

BAYVIEW ESTATES RESIDENTIAL PROJECT

Draft Environmental Impact Report

Contra Costa County File Nos. CDSD04-08809, CDGP04-00013, CDRZ04-03148,
CDDP04-03080

State Clearing House No. 2008032074

Prepared for
Contra Costa County
Department of Conservation and Development

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CHAPTER I

Introduction

1.1 Overview

This Draft Environmental Impact Report (EIR) is an informational document that discloses to the public and decision makers the environmental effects of the proposed Bayview Estates Residential Project (“Project”). This document assesses the direct, indirect, and cumulative environmental effects or impacts that could result from implementation of the Project. The analysis in this document is based on information submitted by the Project applicant and sponsor, Discovery Builders, Incorporated (“Discovery Builders”), in its application to Contra Costa County (the County) for an amendment to the *Contra Costa County General Plan* (“General Plan”), rezoning, tentative subdivision maps, project design review and a Preliminary Development Plan. The Project site is a total of approximately 78.3 acres in the Vine Hill Pacheco Boulevard Area of unincorporated Contra Costa County. The applicant proposes to develop 144 single family homes and associated internal roadways and infrastructure on approximately 31.8 acres of the site, with the remaining 46.5 acres a combination of hilltop open space, a private neighborhood park, and wetland/marsh areas and a stormwater treatment basin.

The County has prepared this Draft EIR pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000, *et seq.* and Section 15000, *et seq.*) and the state CEQA *Guidelines* (California Code of Regulations) promulgated thereunder (together “CEQA”). CEQA requires that an EIR be prepared by the agency with primary responsibility over the approval of a project (the Lead Agency). The County is the Lead Agency for this EIR, and as such is overseeing and administering the CEQA environmental review process.

This EIR is intended as an informational document that, in itself, does not determine whether the Project should be approved, but informs local officials involved in the planning and decision-making process for the Project.

1.2 Background

In 2008, Discovery Builders proposed an initial version of the proposed Project. The County analyzed the previous proposal in a 2008 Draft EIR. The County published and received public comment on the Draft EIR. In response to input received on the Draft EIR, in November 2010, Discovery Builders submitted a “Lesser Intensity Project Alternative” to the project analyzed in the 2008 Draft EIR. The Lesser Intensity Project Alternative consisted of a revised layout and grading plan that retained the existing top elevation of Vine Hill and was designed to alleviate potential water pressure issues of the originally proposed 2008 project by lowering the elevation

of residential development on the project site. In 2014, Discovery Builders submitted additional detail regarding proposed utilities and infrastructure of the Lesser Intensity Project Alternative, and in 2017, the County renewed preparation of a Draft EIR by issuing a renewed Notice of Preparation (see Section 1.3.1 below).

The Project applicant continued to coordinate with the County to further refine the proposed stormwater plan, grading in certain development areas and wetlands on the Project site, as well as utility infrastructure alignments. The currently proposed Project analyzed in this Draft EIR incorporates the aforementioned refinements to the 2008 proposal. Specifically, this Draft EIR presents an independent, stand-alone analysis of the currently proposed Project; it is not a recirculation of the 2008 Draft EIR to address the current Project, nor is the analysis herein a comparative assessment of the current Project compared to the proposal analyzed in the 2008 Draft EIR.

1.3 CEQA Environmental Review

As set forth in the provisions of CEQA *Guidelines* Section 15126.4, before deciding whether to approve a project, public agencies must consider the significant environmental impacts of the project and must identify feasible measures to minimize those impacts. Pursuant to CEQA *Guidelines* Section 15064, if any aspect of a proposed project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial, an EIR must be prepared.

As previously indicated, this EIR is a factual informational document, prepared in conformance with CEQA and written for the purpose of making the public and decision makers aware of the environmental consequences of the proposed Project. For any environmental impact that is considered “significant”, the EIR identifies mitigation measures, where feasible, to reduce or avoid the significant impact. This EIR also considers the objectives of the Project and, where feasible, identifies alternative ways of accomplishing those objectives while substantially reducing the Project’s impacts.

The County, as Lead Agency, determined that preparation of an EIR is required for the proposed Project because there is “substantial evidence that the project may have a significant effect on the environment” (per CEQA *Guidelines* Section 15064[a][1]). This Draft EIR addresses each environmental topic for which the Project could result in a significant impact and identifies topics for which the Project would have a less-than-significant impact.

CEQA states that the Lead Agency (in this case the County) shall not “approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects...” (PRC Section 21002). If the Lead Agency approves a project despite residual significant adverse impacts that cannot be mitigated to less-than-significant levels, the agency must adopt a “Statement of Overriding Considerations” stating the reasons for its action in writing.

1.3.1 Notice of Preparation

On June 7, 2017, the County issued a Notice of Preparation (NOP) (provided in **Appendix A** of this document) to governmental agencies and organizations and persons interested in the Project. The NOP invited all responsible agencies, interested agencies and individuals to submit comments which address environmental concerns resulting from implementation of the Project. The County held a public scoping session on July 17, 2017, during which public input regarding environmental issues to be addressed was also received. As appropriate, this Draft EIR addresses those responses to the NOP that involved environmental issues associated with the Project site and proposed Project. Copies of written responses to the NOP are also provided in Appendix A.

1.3.2 Notice of Availability

This Draft EIR is available for review during the 45-calendar-day public review period, during which time written comments on the adequacy of the Draft EIR may be submitted to:

Gary Kupp, Senior Planner
Contra Costa County Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, CA 94553

Written comments may also be submitted electronically to gary.kupp@dcd.cccounty.us.

Once scheduled, the date of the public hearing on the Draft EIR will be posted on the County's website for the Project (<http://www.co.contra-costa.ca.us/4731/Bayview-Residential-Project>).

1.3.3 Response to Comments / Final EIR

Responses to all substantive comments received on the adequacy of the Draft EIR and submitted within the specified review period of the Draft EIR will be prepared and included in the Response to Comments / Final EIR. The County will then consider certification of the Final EIR under CEQA, including consideration of whether the Final EIR was completed in compliance with CEQA; was presented to and reviewed by the decision-making body; and is adequate, accurate, and reflects the County's independent judgment and analysis. Prior to approval of the Project, the County must certify the Final EIR and adopt a reporting and monitoring program for mitigation measures identified in this report in accordance with the requirements of PRC Section 21081.

1.4 Adequacy of the EIR Analysis

1.4.1. Standards of Adequacy of an EIR

Pursuant to CEQA Guidelines Section 15151, an EIR should be prepared with a sufficient degree of analysis to provide decision makers with information that enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the

environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

Plans and reports describing the proposed construction and operation of the proposed Project have been developed to a degree sufficient to permit environmental analysis in conformance with CEQA. Accordingly, this EIR presents reasonable assumptions (as described in Chapter 3, *Project Description*, of this document) about the proposed Project and describes their associated environmental impacts. Where necessary, the analysis is based on conservative assumptions that tend to overstate Project impacts.

CEQA *Guidelines* Section 15382 defines a significant effect on the environment as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project....” Therefore, in identifying the significant impacts of the Project, this EIR concentrates on its substantial physical change and upon mitigation measures to avoid, reduce, or otherwise alleviate those effects.

1.4.2. Impacts of the Environment on a Project

Impacts of the environment on a project, as opposed to impacts of a project on the environment, are generally beyond the scope of required CEQA review. The California Supreme Court has stated, “CEQA analysis is concerned with a project’s impact on the environment, rather than with the environment’s impact on a project and its users or residents.” (*California Building Industry Association v. Bay Area Air Quality Management District*, [S213478, Dec. 17, 2015] [“*CBIA v. BAAQMD*”]). As the Court observed, certain considerations involving schools, residential developments and whether the project may exacerbate existing impacts must be analyzed. However, to the extent that the impacts discussed in this EIR (in such sections as 4.2, *Air Quality*; 4.5, *Geology and Soils*; 4.6, *Greenhouse Gas Emissions and Energy*; 4.7, *Hazards and Hazardous Materials*; 4.8, *Hydrology and Water Quality*; and 4.10, *Noise*) relate to the pre-existing environment’s effects (on or off site) on the Project or potential site users, except for those exceptions identified in *CBIA v. BAAQMD*, are included for informational purposes. For the purpose of a thorough analysis, all thresholds for determining the significance of impacts in accordance with the requirements of the *CEQA Guidelines* have been included, including those found in Appendix G of the *CEQA Guidelines*.

1.5 Organization of this Draft EIR

This Draft EIR is organized as follows:

This *Introduction* (Chapter 1) contains a brief summary of the Project and environmental review process. The chapter also describes the purpose, intended use, and organization of the EIR.

The **Summary** (Chapter 2) of this EIR contains a summary of the proposed Project, environmental impacts and recommended mitigation measures, residual environmental impacts after mitigation, and alternatives to the Project that would reduce or avoid impacts considered significant and unavoidable.

The **Project Description** (Chapter 3) describes the Project location, physical characteristics of the Project key to the environmental analysis, the Project objectives, and a list of the required Project approvals and other agencies that must consider aspects of the Project.

Environmental Setting, Impacts and Mitigation Measures (Chapter 4) is organized by sections that address each environment topic. Each section discusses the setting (existing conditions and regulatory framework), the environmental impacts (including cumulative impacts) that would result with the Project, and the mitigation measures that would reduce or eliminate the identified significant impacts. The criteria and thresholds used to determine the significance of potential environmental impacts are also specified in Chapter 4.

Alternatives (Chapter 5) evaluates a reasonable range of alternatives to the proposed Project, including a No Project alternative as required under Section 15126.6(e) of the CEQA *Guidelines*. Chapter 5 discusses the environmental impacts associated with each alternative, compares the relative impacts of each alternative to those of the Project and the other alternatives, and discusses the relationship of the alternatives to the Project sponsor's objectives. The determinations of the County concerning the feasibility, acceptance, or rejection of each and all alternatives considered in this EIR will be addressed and resolved in the County's CEQA findings to certify the EIR, prior to taking action on the Project, as required by CEQA.

Other CEQA Considerations (Chapter 6) discusses the Project's potential for inducing growth and summarizes the significant unavoidable impacts, effects found not to be significant, and significant irreversible effects, pursuant to Section 15127 of the CEQA *Guidelines*.

Report Preparation (Chapter 7) identifies the EIR report preparers. Persons and documents consulted during preparation of the EIR are listed at the end of each topical analysis section in Chapter 4.

Appendices and References. The NOP, as well as supporting background documents and technical information that support the impact analysis, are presented in the appendices. All reference documents listed at the end of each analysis section (throughout Chapter 4) are available for public review at the Contra Costa County Department of Conservation and Development, Current Planning Division.

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CHAPTER 2

Summary

2.1 Introduction

As provided by Section 15123 of the California Environmental Quality Act (CEQA) Guidelines (CEQA *Guidelines*), this chapter summarizes the proposed Bayview Estates Residential Project (“Project”) and its environmental consequences. This chapter serves as a stand-alone summary of the proposed Project described in Chapter 3 (*Project Description*), the impacts and mitigation measures discussed in Chapter 4 (*Environmental Setting, Impacts, and Mitigation Measures*), and the alternatives analysis presented in Chapter 5 (*Alternatives*).

This Draft Environmental Impact Report (EIR) has been prepared to evaluate the anticipated environmental effects of the Project in conformance with the provisions of CEQA and the CEQA *Guidelines*. Contra Costa County (County) is the public agency that has the principal responsibility for implementing the Project and is therefore the Lead Agency for the EIR.

2.2 Project Overview

The Project sponsor, Discovery Builders, Inc., proposes to develop a residential subdivision located south of Central Avenue and east of Interstate 680 (I-680), in the Vine Hill/Pacheco Boulevard area of unincorporated Contra Costa County. The Project site is 78.3 acres that currently consists of a single vacant parcel (Assessor’s Parcel Number 380-030-046). The proposed Project involves:

1. A Vesting Tentative Map to create parcels for development of the project components listed below;
2. Development of 144 single-family residential units and associated internal roadways;
3. Approximately 46.5 acres of open space, marshes and undeveloped land, including:
 - The preservation of approximately 20.1 acres of the upper hill area (Vine Hill);
 - The preservation of approximately 19.9 acres of the lower site areas (containing wetlands, coastal salt marsh, freshwater marsh, open water, and alkali meadow);
 - The development of a new 2.0-acre stormwater treatment basin;
4. Development of an approximately 4.5-acre private neighborhood park;
5. Substantial grading of the lower hill area and limited grading of the upper hill area in order to balance cut and fill earthwork volumes;

6. Extension of new utility lines to and throughout the Project site, and the repair and upgrade of existing off-site utility lines; and
7. Improvement of two existing off-site roadways, Central Avenue and Palms Drive, to better accommodate two lanes of moving vehicular traffic to/from the Project site.

The Project proposes amendments to the existing *Contra Costa County General Plan* (General Plan). Specifically, the Project seeks to amend the existing General Plan land use map to change the existing Heavy Industrial (“HI”) land use designation on the Project site to the Single Family Residential-High Density (“SH”), and Open Space (“OS”) land use designations. The Project would also amend the existing General Plan to modify existing land use policy language regarding the Vine Hill/Pacheco Boulevard area. For zoning, the Project seeks to reclassify the existing Heavy Industrial (“H-I”) zoning designation on the Project site to the Planned Unit District (“P-1”) designation.

The Project involves a grading plan that would alter the existing topography in specific areas of the Project site and would clear approximately 1,500 cubic yards (“cy”) of vegetation, almost all of which would be reused on site. The total on-site balance of cut and fill grading would involve approximately 900,000 cubic yards being moved. The proposed Project would use existing and available water and wastewater treatment and off-site transmission/conveyance capacity. Some existing utility lines would require repair and/or upgrade to serve the proposed development.

The Project is anticipated to be developed in up to three phases, generally from west to east across the site, with an anticipated grading start date in 2021 and last house completion date in 2024.

2.3 Environmental Impacts and Mitigation Measures

Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*, discusses each potential environmental impact and recommended mitigation measures identified for the proposed Project. **Table 2-1, Summary of Impacts, Mitigation Measures and Residual Effects**, at the end of this chapter lists, by environmental topic, (1) each impact statement, noting the level of impact (e.g. “potentially significant”) prior to the implementation of any recommended mitigation measure(s); (2) each mitigation measure; and (3), the residual level of the Project’s impact after the mitigation measure(s) is/are implemented (“less than significant” or “significant and unavoidable”).

2.3.1 Significant and Unavoidable Impacts

As indicated in Table 2-1, the Draft EIR determined that the Project would result in significant and unavoidable impacts related to Project and cumulative vehicle miles traveled (VMT) per Project resident, even with implementation of a feasible mitigation measure to develop and implement a Transportation and Parking Demand Management (TDM) Plan (Impacts TRF-3 and C-TRF-8; Mitigation Measures TRF-3).

**TABLE 2-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.1 Aesthetics		
<p>Impact AES-1: Construction of the Project would create temporary aesthetic nuisances associated with Project construction and grading activities. (Criteria a and c) (Potentially Significant)</p>	<p>Mitigation Measure AES-1: The Project shall incorporate into all construction contracts and ensure implementation of the following measures:</p> <ol style="list-style-type: none"> 1) To the extent feasible, during all site preparation and exterior construction activities, a screened security fence shall be placed and maintained around the perimeter of the Project site abutting residential areas. Visual screening along Central Avenue and bordering the perimeter of the property abutting residential areas shall be placed and maintained and removed upon completion of construction work. The County shall determine the appropriate height, material and final placement of such fencing, as appropriate and effective given the relative change in elevation and viewpoints to the site. 2) Construction staging areas shall be located in the interior of the Project site, away from the property boundary and remain clear of all trash, weeds and debris etc. Construction staging areas may include other areas of the Project site when necessary, but shall be located away from adjacent properties and I-680 to minimize visibility from public view to the extent feasible. 	Less Than Significant
<p>Impact AES-2: The Project would not have a substantial adverse effect on a scenic vista or adversely affect scenic resources along any designated scenic highway. (Criterion b) (Less than Significant)</p>	None required	
<p>Impact AES-3: The Project could alter the existing visual character of the Project site, but would not substantially degrade the existing visual quality of the site and its surroundings. (Criteria a and c) (Less than Significant)</p>	None required	
<p>Impact AES-4: The Project would introduce new sources of light and glare onto the Project site and increase ambient light in the vicinity. (Criterion d) (Less than Significant)</p>	None required	
<p>Impact C-AES-1: The Project, in conjunction with cumulative development, would not result in a cumulative aesthetics impact related to scenic vistas and resources, or visual character and visual quality. (All Criteria) (Less than Significant)</p>	None required	
4.2 Air Quality		
<p>Impact AIR-1: The Project could conflict with or obstruct implementation of the applicable air quality plan. (Criterion a) (Less than Significant)</p>	None required	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.2 Air Quality (cont.)		
<p>Impact AIR-2: Emissions from construction and operation of the Project would result in increased emissions of criteria air pollutants and contribute to existing air quality violations (Criteria b and c) (Potentially Significant)</p>	<p>Mitigation Measure AIR-1: Best Management Practices for Controlling Particulate Emissions. The Project applicant shall implement the following BAAQMD Best Management Practices for particulate control. These measures will reduce particulate emissions primarily during soil movement, grading and demolition activities but also during vehicle and equipment movement on unpaved areas.</p> <ol style="list-style-type: none"> 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, § 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in accordance with manufacturer's specifications prior to operation. 8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations. 	<p>Less than Significant</p>
4.2 Air Quality (cont.)		
<p>Impact AIR-3: Construction of the Project could increase emissions of toxic air contaminants (TACs), and increase health risks for nearby residents, and Project operations could expose sensitive receptors to substantial pollutant concentrations including toxic air contaminants and increase health risks for existing and proposed residents. (Criterion d) (Potentially Significant)</p>	<p>Mitigation Measure AIR-2: Enhanced Exhaust Emissions Reduction Measures. The applicant shall implement the following measures during construction to further reduce construction-related exhaust emissions:</p> <p>All off-road equipment greater than 25 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall meet the following requirements:</p> <ol style="list-style-type: none"> 1. Where access to alternative sources of power are available, portable diesel engines shall be prohibited; and 2. All off-road equipment shall have: <ol style="list-style-type: none"> a. Engines that meet or exceed either USEPA or CARB Tier 3 off-road emission standards, and 	<p>Less than Significant</p>

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.2 Air Quality (cont.)		
Impact AIR-3 (cont.)	b. Engines that are retrofitted with a CARB Level 3 Verified Diesel Emissions Control Strategy. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such are available.	
Impact AIR-4: The Project would locate sensitive receptors near existing sources of objectionable odors. (Criterion e) (Less than Significant)	None required	
Impact C-AIR-1: The Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative regional air quality impacts. (Criteria b and c) (Potentially Significant)	Mitigation Measure AIR-1 (Best Management Practices for Controlling Particulate Emissions (see Impact AIR-2)	Less Than Significant
Impact C-AIR-2: The Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative health risk impacts on sensitive receptors. (Criterion d) (Less than Significant)	None required	
4.3 Biological Resources		
Impact BIO-1: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (Potentially Significant)	<p>Mitigation Measure BIO-1a: Avoidance and Minimization for Impacts to Special-Status Plants. A qualified botanist with a minimum of four years of academic training and professional experience in botanical sciences and a minimum of two years of experience conducting rare plant surveys shall conduct appropriately timed surveys for special-status plant species with a moderate or high potential to occur in the Project site (i.e., soft bird's-beak, Mason's liaeopsis, alkali milk-vetch, Congdon's tarplant, small spikerush, fragrant fritillary, delta tulle pea, and delta mudwort) in all suitable habitat that would be potentially disturbed by the Project.</p> <ol style="list-style-type: none"> 1) If no special-status plants are found during focused surveys, the botanist shall document the findings of found species in a letter to CDFW and the County, and no further mitigation will be required. 2) If special-status plants are found during focused surveys, the following measures shall be implemented: <ol style="list-style-type: none"> a) Information regarding the special-status plant populations shall be reported to the CNDDDB, mapped, and documented in a technical memorandum provided to the County. b) If federally or state listed species are identified during floristic preconstruction surveys, the Project proponent shall mark these plants for avoidance and comply with applicable laws (i.e., the federal and State Endangered Species Acts) including through coordination or consultation with regulatory agencies (i.e., USFWS and/or CDFW), as appropriate, and as described in items 3 and 4, below. 	Less Than Significant

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
Impact BIO-1 (cont.)	<ul style="list-style-type: none"> c) If other special-status plant populations (i.e., California Rare Plant Ranked or locally significant plants) are identified during floristic preconstruction surveys and can be avoided during project implementation, they shall be clearly marked in the field by a qualified botanist and avoided during construction activities. If a Rank 3 or Rank 4 plant species is detected during the survey, the survey report shall analyze species rarity consistent with CEQA Guidelines (Section 15380) to determine if species protection is warranted. If the plants do not warrant protection, then no further action is needed for these species. d) If special-status plant populations are identified and cannot be avoided, the County shall coordinate or consult with CDFW and/or USFWS, as appropriate, on relocation of special-status plants. To the extent feasible, special-status plants that would be impacted by the Project shall be relocated within local suitable habitat. This can be done either through salvage and transplanting or by collection and propagation of seeds or other vegetative material. Any plant relocation or reintroduction through seeds or other vegetative material would be done under the supervision of a qualified botanist or restoration ecologist. e) If rare plants can be avoided, prior to vegetation removal, ground clearing or ground disturbance, all on-site construction personnel shall be instructed as to the species' presence and the importance of avoiding impacts to rare plant species and their habitat through the Worker Environmental Awareness Program training (see Mitigation Measure BIO-2a, below). f) The Project Applicant shall prepare a Rare Plant Relocation/Reintroduction and Monitoring Plan for relocated or reintroduced special-status plants which shall detail relocation or reintroduction methods or appropriate replacement ratios (e.g., at least 1:1 based on number of relocated plants or the area occupied by rare plants, as appropriate for the species) and methods for implementation (e.g., planting methods, need for supplemental irrigation, or weed control), success criteria (e.g., greater than 70% survival or ground coverage following 5 years), monitoring and reporting protocols, and contingency measures that shall be implemented if the initial mitigation fails (e.g., replanting to achieve success criteria). The plan shall be developed in coordination with the appropriate agencies prior to the start of local construction activities. At a minimum, success criteria shall require any mitigation to provide equal or better habitat and populations than the impacted area. g) If special-status plants are relocated from the Project or reintroduction of plants or seed is implemented, the Project Applicant shall maintain and monitor the relocation sites and/or restored areas for 5 years following the completion of construction and restoration activities. The Applicant shall submit monitoring reports to the County at the completion of restoration and for 5 years following restoration implementation. Monitoring reports shall include photo-documentation, planting specifications, a site layout map, descriptions of materials used, and justification for any deviations from the mitigation plan. 	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
<p>Impact BIO-2: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on amphibian or reptile species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (Potentially Significant)</p>	<p>Mitigation Measure BIO-2a: Worker Environmental Awareness Program Training. A Project-specific Worker Environmental Awareness Program (WEAP) training shall be developed and implemented by a qualified biologist for the Project and attended by all construction personnel prior to beginning work onsite. Typical credentials for a qualified biologist include a minimum of four years of academic training and professional experience in biological sciences and related resource management activities, and a minimum of two years of experience conducting surveys for each species that may be present within the Project area. The training could consist of a recorded presentation that could be reused for new personnel. The WEAP training shall generally address but not be limited to the following:</p> <ol style="list-style-type: none"> 1) Applicable State and federal laws, environmental regulations, project permit conditions, and penalties for non-compliance; 2) Special-status plant and animal species with potential to occur at or in the vicinity of the Project site, their habitat, the importance of these species and their habitat, the general measures that are being implemented to conserve these species as they relate to the Project, and the boundaries within which the project construction shall occur, avoidance measures, and a protocol for encountering such species including a communication chain; 3) Pre-construction surveys associated with each phase of work; 4) Known sensitive resource areas in the Project vicinity that are to be avoided and/or protected as well as approved Project work areas; and 5) Best management practices (BMPs) and their location on the Project site for erosion control and/or species exclusion. 	<p>Less Than Significant</p>
	<p>Mitigation Measure BIO-2b: General Conservation Measures during Construction. The County shall ensure that the following general measures are implemented by the contractor during construction to prevent and minimize impacts on special-status species and sensitive biological resources:</p> <ol style="list-style-type: none"> 1) Ground disturbance and construction footprints will be minimized to the greatest degree feasible. 2) Vehicles shall observe a 15 mile-per-hour speed limit within the Project site. 3) The contractor shall provide closed garbage containers for the disposal of all food-related trash items. All garbage shall be collected daily from the Project site and placed in a closed container from which garbage shall be removed weekly. Construction personnel shall not feed or otherwise attract fish or wildlife to the Project site. 4) As necessary, erosion control measures shall be implemented to prevent any soil or other materials from entering any nearby aquatic habitat. Erosion control measures shall be installed at work site boundaries adjacent to aquatic habitat to prevent soil from eroding or falling into the area. 	

