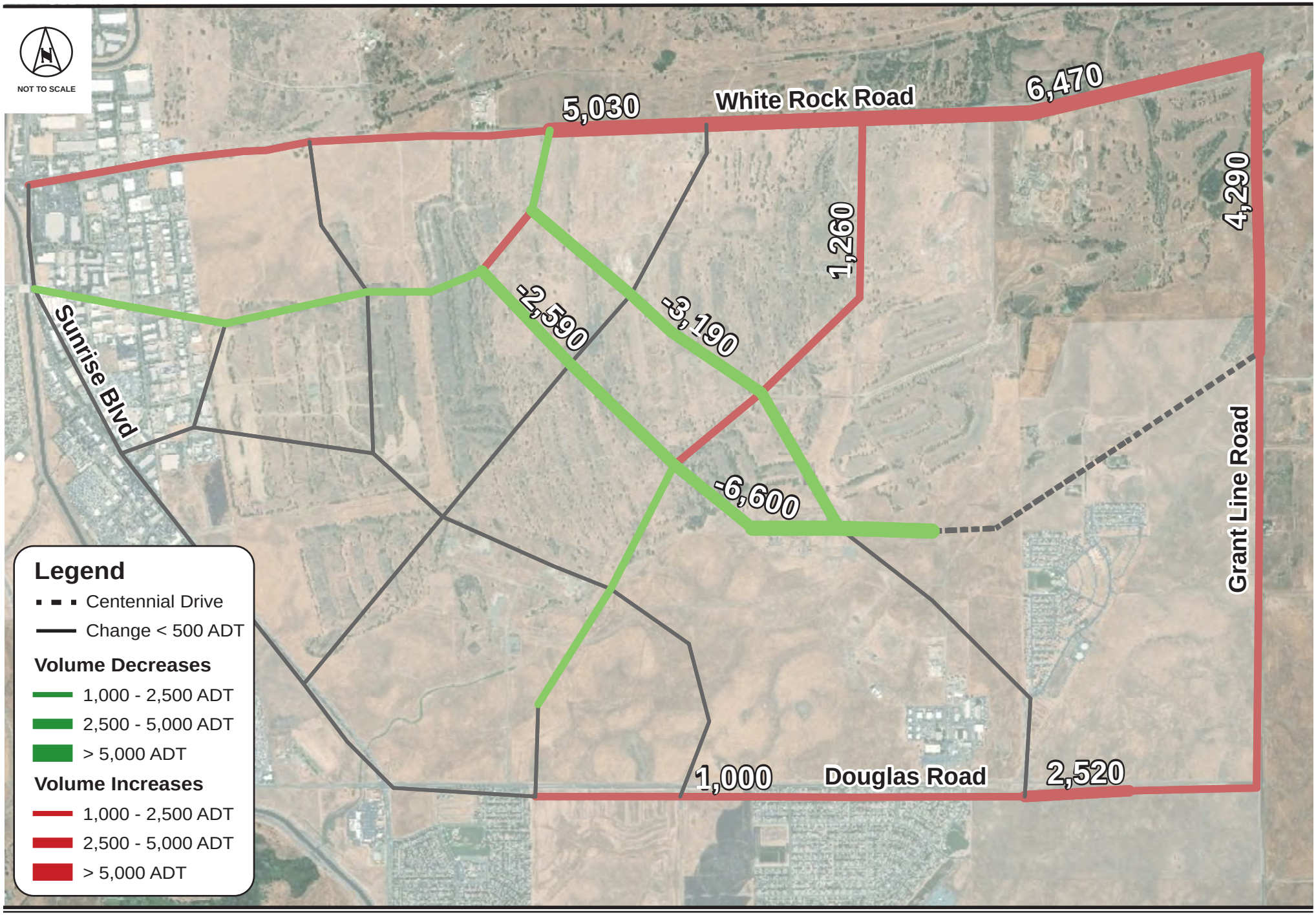
Conclusions

As shown in **Exhibit 1** and **Table 1**, the removal of the Centennial Drive connection between Americanos Boulevard and Grant Line Road is not expected to significantly impact the surrounding roadway network. While volumes are expected to fluctuate between increasing by almost 6,500 daily vehicles to decreasing by 6,600 daily vehicles, the change in daily volumes does not impact any roadway segment. When applying these fluctuating volumes to the Rio del Oro roadway segment analysis, no impacts were created that weren't previously identified and one impact for Cumulative (2030) Conditions was removed, as shown in **Exhibit 2** and **Exhibit 3**. In addition, the removal of the Centennial Drive extension has a negligible effect on regional VMT. Finally, when considering alternative alignments for the Centennial Drive extension, three alignments were reviewed and all were deemed infeasible.

Attachments:

Exhibit 1 – 2035 Daily Volume Change without Centennial Drive
Exhibit 2 – Baseline Roadway Segment Analysis and Volume Shift
Exhibit 3 – Cumulative (2030) Roadway Segment Analysis and Volume Shift

[3] *Centennial Drive Alternatives*. Bob Shattuck, Shattuck Community Planning. June 10, 2019.



Kimley»Horn

Exhibit 1
2035 Daily Volume Change without Centennial Drive

Baseline Roadway Segment Analysis and Volume Shift

ID	Roadway	Segment		Existing						Baseline (No Project)						LOS Threshold