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
<p>Impact BIO-2 (cont.)</p>	<p>5) Erosion control measures shall be implemented as described in the Project SWPPP. Sediment control measures shall be furnished, constructed, maintained, and later removed. Plastic monofilament of any kind (including those labeled as biodegradable, photodegradable, or UV-degradable) shall not be used. Only natural burlap, coir, or jute wrapped fiber rolls that are certified weed-free shall be used.</p> <p>6) All fueling and maintenance of vehicles and equipment and the location of Project staging areas shall occur at least 100 feet from any aquatic habitat and associated freshwater and saltmarsh vegetation. Spill kits containing cleanup materials shall be available on-site.</p> <p>7) No equipment used in support of Project implementation (e.g. excavator) shall enter or cross waters in the Project area while water is flowing.</p> <p>8) Project personnel shall be required to report immediately any harm, injury, or mortality of a listed species (federal or state) during construction, including entrapment, to the construction foreman, qualified biologist, or County staff. The County or their consultant shall provide verbal notification to the USFWS Endangered Species Office in Sacramento, California, and/or to the local CDFW warden or biologist (as applicable) within 1 working day of the incident. The County or their consultant shall follow up with written notification to the appropriate agencies within 5 working days of the incident. All special-status species observations shall be recorded on California Natural Diversity Data Base (CNDDDB) field sheets/lpAC and sent to the CDFW/USFWS and by County staff or their consultant.</p>	
	<p>Mitigation Measure BIO-2c: Avoidance, Minimization, and Protection Measures for Sensitive Amphibians and Reptiles. The following conservation measures shall be implemented to minimize or eliminate potential adverse impacts on California red-legged frog (CRLF) and western pond turtle (WPT) during Project construction:</p> <p>1) Consistent with the USFWS <i>California Red-legged Frog Survey Protocol</i>, a habitat assessment shall be prepared and submitted to the USFWS to support their determination of the species' potential to occur on site. If the USFWS agrees that the habitat assessment establishes species absence, or if subsequent protocol-level surveys requested by the USFWS following their review of the habitat assessment establish species absence, then no further action shall be needed to protect this species. In the absence of USFWS coordination, CRLF shall be presumed present within suitable aquatic habitat on the site and protective measures described below shall be followed.</p> <p>2) A qualified biologist shall survey the work sites within 5 calendar days prior to the onset of construction for CRLF and WPT to determine presence (and life stage) of these species on the Project site.</p> <p>Additionally, a qualified biologist shall conduct a pre-construction survey of Project aquatic habitat for CRLF and WPT immediately prior to the start of construction activities, beginning with installation of exclusion fencing (see 3, below). The surveys will consist of walking the Project work limits adjacent to areas where natural habitat is present to ascertain presence of these species (e.g., grasslands adjacent to suitable aquatic habitat within the Project site).</p>	

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
Impact BIO-2 (cont.)	<p>3) Unless explicitly authorized by the USFWS (e.g., through issuance of a Biological Opinion, CRLF shall not be relocated if encountered within the Project site. Rather CRLF shall be allowed to disperse of their own volition while all work is halted within 50 feet of individuals. Prior to conducting preconstruction surveys, the qualified biologist shall prepare a relocation plan that describes the appropriate survey and handling methods for WPT and identifies nearby relocation sites where individuals would be relocated if found during the preconstruction surveys. The relocation plan shall be submitted to CDFW for review prior to the start of construction activities. The animal shall be relocated to equivalent or better WPT habitat relative to where it was found.</p> <p>4) A qualified biologist shall monitor installation of exclusion fencing (see 3, below) to identify, capture, and relocate WPT if found, and halt or observe work in the vicinity of CRLF if encountered onsite. The qualified biologist shall have the authority to stop construction activities proximate to these species and develop alternative work practices, in consultation with construction personnel and resource agencies (as appropriate), if construction activities are likely to affect special-status species or other sensitive biological resources.</p> <p>Unless explicitly authorized by the USFWS (e.g., through issuance of a Biological Opinion, CRLF shall not be relocated if encountered within the Project site. Rather CRLF shall be allowed to disperse of their own volition while all work is halted within 50 feet of individuals. If a CRLF is not dispersing on its own volition, the qualified biologist shall monitor the frog while exclusion fence installation or other work continues, as long as they can ensure the safety of the frog. The qualified biologist shall immediately inform the construction manager that work should be halted or modified (in the case of a buffer or non-dispersing individual), if necessary, to avert avoidable take of listed species. Should egg masses, metamorphs, or tadpoles of CRLF be identified within Project site aquatic habitat during these initial surveys or at any time during Project construction, the USFWS shall be contacted prior to continuation of work near the discovery.</p> <p>If WPT and/or CRLF are not observed during pre-construction surveys or installation of the exclusion fence, continued biological monitoring during construction is not necessary. If either of these species are observed onsite at any time, the Project Applicant shall coordinate with USFWS and /or CDFW as necessary to determine the appropriate measures to avoid species' take.</p> <p>5) The Project Applicant or its contractors shall install temporary exclusion fencing around key project boundaries (i.e., at the work limit of aquatic habitat and associated marsh vegetation to be preserved under the Project) and around all staging and laydown areas to exclude CRLF and WPT from Project construction activities.</p> <ul style="list-style-type: none"> • Fencing shall be installed immediately prior to the start of construction activities under the supervision of a qualified biologist. 	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
<p>Impact BIO-2 (cont.)</p>	<ul style="list-style-type: none"> • The Project Applicant or their contractor shall ensure that the temporary exclusion fencing is continuously maintained until all Project construction activities are completed. Daily fence inspections shall be conducted by the qualified biologist during the first week of construction. Thereafter, the qualified biologist may train the contractor to conduct regular inspections and coordinate findings with the qualified biologist. Similarly, vehicles or equipment parked overnight at the Project staging areas or work areas shall be inspected for harboring species each morning by the qualified biologist (or the trained contractor) before they are moved. • The wildlife exclusion fencing shall be a minimum height of 3 feet above ground surface, with an additional 4 to 6 inches of fence material buried such that animals cannot burrow under the fence. • The exclusion fence shall not cross the marsh associated with Pacheco Creek along the south edge of the site or bisect marsh vegetation to allow wildlife movement to continue through these areas when work is not occurring. <p>6) All onsite excavations of a depth of 8 inches or greater shall be either backfilled at the end of each workday, covered with heavy metal plates, or escape ramps shall be installed at a 3:1 grade to allow wildlife that fall in a means to escape.</p>	
<p>Impact BIO-3: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on migratory birds and/or on bird species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (Potentially Significant)</p>	<p>Mitigation Measure BIO-3a: Nesting Bird Protection Measures.</p> <p>1) Project staging, project construction, vegetation removal (e.g., clearing and grubbing), vegetation management activities requiring heavy equipment, or tree trimming shall be performed outside of the bird nesting season (February 1st through August 31st) to avoid impacts to nesting birds; if these activities must be performed during the nesting bird season, a qualified biologist shall be retained to conduct a pre-construction survey in the project construction and staging areas for nesting birds and verify the presence or absence of nesting birds no more than 5 calendar days prior to construction activities or after any construction breaks of 5 calendar days or more. Surveys shall be performed for the project construction and staging areas and suitable habitat within 250 feet of the project construction and staging areas in order to locate any active passerine (perching bird) nests and within 500 feet of the project construction and staging areas to locate any active raptor (birds of prey) nest. If nesting birds and raptors do not occur within 250 and 500 feet of the Project area, respectively, then no further action is required if construction begins within 5 calendar days.</p> <p>If active nests are located during the pre-construction bird nesting surveys, no- disturbance buffer zones shall be established around nests, with a buffer size established by the qualified biologist. Typically, these buffer distances are between 50 feet and 250 feet for passerines and between 300 feet and 500 feet for raptors. These distances may be adjusted depending on the level of surrounding ambient activity and if an obstruction, such as a building or structure, is within line-of-sight between the nest and construction. Reduced buffers may be allowed if a full-time qualified biologist is present to monitor the nest and has authority to halt construction if bird behavior indicates continued activities could lead to nest failure. Buffered zones shall be avoided during construction-related activities until young have fledged or the nest is otherwise abandoned.</p>	<p align="center">Less Than Significant</p>

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
<p>Impact BIO-2 (cont.)</p>	<p>Mitigation Measure BIO-3b: Avoid and Minimize Impacts to California Black Rail and Ridgway's Rail.</p> <p>To minimize or avoid the loss of individual California black rail and Ridgway's rail, construction activities, including vegetation management activities requiring heavy equipment, adjacent to tidal marsh areas (within 500 feet [150 meters] or a distance determined in coordination with USFWS or CDFW, shall be avoided during the breeding season from February 1 through August 31.</p> <ul style="list-style-type: none"> • If areas within or adjacent to rail habitat cannot be avoided during the breeding season (February 1 through August 31), protocol-level surveys shall be conducted to determine rail nesting locations. The surveys will focus on potential habitat that could be disturbed by construction activities during the breeding season to ensure that rails are not breeding in these locations. <p>Survey methods for rails will follow the Site-Specific Protocol for Monitoring Marsh Birds, which was developed for use by USFWS and partners to improve bay-wide monitoring accuracy by standardizing surveys and increasing the ability to share data (Wood et al. 2017). Surveys are conducted during the approximate period of peak detectability, January 15 to March 25 and are structured to efficiently sample an area in three rounds of surveys by broadcasting calls of target species during specific periods of each survey round. Call broadcasting increases the probability of detection compared to passive surveys when no call broadcasting is employed. This protocol has since been adopted by Invasive Spartina Project (ISP) and Point Blue Conservation Science to survey Ridgway's rails at sites throughout San Francisco Bay Estuary. The survey protocol for Ridgway's rail is summarized below.</p> <ul style="list-style-type: none"> – Previously used survey locations (points) should be used when available to maintain consistency with past survey results. New survey points should be at least 200 meters apart along transects in or adjacent to areas representative of potentially suitable marsh habitat. Points should be located to minimize disturbances to marsh vegetation. Up to 8 points can be located on a transect. – At each transect, three surveys (rounds) are to be conducted, with the first round of surveys initiated between January 15 and February 6, the second round performed February 7 to February 28, and the third round March 1 to March 25. Surveys should be spaced at least one week apart and the period between March 25 to April 15 can be used to complete surveys delayed by logistical or weather issues. A Federal Endangered Species Act Section 10(a)(1)(A) permit is required to conduct active surveys. – Each point on a transect will be surveyed for 10 minutes each round. A recording of calls available from USFWS is broadcast at each point. The recording consists of 5 minutes of silence, followed by a 30-second recording of Ridgway's rail vocalizations, followed by 30 seconds of silence, followed by a 30-second recording of California black rail, followed by 3.5 minutes of silence. 	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
Impact BIO-2 (cont.)	<ul style="list-style-type: none"> • If no breeding Ridgway's rails or black rails are detected during surveys, or if their breeding territories can be avoided by 500 feet (150 meters), then Project activities may proceed at that location. • If protocol surveys determine that breeding Ridgway's rails or black rails are present in the Project area, the following measures would apply to project activities conducted during their breeding season (February 1- August 31): <ul style="list-style-type: none"> – A USFWS- and CDFW-approved biologist with experience recognizing Ridgway's rail and black rail vocalizations will be on site during construction activities occurring within 500 feet (150 meters) of suitable rail breeding habitat. – If a Ridgway's rail or black rail vocalizes or flushes within 10 meters, it is possible that a nest or young are nearby. If an alarmed bird or nest is detected, work will be stopped, and workers will leave the immediate area carefully and quickly. An alternate route will be selected that avoids this area, and the location of the sighting will be recorded to inform future activities in the area. – All crews working within 500 feet of aquatic habitats during rail breeding season will be trained and supervised by a USFWS- and CDFW-approved rail biologist. – If any activities will be conducted during the rail breeding season in Ridgway's rail- or black rail-occupied marshes, biologists will have maps or GPS locations of the most current occurrences on the site and will proceed cautiously and minimize time spent in areas where rails were detected. • For vegetation management activities in suitable habitat for Ridgway's rail or black rail, the following measures will be implemented: <ul style="list-style-type: none"> – Any herbicides to be used will be EPA-certified for use in/adjacent to aquatic environments. – Vegetation management activities will be limited to areas outside of tidal marsh and non-tidal pickleweed marsh habitats. 	
	Mitigation Measure BIO-2a (Worker Environmental Awareness Program Training) (see Impact BIO-2)	
Impact BIO-4: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on salt marsh harvest mouse and special-status bat species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (Potentially Significant)	<p>Mitigation Measure BIO-4a: Avoidance and Minimization Measures for Salt Marsh Harvest Mouse.</p> <ul style="list-style-type: none"> • A USFWS and CDFW-approved biologist, with knowledge of and experience with salt marsh harvest mouse habitat requirements, will conduct pre-construction surveys for the species and identify and mark suitable salt marsh harvest mouse marsh habitat prior to Project initiation. • Ground disturbance to suitable salt marsh harvest mouse habitat (including, but not limited to pickleweed, and emergent salt marsh vegetation including bulrush and cattails) will be avoided to the extent feasible. Where salt marsh harvest mouse habitat cannot be avoided - such as for channel excavation, access routes and grading, or anywhere else that vegetation could be trampled or crushed by work activities - vegetation will be removed from the ground 	Less Than Significant

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
<p>Impact BIO-4 (cont.)</p>	<p>disturbance work area plus a 10-foot buffer around the area, as well as any access routes within salt marsh harvest mouse habitat, utilizing mechanized hand tools or by another method approved by the USFWS and CDFW. Vegetation height shall be maintained at or below 5 inches above ground. Vegetation removal in salt marsh harvest mouse habitat will be conducted under the supervision of the USFWS- and CDFW-approved biologist.</p> <ul style="list-style-type: none"> • To protect salt marsh harvest mouse from construction-related traffic, access roads, haul routes, and staging areas within 200 feet of salt marsh harvest mouse habitat will be bordered by temporary exclusion fencing. The fence should be made of a smooth material that does not allow salt marsh harvest mouse to climb or pass through, of a minimum above-ground height of 30 inches, and the bottom should be buried to a depth of at least 6 inches so that mice cannot crawl under the fence. Any supports for the salt marsh harvest mouse exclusion fencing (e.g., t-posts) will be placed on the inside of the project area. The last 5 feet of the fence shall be angled away from the road to direct wildlife away from the road. A USFWS- and CDFW-approved biologist with previous salt marsh harvest mouse experience will be on site during fence installation and will check the fence alignment prior to vegetation clearing and fence installation to ensure no salt marsh harvest mice are present. • All construction equipment and materials will be staged on existing roadways and away from suitable wetland habitats when not in use. • Vegetation shall be removed from all non-marsh areas of disturbance (driving roads, grading and stockpiling areas) to discourage presence of salt marsh harvest mouse. • A USFWS- and CDFW-approved biologist with previous salt marsh harvest mouse monitoring and/or surveying experience will be on site during construction activities occurring in suitable habitat. The biologist will document compliance with the project permit conditions and avoidance and conservation measures. The USFWS-and CDFW-approved biologist has the authority to stop project activities if any of the requirements associated with these measures is not being fulfilled. If salt marsh harvest mouse is observed in the work area, construction activities will cease in the immediate vicinity of the salt marsh harvest mouse. The individual will be allowed to leave the area before work is resumed. If the individual does not move on its own volition, the USFWS-approved biologist would contact USFWS (and CDFW if appropriate) for further guidance on how to proceed. • If the USFWS- and CDFW-approved biologist has requested work stoppage because of take of any of the listed species, or if a dead or injured salt marsh harvest mouse is observed, the USFWS and CDFW will be notified within one day by email or telephone. • For vegetation management activities in suitable habitat for salt marsh harvest mouse, the following measures shall be implemented: <ul style="list-style-type: none"> – Any herbicides to be used will be EPA certified for use in/adjacent to aquatic environments. – Work in upland habitat within 100 feet of salt marsh harvest mouse habitat will be scheduled to avoid extreme high tides when there is potential for salt marsh harvest mouse to move to higher, drier grounds, such as ruderal and grassland habitats. 	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
<p>Impact BIO-4 (cont.)</p>	<p>Mitigation Measure BIO-4b: Avoidance and Minimization Measures for Bats. A qualified biologist who is experienced with bat surveying techniques, behavior, roosting habitat, and identification of local bat species shall conduct a pre-construction habitat assessment of the Project site to characterize potential bat habitat and identify potentially active roost sites. No further action is required if the pre-construction habitat assessment does not identify bat habitat or signs of potentially active bat roosts within the Project site (e.g., guano, urine staining, dead bats, etc.).</p> <p>If the surveying biologist identifies potential roosting habitat or potentially active bat roosts within or in the immediate vicinity of the Project site, including trees that could be trimmed or removed under the Project, the following measures shall be implemented:</p> <ol style="list-style-type: none"> 1) Removal of- or disturbance to trees identified as potential bat roosting habitat or active roosts shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, to the extent feasible. These dates avoid bat maternity roosting season (approximately April 15 to August 31) and period of winter torpor (approximately October 15 to February 28). <ol style="list-style-type: none"> a. If removal of- or disturbance to trees identified as potential bat roosting habitat or active roosts during the periods when bats are active is not feasible, a qualified biologist will conduct pre-construction surveys within 5 calendar days prior to disturbance to further evaluate bat activity within the potential habitat or roost site. b. If active bat roosts are not identified in potential habitat during pre-construction surveys, no further action is required prior to removal of- or disturbance to trees within the pre-construction survey area. c. If active bat roosts or evidence of roosting is identified during pre-construction surveys, the qualified biologist shall determine, if possible, the type of roost and species. <ol style="list-style-type: none"> i) If special-status bat species or maternity or hibernation roosts are detected during these surveys, appropriate species- and roost-specific avoidance and protection measures shall be developed by the qualified biologist. Such measures may include postponing the removal of or disturbance to trees, or establishing exclusionary work buffers while the roost is active. A minimum 100-foot no disturbance buffer shall be established around special-status species, maternity, or hibernation roosts until the qualified biologist determines they are no longer active. The size of the no-disturbance buffer may be adjusted by the qualified biologist, in coordination with CDFW, depending on the species present, roost type, existing screening around the roost site (such as dense vegetation), as well as the type of construction activity that would occur around the roost site, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals. <p>Active maternity roosts shall not be disturbed without advance CDFW approval until the roost disbands at the completion of the maternity roosting season or otherwise becomes inactive, as determined by the qualified biologist.</p>	

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
Impact BIO-4 (cont.)	<ul style="list-style-type: none"> ii) If a common species, non-maternity or hibernation roost (e.g., bachelor daytime roost) is identified, disturbance to- or removal of trees or structures may occur under the supervision of a qualified biologist as described under 3). 2) The qualified biologist shall be present during tree disturbance or removal if active non-maternity or hibernation bat roosts or potential roosting habitat are present. Trees with active non-maternity or hibernation roosts of common species or potential habitat shall be disturbed or removed only under clear weather conditions when precipitation is not forecast for three days and when daytime temperatures are at least 50°F to ensure bats are active and can abandon any potential roosts as disturbance from the clearing activities occurs, and when wind speeds are less than 15 mph. Trimming or removal of trees with active (non-maternity or hibernation) or potentially active roost sites of common bat species shall follow a two-step removal process: <ul style="list-style-type: none"> a. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using hand tools (e.g., chainsaws). b. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using hand tools or other equipment (e.g. excavator or backhoe). c. All felled trees shall remain on the ground for at least 24 hours prior to chipping, off-site removal, or other processing to allow any bats to escape, or be inspected once felled by the qualified biologist to ensure no bats remain within the tree and/or branches. 3) Bat roosts that begin during construction are presumed to be unaffected as long as a similar type of construction activity continues, and no buffer would be necessary. Direct impacts on bat roosts or take of individual bats will be avoided. 	
	Mitigation Measure BIO-2a (Worker Environmental Awareness Program Training) (see Impact BIO-2)	
Impact BIO-5: Construction of the Project could have a substantial adverse effect on sensitive natural communities. (Criterion b) (Potentially Significant)	<p>Mitigation Measure BIO-5a: Salvage and Reintroduction of Creeping Wildrye Grassland. The following measures shall be implemented prior to construction to avoid or minimize impacts to creeping wildrye grassland within the Project site.</p> <ul style="list-style-type: none"> 1) A qualified botanist shall identify the boundaries of creeping wildrye grassland within the Project site during the flowering season (between June and July) and prior to site grading. Boundaries of this sensitive natural community shall be mapped and flagged for avoidance, if feasible. 2) Where avoidance of this community is infeasible, the perennial grasses shall be harvested at the appropriate time and under the direction of the qualified botanist from locations where grading and/or ground disturbance will occur within the Project site. 	Less Than Significant

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
<p>Impact BIO-5 (cont.)</p>	<p>3) Harvested grasses shall be stored for reintroduction into suitable habitat within upland portions of the Project site that will be preserved as open space.</p> <p>4) The Project applicant shall contract a qualified restoration ecologist to prepare a Monitoring Plan for relocated / transplanted creeping wildrye grasses within the Project site. The plan shall detail methods and location for relocating or reintroducing the grasses, success criteria, monitoring methods and maintenance for successful establishment, reporting protocols, and contingency measures to be implemented if the initial mitigation fails. The plan shall be developed in coordination with the appropriate agencies prior to the start of local construction activities, with the objective of providing equal or better habitat and populations than the impacted area(s). The recommended success criteria for relocated plants shall be 0.75:1 ratio [number of plants established: number of plants impacted] after two years, unless otherwise specified by CDFW.</p> <p>5) The plan shall be submitted to the County and CDFW prior to the start of local construction activities within the creeping wildrye grassland.</p> <p>6) Monitoring reports shall include photo-documentation, planting specifications, a site layout map, descriptions of materials used, and justification for any deviations from the monitoring plan.</p>	
	<p>Mitigation Measure BIO-5b: Enhancement and Creation of Valley Oak Woodland. The Project applicant shall mitigate for temporary disturbance of oak woodland in support of the Project through restoration or preservation / enhancement / creation of oak woodland at a ratio of 1:1 (restored/enhanced/preserved area: impacted area) through one of the following options:</p> <p>1) Planting replacement trees within the Project site on areas of the hill that will be preserved as open space following development.</p> <p>The Project sponsor shall contract with a qualified restoration ecologist to prepare a Habitat Mitigation and Monitoring Plan (HMMP) for oak woodland habitat to be restored as part of the Project. The HMMP would be subject to approval by Contra Costa County. The HMMP shall include a detailed description of restoration/enhancement/preservation actions proposed such as a planting plan, a weed control plan to prevent the spread of invasive and non-native species within restored areas, and erosion control measures to be installed around the restored area following mitigation planting to avoid or minimize sediment runoff throughout the Project site; restoration performance criteria for the restored area that establish success thresholds over a period of 5 years; and proposed monitoring/maintenance program to evaluate the restoration performance criteria, under which progress of restored areas are tracked to ensure survival of the mitigation plantings. The program shall document overall health and vigor of mitigation plantings throughout the monitoring period and provide recommendations for adaptive management as needed to ensure the site is successful, according to the established performance criteria. An annual report documenting the results and providing recommendations for improvements throughout the year shall be provided to the County.</p>	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
Impact BIO-5 (cont.)	<p>In designing the Tree Replacement Plan, the arborist shall review the final project grading plans to ensure that adequate tree preservation methods, guidelines, and conditions are in place. The project arborist shall host pre-demolition meetings with the general contractor and demolition contractor to determine clearance pruning, stump removal techniques, fencing placement and, timing to establish a Tree Protection Zone (TPZ). The arborist shall conduct post-demolition meetings to review and confirm tree protection fencing for grading and construction. All vehicles, equipment, and storage of job site materials and debris, shall be kept outside of the TPZ. The arborist shall incorporate standard protocols set forth in the American National Standards Institute (ANSI) A300 Construction Management Standard, Part 5 and the International Society of Arboriculture's Best Management Practices: Managing Trees During Construction.</p> <p>2) Paying an in-lieu fee to a natural resource agency or a non-profit organization that would use the fees to protect or enhance oak woodland habitat of the region.</p> <p>If an in-lieu fee is used for mitigation, the amount of the in-lieu fee shall be determined either by calculating the value of the land with oak woodland habitat proposed for removal, or by some other calculation. An alternate calculation shall reflect differences in the quality of habitat proposed for removal, and may consider the cost of comparable habitat (fee title or easement) in nearby areas. The amount of the in-lieu fee and entity receiving the funds shall be subject to review and approval by Contra Costa County.</p>	
	<p>Mitigation Measure BIO-6a (Protection of Jurisdictional Wetlands and Other Waters) (see Impact BIO-6)</p> <p>Mitigation Measure BIO-6b (Permits and Compensation for Impacts to Wetlands and Waters) (see Impact BIO-6)</p>	
<p>Impact BIO-6: Construction of the Project could have a substantial adverse effect on wetlands or other Waters of the U.S. and the State. (Criterion c) (Potentially Significant)</p>	<p>Mitigation Measure BIO-6a: Protection of Jurisdictional Wetlands and Other Waters. For Project development within or adjacent to state and federal jurisdictional wetlands and waters, protection measures shall be applied to protect these features. These measures shall include the following:</p> <ol style="list-style-type: none"> 1) An updated wetland delineation shall be submitted to USACE for verification to establish the boundaries and current jurisdictional status of the aquatic features in the site. The verified wetland delineation shall be used to quantify the Project impacts to aquatic resources for permitting purposes. 2) To the maximum extent feasible, Project construction activities within or adjacent to wetlands or waters shall be conducted during the dry season (between June 15 and October 15) and the disturbance footprint shall be minimized in these areas. 3) Stabilize disturbed, exposed slopes immediately upon completion of construction activities (e.g., following cut and fill activities and installation of bioretention pond infrastructure) to prevent any soil or other materials from entering aquatic habitat. Plastic monofilament of any kind (including those labeled as biodegradable, photodegradable, or UV-degradable) shall not be used. Only natural burlap, coir, coconut or jute wrapped fiber rolls and mats shall be used. 	<p align="center">Less Than Significant</p>

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
Impact BIO-6 (cont.)	<ol style="list-style-type: none"> 4) A protective barrier (fence) shall be erected around any wetlands or waters designated for complete avoidance in Project construction plans and regulatory permits to isolate it from construction or other ground-disturbing activities. 5) A fencing material meeting the requirements of both water quality protection and wildlife exclusion may be used. Fences must be properly installed with final approval by a County representative, including adequate supports or wire backing for use if windy conditions are anticipated, and with the lower edge keyed in to the soil to ensure a proper barrier. Signage shall be installed on the fencing to identify sensitive habitat areas and restrict construction activities; 6) No equipment mobilization, grading, clearing, or storage of vehicles, equipment or machinery, or similar activity shall occur until a County representative has inspected and approved the wetland protection fence; and 7) The Project proponent shall ensure that the temporary fence is continuously maintained until all construction or other ground-disturbing activities are completed. 8) Drip pans and/or liners shall be stationed beneath all equipment staged nearby jurisdictional features overnight to minimize spill of deleterious materials into jurisdictional waters. Equipment maintenance and refueling in support of project implementation shall be performed in designated upland staging areas and work areas, and spill kits shall be available on-site. Maintenance activity and fueling must occur at least 100 feet from jurisdictional wetlands and other waters or farther as specified in the project permits and authorizations. 	
	<p>Mitigation Measure BIO-6b: Permits and Compensation for Impacts to Wetlands and Waters.</p> <p>To offset unavoidable permanent impacts to approximately 0.02 acres of the side-hill seep and the fill of less than 0.1 acres for construction of the storm drain outfall along the bank of Pacheco Creek, the Project applicant shall secure the appropriate permits and provide compensatory mitigation as determined by the regulatory agencies with jurisdiction over the impacted aquatic resources during the permitting process. To establish the jurisdictional status of the various aquatic features in the site, the updated wetland delineation will be submitted to USACE for verification. The necessary permits will depend on the jurisdictional status of the features. While the outfall in Pacheco Creek is expected to require permits from USACE (Nationwide 7), CDFW (1602 Streambed Alteration Agreement), and RWQCB (401 Certification), the permitting scenario of the side-hill seep is less predictable. It is possible USACE will verify this feature as outside Clean Water Act jurisdiction due to spatial and hydrological isolation from other Waters of the U.S. If the seep is verified as non-jurisdictional, the Regional Water Quality Control Board Water would be expected to issue a Notice of Applicability to authorize its fill pursuant to Water Quality Order No. 2004-0004-DWQ.</p> <p>At a minimum, compensation acreage for impacted wetlands and waters would meet a 1:1 ratio (created/restored/enhanced: impacted) to achieve no net loss of aquatic resources. Compensation may include on-site or off-site creation, restoration, or enhancement of jurisdictional resources, as determined by the permitting agencies. On-site or off-site creation/restoration/enhancement plans</p>	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
Impact BIO-6 (cont.)	must be prepared by a qualified biologist prior to construction, include a planting plan and planting methods, monitoring and reporting requirements, performance criteria (e.g., species diversity and vegetative cover thresholds), and maintenance requirements, and is subject to review and modification by resource agency permits. Implementation of creation/restoration/enhancement activities by the Project applicant (or permittee) shall occur prior to Project impacts, whenever possible, to avoid temporal loss. On- or off-site creation/restoration/enhancement sites shall be monitored by the applicant for at least five years to ensure their success, or as otherwise required by resource agencies.	
	<p>Mitigation Measure BIO-2a (Worker Environmental Awareness Program Training) (see Impact BIO-2)</p> <p>Mitigation Measure BIO-2b (General Conservation Measures during Construction) (see Impact BIO-2)</p>	
<p>Impact BIO-7: The Project would not interfere substantially with the movement of native resident or migratory bird species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Criterion d) (Potentially Significant)</p>	<p>Mitigation Measure BIO-2a (Worker Environmental Awareness Program Training) (see Impact BIO-2)</p> <p>Mitigation Measure BIO-2b (General Conservation Measures during Construction) (see Impact BIO-2)</p> <p>Mitigation Measure BIO-2c (Avoidance, Minimization, and Protection Measures for Sensitive Amphibians and Reptiles) (see Impact BIO-2c)</p> <p>Mitigation Measure BIO-3a (Nesting Bird Protection Measures) (see Impact BIO-3)</p> <p>Mitigation Measure BIO-3b (Avoid and Minimize Impacts to California Black Rail and Ridgway's Rail)</p> <p>Mitigation Measure BIO-4a (Avoidance and Minimization Measures For Salt Marsh Harvest Mouse) (see Impact BIO-4)</p> <p>Mitigation Measure BIO-4b (Avoidance and Minimization Measures for Bats) (see Impact BIO-4)</p>	Less Than Significant
<p>Impact BIO-8: The Project would not conflict with any local policies or ordinances protecting biological resources. (Criteria e). (Potentially Significant)</p>	<p>Mitigation Measure BIO-5b (Enhancement and Creation of Valley Oak Woodland) (see Impact BIO-5)</p>	Less Than Significant
<p>Impact C-BIO-1: The proposed Project, in conjunction with cumulative development in the region, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S., to which the Project would have a cumulatively considerable contribution. (All Criteria) (Potentially Significant)</p>	<p>Mitigation Measures BIO-1 (Avoidance and Minimization for Impacts to Special-Status Plants) see Impact BIO-1)</p> <p>Mitigation Measure BIO-2a (Worker Environmental Awareness Program Training) (see Impact BIO-2)</p> <p>Mitigation Measure BIO-2b (General Conservation Measures during Construction) (see Impact BIO-2)</p>	Less Than Significant

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.3 Biological Resources (cont.)		
<p>Impact C-BIO-1 (cont.)</p>	<p>Mitigation Measure BIO-2c (Avoidance, Minimization, and Protection Measures for Sensitive Amphibians and Reptiles) (see Impact BIO-2c) Mitigation Measure BIO-3a (Nesting Bird Protection Measures) (see Impact BIO-3) Mitigation Measure BIO-4a (Avoidance and Minimization Measures For Salt Marsh Harvest Mouse) (see Impact BIO-4) Mitigation Measure BIO-4a (Avoidance and Minimization Measures For Salt Marsh Harvest Mouse) (see Impact BIO-4) Mitigation Measure BIO-4b (Avoidance and Minimization Measures for Bats) (see Impact BIO-4) Mitigation Measure BIO-5a (Salvage and Reintroduction of Creeping Wildrye Grassland) (see Impact BIO-5) Mitigation Measure BIO-5b (Enhancement and Creation of Valley Oak Woodland) (see Impact BIO-5) Mitigation Measure BIO-6a (Protection of Jurisdictional Wetlands and Other Waters) (see Impact BIO-6) Mitigation Measure BIO-6b (Permits and Compensation for Impacts to Wetlands and Waters) (see Impact BIO-6)</p>	
4.4 Cultural Resources and Tribal Cultural Resources		
<p>Impact CUL-1: The Project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered archaeological resources, human remains, and tribal cultural resources. (Criteria b, c and d) (Potentially Significant prior to Mitigation)</p>	<p>Mitigation Measure CUL-1a: If prehistoric or historic-period archaeological resources are encountered during Project implementation, including ground disturbance associated with project construction, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior’s Professional Qualification Standards for Archeology, shall inspect the find within 24 hours of discovery and notify the County of their initial assessment. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.</p> <p>If the County determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is Native American-related), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided if feasible. If avoidance is not feasible, the County shall consult with appropriate Native American tribes (if the resource is Native American-related), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section</p>	<p align="center">Less Than Significant</p>

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.4 Cultural and Tribal Cultural Resources (cont.)		
<p>Impact CUL-1 (cont.)</p>	<p>21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource, determined by a qualified professional or California Native American tribe, as is appropriate (according to PRC Section 21084.3). All significant cultural materials recovered shall, at the discretion of the consulting professional, be subject to scientific analysis, professional museum curation, and documentation according to current professional standards.</p> <p>In considering any suggested mitigation proposed by the consulting professional to mitigate impacts to cultural resources, the County shall determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations.</p> <p>If avoidance is infeasible, other appropriate measures, such as data recovery, shall be instituted. The resource shall be treated with the appropriate dignity, taking into account the resource's historical or cultural value, meaning, and traditional use, as determined by a qualified professional or California Native American tribe, as is appropriate. Work may proceed on other parts of the project site while mitigation for cultural resources is carried out. All significant cultural materials recovered shall, at the discretion of the consulting professional, be subject to scientific analysis, professional museum curation, and documentation according to current professional standards. At the County's discretion, all work performed by the consulting professional shall be paid for by the proponent and at the County's discretion, the professional may work under contract with the County.</p>	
	<p>Mitigation Measure CUL-1b: In the event of discovery or recognition of any human remains during construction activities, the following steps shall be taken:</p> <ol style="list-style-type: none"> 1. There shall be no further excavation or disturbance of the location where human remains are found or within 100 feet until: <ol style="list-style-type: none"> A. The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and B. If the coroner determines the remains to be Native American: <ol style="list-style-type: none"> (1) The coroner shall contact the Native American Heritage Commission within 24 hours; (2) The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American; (3) The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98; or 2. Where the following conditions occur, the landowner or his authorized representative shall reburry the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance: 	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.4 Cultural and Tribal Cultural Resources (cont.)		
Impact CUL-1 (cont.)	A. The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the Commission; <ul style="list-style-type: none"> (1) The identified descendant fails to make a recommendation; or (2) The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner. 	
Impact C-CUL-1: The Project, in conjunction with cumulative development, could contribute to cumulative impacts on cultural resources. (Criteria b, c and d) (Less than Significant)	None required	
4.5 Geology and Soils		
Impact GEO-1: The Project could directly or indirectly cause substantial adverse effects involving slope instability hazards, including landslides, debris flows, and rockfalls caused by seismic or nonseismic mechanisms. (Criteria a.iv and c) (Potentially Significant)	<p>Mitigation Measure GEO-1: Grading Plans. The Project applicant shall include in the Project's preliminary grading plan the recommendations made in Engeo's <i>Geotechnical Exploration Bay View Subdivision</i> report dated August 15, 2003, the <i>Geotechnical Review of Rough Grading Plan and Supplemental Recommendations</i> dated June 27, 2006, and supplemental <i>Plan Review and Response to Peer Review Comments Memo</i> dated June 19, 2019, and <i>Response to CCCFCD Comments Regarding Geotechnical Feasibility Bayview</i> dated May 29, 2020, except as superseded by specific geotechnical recommendations related to engineering or the physical aspects of Project construction in the <i>Geologic Peer Reviews</i> dated August 9, 2006, April 14, 2006 and June 30, 2020 by Darwin Myers Associates (DMA) on behalf of the County, to the extent that all recommendations apply to the proposed grading plan. These recommendations include oversight of grading operations which shall be conducted by a California Certified Engineering Geologist or Registered Professional Geotechnical Engineer.</p> <p>The final grading plans shall be in accordance with the <i>Contra Costa County Grading Ordinance (Title 7 Division 716)</i> and reviewed and approved by the Contra Costa Department of Conservation and Development prior to the commencement of Project construction. If any slopes or areas of concern are observed to be unstable during grading, the California certified engineering geologist or registered professional geotechnical engineer shall oversee the removal of the suspected material and reconstruction of the slope as a buttress fill slope with engineered slope stabilization features such as geogrid reinforcement.</p> <p>Final inspection of excavated slopes and graded slopes shall be completed by a California certified engineering geologist or registered professional geotechnical engineer with knowledge of the Project conditions. The slope stability considerations for the site shall be submitted to and approved of by the Contra Costa Department of Conservation and Development prior to the commencement of Project construction.</p>	Less Than Significant

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.5 Geology and Soils (cont.)		
<p>Impact GEO-2: The Project could directly or indirectly expose people or structures to strong ground shaking from a seismic event on one of the regional active faults, causing substantial risk of loss, injury, or death. (Criterion a.ii) (Potentially Significant)</p>	<p>Mitigation Measure GEO-2: Design-level Geotechnical Investigation. The Project applicant shall prepare and submit to the County a site-specific, design level geotechnical investigation for the Project. The investigation shall analyze expected ground motions at the site from known active faults in accordance with the 2019 California Building Code (“Title 24”), which requires that all designs accommodate ground accelerations expected from known active faults. The investigation shall review improvement and grading plans and update geotechnical design recommendations for proposed walls, foundations, foundation slabs and surrounding related improvements (e.g., utilities, roadways, parking lots and sidewalks) including maintaining pipeline safety for existing pipelines. The report shall be subject to technical review and approval by a California certified engineering geologist or registered professional geotechnical engineer.</p> <p>All recommendations by the engineering geologist and/or geotechnical engineer shall be incorporated into the final design. Recommendations that are applicable to foundation design, earthwork, and site preparation that were prepared prior to or during the Project design phase, shall be incorporated in the Project, all foundations and other project structures must comply with the performance standards set forth in the California Building Code. The final seismic considerations for the site shall be submitted to and approved of by the Contra Costa Department of Conservation and Development prior to the commencement of Project construction.</p>	Less Than Significant
<p>Impact GEO-3: The Project site would be susceptible to settlement from static forces or earthquake induced forces, posing substantial risk of structural damage or personal injury. (Criterion c) (Potentially Significant prior to Mitigation)</p>	<p>Mitigation Measure GEO-3: Fill Placement. The Project applicant shall incorporate the geotechnical recommendations pertaining to proposed fill placement and site preparation including the fill transition zone areas for the grading plan for the Project, as specified in Engeo’s <i>Geotechnical Exploration Bay View Subdivision</i> report dated August 15, 2003, and the <i>Geotechnical Review of Rough Grading Plan and Supplemental Recommendations</i> dated June 27, 2006, and supplemental <i>Plan Review and Response to Peer Review Comments Memo</i> dated June 19, 2019 and <i>Response to CCCFCD Comments Regarding Geotechnical Feasibility</i> dated May 29, 2020, except as superseded by specific geotechnical recommendations related to engineering or the physical aspects of Project construction in the <i>Geologic Peer Reviews</i> dated August 9, 2006, April 14, 2006, and June 30, 2020 by Darwin Myers Associates (DMA) on behalf of the County. In addition, the Project applicant shall adhere to County grading and construction policies to reduce the potential for geologic hazards, including settlement and differential settlement. All construction activities and design criteria shall comply with applicable codes and requirements of the 2019 California Building Code (“Title 24”). The final grading plan reflecting the applicant recommendation for the site pertaining to fill placement shall be submitted to and approved by the Contra Costa Department of Conservation and Development prior to the commencement of Project construction.</p>	Less Than Significant
<p>Impact GEO-4: Project construction would loosen and expose substantial volumes of surface soils susceptible to loss of topsoil and erosion. (Criterion b) (Potentially Significant)</p>	<p>Mitigation Measure GEO-4: Terraced Slopes/Drainage. The Project applicant shall ensure routine inspections and maintenance of terraced slopes conducted by qualified professionals. Maintenance measures shall include maintaining vegetative cover of exposed slopes upland of the proposed development after construction, for the operational life of the Project, consistent with the provisions of the Project’s SWPPP, as identified in Section 4.7, <i>Hydrology and Water Quality</i>, if this EIR. Drainage conveyances on the cut terraces shall be maintained to ensure a minimum of 85 percent</p>	Less Than Significant

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.5 Geology and Soils (cont.)		
Impact GEO-4 (cont.)	of total conveyance capacity, as specified in the Stormwater Management Facilities Operation and Maintenance Agreement. Any evidence of gully or rill erosional effects shall be remedied immediately by the Project applicant through additional hydroseeding or other industry standard measures and best practices for erosion control.	
Impact GEO-5: The Project site would be susceptible to expansive soils, posing substantial risk of structural damage or personal injury. (Criterion d) (Potentially Significant)	Mitigation Measure GEO-3 (Fill Placement) (see Impact GEO-3)	Less Than Significant
Impact GEO-6: The Project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered buried paleontological resources or unique geological features. (Criterion f) (Potentially Significant)	Mitigation Measure GEO-5: Paleontological Resources Treatment. If paleontological resources are encountered, all construction activities within 100 feet shall halt and the County shall be notified. A qualified paleontologist, defined as a paleontologist meeting the Society for Vertebrate Paleontology's Professional Standards shall inspect the findings within 24 hours of discovery. If it is determined that the Project could damage a paleontological resource or a unique geologic feature (as defined pursuant to the CEQA Guidelines), mitigation shall be implemented in accordance with PRC Section 21083.2 and Section 15126.4 of the CEQA <i>Guidelines</i> , with a preference for preservation in place. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance is not feasible, a qualified paleontologist shall prepare and implement a detailed treatment plan in consultation with the County. Treatment of unique paleontological resources shall follow the applicable requirements of PRC Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the Project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.	Less Than Significant
Impact C-GEO-1: The Project, in conjunction with cumulative development, would not result in significant cumulative impacts with respect to geology, soils, or seismicity to which the Project would have a cumulatively considerable contribution. (All Criteria) (Less than Significant)	None required	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.6 Greenhouse Gas Emissions and Energy		
<p>Impact GHG-1: The Project would generate GHG emissions that could have a significant impact on the environment. (Criterion a.) (Potentially Significant)</p>	<p>Mitigation Measure GHG-1: GHG Emissions Reduction Plan.</p> <p><i>Prior to the County's approval of the first construction or grading-related permit for the Project, the Project applicant shall submit to the County a "GHG Emissions Reduction Plan" ("Plan") for implementation over the useful life of the Project (generally estimated to be at least 30 years) in accordance with the requirements of this mitigation measure. The Plan shall document the GHG reduction measures that will be combined and implemented to achieve the required emissions reduction of at least 182 MT CO_{2e} /year, and a quantification of the emissions reductions achieved with the combination of measures identified in the Plan.</i></p> <p>A. On-Site Reduction Measures. The Project applicant shall implement any combination of the following GHG emissions reduction measures to, cumulatively, achieve the required emissions reduction of at least approximately 182 MT CO_{2e} /year to achieve the GHG efficiency target of 3.86 MTCO_{2e}/SP, as discussed in the <i>Approach to Analysis</i>.</p> <ol style="list-style-type: none"> 1) <u>Meet the Project's electricity demand with rooftop solar PV and/or through purchase of 100% zero-carbon electricity.</u> The Project will purchase 100% zero-carbon electricity (e.g., through MCE's "Deep Green" or "Local Sol" plans, or through PG&E's "Solar Choice" plan). 2) <u>Electrification.</u> The Project applicant shall demonstrate on Project plans submitted to the County for review and approval that each of the 144 homes include electric heating and cooling or all loads, and will either use additional on-site solar or purchase 100 percent zero-carbon electricity (e.g., through MCE's "Deep Green" or "Local Sol" plans or PG&E's "Solar Choice" plan). Alternatively, default grid-supplied electricity would be incorporated into the Project. 3) <u>Hearth Reduction.</u> The Project applicant shall demonstrate on Project plans submitted to the County for review and approval that hearths will not be installed in any of the Project homes. 4) <u>EV Chargers and Promotion.</u> <ol style="list-style-type: none"> a. The Project applicant shall demonstrate on Project plans submitted to the County for review and approval the proposed installation of residential electrical vehicle (EV) chargers in at least 100 of the 144 homes. This mitigation involves measures beyond the required installation of charging capability (i.e., wiring) required by CALGreen Building Code. b. The Project applicant shall submit to the County promotional materials that specifically promote EV use through messaging (e.g., flyers, fact sheets), vehicle subsidies, and/or test-drive events specific for residents of Project homes. The Project applicant shall also submit to the County documents that quantify the number or rate of EV ownership and for all Project homes for the prior year. 	<p>Less than Significant</p>

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.6 Greenhouse Gas Emissions and Energy		
<p>Impact GHG-1 (cont.)</p>	<p>The target for this measure is that at least 50 percent of residents with EV chargers (corresponding to 35 percent of project households) own an EV and use the EV for 80 percent of household driving by 2035, however, this target may vary depending on the level of implementation and resulting emissions reduction achieved by other measures in this mitigation measure.</p> <p>5) <u>Additional Energy Measures.</u></p> <p>a. <i>High-Efficiency Appliances.</i> Throughout occupancy of the Project, and if appliances are offered by homebuilders, the Project applicant shall offer homebuyers Energy Star-rated high-efficiency appliances (or other equivalent technology) that have efficiency levels at or above measures required by CALGreen, for installation in Project homes.</p> <p>B. Implementation, Monitoring and Enforcement.</p> <p>1) <u>Implementation.</u></p> <p>The Project applicant shall implement the approved GHG Reduction Plan (Plan) throughout operation of the Project.</p> <p><i>On-site Measures:</i> For physical GHG reduction measures to be incorporated into the design of the Project (Mitigation Measures GHG-1, A.2, A.3, A.4a, and A5), the measures shall be included on the drawings and submitted to the County Planning Director or his/her designee for review and confirmation prior to issuance of the first grading-related and/or building permit for horizontal construction of each of the up to three development phases proposed.</p> <p>The County Planning Director or his/her designee shall confirm completion of the implementation of these measures as part of the final inspection and prior to issuance of the final certificate of occupancy (CO) for each development phase of the Project. For operational GHG reduction measures (Mitigation Measures GHG-1, A.1 and A.4b), the measures shall be implemented on an indefinite and ongoing basis, as described in Section C.2, <i>Reporting and Monitoring</i>, of this mitigation measure.</p> <p>2) <u>Reporting and Monitoring.</u></p> <p><i>Reporting:</i> The Project applicant shall submit a GHG Reduction Report (Report) to the County Planning Director or his/her designee within one year after the County issues the final CO for each development phase of the Project. The Report shall summarize the Project's implementation of GHG reduction measures, over past, current, and anticipated Project phases, if applicable; describe compliance with the conditions of the Plan; show calculations of the emissions reduction achieved toward the minimum reduction required (182 MT CO₂e /year); and include a brief summary of any revisions to the Plan since any previous Report was submitted.</p>	

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.6 Greenhouse Gas Emissions and Energy		
Impact GHG-1 (cont.)	<p>Monitoring: The County or its designee shall review the Report to verify that the Plan is being implemented in full and monitored in accordance with the terms of this mitigation measure. The Plan shall be considered fully attained when the County or its designee makes the determination, based on substantial evidence, that the proposed Project has achieved the required emissions reduction of at least approximately 182 MT CO₂e /year and is unlikely to exceed the applicable significance threshold at any time in the future, after implementation of this mitigation. Enforcement: Notwithstanding the foregoing, the County retains its discretion to enforce all mechanisms under the Municipal Code and other laws to enforce non-compliance with the requirements of this mitigation measure.</p> <p>The County retains the right to request a Corrective Action Plan if the Report is not submitted, or if the GHG Reduction Measures in the Plan are not being fully implemented and/or maintained, and also retains the right to enforce provisions of that Corrective Action Plan if specified actions are not taken or are not successful at addressing the violation within the specified period of time.</p> <p>The County shall have the discretion to reasonably modify the timing of reporting, with reasonable notice and opportunity to comment by the Applicant, to coincide with other related monitoring and reporting required for the Project.</p>	
Impact GHG-2: The Project would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing GHG emissions. (Criterion b) (Potentially Significant)	Mitigation Measure GHG-1 (GHG Emissions Reduction Plan) (see Impact GHG-1)	Less than Significant
Impact ENE-1: The Project would not result in wasteful, inefficient and unnecessary use of energy and the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (Criteria a and b) (Less than Significant)	None required.	
4.7 Hazards and Hazardous Materials		
Impact HAZ-1: The Project would use hazardous materials (i.e., solvents) onsite during construction that could be released to the environment through improper handling or storage. (Criterion a, in part) (Potentially Significant)	<p>Mitigation Measure HAZ-1: The use of construction best management practices shall be implemented as part of construction to minimize the potential negative effects of accidental release of hazardous materials to groundwater and soils. These shall include the following:</p> <ol style="list-style-type: none"> 1. Follow manufacturer’s recommendations on use, storage and disposal of chemical products used in construction; 2. Avoid overtopping construction equipment fuel gas tanks; 3. During routine maintenance of construction equipment, properly contain and remove grease and oils; and 4. Properly dispose of discarded containers of fuels and other chemicals. 	Less Than Significant

**TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT**

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.7 Hazards and Hazardous Materials (cont.)		
Impact HAZ-2: Project operations would generate general household and maintenance hazardous waste. (Criterion a, in part) (Less than Significant)	None required	
Impact HAZ-3: The Project would be developed where existing crude oil pipelines transect the Project site, which could present a hazard to the public or environment in the event of accidental upset. (Criterion b, in part) (Potentially Significant)	<p>Mitigation Measure HAZ-2: The Project shall ensure the following fill and excavation parameters are met to reduce the risk of damage to pipelines:</p> <ol style="list-style-type: none"> 1. Before the commencement of any grading activities, the tops of the five pipelines shall be accurately located on site, and confirmed to be a minimum of 6 feet below the existing ground surface. If it is determined that the any pipeline top is less than six feet below the surface, and will be at risk of impact during proposed grading excavation, one of the following additional safety measures shall be undertaken: deepening the pipeline, providing mechanical protection such as steel or concrete barriers, or elevating the proposed final road elevation. 2. Maximum fill heights over the Santa Fe Pacific Partners L.P. ("SFPP"); Kinder Morgan Energy Partners, L.P. ("KMP"); and Crimson-Chevron KLM ("KLM") and Chevron pipelines shall exert a calculated stress of more than what the pipelines can safely tolerate, as determined by a professional engineer in accord with applicable industry standards and safety regulations based on observed pipe material and other factors 3. Prior to final design and construction, a refined analysis of field determined bay mud thickness and bay mud consolidation properties shall be conducted. Though not anticipated, if bay mud is found to exert a calculated stress of more than what the pipeline can safely tolerate, as determined by a professional engineer in accord with applicable industry standards and safety regulations based on observed pipe material and other factors, then one or both of the following additional safety measures shall be undertaken: reduce proposed fill thickness or use lightweight fill such as cellular concrete or Geofoam encasement (or its equivalent). 4. The as-built burial depths of the pipelines and the final proposed subgrade elevations shall result in all pipelines having a minimum burial depth in accord with prevailing regulatory code or pipe owner requirement, whichever is more stringent. If any pipeline does not have a cover in accordance with regulatory minimums, one of the following additional safety measures shall be undertaken: deepening the pipeline, providing mechanical protection such as steel or concrete barriers, or elevating the proposed final road elevation. 	Less Than Significant
Impact HAZ-4: The Project site is within the Contra Costa County Airport Land Use Plan and the Buchanan Field Airport Influence Area, and could result in a safety hazard or excessive noise for people residing in the area. (Criterion e) (Less than Significant)	None required	

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.7 Hazards and Hazardous Materials (cont.)		
Impact HAZ-5: The Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. (Criterion g.) (Less than Significant)	None required	
Impact C-HAZ-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts related to hazards and hazardous materials to which the Project would have a cumulatively considerable contribution. (All Criteria) (Less than Significant)	None required	
4.8 Hydrology and Water Quality		
Impact HYD-1: The Project could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces, but would not violate any water quality standards or waste discharge requirements. (Criterion 1) (Potentially Significant)	Mitigation Measure BIO-6a (Protection of Jurisdictional Wetlands and Other Waters) (see Impact BIO-6)	Less Than Significant
Impact HYD-2: The Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that it would impede sustainable groundwater management of the basin. (Criterion 2) (Less than Significant)	None required	
Impact HYD-3: The Project would not substantially alter the drainage pattern of the site such that it would result in substantial erosion or siltation onsite or offsite. (Criterion 3.a) (Less than Significant, No Mitigation Required)	None required	
Impact HYD-4: The Project would not substantially alter the drainage pattern of the site or surrounding areas such that it would result in flooding on- or off-site. (Criterion 3.b) (Less than Significant)	None required	
Impact HYD-5: The Project would not create or contribute runoff water which would exceed the capacity of existing or planned drainage systems, or provide substantial additional sources of polluted runoff. (Criterion 3.c) (Less than Significant)	None required	
Impact HYD-6: The Project could develop structures which would impede or redirect flood flows. (Criteria 3.d.) (Less than Significant)	None required	