		From	To	Travel Lanes	Facility Type	Daily Volume	LOS Threshold	Volume / Capacity Ratio	Level of Service	Travel Lanes	Facility Type	Daily Volume	LOS Threshold	Volume / Capacity Ratio	Level of Service	
1	SR 16	Excelsior Rd	Eagles Nest Road	2	Arterial Moderate	11,400	18,000	0.63	B	2	Arterial Moderate	12,100	18,000	0.67	B	D
2	SR 16	Sunrise Blvd	Grant Line Road	2	Arterial Moderate	15,400	18,000	0.86	D	2	Arterial Moderate	16,000	18,000	0.89	D	E
3	Kiefer Blvd	Grant Line Rd	SR 16	2	Rural Two-Lane	1,800	17,000	0.11	B	2	Rural Two-Lane	1,900	17,000	0.11	B	E
4	Mather Blvd	Femoyer St	Douglas Road	2	Arterial Moderate	6,000	18,000	0.33	A	2	Arterial Moderate	17,400	18,000	**0.97**	**E**	D
5	Douglas Rd	Mather Blvd	Sunrise Blvd	2	Arterial Moderate	5,000	18,000	0.28	A	2	Arterial Moderate	18,200	18,000	**1.01**	**F**	D
6	Douglas Rd	Sunrise Blvd	Grant Line Road	2	Arterial Moderate	2,300	18,000	0.13	A	See Segments #22 and #23						D
7	International Dr	South White Rock Rd	Zinfandel Dr	4	Arterial Moderate	12,000	36,000	0.33	A	4	Arterial Moderate	13,700	36,000	0.38	A	D
8	International Dr	Zinfandel Dr	Kilgore Road	4	Arterial Moderate	6,800	36,000	0.19	A	4	Arterial Moderate	8,900	36,000	0.25	A	D
9	White Rock Rd	Zinfandel Dr	Sunrise Blvd	6	Arterial Moderate	17,900	54,000	0.33	A	6	Arterial Moderate	23,200	54,000	0.43	A	D
10	White Rock Rd	Sunrise Blvd	Grant Line Road	2	Arterial Moderate	4,400	18,000	0.24	A	2	Arterial Moderate	8,200	18,000	0.46	A	D
11	Zinfandel Dr	White Rock Rd	International Dr	6	Arterial Moderate	19,700	54,000	0.36	A	6	Arterial Moderate	23,000	54,000	0.43	A	D
12	Sunrise Blvd	Gold Country Blvd	Coloma Rd	6	Arterial Moderate	75,800	54,000	**1.40**	**F**	6	Arterial Moderate	77,600	54,000	**1.44**	**F**	D