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.8 Hydrology and Water Quality (cont.)		
Impact HYD-7: The Project could conflict with a water quality control plan or sustainable groundwater management plan. (Criterion 5) (Less than Significant)	None required	
Impact C-HYD-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts with respect to hydrology and water quality to which the Project would have a cumulatively considerable contribution. (All Criteria) (Less than Significant)	None required	
4.9 Land Use, Plans and Policies		
Impact LUP-1: The Project would not divide an established community. (Criterion a) (Less than Significant)	None required	
Impact LUP-2: The Project, including the proposed amendments to the General Plan and zoning designation, would not conflict with adopted applicable land use plans and policies such that the Project is inconsistent with the General Plan. (Criterion b) (Less than Significant)	None required	
Impact C-LUP-1: Development of the Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Project site, would not result in significant cumulative impacts to land use and planning. (All Criteria) (Less Than Significant)	None required	
4.10 Noise		
Impact NOI-1: Construction of the Project would result in a temporary increase in ambient noise levels. (Criterion a) (Potentially Significant)	Mitigation Measure NOI-1: The applicant shall create and implement a development-specific noise reduction plan to reduce noise at sensitive receptors along Central Avenue to below 75 dBA Lmax, which shall be enforced via contract specifications. Contractors may elect any combination of legal, non-polluting methods to maintain or reduce construction-related noise to threshold levels or lower, as long as those methods do not result in other significant environmental impacts or create a substantial public nuisance. Examples of measures that can effectively reduce noise impacts include locating equipment in shielded and/or less noise-sensitive areas, selection of equipment that emits low noise levels, and/or installation of noise barriers such as enclosures to block the line of sight between the noise source and the nearest receptors. Other feasible controls could include, but shall not be limited to, fan silencers, enclosures, and mechanical equipment screen walls. In addition, the applicant shall require contractors to limit construction activities in the northernmost 500 feet of the project site to daytime hours between 7:30 am and 5:30 pm Monday through Friday. The plan for attenuating construction-related noises shall be implemented prior to the initiation of any work that triggers the need for such a plan.	Less than Significant

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.10 Noise (cont.)		
Impact NOI-2: Project operations could cause a long-term increase in ambient noise levels in the Project site vicinity. (Criterion a) (Less Than Significant)	None required	
Impact NOI-3: Project construction could generate ground-borne vibration. (Criterion c) (Less Than Significant)	None required	
Impact C-NOI-1: Project construction activities, in conjunction with construction noise from cumulative development noise in the vicinity of the Project site, could cause a substantial temporary or periodic increase in ambient noise levels in the Project site vicinity during construction. (Criterion a) (Potentially Significant)	Mitigation Measure NOI-1 (Construction Noise) (see Impact NOI-1)	Less than Significant
Impact C-NOI-2: Operation of the proposed Project, in conjunction with cumulative development, would not cause a substantial permanent increase in ambient noise levels in the Project vicinity. (Criterion a) (Less Than Significant)	None required	
4.11 Population and Housing		
Impact POP-1: The Project would not directly or indirectly induce substantial population growth. (Criterion a.) (Less than Significant)	None required	
Impact C-POP-1: The Project, in conjunction with cumulative development, would not result a significant cumulative impact by directly or indirectly causing substantial growth, and to which the Project would have a cumulatively considerable contribution. (All Criteria) (Less Than Significant)	None required	
4.12 Public Services and Recreation		
Impact PUB-1: The Project would increase the demand for fire protection and emergency medical services, but would not result in the need for new or physically altered facilities, the construction of which would cause significant environmental impacts. (Criterion a.1) (Potentially Significant)	Mitigation Measure PUB-1: The Project applicant shall equip all dwelling units with residential automatic fire sprinkler systems, complying with the 2016 edition of the National Fire Protection Association Standard 13D, or otherwise most current edition, subject to the review and approval of the Contra Costa County Fire Protection District.	Less Than Significant
Impact PUB-2: The Project would increase the demand for police protection services, but would not result in the need for the provision of new or physically altered facilities, the construction of which would cause significant environmental impacts. (Criterion a.2) (Less than Significant)	None required	

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.12 Public Services (cont.)		
Impact PUB-3: The Project would increase the demand for public school services, but would not result in the need for the provision of new or physically altered facilities. (Criterion a.3) (Less than Significant)	None required	
Impact PUB-4: The Project would increase the demand for child care services, but would not result in the need for the provision of new or physically altered facilities. (Criterion a.4) (Less than Significant)	None required	
Impact PUB-5: The Project would increase the use of existing parks or other recreational facilities, but not such that substantial physical deterioration would occur or new or expanded facilities would be required. (Criteria b and c) (Less than Significant)	None required	
Impact C-PUB-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts on public services and recreation to which the Project would have a cumulatively considerable contribution. (All Criteria) (Less than Significant)	None required	
4.13 Transportation		
Impact TRF-1: Project construction would result in temporary increases in truck traffic and construction worker traffic. (Criterion a) (Potentially Significant)	<p>Mitigation Measure TRF-1: The Project applicant and construction contractor(s) shall develop and submit a Construction Management and Traffic Control Plan for the review and approval of the County's Public Works Department. The Construction Management and Traffic Control Plan shall be submitted to the Public Works Department a minimum of 60 days prior to the initiation of construction activities:</p> <ul style="list-style-type: none"> • A set of comprehensive traffic control measures, including scheduling of major truck trips to avoid peak traffic hours, types of vehicles and maximum speed limits for each type of vehicle, expected daily truck trips, staging areas, emergency routes and access, detour signs if required, lane closure procedures, flag person requirements, signs, cones for drivers, a street sweeping plan and designated construction access routes. • Identification of roadways to be used for the movement of construction vehicles to minimize impacts on motor vehicle, bicycle and pedestrian traffic, circulation and safety, and specifically to minimize impacts to the greatest extent possible on streets in the Project area. • Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures would occur. 	Less Than Significant

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.13 Transportation (cont.)		
<p>Impact TRF-2: Project-generated increases in heavy truck traffic on area roadways during Project construction could result in substantial damage to or wear of public roadways. (Criterion a) (Potentially Significant)</p>	<p>Mitigation Measure TRF-2: Prior to commencement of Project construction activities, which would include any construction-related deliveries to the site, the Project applicant shall document to the satisfaction of the Contra Costa County Public Works Department, the road conditions of the construction route that would be used by Project construction-related vehicles. The Project applicant shall also document the construction route road conditions after Project construction has been completed. The Project applicant shall repair roads that are damaged by construction related activities to County standards and to a structural condition equal to that which existed prior to construction activity. As a security to ensure that damaged roads are adequately repaired, the Project applicant shall make an initial monetary deposit, in an amount to be determined by the Department of Public Works, to an account to be used for roadway rehabilitation or reconstruction. If the County must ultimately undertake the road repairs, and repair costs exceed the initial payment, then the Project applicant shall pay the additional amount necessary to fully repair the roads to pre-construction conditions.</p>	Less than Significant
<p>Impact TRF-3: Total Home-Based VMT per resident generated by the Project would be greater than 15 percent below the regional VMT for similar uses in Contra Costa County, resulting in a significant impact for the Project. (Criterion b) (Significant)</p>	<p>Mitigation Measure TRF-3: Transportation and Parking Demand Management (TDM) Plan. Prior to issuance of building permits, the project applicant shall develop a TDM program for the proposed project, including any anticipated phasing, and shall submit the TDM Program to the County Department of Conservation and Development for review and approval. The TDM Program shall identify trip reduction strategies as well as mechanisms for funding and overseeing the delivery of trip reduction programs and strategies. The TDM Program shall be designed to achieve the trip reduction, as required to reduce the VMT per resident from 20.6 to 16.5 consistent with a 20 percent reduction in the near-term.</p> <p>Trip reduction strategies may include, but are not limited to, the following:</p> <ol style="list-style-type: none"> 1. Pedestrian improvements, on-site or off-site, to connect to existing and planned pedestrian facilities, nearby transit stops, services, schools, shops, etc. 2. Bicycle network improvements, on-site or off-site, to connect to existing and planned bicycle facilities, nearby transit stops, services, schools, shops, etc. 3. Enhancements to bus service during peak commute times 4. Compliance with a future County VMT/TDM ordinance 5. Participation in a future County VMT fee program 	Significant and Unavoidable
<p>Impact TRF-4a: The Project would increase traffic volumes on residential roadway segments near the Project site resulting in obstacles (or hazards) for project vehicle traffic. (Criterion c) (Potentially Significant)</p>	<p>Mitigation Measure TRF-4: In accordance with County requirements and design standards provide even surface pavement, appropriate signage, delineation, and other features on Palms Drive (and Central Avenue if it becomes a public street) to improve vehicle transportation conditions and eliminate obstacles (or hazards).</p>	Less than Significant
<p>Impact TRF-4b: The Project would not have adverse impacts to the project site's vehicle system. (Criterion c) (Less than Significant)</p>	None required	

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.13 Transportation (cont.)		
Impact TRF-5: The Project could increase ridership on public transit serving the Project area. (Criterion a) (Less than Significant)	None required	
Impact TRF-6: The Project would increase the pedestrian and bicycle activity that would be incompatible with the existing infrastructure by exposing users to hazards and safety conflicts. (Criterion a) (Potentially Significant)	Mitigation Measure TRF-6: In accordance with County requirements and design standards, the project applicant shall provide: <ul style="list-style-type: none"> • Continuous sidewalks on at least one side of Palms Drive and Central Avenue to connect the project site to the existing pedestrian facilities on Arthur Road to improve pedestrian transportation conditions. • Even surface pavement, appropriate signage, delineation, and other features on Palms Drive and Central Avenue to improve bicycle transportation conditions. • Sidewalks for all streets within the project site including facilities on both sides of each street and curb ramps at each street intersection. 	Less than Significant
Impact TRF-7a: Emergency access to the Project site would be through existing streets that would be incompatible with the existing transportation infrastructure by exposing emergency vehicles to hazards. (Criterion d) (Potentially Significant)	Mitigation Measure TRF-7a: In accordance with County requirements and design standards, the project applicant shall provide even surface pavement, appropriate signage, delineation, and other features on Palms Drive and Central Avenue to accommodate emergency vehicles.	Less Than Significant
Impact TRF-7b: The Project would not have adverse impacts to the project site's emergency vehicle system. (Criterion d) (Less than Significant)	None required	
Impact C-TRF-8: The Project with a General Plan amendment would increase the Countywide VMT, resulting in a significant impact for the Project. (Significant)	Mitigation Measure TRF-3 (Transportation and Parking Demand Management [TDM] Plan) (see Impact TRF-3)	Significant and Unavoidable
4.14 Utilities and Service Systems		
Impact UTIL-2: The Project would require or result in construction of new or expanded water facilities, the construction of which would cause significant environmental effects. (Criteria b) (Potentially Significant)	Mitigation Measure UTIL-2: The Project sponsor shall implement the following mitigation measures for construction-related effects from installation and expansion of the proposed new waterline: <ol style="list-style-type: none"> a) Mitigation Measure AIR-1 (Best Management Practices for Controlling Particulate Emissions) b) Mitigation Measure BIO-2a (Worker Environmental Awareness Program Training) (see Impact BIO-2) c) Mitigation Measure BIO-2b (General Conservation Measures during Construction) (see Impact BIO-2) d) Mitigation Measure BIO-6a (Protection of Jurisdictional Wetlands and Other Waters) (see Impact BIO-6) e) Mitigation Measure CUL-1a (Prehistoric or Historic-Period Archaeological Resources) (see Impact CUL-1) 	Less Than Significant

TABLE 2-1 (CONTINUED)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PROJECT

Impacts, Criterion, and Significance before Mitigation	Mitigation Measures and Improvement Measures	Significance After Mitigation
4.14 Utilities and Service Systems (cont.)		
Impact UTIL-2 (cont.)	f) Mitigation Measure CUL-1b (Human Remains) (see Impact CUL-1) g) Mitigation Measure GEO-2 (Design-level Geotechnical Compliance) (see Impact GEO-3) h) Mitigation Measure GEO-3 (Fill Placement) i) Mitigation Measure GEO-4 (Terraced Slopes/Drainage) j) Mitigation Measure GEO-5 (Paleontological Resources Treatment) k) Mitigation Measure HAZ-1 (Release of Hazardous Materials) (see Impact HAZ-1) l) Mitigation Measure HAZ-2 (Pipeline Damage Risk) (see Impact HAZ-2) m) Mitigation Measure NOI-1 (Construction Noise) (see Impact NOI-1) n) Mitigation Measure TRF-1 (Construction Traffic) (see Impact TRF-1) o) Mitigation Measure TRF-2 (Public Roadway Damage or Wear) (see Impact HAZ-2)	
Impact UTIL-3: The Project would require or result in construction of new or expanded stormwater drainage facilities, the construction of which could cause significant environmental effects. (Criterion c) (Potentially Significant)	Mitigation Measure UTIL-2 (New Waterline Construction) (see Impact UTIL-2)	Less Than Significant
Impact UTIL-4: The Project would generate demand for wastewater utility service, and would result in the expansion of the existing wastewater collection system, the construction of which would not cause significant environmental effects. (Criteria a, b, and e) (Potentially Significant)	Mitigation Measure UTIL-2 (New Waterline Construction) (see Impact UTIL-2)	Less Than Significant
Impact UTIL-5: The Project would generate solid waste, but would not exceed the permitted capacity of the landfill serving the Project site, and would comply with federal, state and local statutes and regulations related to solid waste. (Criteria f and g) (Less than Significant)	None required	
Impact C-UTIL-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts on utilities and service systems to which the Project would have a cumulatively considerable contribution. (All Criteria) (Less than Significant)	None required	

2.4 Alternatives

Chapter 5 of this Draft EIR analyzes the following range of alternatives to the proposed Project to address its environmental effects and consider a non-residential land use scenario consistent with the existing General Plan and zoning designations:

- **Alternative 1: No Project / Existing Conditions** – Under this alternative, the proposed Project would not be undertaken and no change would occur on the Project site, and no change to the existing General Plan or zoning designations would occur. Although it is reasonable to assume that the Project site would eventually be developed, no other proposals are currently under consideration. Therefore, if the County does not approve the proposed Project, the No Project Alternative assumes no change in the existing environmental setting, the Project site would remain in its current undeveloped state.
- **Alternative 2: Reduced Grading / 50 Percent Density (72 units)** – Under this alternative, one-half of the residential development would occur - a total of 72 new single-family units on the Project site. The distribution of the 72 residential lots would be reconfigured within the Project site such that the developable area would also be reduced by more than 50 percent. Steep (2:1) slopes created by site grading would be limited to a maximum height of 15 feet, thereby avoiding the need for drainage terraces on high cut slopes, like those proposed by the Project. Also, an existing valley oak woodland on the mid-slope of Vine Hill would be retained under this alternative, compared to the Project's removal of up to approximately 30 of the 34 protected native oaks that exist on the north side of Vine Hill.
- **Alternative 3: Reduced Grading / Light Industrial** – Under this alternative, the land use development would be a relatively low intensity of light industrial uses, such as self-storage or recreational vehicle storage similar to existing uses in the nearby area. Central Avenue would serve as the only access point to the site; there would be no access from Palms Drive, unlike the proposed Project's access. Also, like Alternative 2 and counter to the proposed Project, the developable area under this alternative would be reduced by approximately 50 percent, and the steepness of graded site slopes would avoid the need for drainage terraces on high cut slopes. Also like Alternative 2, the existing valley oak woodland on the mid-slope of Vine Hill would be retained, compared to the Project's removal of up to approximately 30 of the 34 protected native oaks that exist on the north side of Vine Hill.

2.4.1 Environmentally Superior Alternative

Alternative 1 (No Project / Existing Conditions) would be environmentally superior to the proposed Project on the basis of it minimizing or avoiding physical environmental impacts. However, pursuant to CEQA, when a no project scenario is determined to most substantially reduce or avoid the significant impacts identified with a proposed project, a second most environmental superior alternative must be identified. Alternative 3 is considered environmental superior because it avoids a significant and unavoidable impact of the proposed Project that no other analyzed alternative avoids (except the no project): Impact C-TRF-8 regarding the Projects contribution to cumulative vehicle miles traveled (VMT). Moreover, Alternative 3 avoids other less-than-significant impacts that result with the Project, including impacts that warranted mitigation with the Project and Alternative 2. The discussion in Chapter 5 acknowledges that, while environmentally superior for physical environmental effects under CEQA, Alternative 3 would not meet the fundamental Project objective of developing residential use at the Project site.

2.5 Areas of Controversy

CEQA *Guidelines* Section 15123 specifies that the EIR summary shall identify “areas of controversy” known to the Lead Agency, including issues raised by agencies and the public, and issues to be resolved, including the choice among alternatives and whether or how to mitigate the significant effects. Public agencies, representatives of organization, and private citizens commented during the scoping process in response to the NOP (see **Appendix A**, Notice of Preparation and EIR Scoping Comments, to this document). Listed below are the primary themes raised in the written and oral comments received during the scoping process. To the extent these themes pertain to environmental effects addressed under CEQA, they are addressed in this Draft EIR.

- Adequacy of utilities infrastructure and placement
- Adequate vehicular access to the Project site
- Change of existing views to visual resource
- Land use compatibility with existing industrial uses
- Stormwater management
- Effects on local wildlife and habitats
- Increased traffic on local private and County roads
- Capacity of public services

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CHAPTER 3

Project Description

3.1 Introduction

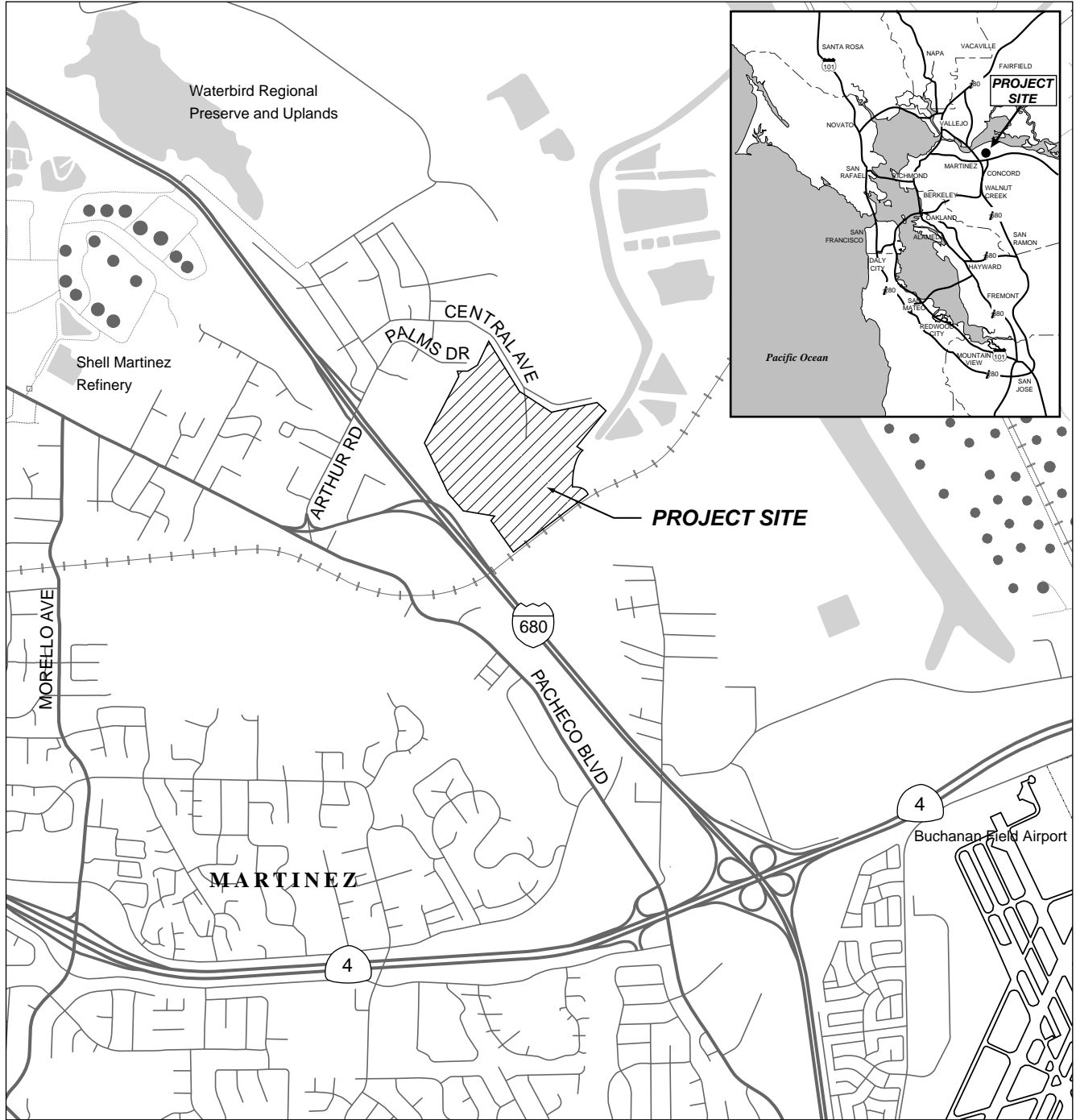
This chapter specifically describes the following characteristics of the Project evaluated in this Draft EIR: Project site location, existing Project site characteristics, the Project objectives, the proposed Project subdivision map and land use plan, and various development plan characteristics. This chapter also describes the jurisdictional approvals required to implement the Project.

3.2 Project Overview

The Project sponsor, Discovery Builders, Incorporated (“Discovery Builders”), proposes to develop a residential subdivision on approximately 78.3-acres of vacant land located south of Central Avenue and east of Interstate 680 (I-680), in the Vine Hill/Pacheco Boulevard area of unincorporated Contra Costa County, as shown in **Figure 3-1, Project Location**.

The proposed Project includes the following major components on and adjacent to the Project site:

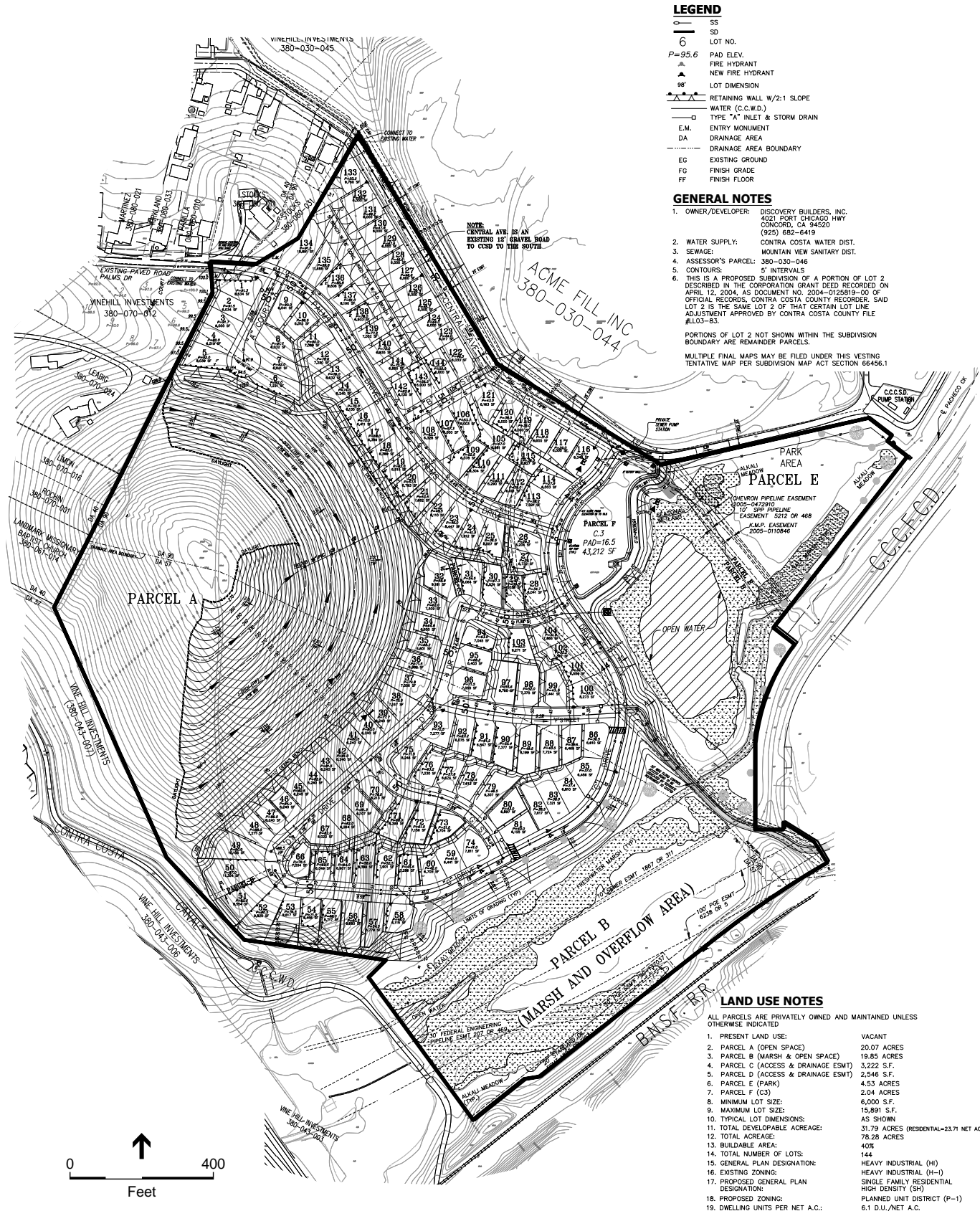
1. A new subdivision map shown in **Figure 3-2, Proposed Vesting Tentative Map (VTM) and Grading**, to accommodate development up to 144 detached single-family homes and associated new internal roadways on approximately 31.8 acres of the Project site;
2. Approximately 46.5 acres of open space, marshes and undeveloped land, including:
 - The preservation of approximately 20.1 acres of the upper hill area (Vine Hill) shown as “Parcel A” on the VTM;
 - The preservation of approximately 19.9 acres of the lower site areas (containing wetlands, coastal salt marsh, freshwater marsh, open water, and alkali meadow) shown as “Parcel B” on the VTM;
 - The development of a new 2.0-acre stormwater treatment basin, in accordance with the County’s C.3 Guidebook, and shown as “Parcel F” on the VTM;
3. Development of an approximately 4.5-acre private neighborhood park, shown as "Parcel E" on the VTM, in proximity to “Parcel B” and “Parcel F”;
4. Substantial grading of the lower hill area and limited grading of the upper hill area in order to balance cut and fill earthwork volumes;
5. Extension of new utility lines to and throughout the Project site, and the repair and upgrade of existing off-site utility lines; and
6. Improvement of two existing off-site roadways, Central Avenue and Palms Drive, to better accommodate two lanes of moving vehicular traffic to/from the Project site.



SOURCE: ESA

Bayview Estates Residential Project . 208078

Figure 3-1
Project Location



LEGEND

- SS
- SD
- 6 LOT NO.
- P=95.6 PAD ELEV.
- ▲ FIRE HYDRANT
- ▲ NEW FIRE HYDRANT
- 98' LOT DIMENSION
- ▲▲▲ RETAINING WALL W/2:1 SLOPE
- WATER (C.C.W.D.)
- TYPE "A" INLET & STORM DRAIN
- E.M. ENTRY MONUMENT
- DA DRAINAGE AREA
- DRAINAGE AREA BOUNDARY
- EG EXISTING GROUND
- FG FINISH GRADE
- FF FINISH FLOOR

GENERAL NOTES

1. OWNER/DEVELOPER: DISCOVERY BUILDERS, INC.
4021 FORT CHICAGO HWY
CONCORD, CA 94520
(925) 682-6419
 2. WATER SUPPLY: CONTRA COSTA WATER DIST.
 3. SEWAGE: MOUNTAIN VIEW SANITARY DIST.
 4. ASSESSOR'S PARCEL: 380-030-046
 5. CONTOURS: 5' INTERVALS
 6. THIS IS A PROPOSED SUBDIVISION OF A PORTION OF LOT 2 DESCRIBED IN THE CORPORATION GRANT DEED RECORDED ON APRIL 12, 2004, AS DOCUMENT NO. 2004-0125819-00 OF OFFICIAL RECORDS, CONTRA COSTA COUNTY RECORDER. SAID LOT 2 IS THE SAME LOT 2 OF THAT CERTAIN LOT LINE ADJUSTMENT APPROVED BY CONTRA COSTA COUNTY FILE #L003-83.
- PORTIONS OF LOT 2 NOT SHOWN WITHIN THE SUBDIVISION BOUNDARY ARE REMAINDER PARCELS.
- MULTIPLE FINAL MAPS MAY BE FILED UNDER THIS VESTING TENTATIVE MAP PER SUBDIVISION MAP ACT SECTION 66456.1

LAND USE NOTES

- ALL PARCELS ARE PRIVATELY OWNED AND MAINTAINED UNLESS OTHERWISE INDICATED
- | | |
|--|---|
| 1. PRESENT LAND USE: | VACANT |
| 2. PARCEL A (OPEN SPACE) | 20.07 ACRES |
| 3. PARCEL B (MARSH & OPEN SPACE) | 19.55 ACRES |
| 4. PARCEL C (ACCESS & DRAINAGE ESMT) | 3,222 S.F. |
| 5. PARCEL D (ACCESS & DRAINAGE ESMT) | 2,546 S.F. |
| 6. PARCEL E (PARK) | 4.53 ACRES |
| 7. PARCEL F (C3) | 2.04 ACRES |
| 8. MINIMUM LOT SIZE: | 6,000 S.F. |
| 9. MAXIMUM LOT SIZE: | 15,891 S.F. |
| 10. TYPICAL LOT DIMENSIONS: | AS SHOWN |
| 11. TOTAL DEVELOPABLE ACREAGE: | 31.79 ACRES (RESIDENTIAL=23.71 NET AC) |
| 12. TOTAL ACREAGE: | 78.28 ACRES |
| 13. BUILDABLE AREA: | 40% |
| 14. TOTAL NUMBER OF LOTS: | 144 |
| 15. GENERAL PLAN DESIGNATION: | HEAVY INDUSTRIAL (H) |
| 16. EXISTING ZONING: | HEAVY INDUSTRIAL (H-I) |
| 17. PROPOSED GENERAL PLAN DESIGNATION: | SINGLE FAMILY RESIDENTIAL HIGH DENSITY (SH) |
| 18. PROPOSED ZONING: | PLANNED UNIT DISTRICT (P-1) |
| 19. DWELLING UNITS PER NET A.C.: | 6.1 D.U./NET A.C. |

SOURCE: Isakson & Associates Inc.

Bayview Estates Residential Project . 208078
Figure 3-2
Proposed Vesting Tentative Map and Grading

To support the proposed land use and density, the Project proposes to amend the existing *Contra Costa County General Plan* (“General Plan”) land use map to change the existing Heavy Industrial (“HI”) land use designation to the Single Family Residential- High Density (“SH”, 5.0-7.2 units/acre), Open Space (“OS”) and. Also, a zoning reclassification is proposed to change the existing Heavy Industrial (“H-I”) zoning designation on the Project site to the Planned Unit District (“P-1”) designation.

Section 3.5 (*Proposed Project Characteristics*) of this chapter expands on the Project overview describe presented in this section.

3.3 Project Objectives

CEQA *Guidelines* Section 15124(b) requires that the Project Description chapter of an EIR contain a statement of objectives sought by the proposed Project. The basic objectives for this proposed Project are to:

1. Maximize the development of new residential projects in the County to help fulfill regional and local (Contra Costa County) planning goals for the development of housing;
2. Exemplify sustainable site planning concepts through compact and efficient organization of built space in a manner to preserve existing sensitive habitat areas, and to preserve and improve access to existing open space areas; and
3. Introduce new residential uses in areas near employment centers in the Cities of Martinez, Concord, and Walnut Creek, near existing or planned urban development, and in areas near regional transportation.

3.4 Project Location and Area Characteristics

3.4.1 Site Location and Surrounding Area

Location

As previously shown in Figure 3-1, the proposed Project site is located along the northern I-680 corridor in Contra Costa County. It is within Area 10, Vine Hill/Pacheco Boulevard Area, of the County’s unincorporated communities, as shown in the General Plan.

The Vine Hill/Pacheco Boulevard Area is located in North Central Contra Costa County, east of the City of Martinez and northwest of the City of Concord. The Area is developed with roads, trails and residential communities, as well as industrial uses including gas pipelines, a landfill and wastewater treatment facilities, and includes areas of open space.

Surrounding Area Land Uses

The immediate vicinity of the Project site is characterized by a variety of land uses. As shown in Figure 3-1, I-680 extends in a northwest-southeast direction west and south of the Project site.

(Also see Figure 4.9-1, Aerial Photo of Project Site and Vicinity, in Chapter 4 of this document, which shows existing land uses and characteristics in the Project vicinity.)

West: The area directly west of the freeway supports a mix of residential, commercial and light industrial uses. Further west, the uses are primarily residential development, including the County's unincorporated Mountain View neighborhood and suburban areas of the City of Martinez.

Northwest: Parcels to the northwest of the site and east of the freeway are characterized by single-family homes within land use designation "SH" (5.0-7.2 units/acre). Further northwest is the Waterbird Regional Preserve, which is an approximately 198-acre wetland and associated upland area managed jointly by the East Bay Regional Park District (EBRPD), the Mountain View Sanitary District (MVSD), the Contra Costa County Mosquito and Vector Control District and the California Department of Fish and Wildlife (CDFW).

Northeast, East and South: Lands to the northeast, east and south are mostly undeveloped properties zoned for heavy industrial purposes. Undeveloped lands and recreational vehicle storage occupy areas immediately south of the railroad tracks. The Maltby sanitary sewer pumping station, operated by the Central Contra Costa Sanitary District (CCCSD), is directly adjacent to the Project site to the east. The Conco construction and trucking yard is also located east of the site and Pacheco Creek. The majority of the land to the north and northeast of the Project site is property of the Acme Landfill. While the landfill is currently mostly inactive, a fully operational refuse transfer station is located approximately 0.3 miles north of the Project site. In addition, heavily industrialized land areas supporting Shell Martinez Refinery and the Marathon Refinery (previously Tesoro Golden Eagle) are located approximately one mile northwest and east respectively. Underground pipelines carrying crude oil and refined petroleum products (gasoline, diesel fuel and jet fuel) run under Central Avenue and the Project site along a wetland area on the northeastern boundary of the site.

3.4.2 Existing Characteristics of the Project Site

Uses at the Project Site Boundary

The Project site currently consists of a single parcel (Assessor's Parcel Number 380-030-046). The Project site is bounded by the Contra Costa Canal and Burlington Northern Santa Fe Railroad (BNSF) Railway tracks to the southwest and south, residential development to the northwest, a self-storage facility (EconoStorage) to the west, Pacheco Creek to the east, and Central Avenue to the northeast. The Project site is currently undeveloped.

The Project site consists of relatively flat wetland and marsh areas in the east, rising sharply to the summit of the prominent hill, referred to as "Vine Hill," in the western part of the site. Elevations on the site range from 4 to 283 feet above mean sea level (msl). The property supports permanent and seasonal wetlands and an extensive band of freshwater marsh in the eastern and southern part of the site. A valley oak woodland covers a small area mid-slope on the north-facing side of the

hill. Within the grove, 34 native oak trees have a trunk diameter of 6.5 inches or larger, which fits the criteria for a “Protected Tree,” as defined in the *Contra Costa Zoning Code* (“Zoning Code”).

Former and Existing Land Uses on the Project Site

The Project site appears to have remained undeveloped land dating back to at least 1939. However, according to a geotechnical investigation prepared for the site, there is evidence of previous quarrying activity on the east facing slope of the hill.

The Project site is currently undeveloped and has undergone fire management activities, such as grazing, mowing and tilling. Parts of the site show disturbance from illegal motocross activity.

Existing General Plan and Zoning Designations on the Project Site

As a part of the Vine Hill/Pacheco Boulevard area community, the Project site falls within the area permitted to be developed in accordance with the voter-approved Urban Limit Line, as established through adoption of Measure C-1990. The existing General Plan land use designation of the Project site is Heavy Industrial (“HI”), and the existing zoning designation for the Project site is Heavy Industrial (“H-I”). More detail regarding the existing General Plan and zoning designations on the Project site is presented in Section 4.9, *Land Use and Planning*, in Chapter 4 of this document.

Existing Access to the Project Site

Primary regional access to the Project site by vehicle is provided by I-680, via the Pacheco Boulevard/Arthur Road exit, Arthur Road, Central Avenue, and Palms Drive (see Figure 3-1).

The Project site is accessed from Palms Drive, an existing private paved road originating in the mostly residential area northwest of the site; and Central Avenue, which is mostly paved west of the Project site and unpaved as it extends adjacent to the northeastern boundary of the Project site (see Figure 3-2 in Section 3.5 below). Most segments of Central Avenue are public but some segments are still private. Both Palms Drive and Central Avenue west of the Project site are generally too narrow to accommodate two lanes of moving traffic per County Public Works standards, though they currently provide two-way passage.

Existing Utilities on the Project Site

Minimal existing utilities exist within the Project site. A sanitary sewer main line extends below the I-680 freeway to the west of the Project site. Sewer mains also extend below several roads in the vicinity of the Project site, including Central Avenue and Palms Drive. Existing water lines exist below Central Avenue and Palms Drive adjacent to the Project site.

3.5 Proposed Project Characteristics

This section describes the proposed Project in detail suitable to conduct the comprehensive environmental analysis presented in this Draft EIR.¹ **Table 3-1, Proposed Project Land Use Program**, summarizes the key components of the Project, which are illustrated in **Figure 3-3, Proposed Land Use Plan**.

**TABLE 3-1
PROPOSED PROJECT LAND USE PROGRAM**

Proposed Land Use	Number of Units	Approximate Size	Building Heights ^a
Residential			
Single-family Homes and Internal Roadways ^b (Site Developable Area)	144	Unit Size (Maximum/Minimum) 1,800 sf / 3,500 sf	1 - 2 stories/ 18 - 32 ft ^c
		31.8 ac	
Subtotal	144	31.8 ac	-
Open Space and Parks			
Parcel A (Hilltop Area)	-	20.1 ac	-
Parcel B (Southern Marsh Area)	-	19.9 ac	-
Parcel E (Park, Freshwater Pond and Northern Marsh Area)	-	4.5 ac	-
Parcel F (C.3 Stormwater Treatment Basin)	-	2.0ac	-
Subtotal	-	46.5 ac	-
TOTAL	144	78.3 ac	1 - 2 stories/ 18 - 32 ft

NOTES:

^a Building height is measured to the top of the parapet wall. Building height calculations do not include staircase penthouses, mechanical screening or associated mechanical equipment or other features that extend above the horizontal plane of the roof.

^b Includes 0.1 acres of access easements "Parcels C and D", which are within the total 37.1-acre Residential Development.

^c Building height above finished floor elevation of ground level units.

SOURCE: Discovery Builders; Isakson & Associates.

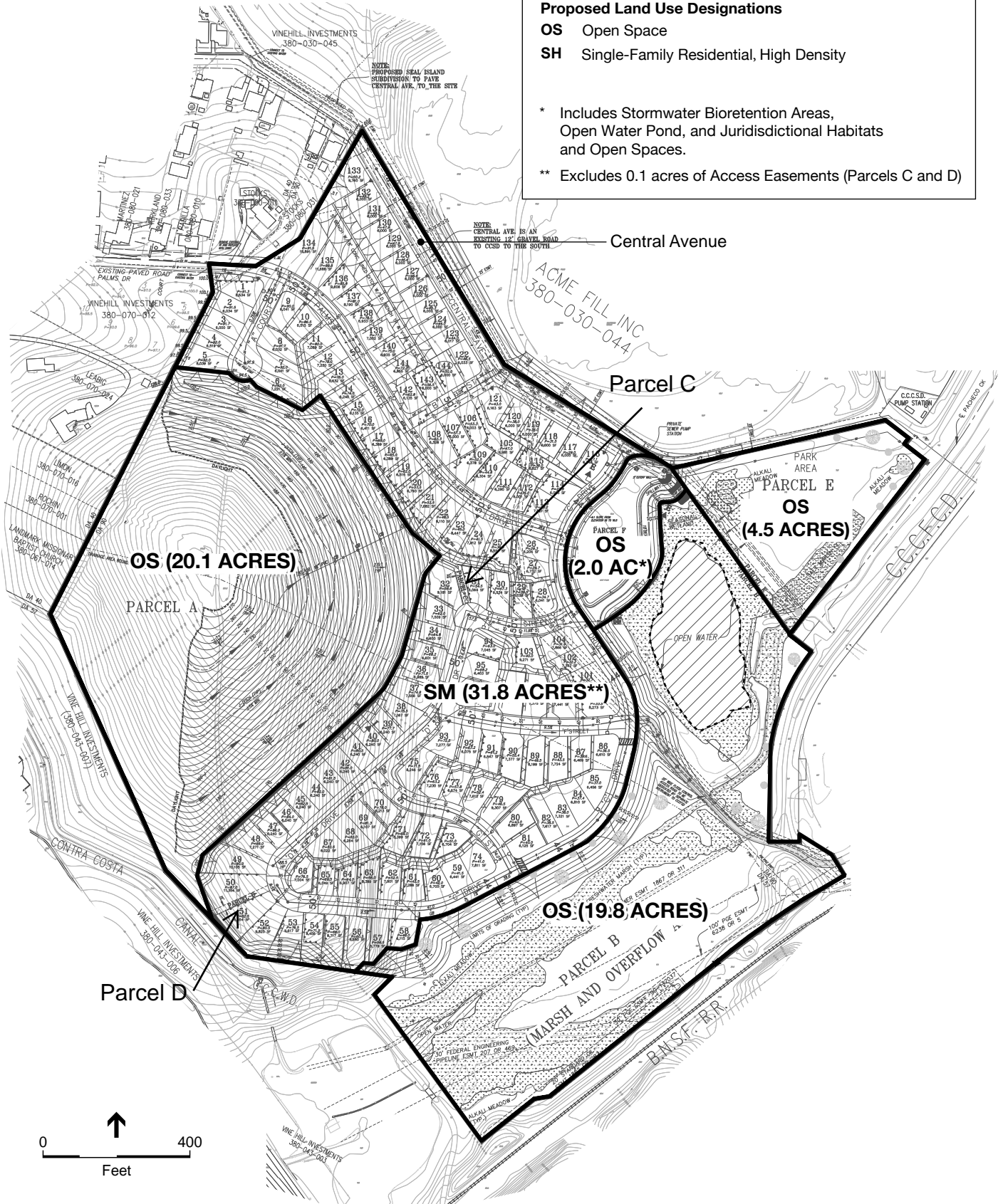
¹ Chapter 4 of this document presents the detailed analysis of the proposed Project by topic, and in many cases describes Project components in further specificity.

Proposed Land Use Designations

- OS** Open Space
- SH** Single-Family Residential, High Density

* Includes Stormwater Bioretention Areas, Open Water Pond, and Jurisdictional Habitats and Open Spaces.

** Excludes 0.1 acres of Access Easements (Parcels C and D)



3.5.1 Residential Development

The proposed Project would result in the development of up to 144 detached single-family homes. As illustrated in Figures 3-2 and 3-3, the proposed lot sizes would range from 6,000 square feet to over 13,000 square feet. The Project would include a range of generally three-, four-, and five-bedroom homes ranging in size from approximately 1,800 to 3,500 square feet. The Project would include a mix of single-story and two-story houses; the distribution between single- and two-story houses has not yet been determined.

3.5.2 Park, Open Spaces and Public Realm Improvements

The proposed Project would preserve four areas on the Project site as open space, as shown in Figure 3-3 within the Open Space (OS) land use designation. “Parcel A” is the approximately 20.1-acre parcel in the western part of the property, consists of the upper hill area (Vine Hill) and would be retained as hillside meadow open space. “Parcel B” is the approximately 19.9-acre parcel in the southeastern part of the Project site, would be preserved as wetland, salt marsh, freshwater marsh, open water, and alkali meadow. Parcel F would be developed as a C.3 Basin to treat stormwater runoff from the developed areas (mainly residential and street surfaces) in accordance with regulatory requirements.

The Project would provide an approximately 4.5-acre Park at the end of the extension of Central Avenue, which Park is shown as Parcel E in Figures 3-2 and 3-3, with a General Plan Land Use Designation of PR (Parks and Recreation). This Park is proposed to be a private neighborhood park for passive activities such as walking, viewing, picnicking, etc. No sport courts, sports fields, or programmed event features would be provided. As described under Project Access and Circulation, all in-tract streets, including Central Avenue, would have sidewalks on both sides to provide pedestrian circulation. No vehicular parking would be provided at the Park, but bicycle racks would be provided, in order to encourage walking and biking to the Park.

The Project would include on-site landscaping, which would generally be comprised of shrubs and small trees. A variety of small trees would line both sides of all proposed internal streets. In addition, an array of shrubs and trees would be planted within Parcel A, in the hillside open space. Native drought tolerant trees such as blue oak, coastal live oak, and valley oak will be planted.

3.5.3 Grading and Site Preparation

Cut/Fill Balance, Vegetation Removal and Residual Fill

To support the development of up to 144 housing lots and the associated internal roadway system, the Project involves a grading plan that would alter the existing topography in specific areas of the Project site and would clear approximately 1,500 cubic yards (“cy”) of vegetation, almost all of which would be reused on site. Up to approximately 30 of the existing Protected trees on the site would be removed during grading and construction activities.

During site grading, existing slopes would be reconfigured through excavation, and infill of materials would occur in less sloped areas of the site, resulting in a balance of cut and fill (i.e., excavation and fill materials would be equal to one another in volume, and no off-hauling of

excavated materials would be required), nor would the importation of additional fill materials be required. The areas of proposed cut and fill are shown in **Figure 3-4, Proposed Cut and Fill (Grading) Areas Map**.

The Project involves the replacement of any residual fill along the southern and eastern perimeters of the Project site. In addition, materials proposed for excavation have been evaluated and determined satisfactory for reuse as fill placement.

Specific to earth movement associated with utility infrastructure, trenching will be involved. trenching. As with the on-site balance for overall site grading, a majority of the utility trench spoils would be reused onsite. The trench spoils would be temporarily stockpiled adjacent to the excavation and compacted to applicable agency standards as backfill supporting utility lines.

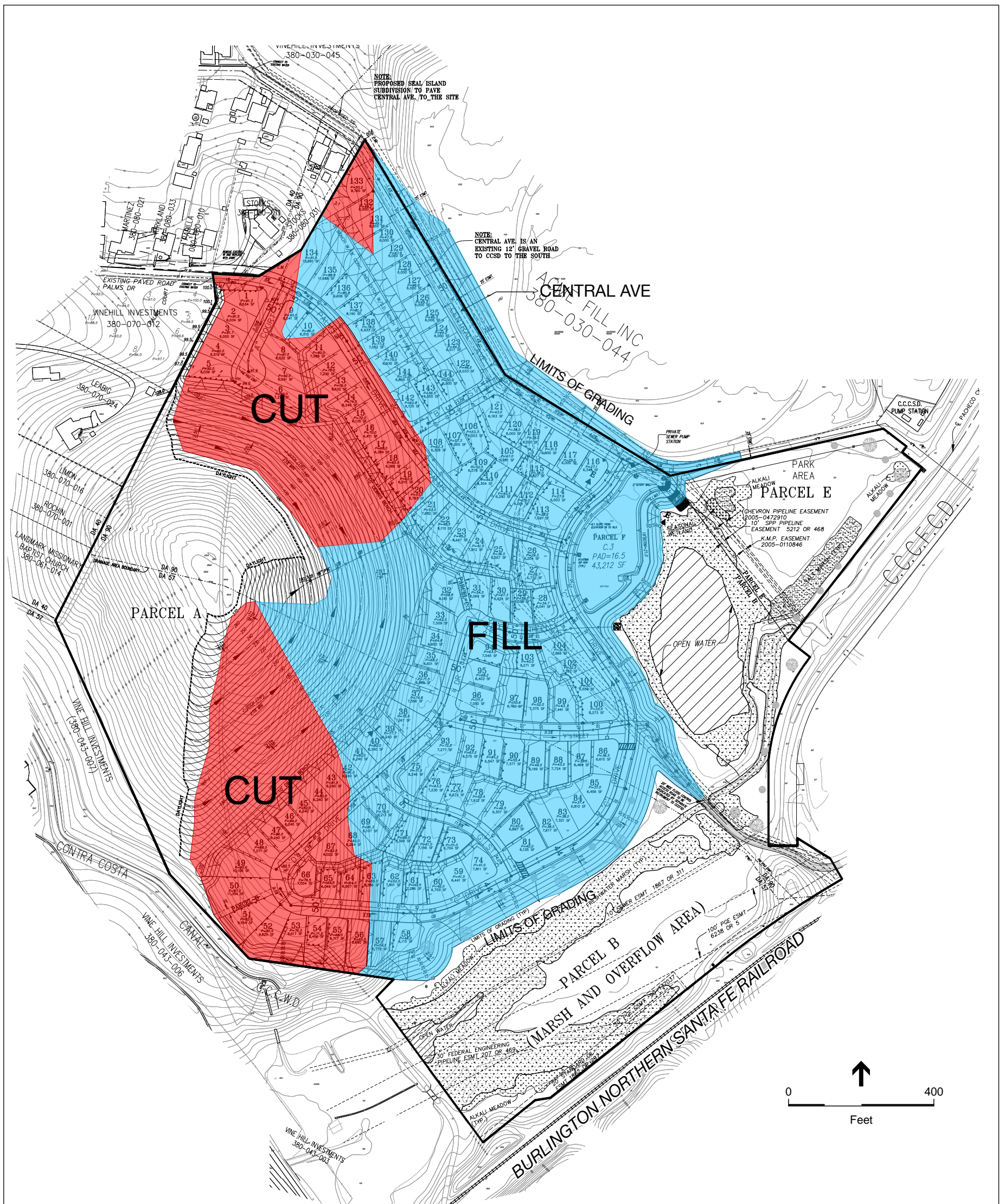
Grading Detail

Over the entire Project site, the maximum fill depth would be approximately 50 feet, and the maximum cut depth -would be approximately 105 feet. The total on-site balance of cut and fill grading would involve approximately 900,000 cubic yards being moved.

In Parcel A, the existing peak elevation of the hill (Vine Hill) is approximately 283 feet above msl. Grading within the upper hill area would be minimized in order to retain this hill feature. As illustrated in Figure 3-4, areas below the upper hill area and above the proposed residential development area would be substantially graded and include cut and fill slopes of approximately 215 vertical feet with inclines as steep as 50 percent (or 2:1 horizontal:vertical). The resulting steep slope in these areas would be separated by J-ditches extending horizontally along the hillside at approximately 30-vertical-foot intervals. Excavation of steep slopes would also take place within the area of residential development. The steep hillside slope would terminate in a 10-foot debris bench upslope of (just above) the first tier of residential lots at the bottom of the slope. Residential lots would be padded with sloping rear and side yards. Grading within Parcel B (marsh areas) would include fill that would create slopes as steep as approximately 50 percent slope (or 2:1 horizontal:vertical), and ranging up to 30 feet in height.

Post-Grading Stabilization and Drainage

After grading, the hillside slopes would be hydroseeded: a slurry of seed and mulch would be applied through spraying, establishing new vegetation and providing erosion control. No long-term irrigation system would be installed. Grading near the drainage basin along the southeast edge of the Project site is designed to reduced stormwater runoff into the Contra Costa Canal and marsh areas in Parcel B. See Section 4.6, *Geology, Soils and Paleontological Resources*, and Section 4.9, *Hydrology and Water Quality*, in Chapter 4 of this document for additional details and reference citations on Project grading and drainage. The Project applicant is requesting an exception to Code 914-12.010 pertaining to the requirement for a detention basin to be maintained by a public entity in order to allow for the detention basin in Bayview Estates to be privately maintained by a Homeowners Association or equivalent private entity with property lien authority.



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3.5.4 Proposed Access and Circulation

The proposed Project would establish a new roadway system constructed to public street standards throughout the area of new residential development. Most streets within the Project site would provide circulation internal to the development, but would not provide ingress or egress from the Project site, as shown in Figure 3-3.

Project ingress and egress would be provided by Central Avenue and Palms Drive. Palms Drive is mostly paved off-site and would be extended into the Project site as a two-lane road. Central Avenue is mostly paved west of the Project site and unpaved as it extends adjacent to the northeastern boundary of the site. Both streets would be improved to better accommodate two lanes of moving traffic and paved as part of the Project.