13	Sunrise Blvd	Coloma Rd	US 50	6	Arterial Moderate	82,400	54,000	**1.53**	**F**	6	Arterial Moderate	85,000	54,000	**1.57**	**F**	D
14	Sunrise Blvd	US 50	Folsom Blvd	6	Arterial Moderate	52,100	54,000	**0.96**	**E**	6	Arterial Moderate	58,600	54,000	**1.09**	**F**	D
15	Sunrise Blvd	Folsom Blvd	White Rock Rd	6	Arterial Moderate	37,200	54,000	0.69	B	6	Arterial Moderate	49,500	54,000	**0.92**	**E**	D
16	Sunrise Blvd	White Rock Rd	Douglas Road	4	Arterial Moderate	24,600	36,000	0.68	B	4	Arterial Moderate	36,700	36,000	1.02	B	D
17	Sunrise Blvd	Douglas Rd	SR 16	2	Arterial High	20,000	20,000	**1.00**	**E**	See Segments #24 and #25						D
18	Sunrise Blvd	SR 16	Grant Line Road	2	Arterial Moderate	13,600	18,000	0.76	C	2	Arterial Moderate	15,000	18,000	0.83	D	E
19	Grant Line Road	White Rock Rd	Douglas Road	2	Arterial Moderate	6,000	18,000	0.33	A	2	Arterial Moderate	8,900	18,000	0.49	A	D
20	Grant Line Road	Douglas Rd	SR 16	2	Arterial Moderate	6,700	18,000	0.37	A	2	Arterial Moderate	7,100	18,000	0.39	A	D
21	Grant Line Road	SR 16	Sunrise Blvd	2	Arterial Moderate	5,600	18,000	0.31	A	2	Arterial Moderate	6,100	18,000	0.34	A	E
22	Douglas Rd	Sunrise Blvd	Jaeger Rd	See Segment #6						4	Arterial Moderate	21,400	36,000	0.59	A	D
23	Douglas Rd	Americanos Blvd	Grant Line Road							2	Arterial Moderate	5,700	18,000	0.32	A	D
24	Sunrise Blvd	Douglas Rd	Keifer Blvd	See Segment #17						4	Arterial Moderate	25,000	36,000	0.69	B	D
25	Sunrise Blvd	Keifer Blvd	SR 16							4	Arterial Moderate	23,100	36,000	0.64	B	D