The proposed “B” Street and “C” Drive within the Project site would provide connections between Central Avenue and Palms Drive. The proposed “C” Drive would run along the eastern boundary of residential development, separating it from the easternmost area of the site containing the new C.3 Basin, the neighborhood park and protected freshwater pond and marshes. All other proposed streets (“A” Court, “D” Drive and “E,” “F,” and “G” streets) would provide internal circulation within the Project site only.

The Project applicant is requesting an exception to Code 98-4.002 pertaining to 52' R/W for Minor streets to allow for 50' R/W for all Minor streets within Bayview. For all Minor streets within Bayview Estates, Applicant is proposing 50' R/W, 36' pavement width, parking on both sides, and 5' sidewalk on both sides. The applicant is also requesting an exception to Code 98-4.002 pertaining to 56' R/W for Collectors in order to allow for 50' R/W for Central Ave. and Palms Dr. within Bayview Estates. For Central Ave and Palms Dr., where it is proposed to have 50' R/W, 36' pavement width, parking on both sides, and 5' sidewalk on both sides. A final exception is being requested to Code 98-4.002 pertaining to 56' R/W and 36' pavement width (curb face to curb face) for Collectors in order to allow for 44' R/W for C Dr. For C Dr., Applicant is proposing 44' R/W, 32' pavement width, parking on one side (or no parking both sides), and 5' sidewalk both sides.

3.5.5 Proposed Utilities

The proposed Project would use existing and available water and wastewater treatment and off-site transmission/conveyance capacity. The Project applicant will also assume responsibility for constructing all on-site water and wastewater improvements needed to tie into the existing backbone infrastructure and adequately serve the Project. Some existing utility lines would require repair and/or upgrade to serve the proposed development.

Sanitary Sewer Service

The Project site currently falls within two sanitary sewer districts: The CCCSD and the MVSD. However, MVSD approved of the proposed subdivision and the annexation of the Project site to be wholly within the MVSD SOI, subject to the approval by the Local Agency Formation

Commission (LAFCO). MVSD issued a “Will Serve” letter confirming its plan to provide wastewater utility service to the Project site.

The Project would require a new connection to MVSD’s existing sanitary sewer main in Palms Drive, and replace and/or upgrade this existing sewer main per MVSD standards in order to serve the Project.

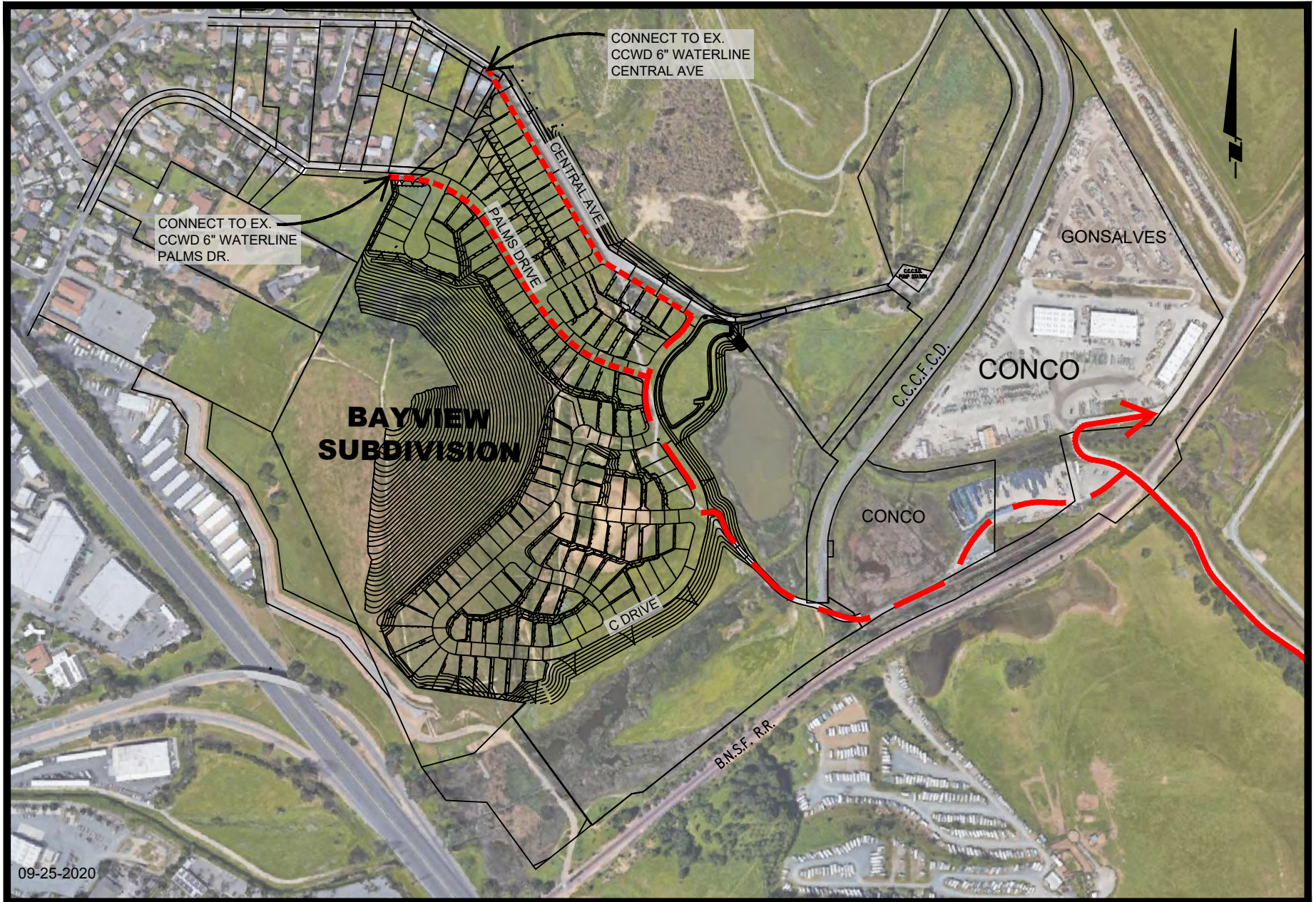
Water Supply Infrastructure

The Project would require new and upgraded water supply conveyance infrastructure. The locations of the offsite portion of the proposed 12-inch waterline for the Project, as shown in **Figure 3-5, Waterline Exhibit**, are designed to minimize the placement of waterlines within or crossing existing petroleum pipeline corridors. Also, to avoid the need for extensive additional water infrastructure, all residential lots are located at or below 92 feet above mean sea level (msl) in elevation. This Project has been determined by CCWD to be in an area that is deficient in fire flow (i.e. not having sufficient water flow to meet fire fighting demands) and thus would require the extension of CCWD’s existing 12-inch transmission main currently terminating within the Conco property just northwest of the BNSF railroad. This main extension would be constructed under the proposed gravel access road through Parcel B Open Space (the access road would be outside of the delineated wetlands), connecting to “C” Drive, then branching off to the in-tract water distribution network to serve the Project.

This Project has been determined by CCWD to be in an area that is deficient in fire flow (i.e., not having sufficient water flow to meet fire-fighting demands) and thus would require the extension of CCWD's existing 12-inch transmission main currently terminating within the Conco property located northwest of the BNSF railroad. This main extension would be constructed under the proposed gravel access road through Parcel B Open Space (the access road would be outside of the delineated wetlands), connecting to "C" Drive, then branching off to the in-tract water distribution network to serve the Project.

The in-tract water distribution network would also connect to CCWD’s existing 6” water mains in Central Avenue and Palms Drive. These connections would enhance fire flow in the currently deficient area adjacent to the Project to the northwest. Within the Project site, the 8-inch waterline within Central Avenue would preserve a minimum 10-foot buffer west of the existing petroleum pipeline easements should the pipeline itself stray outside of its easement. Positive petroleum pipeline locations would be identified through a process of pothole verification and surveying prior to any grading at the site.

See more detail regarding the proposed sanitary sewer and water service, infrastructure, related construction, and reference citations in Section 4.15, *Utilities and Service Systems*, in Chapter 4 of this Draft EIR, in addition to the overview of proposed construction activities under Section 3.5.6 (*Project Phasing and Construction*) below.



SOURCE: Isakson & Associates, 2020

Bayview Estates Residential Project 208078

Figure 3-5
Waterline Exhibit

- Existing CCWD 12" Waterline to CONCO
- - - - Proposed 12" S'LY Waterline Extension from CONCO through Bayview
- Proposed In-Tract Waterlines to Connect to Existing

3.5.6 Project Phasing and Construction

Schedule, Activities and Equipment

The Project is anticipated to be developed in up to three phases, generally from west to east across the site, with an anticipated grading start date in 2021 and last house completion date in 2024. The proposed neighborhood park is anticipated to occur at the mid-point of house construction (i.e., around the 70th of the 144 total residential units).

The Project will involve grading and construction activities typical for residential subdivision development on sloped, undeveloped property: grading and site preparation, tree/vegetation removal, utility trenching and backbone infrastructure (including stormwater elements), construction of primary roadways and public-realm improvements, vertical construction and finishing (residences), and master and lot-specific landscaping. Construction equipment will include, but not be limited to, excavators, backhoes, bulldozers, wheeled loaders, dump trucks, compaction equipment, and numerous pick-up trucks, during the site preparation (tree removal and grading) and construction phases.

Staging and Access

Construction staging would occur primarily on the Project site and is anticipated to include a storage container, mobile office, parking, materials/laydown area and other construction equipment. The applicant also owns adjacent parcels along Palms Drive and Central Avenue, and will use these parcels for staging during the final stages of construction. It is anticipated that temporary construction vehicle access to the Project site during construction would occur along Pacheco Boulevard, Arthur Road, Central Avenue and Palms Drive, subject to the County's approval of a *Construction Management and Traffic Control Plan* to be prepared by the Project sponsor. Larger construction vehicles will utilize Central Avenue (rather than Palms Drive), since it is the wider of the two direct access roads.

3.5.7 Sustainability and Green Building Elements

The proposed Project incorporates the following voluntary sustainability elements that are not otherwise required for compliance with the California Green Building Standards Code (Part 11, Title 24) Code (CALGreen Code), California Energy Code or other regulatory requirements, or identified as mitigation measures in this Draft EIR. Where applicable, certain voluntary elements that exceed required to meet existing regulatory standards are factored into the environmental analysis presented in Chapter 4 of this Draft EIR and include measures such as using ecologically-sensitive landscaping, reducing domestic water use, optimizing energy performance, using recycled materials, low-emitting construction materials and coatings.

3.6 Proposed General Plan Amendments and Rezoning

Neither the existing General Plan land use designation nor the existing Zoning designation applied to the Project site allows for the residential use. Therefore, the Project requests a General Plan amendment and a zoning reclassification, which are required to permit the proposed development.

3.6.1 General Plan Amendments

The Project site is designated as Heavy Industry (HI) in the County's General Plan Land Use Map. The HI designation allows for activities requiring large areas of land with convenient truck and rail access. The Project requests that the County amend the General Plan Land Use Map to change the existing HI land use designation to the Single Family Residential-High Density (SH), and Open Space (OS) land use designations. Each is described below and delineated in Figure 3-3 in this Draft EIR.

- **Single Family Residential-High Density (SH).** A Single Family Residential-High Density designation permits between 5.0 and 7.2 single-family units per net acre and sites up to 14,519 square feet. The General Plan assumes that, with an average of 2.5 to 3.0 persons per household, population densities within this land use designation would normally range between about 12.5 to about 22 persons per acre.
- **Open Space (OS).** Lands designated as Open Space can be public or private property, and include wetlands and other areas of ecological resources, as well as geologic hazards and steep, unbuildable areas. Appropriate uses in the OS designation include maintaining critical marsh and endangered habitats, and establishing safety zones around identified geologic hazards. Low-intensity, private recreation uses are also appropriate for this designation. New housing is permitted within this designation.

The Project also proposes the amend policy language in the Land Use Element of the General Plan. Specifically, Policy 3-105 is specific to the Vine Hill/Pacheco Boulevard area and would prohibit development of the proposed Project. The Project proposes to amend Policy 3-105 shown below to accommodate the grading and residential development:

- *Policy 3-105:* The scenic assets and unstable slopes of the Vine Hill Ridge will, in some measure, be preserved while still allowing safe, feasible development of the property. Grading of these scenic assets shall be permitted to allow for development granted that the remainder parcels are to be protected for open space/agricultural use.

3.6.2 Rezoning

The Project site designated with the County's Heavy Industrial (H-I) zoning district, which allows for a range of industrial and manufacturing uses, but not residential use. Therefore, the Project proposes a zoning reclassification to Planned Unit District (P-1) in order to accommodate the proposed residential uses and for the Project to be consistent with the amended General Plan land use designations discussed above.

There is no minimum size or dimensional requirements for a parcel designated P-1, but generally parcels designated P-1 conform to the R-6 zoning district lot requirements and would also reference the R-6 district development standards. Permitted uses within a P-1 district include detached single-family dwellings on legally established lots and associated auxiliary structures and uses. Structures generally are limited to 2.5 stories and 35 feet in height.

See Section 4.10, *Land Use, Plans and Policies*, in Chapter 4 of this Draft EIR for further description of the existing and proposed General Plan and zoning designations.

3.7 Discretionary Actions and Other Permits and Approvals

A number of permits and approvals would be required before development of the proposed Project could proceed. As Lead Agency for the Project, Contra Costa County is responsible for the majority of approvals required for development and for preparation of this Draft EIR (pursuant to CEQA Guidelines Section 15051). **Table 3-2, Required Approvals and Permits for the Proposed Project**, identifies currently anticipated County approvals and permits for the proposed Project, without limitation. Table 3-2 also identifies other agencies that will or may have purview over some aspect of the Project. Once certified, this EIR is intended to be used for the required discretionary actions described below, along with any other discretionary approvals that are requested and required in connection with the Project but not listed below.

**TABLE 3-2
REQUIRED APPROVALS AND PERMITS FOR THE PROPOSED PROJECT**

CONTRA COSTA COUNTY (LEAD AGENCY)	
<p>Contra Costa County Planning Commission and Contra Costa County Board of Supervisors</p>	<p>Discretionary Approvals:</p> <ul style="list-style-type: none"> • General Plan Amendment - to change the land use map to change the Heavy Industry (HI) designation to the Single Family Residential-High Density (SH), and Open Space (OS); and to amend Policy 3-105) • Rezoning - to change the Heavy Industrial (H-I) zoning designation to Planned Unit District (P-1) • Vesting Tentative Subdivision Map • Project Development Plan (Preliminary and Final) • Conditional Use Permits or Variances, if determined necessary once detailed plans are submitted <hr/> <p>Ministerial Permits and Administrative Approvals: Including but not limited to:</p> <ul style="list-style-type: none"> • Grading Permits • Tree Preservation and Removal Permit • Building Permits • Encroachment Permits • Approval of Drainage Master Plan

TABLE 3-2 (CONTINUED)
REQUIRED APPROVALS AND PERMITS FOR THE PROPOSED PROJECT

REGIONAL AND LOCAL AGENCIES (RESPONSIBLE AGENCIES)	
Contra Costa County Flood Control and Water Conservation District	<ul style="list-style-type: none"> • Compliance with the County Regional Drainage Plan • Flood Control Encroachment Permits
San Francisco Regional Water Quality Control Board (RWQCB)	<ul style="list-style-type: none"> • National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharge construction dewatering • Clean Water Act Section 401 permit for construction affecting jurisdictional waters on site) • Acceptance of Notice of Intent (NOI) to obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) and Notice of Termination after construction is complete
Bay Area Air Quality Management District (BAAQMD)	<ul style="list-style-type: none"> • Compliance with BAAQMD Regulation 2, Rule 1 (General Requirements) for all portable construction equipment subject to that rule, and permits for natural gas-powered emergency generators
Contra Costa Water District (CCWD)	<ul style="list-style-type: none"> • Approval of new and extended water lines, new water hookups • Water Supply Assessment
Mt. View Sanitary District (MVSD)	<ul style="list-style-type: none"> • Approval of new and extended sewer lines and connections
Local Agency Formation Commission (LAFCO)	<ul style="list-style-type: none"> • Approval of annexation of Project site areas into the MVSD Sphere of Influence (SOI)
Pacific Gas & Electric (PGE), Cable, Satellite and/or Telephone Service Providers	<ul style="list-style-type: none"> • New or expanded service requests and, where applicable, meter installations
STATE AGENCY	
California Department of Fish & Wildlife (CDFW)	<ul style="list-style-type: none"> • Issuance of an Incidental Take Permit under the California Endangered Species Act, if the proposed Project impacts State-listed endangered or threatened species or their habitat.
FEDERAL AGENCIES	
U.S. Army Corps of Engineers (USACE)	<ul style="list-style-type: none"> • Approval of a Section 404 Permit may be required under the Federal Clean Water Act for Project impacts to jurisdictional waters of the United States resulting from the construction of the Project, if any.
U.S. Fish & Wildlife Service (USFWS)	<ul style="list-style-type: none"> • Consultation with USACE under Section 7 of the Federal Endangered Species Act and issuance of a USFWS Biological Opinion may be required for Project impacts to federally-listed special status species or their habitat, if any.

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CHAPTER 4

Environmental Setting, Impacts, and Mitigation Measures

Introduction to the Environmental Analysis

Organized by environmental resource area (also referred to as environmental “topics” or environmental “factors”), this chapter provides an integrated discussion of the environmental setting (including the regional, local and/or Project setting and regulatory setting) and environmental consequences (impacts), associated with the construction, operation, and maintenance of the Project, and mitigation measures for potentially significant impacts.

This introduction to the analysis presents an overview of the scope and organization of the analysis sections, the methods for determining what impacts are significant, and the nomenclature for impacts and mitigation measures used throughout the document.

4.0.1 CEQA Requirements

The California Environmental Quality Act (CEQA) *Statutes* and the CEQA *Guidelines* require that the environmental analysis for an Environmental Impact Report (EIR) must evaluate impacts associated with a project and identify mitigation measures for any potentially significant impacts. All phases of a project are evaluated in the analysis. The CEQA *Guidelines* state:

- An EIR shall identify and focus on the significant environmental effects of the project. In assessing the impact of a 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 (NOP) is published, or where no NOP is published, at the time environmental analysis is commenced. Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, the human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic quality, and public services. The EIR shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected (CEQA *Guidelines* Section 15126.2[a]).
- An EIR must discuss any inconsistencies between the project and applicable general plans and regional plans, including, without limitation, the applicable air quality attainment or maintenance plan or State Implementation Plan, area-wide waste treatment and water quality

control plans, regional transportation plans, regional housing allocation plans, habitat conservation plans, natural community conservation plans and regional land use plans (CEQA *Guidelines* Section 15125[d]).

- An EIR must describe feasible measures that could minimize significant adverse impacts; such measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments. Mitigation measures are not required for effects that are found to be less than significant (CEQA *Guidelines* Section 15126.4[a]).

4.0.2 Project Baseline

The environmental baseline identifies the existing physical conditions on, around, and affecting the Project site. The baseline is established to provide a point of comparison between pre-Project conditions (the baseline) and post-Project conditions to determine whether the change to the existing environment caused by the Project is significant under CEQA. For most topics or resource areas (such as hazards and hazardous materials; utilities and service systems; noise; and other aspects of the physical environment), the baseline is the same as the “environmental setting,” *i.e.*, the physical environmental conditions in the vicinity of the Project as they existed in the spring of 2017¹ when the City published the NOP for the Project (CEQA *Guidelines* Sections 15125[a], 15126.2[a]). Because no uses currently operate at the site, the air quality and greenhouse gas baseline emissions at the Project site are assumed to be zero. Similarly, no vehicle trips are currently generated from the Project site. For traffic, potential Project impacts are evaluated in the context of scenarios referred to as “Existing Conditions” (existing conditions with volumes obtained from recent traffic counts and the existing roadway system), as well as future “Cumulative (2040) Conditions” (future conditions with planned population and employment growth, and planned transportation system improvements, for the year 2040). Traffic volume forecasts were developed using the Contra Costa Transportation Authority [CCTA] Countywide Travel Demand Model.

4.0.3 Environmental Impacts

This EIR addresses impacts of the Project on the existing environment pursuant to CEQA. As discussed in Chapter 1, *Introduction*, of this EIR, potential effects of the environment on a project may not be legally required to be analyzed or mitigated under CEQA, although the CEQA *Guidelines* include certain significance criteria that pertain to the effect of the environment on a project. A growing number of court cases have supported the position that CEQA is solely, or largely, concerned with the effects of a project on the environment and not the effects of the environment on a project; that latter may include thresholds related to air quality (e.g., locating a new residential project near an existing source of air pollution), geology (e.g., locating a new structure in a seismic hazard zone), and noise (e.g., locating a new residential project on a loud street).

¹ The City issued the NOP for the EIR on June 7, 2017.

Most recently, the California Supreme Court’s *CBIA v. BAAQMD* decision² has indicated that the impact of existing environmental conditions on a project’s future users or residents are generally not required to be considered in a CEQA evaluation, except when the project may exacerbate existing hazards or existing conditions.

Consistent with previous County practice and CEQA guidance, this EIR continues to address impacts of the environment on the Project caused by the existing environment with respect to air quality, geology and soils, climate change and greenhouse gases, hazards and hazardous materials, and noise. These impacts are also addressed to provide information to the public and decision-makers of the Project.

COVID-19

Since publication of the NOP, the COVID-19 pandemic has introduced a substantial amount of uncertainty to human lives. The pandemic has directly affected human behavior, requiring people to shelter in place, implement social distancing, and make other changes to the manner in which they live. Indirectly, COVID-19 has affected the economy by resulting in reduced consumer spending, business closures, and widespread unemployment. Some of these trends are considered short-term and are expected to reverse; however, there likely will be more permanent changes in the ways people live and behave in the post-pandemic world. Some EIR sections note the recent changes to behavior and the economy resulting from COVID-19 for informational purposes; however, the EIR analysis is based on an environmental baseline without COVID-19, and it would be speculative to identify long-term consequences of the pandemic at this time.

4.0.4 Mitigation Measures

Project-specific mitigation measures are identified throughout this EIR where feasible and necessary to avoid, minimize, rectify, reduce, or compensate for potential significant, adverse impacts of the Project in accordance with CEQA *Guidelines* Section 15126.4. All mitigation measures will be 1) included as part of the design, construction, and operations of the proposed Project; 2) adopted as conditions of approval for the proposed Project; and 3) subject to monitoring and reporting requirements of CEQA and the terms of the discretionary approvals for the Project.

4.0.5 Section Contents and Definition of Terms

Section Contents

Sections 4.1 through 4.13 follow this format:

- **Environmental Setting:** Provides an overview of the physical environmental conditions in the area at the time of, or prior to, the publication of the NOP, that could be affected by implementation of the Project in accordance with State CEQA *Guidelines* Section 15125.

² *California Building Industry Association v. Bay Area Air Quality Management District*, 218 Cal.App.4th 1171 (2015). In the decision, the 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.”

- **Regulatory Setting:** Identifies the laws, regulations, ordinances, plans, and policies that are relevant to each resource area.
- **Significance Criteria:** Provides the criteria used in this document to define the level at which an impact would be considered significant. This EIR applies the significance criteria identified in the provisions in the CEQA *Guidelines* for determining the significance of environmental effects, including CEQA *Guidelines* Sections 15064, 15064.5, 15065, 15382, and Appendix G.³ This section also discusses, where applicable, the *Approach to Analysis* (i.e., analytical methodology), and, where applicable, a summary of *Topics with No Impact or Otherwise Not Addressed in this EIR*.
- **Impact Analysis:** Presents the potential resulting impacts and, where applicable, feasible mitigation measures. The cumulative analysis follows the Project-level analysis in each section.

Impacts. The impacts analysis addresses all parts of the Project action: construction and operations, and secondary impacts resulting from the implementation of mitigation measures, where applicable.

Each section lists impacts numerically and sequentially. An impact statement (always in bold text) precedes the discussion of each impact analysis and summarizes the potential for the Project to have an impact. Impact statements use an abbreviated designation that corresponds to the environmental topic (e.g., “AES” for aesthetic impacts). A number follows the designation to indicate the order in which that impact is identified within that particular analysis. For example, “Impact CUL-3” is the third cultural resources impact identified in the cultural resources analysis.

The impact statement culminates with the level of impact that exists *prior* to the consideration of mitigation measures, if any are required. An impact determination following the initial analysis (prior to considering mitigation measures) is categorized as one of the following:

- **No Impact (N):** The Project would not cause a noticeable effect on the environment as measured by the applicable significance criterion and threshold; therefore, no mitigation would be required.
- **Less than Significant, No Mitigation Required (LTS):** The impact of the Project does not reach or exceed the defined threshold of significance. The impact would not cause a substantial adverse change in the environment as measured by the applicable significance criterion and threshold; therefore, no mitigation would be required.
- **Potentially Significant prior to Mitigation (PS):** The Project would cause a substantial adverse change in the physical conditions of the environment; one or more feasible mitigation measures would reduce the impact to a less-than-significant level.

Mitigation Measures. Mitigation measures are designated in the same manner described above for impact statements, and each mitigation measure is numbered sequentially. Generally, all mitigation measures are indented, and titles are in bold text.

³ Although no Environmental Review Checklist was prepared for this EIR, the factors listed for consideration in the Environmental Review Checklist are evaluated in this EIR.

The impact determination after the incorporation of feasible mitigation measures for a particular impact is stated at the close of the impact analysis discussion and presentation of mitigation measures and is either:

- ***Less than Significant (LTS or LTSM)***: The impact is less-than-significant, either because no mitigation measure was required (LS), or because feasible mitigation measures were identified for implementation and would fully reduce the impact to a less-than-significant level (LTSM).
- ***Significant and Unavoidable (SU)***: No feasible mitigation measures were identified to reduce the Potentially Significant impact to a less-than-significant level or the implementation of which was fully within the control of the Lead Agency.

4.0.6 Cumulative Analysis

Approach

CEQA defines cumulative as “two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts.” Section 15130 of the *CEQA Guidelines* requires that an EIR evaluate potential environmental impacts when the project’s incremental effect is cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past, present, existing, approved, pending and reasonably foreseeable future projects. These impacts can result from a combination of a proposed project together with other projects causing related impacts.

CEQA Guidelines Section 15130(b)(1) identifies two approaches to cumulative impacts analysis. Specifically, cumulative impacts analysis can be based on: (1) a list of past, present, and probable future projects producing related impacts that could combine with those of a proposed project; or (2) a summary of projections contained in a general plan or related planning document. As described below, this EIR primarily uses the projections approach, as appropriate for each impact area, and then lists specific projects in proximity to the Project site.

The effects of existing development, including past projects, is considered for each environmental topic discussed in this chapter, as part of baseline conditions.

Potential cumulative impacts are discussed throughout each environmental topic section in this Chapter 4 as necessary.

Cumulative Context

The context used for assessing cumulative impacts typically varies depending on the specific topic being analyzed to reflect the different geographic scope of different impact areas. For example, considerations for the cumulative air quality analysis are different from those used for the cumulative analysis of aesthetics. In assessing aesthetic impacts, only development within the vicinity of the Project site could contribute to a cumulative visual effect. In assessing air quality impacts, on the other hand, all development within the air basin contributes to regional emissions of criteria pollutants, and basin-wide projections of emissions comprise the best tool for determining the cumulative effect. Accordingly, the geographic setting and other parameters of each cumulative analysis discussion can vary.

For the purposes of this EIR analysis, the cumulative context area is generally defined as the City of Martinez and its SOI, which includes the Vine Hill/Pacheco Boulevard area, which generally extends east to the main channel of Pacheco Creek, north to Waterfront Road, west to Shell Avenue and Pacheco Boulevard, and south to Highway 4.

Cumulative Land Use and Infrastructure Assumptions

Information used to determine cumulative growth assumptions for employment and housing is obtained from *Plan Bay Area 2040*, the County's General Plan, and information regarding projects in the vicinity of the proposed Project site that are under construction, approved, and/or pending, based on information provided by the County's Department of Conservation and Development and the County's list of all development projects under review as of the third quarter 2020 (listed below). For the analyses of traffic, air quality, greenhouse gases (GHGs), and noise impacts, cumulative scenario projections were developed using Plan Bay Area projections per the Contra Costa County Transportation Authority (CCTA) Countywide Travel Demand Model.

Cumulative Projects in the Vicinity of the Project Site

County staff identified "approved, but not yet completed" projects within the vicinity of the Project site area in **Table 4.0-1**. Most of the projects identified for the cumulative scenario "list" would introduce new residential uses to the Project vicinity. Future new development within the area would be subject to development guidance contained within the General Plan.

Table 4.0-1 does not include all projects that would contribute to the cumulative setting along with the proposed Project; rather, it includes a number of larger cumulative projects to demonstrate the scope and nature of development in the cumulative context for the Project. Some of the projects listed in Table 4.0-1 may not have been known or foreseeable at the time necessary to have been incorporated into *Plan Bay Area 2040* and the CCTA Countywide Travel Demand Model.

**TABLE 4.0-1
CUMULATIVE PROJECTS NEAR THE PROJECT SITE**

Project Name	Project Description	Location / Relation to Project Site	Environmental Review / Construction Schedule
Approved Projects/No Construction Started			
Palms Ten	10-lot residential subdivision	Palms Drive Adjacent to Project site's northwestern boundary.	Approved. 10 Lots recorded. Construction timing not known.
Lower Walnut Creek Restoration Project	Contra Costa Flood Control District's proposal to restore and enhance coastal wetlands, adjacent habitat, diversity, and connectivity along four miles of creek channel, over approximately 386 acres in total.	Southern shoreline of Suisun Bay and from the mouth of Walnut Creek at Suisun Bay upstream along Walnut Creek and Pacheco Creek. Approximately 0.5 miles east of Project site	Approved. Construction anticipated 2021 through 2022 (or 2022 through 2023 at the latest).
FILE #SD17-9459 & LP14-2046	Tentative map to subdivide a 66.57-acre portion (APN 159-250-018, -019) of the 95-acre project site into six individual industrial lots. Land use permit to allow: (1) the establishment of up to five contractor's yard uses, 1 immediate and 4 future; (2) roadway and utility improvements impacting three additional parcels (APN 159-250-020, -021, -022); and (3) importation of up to approx. 155,576 cubic yards of fill material (some of which is composed of lightweight confoam material).	Western boundary of Walnut Creek, approximately 0.74 miles south of the Waterfront Road bridge crossing over Walnut Creek. Approximately 0.1 miles east of Project site	Approved. Construction anticipated Construction timing not known.
Weatherly Place	8-lot residential subdivision	4776 Pacheco Boulevard Approximately 0.75 miles southwest of Project site	Approved. Construction timing not known.
Approved Projects Under Construction:			
Blum View Estates	28-lot residential subdivision	Blum Road Approximately 0.2 mile southeast of Project site.	Approved. Partially constructed: 9 Lots recorded, Lots 1-8 developed.
Hillside Estates	11-lot residential subdivision	150 Hillside Lane Approximately 0.4 mile southeast of Project site.	Approved. Partially constructed: Phase 1, Lot 1 developed. Phase 2, Lots 2-11 not recorded or developed.
Approved and Constructed			
Bella Rosa	128-lot residential subdivision	Pacheco Boulevard Approximately 0.3 miles southwest of Project site	Constructed
Field Courtyard	89-lot residential subdivision	Pacheco Boulevard Approximately 0.3 miles south of Project site	Constructed
4762 Pacheco Boulevard	20-lot residential subdivision	4762 Pacheco Boulevard Approximately 0.4 miles south of Project site	Constructed

TABLE 4.0-1 (CONTINUED)
CUMULATIVE PROJECTS NEAR THE PROJECT SITE

Project Name	Project Description	Location / Relation to Project Site	Environmental Review / Construction Schedule
Projects Under Review:			
File # LP20-2013	Land use permit application to establish a cannabis delivery business and call center within an existing tenant space	111 Center Avenue Approximately 2 miles south of Project site.	Environmental review underway.
SD18-9500	6-lot residential subdivision	4500 Blum Road, Martinez Approximately 0.3 miles southeast of Project site	Environmental review underway.
Pacheco Boulevard Improvements - Blum Road to Morello Avenue	Contra Costa County and the City of Martinez are evaluating alternatives to improve Pacheco Boulevard between Blum Road and Morello Avenue (Contra Costa County, 2017). The project will consider widening of the roadway, intersection configuration, continuous sidewalks, the addition of bike lanes, and coordination with transit companies.	Along Pacheco Boulevard from Blum Road to Morello Avenue, within unincorporated Contra Costa County and the City of Martinez. Approximately 1,300 feet west of the Project site.	Environmental review underway.
Project Review Inactive			
Seal Island	24-lot residential subdivision	Central Avenue Adjacent to Project site's northeastern boundary.	Inactive

4.1 Aesthetics

4.1.1 Introduction

This section evaluates the potential for development of the Project to affect existing visual conditions, specifically, scenic vistas and certain scenic resources, visual character and quality of public views, and light and glare. This analysis is based on information from field reconnaissance and photographs taken within and around the Project site, including publicly accessible open space areas, to assess potential views of the Project site within existing scenic vistas.

This section incorporates photographs and computer-generated visual simulations illustrating the “before” and “after” conditions of the Project site and its surroundings (discussed below as the “Project area,” and comprising visual conditions within approximately 0.5 miles of the Project site). Visual simulations are based on the Vesting Tentative Map provided by the Project applicant. The potential impacts consider effects on existing natural and developed environment and focuses on the potential for the Project to substantially damage or degrade existing conditions.

4.1.2 Environmental Setting

Regional and Local Context

Contra Costa County stretches approximately 40 miles from west to east and approximately 20 miles from north to south. The County covers a total of 805 square miles, of which approximately 732 square miles consists of water areas (Contra Costa County, 2010). The physical environment is diverse, with the western and central areas providing much of the urban and suburban character and the eastern portion containing most of the agricultural communities. The topography of the Project area includes hilly terrain, as well as the low-lying and relatively flat coastal terrain that gradually slopes down to the edges of the San Pablo and Suisun Bays. The shoreline area provides a scenic setting with views of the Bays. Vegetation in the Project area consists primarily of grassland in the upland areas with scattered trees and salt marsh vegetation along the shoreline. The natural environment is the main attribute of the Project area’s positive visual character.

The Project site is situated near the northern end of a continuous belt of urban and suburban development that extends southward for nearly 30 miles to the City of Pleasanton in central Alameda County. The site, which is east of the City of Martinez and northwest of the City of Concord, is in one of the County’s unincorporated communities referred to as the Vine Hill/Pacheco Boulevard area. Prominent urban features within the Project area include Interstate 680 (I-680) and a mixture of residential, commercial and industrial uses west of the Project site, including the County’s unincorporated Mountain View neighborhood and additional suburban areas of the City of Martinez. Pockets of residential neighborhoods amongst mostly large scale industrial uses occupy the land east of I-680 from State Route 4 (SR 4) northward to the Bay.

Lands north and northeast of the Project site are characterized by the open grassy hills of the Waterbird Regional Preserve and the inactive portions of the Acme Landfill property. This open

area contains industrial uses throughout, including the active Contra Costa Transfer and Recovery Station (approximately 0.3 miles north of the Project site) and a former firewood and wood chipping facility which abuts the Project site to the southeast. In addition, several reservoirs surround the Project site, including a water holding basin approximately 0.25 miles east of the site, the Mallard Reservoir about 2.0 miles east of the site and the Martinez Reservoir, about 1.2 miles west of the site. Further north, the Shell Martinez Refinery and the Marathon Refinery, located approximately 1 mile northwest and east of the Project site respectively, dominate the landscape. Refinery lands are characterized by tall stacks, vapor plumes, and large storage tanks of various shapes and sizes.

The Burlington Northern Santa Fe (BNSF) Railway abuts the Project site perimeter to the south. A combination of undeveloped lands and a recreational vehicle storage lot occupy the area immediately south of the railroad tracks. The industrial operations of the Central Contra Costa Sanitary District's (CCCSD) wastewater treatment plant and household hazardous waste collection facilities are located 1 mile southeast of the Project site, just north of SR 4. Long-range views of the Diablo mountain ranges and Mount Diablo are visible southeast of the Project site.

Residential areas near the Project site are typically single-family detached dwelling units on landscaped parcels. The surrounding neighborhoods are generally located on low-lying terrain; mature trees and landscaped vegetation are visible along street corridors and rolling, undeveloped hillsides can be seen bordering neighborhoods south and west of the Project site.

Project Site

The existing visual character of the Project site is determined by the attributes (color, form, texture) of specific site features, which are the result of natural and created processes. Evaluation of potential Project impacts on the existing visual character of the site requires analysis of the type and degree of change in visual attributes that could result from implementation of the Project. Perceptions of changes in the physical characteristics of a site may differ with respect to issues of importance and value and are therefore subjective. This analysis considers only publicly accessible views of the Project site.

Views and Scenic Vistas

In 1963, the California Legislature established the State's Scenic Highway Program, intended to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. There are no designated or eligible scenic highways or roadway segments within the Project area (Caltrans, 2019).

The *Contra Costa County General Plan* (General Plan) Open Space Element contains policies to protect scenic ridges. The shoreline and hills along the Carquinez Strait between Crocket and the City of Martinez are described in the General Plan as having "scenic beauty" and preservation of these areas is encouraged. The Project, however, is not in the vicinity of these scenic areas (Contra Costa County, 2010).

The General Plan also, however, in Policy 3-105 of the Land Use Element (as discussed below in *Local Plans and Policies*), states the scenic assets of Vine Hill Ridge are to be protected for “open space/agricultural use” (Contra Costa County, 2010). Vine Hill Ridge is also a well-known regional landmark and one of the last natural landforms visible in the area.

Visual Character and Quality

The assessment of existing visual character and quality considers the following general descriptive categories: site location, landform, land use and vegetation.

The Project site is an approximately 78.3-acre parcel located south of Central Avenue and east of I-680 in the Vine Hill/Pacheco Boulevard area of unincorporated Contra Costa County. The site consists of nearly level to gently sloping land on the east, rising sharply to the summit of the prominent hill on the west, known as “Vine Hill”. The most visually distinctive element of the site other than the hill is the extreme topographic variation. Elevations at the Project site range from 4 to 283 feet above mean sea level (msl). The Project site is undeveloped and is currently an open, grassy field although scarred from illegal motocross activity.

The vegetative features of the site are discussed in detail in Section 4.4, *Biological Resources*, in this chapter of this Draft EIR. The site contains non-native annual grasses and other weedy, non-native plant species. A valley oak woodland covers a small area mid-slope on the north-facing side of the hill. The woodland is dominated by valley oak, with a few coast live oak and California bay trees also present. Within the grove, approximately 34 native oak trees, each with a trunk diameter of 6.5 inches or larger, fit the criteria for a “Protected Tree” as defined in the *Contra Costa Zoning Code* (“*Zoning Code*”). The property also supports permanent and seasonal wetlands and an extensive band of freshwater marsh across the southern portion of the site.

Public View Corridors

The Project site is visible from several public view corridors. General public view corridors include public roadways, residential communities and commercial and industrial areas. The Project site can be seen by north- and southbound traffic traveling along I-680. The northern slope, native oak trees and crest of the hill are visible from the adjacent Vine Hill residential area north of the Project site. The southern slope and crest of Vine Hill on the Project site can be seen from Central Avenue on the property’s eastern boundary. Long-range views of the northern slope and crest of Vine Hill are also visible from the Waterbird Regional Preserve, approximately one mile north of the Project site.

Computer-generated photosimulations illustrating the “before” and “after” conditions of the Project site and its surroundings are shown in Figures 4.1-2 to 4.1-5 further in this section. They include views of the Project site from I-680, Irene Drive at Jane Court and from the Waterbird Regional Preserve. A map showing the locations of the different viewpoints with respect to the Project site is shown in **Figure 4.1-1**. These figures, along with a detailed discussion comparing the “before” and “after” conditions of the Project site and surroundings are included in Impact AES-3 below.

It is important to note that although the visual simulations provide a reliable depiction of how the Project would look on the Project site, the simulation is limited in the sense that it only provides limited viewpoints and cannot demonstrate all views of the Project site with the Project in the setting. In addition, it cannot provide the more dynamic views that are created when one moves (i.e., driving, walking, cycling) along the perimeters of the Project site. Since the Project design is still preliminary, the visual simulations are based on the architectural details of similar past projects.

It should also be noted that design details represented in the simulations are preliminary and subject to change pending the County's design review of the Project (separate from the considerations addressed in this document under CEQA). However, the simulation focuses on general building massing and height and is sufficient in detail to make an assessment of the proposed design's potential aesthetic impacts.

4.1.3 Regulatory Setting

Local Plans and Policies

Contra Costa County General Plan

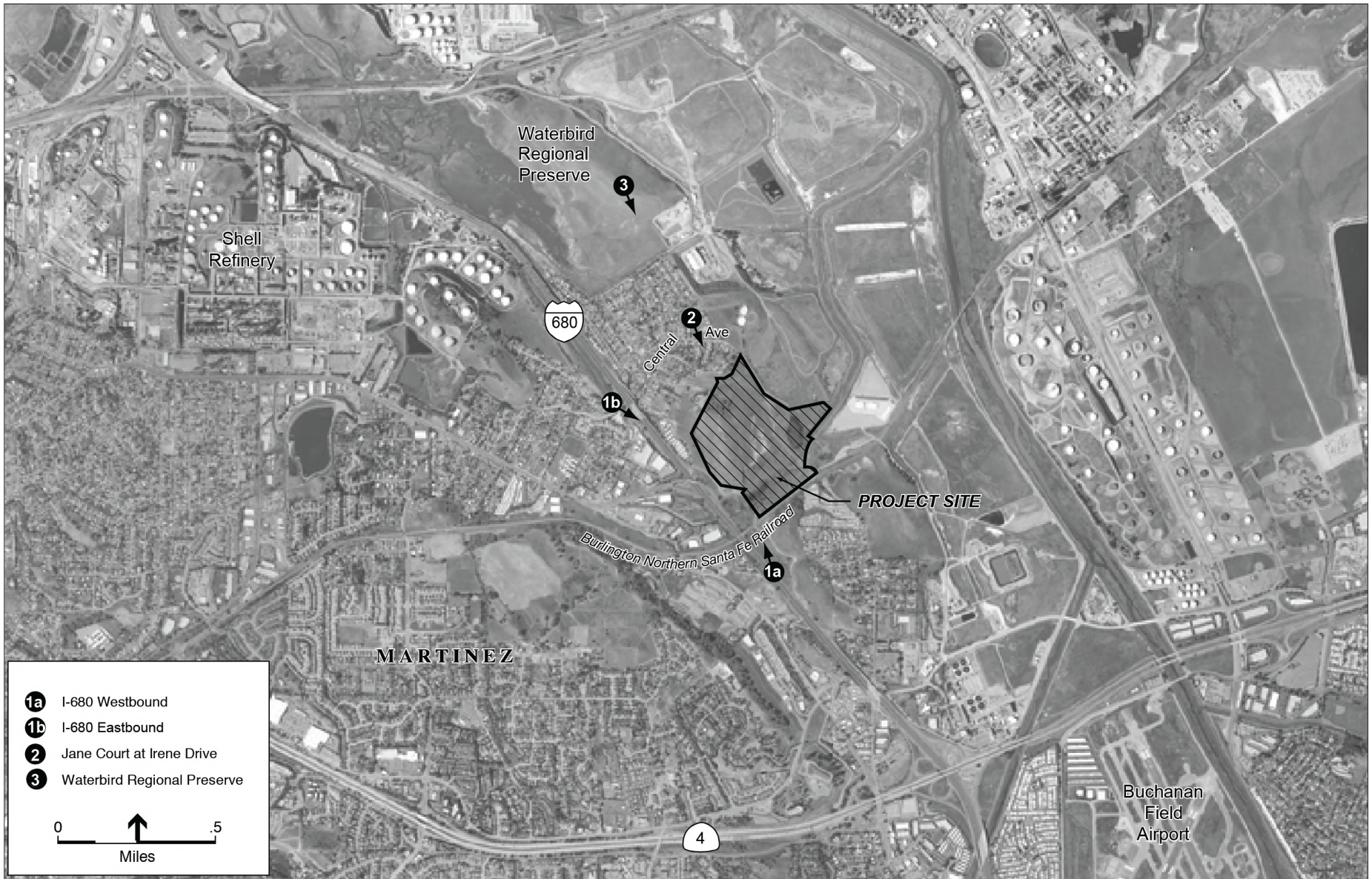
The General Plan contains policies that regulate visual resources in the Project area. These policies are included in the Open Space Element and the Land Use Element of the General Plan (Contra Costa County, 2010).

The Land Use Element of the General Plan includes the following policy that is applicable to the Project with respect to visual quality:

- *Policy 3-105:* The scenic assets and unstable slopes of the Vine Hill Ridge are to be protected for open space/agricultural use.

The Open Space Element of the General Plan includes the following policies that are applicable to the Project with respect to visual resources and aesthetics:

- *Policy 9-2:* Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.
- *Policy 9-D:* To preserve and protect areas of identified high scenic value, where practical, and in accordance with the Land Use Element map
- *Policy 9-E:* To protect major scenic ridges, to the extent practical, from structures, roadways, and other activities which would harm their scenic qualities.
- *Policy 9-11:* High quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damages and damages to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26 percent or more should generally be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted.



SOURCE: ESA

Bayview Estates Residential Project . 208078

Figure 4.1-1
Photo Locations and Simulation Viewpoints

- *Policy 9-12:* In order to conserve the scenic beauty of the county, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damage to significant trees and other visual landmarks.

The Conservation Element of the General Plan also includes the following policy that is applicable to the Project with respect to visual quality:

- *Policy 8-85.* Natural watercourses shall be integrated into new development in such a way that they are accessible and provide a positive visual element.

The Land Use and Open Space Elements also contain goals and policies that seek to protect scenic ridges and are summarized as follows:

- *Goal 3-C:* Encourage aesthetically and functionally compatible development which reinforces the physical character and desired images of the County.
- Protect major scenic ridges, to the extent practical, from structures, roadways, or other activities which would harm their scenic qualities.
- Preserve and protect areas of identified high scenic value, where practical and in accordance with the Land Use Element map.

4.1.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, the Project would result in a significant impact relative to aesthetics if it would:

- 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; or if the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing quality;
- d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Analysis Methodology

With acknowledgment that visual character and quality are subjective interpretations, this analysis relies primarily on the physical elements of the proposed Project illustrated in exhibits submitted by the Project applicant for this analysis. Aesthetic effects are measured by the amount of visual change adversely affecting an area's perceived aesthetic value or the conditions of the setting. A highly visible change resulting from a project that is incompatible with the setting or is not pleasing to look at would contribute to generating a significant adverse aesthetic impact.

This analysis also considers the sensitivity of the affected scenic vista or scenic resource based on the prominence of its visibility and/or the viewpoint location, as well as the characteristics of the view, such as whether they are widely unobstructed; fleeting or intermittent as viewed by viewers traveling along major roadways (specifically I-680) due to existing built or natural obstructions between the viewer's position and the resource.

As previously mentioned, factors to be considered include site location, landform, vegetation and land use. Examples include the physical layout of constructed elements with respect to each other and existing structures, the open and closed spaces defined between structural elements, the density or intensity of development, scale relationships between existing and proposed structures, site landscaping and other features of development.

Also, as stated above, this analysis recognizes that the value of a scenic vista or scenic resource is subjective and dependent on individual preferences; therefore, the analysis focuses on scenic resources of public importance identified in County planning documents and other agency inputs, namely EBPRD. The assessment of the Project relative to applicable General Plan policies intended for the purposes of reducing environmental effects is largely discussed in Section 4.10, *Land Use, Plans and Policies*, in this chapter of the Draft EIR, particularly because the Project seeks to amend General Plan policy regarding aesthetics.

Short-term aesthetic impacts are also considered during site construction where excavation, grading and materials and equipment storage occur. This would be short-term, lasting only during the construction period. Adverse aesthetic impacts would be expected to result from any new lighting fixtures that introduce point sources of light or glare that interfere with nighttime views.

4.1.5 Impact Analysis

Visual Character / Visual Quality – Construction

Impact AES-1: Construction of the Project would create temporary aesthetic nuisances associated with Project construction and grading activities. (Criteria a and c) (*Potentially Significant prior to Mitigation*)

Project construction activities would result in temporary exposure of graded surfaces, construction debris and the presence of construction equipment and truck traffic. Construction equipment for grading activities would be stored at various locations throughout the Project site. Visual buffering along the perimeter of the Project site during construction phases on the site would reduce these visual disruptions, particularly from Central Avenue and Palms Drive. In addition, the identification and maintenance of staging areas away from heavily traveled roadways and sidewalks would reduce potentially significant, short-term impacts. Implementation of the following mitigation measures would reduce short-term aesthetic impacts to less-than-significant levels:

Mitigation Measure AES-1: The Project shall incorporate into all construction contracts and ensure implementation of the following measures:

1. To the extent feasible, during all site preparation and exterior construction activities, a screened security fence shall be placed and maintained around the perimeter of the Project site abutting residential areas. Visual screening along Central Avenue and bordering the perimeter of the property abutting residential areas shall be placed and maintained and removed upon completion of construction work. The County shall determine the appropriate height, material and final placement of such fencing, as appropriate and effective given the relative change in elevation and viewpoints to the site.
2. Construction staging areas shall be located in the interior of the Project site, away from the property boundary and remain clear of all trash, weeds and debris etc. Construction staging areas may include other areas of the Project site when necessary, but shall be located away from adjacent properties and I-680 to minimize visibility from public view to the extent feasible.

Significance after Mitigation: Less Than Significant

Scenic Resources

Impact AES-2: The Project would not have a substantial adverse effect on a scenic vista or adversely affect scenic resources along any designated scenic highway. (Criterion b) (*Less Than Significant, no Mitigation Required*)

Views of and through the Project site would be altered by new residential structures and landscaping, as well as an internal roadway system and other site improvements. Views from the Project site include the Diablo mountain range beyond the Marathon Refinery east and south of the Project site and smaller, rolling hills interspersed between the refinery and the Project site. Views of the Project site from I-680 consist of a hill. These views would not be affected by the Project because the residential development would be built primarily at lower-lying elevations. Residential structures built along the contours of the southern slope of the Vine Hill would be obscured by the existing, surrounding topography and therefore would not obscure any scenic views.

There are no designated scenic vista points in the area of the Project site, therefore the Project would not displace or obstruct views from a scenic vista. The Project is more than seven miles from designated scenic highway routes (Caltrans, 2017) and would not damage any scenic resources related to a scenic highway. The Project would not impact trees, rock outcroppings or historic buildings considered to be significant scenic resources.

Mitigation: None required.

Visual Character and Visual Quality / Scenic Vista

Impact AES-3: The Project could alter the existing visual character of the Project site, but would not substantially degrade the existing visual quality of the site and its surroundings. (Criteria a and c) (*Less than Significant, no Mitigation Required*)

The Project would not substantially alter the visual character of the site, particularly as viewed from vantage points accessible by the public, including from the nearby Waterbird Regional Preserve regional open space and points along westbound I-680. The Project would develop 144 mostly two-story single-family detached residences. Residences would be separated by lawns with a range of distance from 10 to 30 feet and would be built in some sections to conform to the downward sloping topography. The proposed lot sizes would range from 6,000 square feet to over 13,000 square feet. In general, the Project proposes three, four and five bedroom homes ranging in size from about 1,800 to 3,500 square feet. Most streets within the development would provide internal road access and circulation. A variety of small trees would line both sides of all proposed internal streets and street lighting would be interspersed in the neighborhood. On-site landscaping would generally be comprised of shrubs and small trees.

As summarized in the *Project Description* (Chapter 3), to support the development of up to 144 housing lots and the associated internal roadway system, the Project applicant proposes a grading plan that would alter the existing topography in areas of the Project site (see Figure 3-4, Proposed Cut and Fill [Grading] Map, in Chapter 3). Preparation of the site for construction of the proposed Project would also include clearance of approximately 1,500 cubic yards (“cy”) of vegetation, almost all of which would be placed along the southern and eastern perimeters of the Project site. Up to approximately 30 of the existing trees on the site would be removed during grading and construction activities. Over the entire Project site, the maximum fill depth would be approximately 50 feet, and the maximum cut depth would be approximately 105 feet. Some residential lots would include sloping rear yards and side yards. (See Section 4.6, *Geology, Soils and Paleontological Resources*, for additional details on the existing topography and Project grading plan.)