Note: **Bold** represents unacceptable operations. Shaded indicates significant impact

ID	Roadway	Segment		Baseline plus Proposed Project						Baseline plus Proposed Project - REROUTED							LOS Threshold	Comments
		From	To	Travel Lanes	Facility Type	Daily Volume	LOS Threshold	Volume / Capacity Ratio	Level of Service	Travel Lanes	Facility Type	Daily Volume	Volume Difference	LOS Threshold	Volume / Capacity Ratio	Level of Service		
1	SR 16	Excelsior Rd	Eagles Nest Road	2	Arterial Moderate	12,900	18,000	0.72	C	2	Arterial Moderate	12,950	50	18,000	0.72	C	D	
2	SR 16	Sunrise Blvd	Grant Line Road	2	Arterial Moderate	17,500	18,000	0.97	E	2	Arterial Moderate	17,550	50	18,000	0.98	E	E	
3	Kiefer Blvd	Grant Line Rd	SR 16	2	Rural Two-Lane	2,100	17,000	0.12	B	2	Rural Two-Lane Rd (NS)	2,100	0	17,000	0.12	B	E	
4	Mather Blvd	Femoyer St	Douglas Road	2	Arterial Moderate	20,500	18,000	**1.14**	**F**	2	Arterial Moderate	20,590	90	18,000	**1.14**	**F**	D	
5	Douglas Rd	Mather Blvd	Sunrise Blvd	2	Arterial Moderate	25,400	18,000	**1.41**	**F**	2	Arterial Moderate	25,350	-50	18,000	**1.41**	**F**	D	
7	International Dr	South White Rock Rd	Zinfandel Dr	4	Arterial Moderate	17,800	36,000	0.49	A	4	Arterial Moderate	14,800	-3,000	36,000	0.41	A	D	
8	International Dr	Zinfandel Dr	Kilgore Road	4	Arterial Moderate	14,200	36,000	0.39	A	4	Arterial Moderate	13,700	-500	36,000	0.38	A	D	
9	White Rock Rd	Zinfandel Dr	Sunrise Blvd	6	Arterial Moderate	45,100	54,000	0.84	D	6	Arterial Moderate	45,500	400	54,000	0.84	D	D	
10	White Rock Rd	Sunrise Blvd	Grant Line Road	2	Arterial Moderate	20,900	18,000	**1.16**	**F**	2	Arterial Moderate	27,370	6,470	18,000	**1.52**	**F**	D	**LOS C with identified mitigation**
11	Zinfandel Dr	White Rock Rd	International Dr	6	Arterial Moderate	23,200	54,000	0.43	A	6	Arterial Moderate	22,700	-500	54,000	0.42	A	D	
12	Sunrise Blvd	Gold Country Blvd	Coloma Rd	6	Arterial Moderate	92,500	54,000	**1.71**	**F**	6	Arterial Moderate	92,440	-60	54,000	**1.71**	**F**	D	
13	Sunrise Blvd	Coloma Rd	US 50	6	Arterial Moderate	102,500	54,000	**1.90**	**F**	6	Arterial Moderate	102,470	-30	54,000	**1.90**	**F**	D	
14	Sunrise Blvd	US 50	Folsom Blvd	6	Arterial Moderate	82,900	54,000	**1.54**	**F**	6	Arterial Moderate	82,960	60	54,000	**1.54**	**F**	D	
15	Sunrise Blvd	Folsom Blvd	White Rock Rd	6	Arterial Moderate	77,300	54,000	**1.43**	**F**	6	Arterial Moderate	77,450	150	54,000	**1.43**	**F**	D	
16	Sunrise Blvd	White Rock Rd	Douglas Road	4	Arterial Moderate	65,600	36,000	**1.82**	**F**	4	Arterial Moderate	65,540	-60	36,000	**1.82**	**F**	D	
18	Sunrise Blvd	SR 16	Grant Line Road	2	Arterial Moderate	22,400	18,000	**1.24**	**F**	2	Arterial Moderate	22,450	50	18,000	**1.25**	**F**	E	
19	Grant Line Road	White Rock Rd	Douglas Road	2	Arterial Moderate	10,500	18,000	0.58	A	2	Arterial Moderate	15,290	4,790	18,000	0.85	D	D	**LOS Increase, but not impacted**
20	Grant Line Road	Douglas Rd	SR 16	2	Arterial Moderate	7,800	18,000	0.43	A	2	Arterial Moderate	8,100	300	18,000	0.45	A	D	
21	Grant Line Road	SR 16	Sunrise Blvd	2	Arterial Moderate	6,200	18,000	0.34	A	2	Arterial Moderate	6,210	10	18,000	0.35	A	E	
22	Douglas Rd	Sunrise Blvd	Jaeger Rd	4	Arterial Moderate	29,700	36,000	0.83	D	4	Arterial Moderate	30,500	800	36,000	0.85	D	D	
23	Douglas Rd	Americanos Blvd	Grant Line Road	2	Arterial Moderate	6,500	18,000	0.36	A	2	Arterial Moderate	9,020	2,520	18,000	0.50	A	D	
24	Sunrise Blvd	Douglas Rd	Keifer Blvd	4	Arterial Moderate	39,900	36,000	**1.11**	**F**	4	Arterial Moderate	40,020	120	36,000	**1.11**	**F**	D	
25	Sunrise Blvd	Keifer Blvd	SR 16	4	Arterial Moderate	33,800	36,000	**0.94**	**E**	4	Arterial Moderate	33,870	70	36,000	**0.94**	**E**	D	

Note: **Bold** represents unacceptable operations. Shaded indicates significant impact

Cumulative (2030) Roadway Segment Analysis and Volume Shift

ID	Roadway	Segment		Cumulative (2030) No Project						Cumulative (2030) plus Proposed Project						Cumulative (2030) plus Proposed Project - REROUTED							LOS Threshold	Comments
		From	To	Travel Lanes	Facility Type	Daily Volume	LOS Threshold	Volume / Capacity Ratio	Level of Service	Travel Lanes	Facility Type	Daily Volume	LOS Threshold	Volume / Capacity Ratio	Level of Service	Travel Lanes	Facility Type	Daily Volume	Difference	LOS Threshold	Volume / Capacity Ratio	Level of Service		
1	SR 16	Excelsior Rd	Eagles Nest Road	4	Arterial Moderate	19,200	36,000	0.53	A	4	Arterial Moderate	19,200	36,000	0.53	A	4	Arterial Moderate	19,250	50	36,000	0.53	A	E	
2	SR 16	Sunrise Blvd	Grant Line Road	4	Arterial Moderate	19,700	36,000	0.55	A	4	Arterial Moderate	19,900	36,000	0.55	A	4	Arterial Moderate	19,950	50	36,000	0.55	A	D	
3	Kiefer Blvd	Grant Line Rd	SR 16	2	Rural Two-Lane	13,300	17,000	0.78	E	2	Rural Two-Lane	15,300	17,000	0.90	E	2	Rural Two-Lane	15,300	0	17,000	0.90	E	E	
4	Mather Blvd	Femoyer St	Douglas Road	4	Arterial Moderate	19,600	36,000	0.54	A	4	Arterial Moderate	20,800	36,000	0.58	A	4	Arterial Moderate	20,890	90	36,000	0.58	A	E	
5	Douglas Rd	Mather Blvd	Sunrise Blvd	6	Arterial Moderate	18,100	54,000	0.34	A	6	Arterial Moderate	23,300	54,000	0.43	A	6	Arterial Moderate	23,250	-50	54,000	0.43	B	D	**LOS increase, but no impact**
6	International Dr	South White Rock Rd	Zinfandel Dr	6	Expressway	53,900	81,000	0.67	C	6	Expressway	73,500	81,000	**0.91**	**E**	6	Expressway	70,500	-3,000	81,000	0.87	D	D	**LOS decrease, removal of impact**
7	International Dr	Zinfandel Dr	Kilgore Road	6	Expressway	38,300	81,000	0.47	B	6	Expressway	68,400	81,000	0.84	D	6	Expressway	67,900	-500	81,000	0.84	D	D	
8	White Rock Rd	Zinfandel Dr	Sunrise Blvd	6	Arterial Moderate	19,700	54,000	0.36	A	6	Arterial Moderate	30,300	54,000	0.56	A	6	Arterial Moderate	30,700	400	54,000	0.57	A	D	
9	White Rock Rd	Sunrise Blvd	Grant Line Road	6	Arterial High	20,900	60,000	0.35	A	6	Arterial High	36,100	60,000	0.60	B	6	Arterial High	42,570	6,470	60,000	0.71	C	D	**LOS increase, but no impact**
16	Zinfandel Dr	White Rock Rd	International Dr	6	Arterial Moderate	42,400	54,000	0.79	C	6	Arterial Moderate	46,100	54,000	0.85	D	6	Arterial Moderate	45,600	-500	54,000	0.84	D	D	
17	Sunrise Blvd	Gold Country Blvd	Coloma Rd	6	Arterial High	84,400	60,000	**1.41**	**F**	6	Arterial High	95,300	60,000	**1.59**	**F**	6	Arterial High	95,240	-60	60,000	**1.59**	**F**	D	
18	Sunrise Blvd	Coloma Rd	US 50	6	Arterial High	95,500	60,000	**1.59**	**F**	6	Arterial High	108,700	60,000	**1.81**	**F**	6	Arterial High	108,670	-30	60,000	**1.81**	**F**	D	
19	Sunrise Blvd	US 50	Folsom Blvd	6	Arterial High	49,600	60,000	0.83	D	6	Arterial High	63,000	60,000	**1.05**	**F**	6	Arterial High	63,060	60	60,000	**1.05**	**F**	D	
20	Sunrise Blvd	Folsom Blvd	White Rock Rd	6	Arterial High	40,000	60,000	0.67	B	6	Arterial High	55,800	60,000	**0.93**	**E**	6	Arterial High	55,950	150	60,000	**0.93**	**E**	D	
21	Sunrise Blvd	White Rock Rd	Douglas Road	6	Arterial Moderate	33,700	54,000	0.62	B	6	Arterial Moderate	44,900	54,000	0.83	D	6	Arterial Moderate	44,840	-60	54,000	0.83	D	D	
22	Sunrise Blvd	SR 16	Grant Line Road	6	Arterial Moderate	28,100	54,000	0.52	A	6	Arterial Moderate	32,200	54,000	0.60	A	6	Arterial Moderate	32,250	50	54,000	0.60	A	E	
24	Grant Line Road	White Rock Rd	Douglas Road	6	Expressway	26,700	81,000	0.33	B	6	Expressway	27,500	81,000	0.34	B	6	Expressway	32,290	4,790	81,000	0.40	B	D	
25	Grant Line Road	Douglas Rd	SR 16	6	Expressway	21,200	81,000	0.26	A	6	Expressway	21,600	81,000	0.27	A	6	Expressway	21,900	300	81,000	0.27	A	D	
26	Grant Line Road	SR 16	Sunrise Blvd	6	Arterial High	15,100	60,000	0.25	A	6	Arterial High	16,500	60,000	0.28	A	6	Arterial High	16,510	10	60,000	0.28	A	E	
32	Douglas Rd	Sunrise Blvd	Jaeger Rd	6	Arterial Moderate	22,500	54,000	0.42	A	6	Arterial Moderate	27,300	54,000	0.51	A	6	Arterial Moderate	28,100	800	54,000	0.52	A	D	
33	Douglas Rd	Americanos Blvd	Grant Line Road	4	Arterial Moderate	11,700	36,000	0.33	A	4	Arterial Moderate	14,600	36,000	0.41	A	4	Arterial Moderate	17,120	2,520	36,000	0.48	A	D	
34	Douglas Rd	Jaeger Rd	Americanos Blvd	6	Arterial Moderate	11,500	54,000	0.21	A	6	Arterial Moderate	14,600	54,000	0.27	A	6	Arterial Moderate	15,600	1,000	54,000	0.29	A	D	
35	Chrysanthy Blvd	Sunrise Blvd	Jaeger Rd	4	Arterial Moderate	8,400	36,000	0.23	A	4	Arterial Moderate	9,600	36,000	0.27	A	4	Arterial Moderate	9,550	-50	36,000	0.27	A	D	
36	Chrysanthy Blvd	Jaeger Rd	Americanos Blvd	4	Arterial Moderate	13,100	36,000	0.36	A	4	Arterial Moderate	16,200	36,000	0.45	A	4	Arterial Moderate	16,130	-70	36,000	0.45	A	D	
37	Keifer Blvd	Eagles Nest Rd	Sunrise Blvd	2	Arterial Moderate	17,000	18,000	**0.94**	**E**	2	Arterial Moderate	17,100	18,000	**0.95**	**E**	2	Arterial Moderate	17,150	50	18,000	**0.95**	**E**	D	
38	Keifer Blvd	Sunrise Blvd	Jaeger Rd	4	Arterial Moderate	9,100	36,000	0.25	A	4	Arterial Moderate	9,300	36,000	0.26	A	4	Arterial Moderate	9,470	170	36,000	0.26	A	D	
39	Eagles Nest Road	Mather Blvd	Douglas Road	6	Arterial Moderate	34,800	54,000	0.64	B	6	Arterial Moderate	36,100	54,000	0.67	B	6	Arterial Moderate	36,190	90	54,000	0.67	B	E	
40	Eagles Nest Road	Douglas Rd	Keifer Blvd	4	Arterial Moderate	14,000	36,000	0.39	A	4	Arterial Moderate	14,400	36,000	0.40	A	4	Arterial Moderate	14,400	0	36,000	0.40	A	E	
41	Eagles Nest Road	Keifer Blvd	SR 16	4	Arterial Moderate	9,400	36,000	0.26	A	4	Arterial Moderate	9,700	36,000	0.27	A	4	Arterial Moderate	9,690	-10	36,000	0.27	A	E	
42	Sunrise Blvd	Douglas Rd	Chrysanthy Blvd	6	Arterial Moderate	47,000	54,000	0.87	D	6	Arterial Moderate	59,400	54,000	**1.10**	**F**	6	Arterial Moderate	59,450	50	54,000	**1.10**	**F**	D	
43	Sunrise Blvd	Chrysanthy Blvd	Keifer Blvd	6	Arterial Moderate	35,000	54,000	0.65	B	6	Arterial Moderate	43,700	54,000	0.81	D	6	Arterial Moderate	43,820	120	54,000	0.81	D	D	
44	Sunrise Blvd	Keifer Blvd	SR 16	6	Arterial Moderate	40,700	54,000	0.75	C	6	Arterial Moderate	47,200	54,000	0.87	D	6	Arterial Moderate	47,270	70	54,000	0.88	D	D	
45	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	6	Expressway	49,600	81,000	0.61	C	6	Expressway	67,800	81,000	0.84	D	6	Expressway	67,960	160	81,000	0.84	D	D	
46	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	6	Arterial Moderate	40,600	60,000	0.68	B	6	Arterial Moderate	63,900	60,000	**1.07**	**F**	6	Arterial Moderate	64,050	150	60,000	**1.07**	**F**	D	
47	Rancho Cordova Pkwy	White Rock Rd	Douglas Road	6	Arterial Moderate	23,000	54,000	0.43	A	6	Arterial Moderate	47,300	54,000	0.88	D	6	Arterial Moderate	47,380	80	54,000	0.88	D	D	
48	Jaeger Rd	Douglas Rd	Chrysanthy Blvd	6	Arterial Moderate	19,800	54,000	0.37	A	6	Arterial Moderate	35,100	54,000	0.65	B	6	Arterial Moderate	35,130	30	54,000	0.65	B	D	
49	Jaeger Rd	Chrysanthy Blvd	Keifer Blvd	4	Arterial Moderate	9,900	36,000	0.28	A	4	Arterial Moderate	15,400	36,000	0.43	A	4	Arterial Moderate	15,470	70	36,000	0.43	A	D	
50	Americanos Blvd	White Rock Rd	Douglas Road	4	Arterial Moderate	18,100	36,000	0.50	A	4	Arterial Moderate	30,400	36,000	0.84	D	4	Arterial Moderate	27,560	-2,840	36,000	0.77	C	D	**LOS decrease**
51	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	4	Arterial Moderate	15,600	36,000	0.43	A	4	Arterial Moderate	21,800	36,000	0.61	B	4	Arterial Moderate	21,500	-300	36,000	0.60	A	D	**LOS decrease**
52	Excelsior Rd	north of SR 16		2	Arterial Moderate	7,800	18,000	0.43	A	2	Arterial Moderate	10,400	18,000	0.58	A	2	Arterial Moderate	10,420	20	18,000	0.58	A	E	
53	SR 16	west of Excelsior Rd		6	Arterial High	18,800	60,000	0.31	A	6	Arterial High	19,000	60,000	0.32	A	6	Arterial High	18,710	-290	60,000	0.31	A	E	

Note: **Bold** represents unacceptable operations. Shaded indicates significanta impact.