As discussed and demonstrated below in each of comparative existing “before” viewpoint photographs and “after” photosimulations of the Project, the developed portion of the Project would be visible from limited public views given the relatively lower elevations of the surrounding areas compared to the Project site, the location of the proposed residential development at the lower portion of the hill.

Viewpoint 1a: I-680 Westbound

Viewpoint 1a in **Figure 4.1-2** shows the visual character of the Project site from I-680 looking northwesterly from street level elevation (as all photos and simulations are taken). Views of the site include hilly, open grassland and small bushes and trees along the property line and base of the hillside. This view of the Project development is also fleeting, at points through existing vegetation, from high-speed motorists on westbound I-680; the hill (Vine Hill) on the Project site can be seen in the center of this perspective. The BNSF Railway also can be seen where it intersects the hill and an adjacent hillside through a small valley. A utility transmission tower is



Existing view from I-680 Westbound looking northwest



Visual Simulation of Proposed Project (VP 1a)

visible at the base of the hill with electrical lines running parallel to the railway in an easterly direction. An unpaved road can be seen to the left at the base of the hill. The property site's cyclone fence is also visible in the foreground.

Figure 4.1-2 also depicts Viewpoint 1a with the Project. The shape and form of the Vine Hill would be the same as in existing conditions. While not visible due to the new residences that would be constructed, the north and east facing steep slopes on parts of the hill (Parcel A, see Figure 3-4

in Chapter 3 (Project Description) would be separated into vertical segments by drainage terraces. The new development would appear in a "valley" at the foot of the hill. The rear facades of some of the proposed residences would be visible from this viewpoint, obscured at points by the intermittent vegetation in the foreground. As depicted in the simulation, the proposed height, density and exterior color palette of the new homes are such that the development does not result in a substantial adverse change from existing conditions. Nor would the development with the Project degrade Vine Hill as a unique and recognizable resource to the area.

Viewpoint 1b: I-680 Eastbound

Viewpoint 1b in **Figure 4.1-3** shows the visual character of the Project site from I-680 looking southeasterly at street level elevation. Views of the site include hilly, open grassland and small bushes and trees along the property line and base of the hillside.

The prominent hill (Vine Hill) can be seen in the center of this perspective. A utility transmission tower is visible at the base of the hill with electrical lines running parallel to the railway in an easterly direction. An unpaved road can be seen to the left at the base of the hill. The property site's cyclone fence is also visible in the foreground.

Figure 4.1-3 also depicts Viewpoint 1b with the Project. As shown, the shape and form of the top of Vine Hill would generally be the same as in the existing view. As highlighted in the photo and simulation, some of the proposed tree removal will be visible from this viewpoint, however, the homes or other Project development would not be visible.

Viewpoint 2: Jane Court at Irene Drive

The photo in Viewpoint 2 in **Figure 4.1-4** is taken from the Vine Hill neighborhood, near the intersection of Irene Drive and Jane Court, adjacent to and north of the Project site. Looking south from this point, the crest of the hill (Vine Hill) on the Project site is visible above the existing rooftop. Oak trees cover a small area mid-slope on the north-facing side of the hill. Single and two-story homes of the existing neighborhood occupy the foreground.

Figure 4.1-4 also depicts Viewpoint 2 with the Project. Here, some oak trees and other weedy vegetation mid-slope on the north-facing side of the hill would be removed and be visible, as highlighted in the photo and simulation. However, no Project homes or other development would be visible from this view.



Existing view from I-680 Eastbound looking southeast



Visual Simulation of Proposed Project (VP 1b)



Existing view from Jane Court at Irene Drive looking southeast



Visual Simulation of Proposed Project (VP 2)

Viewpoint 3: Waterbird Regional Preserve

In addition, in a comment letter submitted on the Draft EIR for a previous Bayview residential project proposal, the East Bay Regional Parks District (EBRPD) identified views of Vine Hill Ridge from Waterbird Regional Preserve as an important resource, and Vine Hill Ridge as a unique resource to the area (EBRPD, 2010).

Viewpoint 3 in **Figure 4.1-5** is seen from on Meadowlark Ridge Loop Trail toward the southeastern end of the Waterbird Regional Preserve, looking southeast toward the Project site.

The crest of the hill (Vine Hill) and oak trees covering a small area at mid slope of the hill can be seen from this viewpoint – as highlighted in the photo and simulation. A portion of Mount Diablo can be seen to the east (left) of the Project site. Existing development of mixed uses characterize the mid-ground area, between the viewpoint and the Project site, as well as areas to the west (right) of the site.

Figure 4.1-5 also depicts Viewpoint 3 with the Project. No change is proposed to the crest of the Vine Hill, and the only visible development effect is the removal of a portion of the valley oak woodland to accommodate the Project. No residential development or other site development or access roads are visible from this viewpoint, and the change to its existing vegetative features is limited to the aforementioned valley oaks, as with the similar Viewpoint 1a (Figure 4.1-2)

Summary

With development of the proposed Project, visible change to the Project site from the selected public viewpoints shown in Figures 4.1-2 through 4.1-5 is limited. No change is proposed that would alter the recognizable Vine Hill on the Project site or its natural character of grasses and valley oak woodland areas seen from all views. Development is visible from the westbound travel along -680, its limited appearance seeming nestled into the “valley” at the foot of the hill given its siting within the larger property. Also, no portion of the permanent and seasonal wetlands or freshwater marsh is visible.

The Project would not represent an isolated, adverse intrusion into an exceptional or unusual visual environment, although Vine Hill is a unique and recognizable resource to the area. The height, density and exterior color palette of the new residential design would be similar in scale to the adjacent and nearby development. Moreover, as shown in Viewpoint 3 (Figure 4.1-5) compared to the Project development visible in Viewpoint 1a (Figure 4.1-2), the Project incorporates a color palette more consistent with the existing natural character of the area that existing development visible from Viewpoint 3. The Project will adhere to all applicable development standards and design review criteria for residential development – the adherence to and the findings for both of which are intended to ensure that a project’s siting and design are appropriate and compatible with its surrounding context.

The Project as a whole, including the proposed changes to the existing topography, would not degrade the existing visual quality of the site or surrounding area, nor would it adversely affect a scenic view or valuable community resource. With particular value placed on the public view of



Existing view from Waterbird Regional Preserve looking southeast



Visual Simulation of Proposed Project (VP 3)

the Project site from the EBRPD Waterbird Regional Preserve in Viewpoint 3 (Figure 4.1-5), this long-range view captures the Project site within its broader natural and developed context and demonstrates the degree of change that would result with the Project, which is reasonably expected to be minimal and barely discernable. Taken together, the impact is less than significant with no mitigation measure required.

Mitigation: None required.

Light and Glare

Impact AES-4: The Project would introduce new sources of light and glare onto the Project site and increase ambient light in the vicinity. (Criterion d) (*Less Than Significant, no Mitigation Required*)

The Project site is located in a developed area with roads, trails and land uses including residential areas, wastewater treatment facilities and an active refuse transfer station. Northwest of the Project site, the Waterbird Regional Preserve, an approximately 198-acre wetland and associated upland area, is accessible to the public for recreation. Nearby sources of light and glare include the Shell Martinez and Marathon Refineries (approximately one mile northwest and east of the Project site respectively), which generally illuminate facilities in order for operations to continue throughout the night and vehicular traffic on I-680, west of the Project site. On the Project site, existing light levels are low given the undeveloped nature of the site itself and the minimal illumination from adjacent neighborhood street lighting and nearby land uses.

The Project would develop a currently undeveloped site and the amount of light and glare produced on-site would increase and be visible from on- and off-site vantage points. Additional light and glare could contrast with the surrounding land uses, particularly with respect to views from the Waterbird Regional Preserve and would change nighttime views from some neighboring residential uses. “Spill light” (light that falls on offsite receptors, causing additional unwanted illumination) could be produced from interior and exterior home lighting, streets lights and headlights of vehicles traveling to and from the site.

The Project would incrementally increase the amount of light generated on the site and in the vicinity. As part of the Project design, private exterior lighting must be directed downward and away from adjacent properties and public/private right-of-way to prevent glare or excessive light spillover. Lighting bulbs will be limited to low intensity lights, including lighting for identification purposes, and no free standing light poles will be allowed within the residential property. Landscaping lights, meanwhile, will be limited to ground-level for walking/safety purposes. All lighting will be directed downward and away from property lines, and lighting intensity will not be greater than what is reasonably required to safely illuminate the Project site. Per County practices, the Project applicant would be required to prepare and submit to the County an onsite lighting master plan for review and approval by the County. Development on the site

and light generated by the Project would be typical of similar residential development in the area and consistent with the character of the surrounding area.

In summary, while the Project would generate an incremental increase in light generated on the site compared to existing conditions, the Project as design would not create a substantial new source of light and glare that would adversely affect day or nighttime views in the area.

Mitigation: None required.

Cumulative Impacts

Impact C-AES-1: The Project, in conjunction with cumulative development, would not result in a cumulative aesthetics impact related to scenic vistas and resources, or visual character and visual quality. (All Criteria) (*Less than Significant, no Mitigation Required*)

Geographic Context

The geographic context for the cumulative consideration of aesthetic impacts addresses development and visual conditions within approximately 0.5 miles of the Project site, and includes the Project site and its surroundings. As listed in Table 4.0-1, *Cumulative Projects Near the Project Site*, in Section 4.0, *Introduction to the Environmental Analysis*, of this chapter, County staff identified several planned or approved but not constructed residential development projects, in addition to roadway infrastructure and natural habitat improvement projects, exist generally within 0.5-miles of the Project site.

Cumulative Analysis

Each of the projects identified for consideration in the cumulative context for aesthetics would introduce new residential uses and public improvements to the Project area. Future new development within the area would be subject to development guidance contained within the General Plan.

The Project would alter the visual character of the Project site in substantially the same manner as the other approved but not yet completed projects considered in the cumulative scenario would. One such project, Palms Ten (10-lot residential subdivision on Palms Drive) abuts the Project site. However, the urban portions of the proposed developments are not both visible from public vantage points. For instance, the Palms 10 subdivision is located on the north face of Vine Hill, whereas the proposed Project is located on the southern face of the hill. Conservatively, the proposed Project and the Palms 10 project, together, would incrementally increase the urbanized and developed appearance of the Project area. However, in the context of the Project area, the overall change would not cumulate in any substantial way, and the area is largely developed with a combination of residential, commercial and industrial uses such that the area is not as sensitive as other areas of the County. Nor is it anticipated that construction of other project would occur concurrently and be visible within the same view corridor to combine cumulatively. Therefore, in

the context of existing and reasonably foreseeable future residential development in the immediate Project area, the cumulative aesthetic effects would be less than significant.

Mitigation: None required.

References – Aesthetics

California Department of Transportation, 2019. *California State Scenic Highway System Map*.
<https://www.arcgis.com/apps/webappviewer/index.html?id=2e921695c43643b1aaf7000dfc19983>. Accessed September 2020.

Contra Costa County, 2010. *Contra Costa County General Plan 2005-2020*. January 18, 2005.
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4.2 Air Quality

4.2.1 Introduction

This section addresses the potential for air quality impacts that could result from implementation of the Project, including increases in criteria air pollutants and exposure to substantial pollutant concentrations. This section describes existing air quality, potential short-term construction related impacts, and direct and indirect operational emissions associated with development under the Specific Plan. The analysis of emissions focuses on whether construction or operation of the Project would cause an exceedance of State ambient air quality standards.

This section evaluates and analyzes the potential impacts of Project development on regional and local air quality from both stationary and mobile sources of air emissions. The analysis is consistent with methodologies set forth in the Bay Area Air Quality Management District's (BAAQMD) CEQA Guidelines. While potential effects of the environment on the Project are arguably not required to be analyzed or mitigated under CEQA, for informational purposes this section nevertheless analyzes potential effects of the air quality environment on development that could occur as a result of the Project as set forth in CEQA *Guidelines*, Appendix G, Significance Criteria, and in order to provide this supplemental information to the public and decision-makers. Mitigation measures are identified to reduce potential impacts to less-than-significant levels. This air quality analysis is closely coordinated with the analysis of potential impacts with regard to greenhouse gases and climate change, which is provided in Section 4.6, *Greenhouse Gas Emissions and Energy*, of this EIR.

4.2.2 Environmental Setting

Physical Setting

Climate and Meteorology

The Project site is located in Contra Costa County, which lies within the San Francisco Bay Area Air Basin (Bay Area Air Basin). The Bay Area Air Basin encompasses the nine-county region including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, San Francisco, Marin and Napa Counties and the southern portions of Solano and Sonoma Counties. The climate of the Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface and resulting in the formation of subsidence inversions. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates, such as sulfates and nitrates.

Specifically, the Project site is located within the Carquinez Strait climatological subregion of the Bay Area Air Basin. This subregion is bound by Rodeo in the southwest, Vallejo in the northwest, Fairfield in the northeast and Brentwood in the southeast. Prevailing winds in this subregion are from the west with some eastward flow during the summer and fall months. Winds are strongest in the afternoon, and wind speeds ranging from 15 to 20 mph are common throughout the strait region. Annual average wind speeds are 8 mph in Martinez, and 9 to 10 mph further east. Temperatures in the subregion range from the maximum summer averages in the 90s and minimum winter averages in the high 30s.

Many industrial facilities with significant air pollutant emissions — e.g., chemical plants and refineries — are located within the Carquinez Strait Region. The pollution potential of this area is often moderated by high wind speeds. However, upsets at industrial facilities can lead to short-term pollution episodes, and emissions of unpleasant odors may occur at any time. Receptors downwind of these facilities could suffer more long-term exposure to air contaminants than individuals elsewhere (BAAQMD, 2017a).

Criteria Air Pollutants

As required by the federal Clean Air Act passed in 1970, the U.S. Environmental Protection Agency (EPA) has identified six criteria air pollutants that are pervasive in urban environments and for which state and national health-based ambient air quality standards have been established. The U.S. EPA calls these pollutants *criteria air pollutants* because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide (“CO”), nitrogen dioxide, sulfur dioxide, particulate matter (“PM”) and lead are the six criteria air pollutants.

Some criteria air pollutants are considered regional in nature, some are considered local and some have characteristics that are both regional and local. Air pollutants are also characterized as “primary” and “secondary” pollutants. Primary pollutants are those emitted directly into the atmosphere (such as carbon monoxide, sulfur dioxide, lead particulates and hydrogen sulfide). Secondary pollutants are those formed through chemical reactions in the atmosphere; these chemical reactions usually involve primary pollutants, normal constituents of the atmosphere and other secondary pollutants. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (“ROG”) and nitrogen oxides (“NO_x”). ROG and NO_x are known as precursor compounds for ozone. Ozone is a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production.

Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area out to some distance from vehicular sources.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NO_x). ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Accordingly, the Project's potential for increasing ozone is measured by assessing its ROG and NO_x emissions.

Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Carbon Monoxide (“CO”)

Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions,¹ CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

Over the past few decades, CO concentrations have declined dramatically in California due to regulatory controls and programs. Most areas of the state, including the region encompassing the Project site, are in full compliance with State and federal CO standards. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, shown below:

“The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (CARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican

¹ “Inversion conditions” refer to temperature inversion, whereby cold air lies below warmer air at higher altitudes (i.e., temperature increases with height).

border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.”

Nitrogen Dioxide

Nitrogen dioxide (NO₂) is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO₂. NO₂ may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels. Nitrogen dioxide is of concern for air quality because it acts as a respiratory irritant and is a precursor of ozone. Nitrogen dioxide is a major component of the group of gaseous nitrogen compounds commonly referred to as nitrogen oxides (NO_x) which also includes nitric oxide (NO). Nitrogen oxides are produced by fuel combustion in motor vehicles, industrial stationary sources (such as refineries and cement kilns), ships, aircraft, and rail transit. Typically, NO_x emitted from fuel combustion is in the form of NO and NO₂. NO is often converted to NO₂ when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, emissions of NO₂ from combustion sources are typically evaluated based on the amount of NO_x emitted from the source.

Sulfur Dioxide

Sulfur dioxide (SO₂) is a combustion product of sulfur or sulfur-containing fuels such as coal. SO₂ is also a precursor to the formation of atmospheric sulfate and particulate matter (both PM₁₀ and PM_{2.5}) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. In the Bay Area, high concentrations of SO₂ are only a concern in areas close to refinery operations. Its health effects include breathing problems and potential permanent damage to lungs. Sulfur dioxide is an ingredient in acid rain (acid aerosols), which can damage trees, lakes and property. Acid aerosols can also reduce visibility.

Particulate Matter

PM₁₀ and PM_{2.5} consist of particulate matter that is 10 microns or less in diameter and 2.5 microns² or less in diameter, respectively. PM₁₀ and PM_{2.5} represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM₁₀ and PM_{2.5}, are a health concern particularly at levels above the federal and State ambient air quality standards. PM_{2.5} (including diesel exhaust particles) is thought to have greater effects on health because these particles are so small and thus are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health

² A micron is one-millionth of a meter.

problems including asthma, bronchitis, and acute and chronic respiratory symptoms such as shortness of breath and painful breathing.

Studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM₁₀ and PM_{2.5} because their immune and respiratory systems are still developing. Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge, a comprehensive evaluation of research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope, 2006). CARB has estimated that achieving the ambient air quality standards for PM₁₀ could reduce premature mortality rates by 6,500 cases per year (CARB, 2002), while achieving the annual ambient air quality standard for PM_{2.5} could reduce premature mortality by 9,300 per year (CARB, 2008).

Lead

Lead has a range of adverse neurotoxic health effects, and was formerly released into the atmosphere primarily via the combustion of leaded gasoline. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. In the Bay Area, high concentrations of lead are only a concern in areas close to general aviation airports. Lead has a range of adverse neurotoxic health effects for which children are at special risk. Some lead-containing chemicals cause cancer in animals.

Existing Air Quality

Criteria Air Pollutants

The Bay Area Air Quality Management District (BAAQMD) operates a regional monitoring network that measures the ambient concentrations of the six criteria air pollutants. Existing and probable future levels of air quality in the Project vicinity can generally be inferred from ambient air quality measurements conducted by the BAAQMD at its nearby monitoring stations. The station in Martinez at 521 Jones Street is nearest to the Project site (located approximately 3 miles to the northwest); however, this station only monitors sulfur dioxide, which is typically not a pollutant of regional concern in the Bay Area. The 2956-A Treat Boulevard Station in Concord is the second closest station located approximately 6 miles south of the Project site. This station monitors ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM₁₀, and PM_{2.5}. This station does not monitor lead, but the Bay Area is in attainment status with state and federal ambient air quality standards for lead. **Table 4.2-1** shows a five-year summary of monitoring data for criteria pollutants from the 2956-A Treat Boulevard station with the exception of sulfur dioxide which was measured from the Martinez station. The table also compares these measured concentrations with state and federal ambient air quality standards.

**TABLE 4.2-1
 AIR QUALITY DATA SUMMARY (2012–2018) FOR THE PROJECT AREA**

Pollutant	Monitoring Data by Year ^e				
	2014	2015	2016	2017	2018
Ozone					
Highest 1 Hour Average (ppm) ^b	0.095	0.088	0.095	0.082	0.077
Days over State Standard (0.09 ppm) ^a	1	0	1		0
Highest 8 Hour Average (ppm) ^b	0.080	0.073	0.074	0.070	0.061
Days over National Standard (0.075 or 0.070 ppm) ^{a,c}	2	2	2	0	0
Days over State Standard (0.07 ppm) ^a	2	4	2	0	0
Carbon Monoxide					
Highest 1 Hour Average (ppm) ^b	1.4	1.4	1.2	1.7	1.9
Days over State Standard (20 ppm) or National Standard (35 ppm) ^a	0	0	0	0	0
Highest 8 Hour Average (ppm) ^b	1.1	1.3	1.0	1.3	1.6
Days over National and State Standard (9 ppm) ^a	0	0	0	0	0
Particulate Matter (PM₁₀)					
Highest 24 Hour Average (µg/m ³) ^b	43	24	19	41	105
Estimated Days over National Standard (150 µg/m ³) ^{a,d}	0	0	0	0	0
Estimated Days over State Standard (50 µg/m ³) ^{a,d}	0	0	0	0	6
State Annual Average (State Standard 20 µg/m ³) ^{a,b}	14.2	13.1	11.5	13.3	16.3
Particulate Matter (PM_{2.5})					
Highest 24 Hour Average (µg/m ³) ^b –	30.6	31.0	20.7	89	180
Estimated Days over National Standard (35 µg/m ³) ^{a,d}	0	0	0	6	14
State Annual Average (State and National Standard 12 µg/m ³) ^b	6.6	8.8	5.9	12.0	
Nitrogen Dioxide					
Highest 1 Hour Average (ppm) ^b	0.048	0.033	0.016	0.041	0.038
Days over State Standard (0.18 ppm) ^a	0	0	0	0	0
Days over National Standard (0.10 ppm)	0	0	0	0	0
State Annual Average (State Standard 0.03 ppm/National Standard 0.053 ppm)	0.008	0.007	0.005	0.007	0.006
Sulfur Dioxide					
Highest 1 Hour Average (ppm) ^b	0.021	0.015	0.011	0.016	0.025
Days over National Standard (0.075 ppm) or State Standard (0.25 ppm) ^a	0	0	0	0	0
Highest 24 Hour Average (ppm) ^b	0.005	0.005	0.002	0.003	0.004
Days over State Standard (0.04 ppm) or National Standard (0.14 ppm)	0	0	0	0	0

NOTES:

- a Generally, state standards and national standards are not to be exceeded more than once per year.
- b ppm = parts per million; µg/m³ = micrograms per cubic meter.
- c In October 2015, the U.S. EPA implemented a new 8-hour ozone standard of 70 ppb. Exceedances in 2015 are based on this standard.
- d PM_{10.5} is not measured every day of the year.
- e Monitoring Data are from BAAQMD's station in Concord with the exception of sulfur dioxide, which was measured BAAQMD's Martinez station. Values in **Bold** exceed the respective air quality standard.

SOURCE: BAAQMD, 2020.

Table 4.2-1 shows trends in regional exceedances of the federal and state ozone standards. Because of the number of exceedances, ozone is the pollutant of greatest concern in the Bay Area. Bay Area counties experience most ozone exceedances during the period from April through October.

Industrial facilities such as chemical plants and refineries contribute significantly to air pollution in the Carquinez Strait Region. Motor vehicle transportation, including automobiles, trucks, transit buses and other modes of transportation, is also a major contributor to regional air pollution.

The principal sources of ozone precursors ROG and NO_x in the Bay Area include on-road motor vehicles. The Bay Area has a significant motor vehicle population and these reductions are projected as vehicles meeting more stringent emission standards enter the fleet and all vehicles use cleaner burning gasoline and diesel fuel or alternative fuels. This includes the use of improved evaporative emission control systems, computerized fuel injection, engine management systems to meet increasingly stringent California emission standards, cleaner gasoline and the Smog Check program. ROG and NO_x emissions from other mobile sources and stationary sources are also projected to decline as more stringent emission standards and control technologies are adopted and implemented.

Direct emissions of PM₁₀ have increased slightly in the Bay Area since 1975 and the trend is projected to continue. This increase is due to growth in emissions from area-wide sources, primarily fugitive dust sources. Emissions of directly emitted PM_{2.5} from diesel motor vehicles have been decreasing since 1990 (due to adoption of more stringent emission standards for vehicle manufacturers) even though population and vehicle miles traveled are growing. As shown in **Table 4.B-3**, PM₁₀ concentrations at the Treat Boulevard monitoring station occasionally exceed the 24-hour average state standard. The large exceedance in 2018 is attributable to smoke from wildfire.

The standards for nitrogen dioxide, sulfur dioxide and lead are being met in the Bay Area and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future (ABAG, 2001).

Toxic Air Contaminants

The BAAQMD provides a Google Earth-based inventory of stationary source risks and hazards. This source indicates one permitted TAC source within 1,000 feet of the Project site boundary. (BAAQMD, 2020b). These sources have risks/concentrations calculated in **Table 4.2-2** below.

**TABLE 4.2-2
STATIONARY SOURCES OF TACS WITHIN 1,000 FEET OF THE PROJECT SITE**

Name of Source	Address	Cancer Risk (in one million)	Chronic Health Index (Unit less ratio value)	PM _{2.5} Concentration (micrograms/ cubic meter)
Central Contra Costa Sanitary District	990 Central Avenue	1.65	0.00	0.0

NOTES:
SOURCE: BAAQMD 2020b

The Project site is also within 0.5 miles from I-680, a high volume roadway and freeway. An active rail line is located along the southern Project border. This railroad is operated by BNSF (FRA, 2017).

Sensitive Land Uses

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include health problems, proximity to the emissions source and duration of exposure to air pollutants. Land uses such as schools, hospitals and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old and the infirm are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory system.

Existing sensitive receptors in the Project area include single family residences to the northwest of the Project site between Palms Drive and Arthur Road and RV Park inhabitants located on the other side of the hill to the northwest. There are also single family residences located to the northwest of the Project site to the west of I-680. In addition, there are single family homes and an RV Park southeast of the railroad tracks that border the Project site.

4.2.3 Regulatory Setting

Regulatory Context for Air Quality

The U.S. EPA is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the federal ambient air quality standards and judging the adequacy of *State Implementation Plans*. However, the U.S. EPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented. In California, CARB is responsible for establishing and reviewing the state ambient air quality standards, developing and managing the California State Implementation Plan, securing approval of this plan from the U.S. EPA and identifying toxic air contaminants (“TACs”).

CARB also regulates certain mobile emissions sources in California, such as construction equipment, trucks and automobiles and oversees the activities of air quality management districts, which are organized at the county or regional level. Air quality management districts are primarily responsible for regulating stationary emissions sources at facilities within their geographic areas and for preparing the air quality plans that are required under the federal Clean Air Act and California Clean Air Act (see *Air Quality Plans*, below). The BAAQMD is the regional agency with regulatory authority over emissions sources in the Bay Area, which includes all of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin and Napa counties, the southern half of Sonoma County and the southwestern half of Solano County.

Ambient Air Quality Standards

The Federal Clean Air Act requires the U.S. EPA to identify National Ambient Air Quality Standards (NAAQS or “national standards”) to protect public health and welfare. National standards have been established for O₃, CO, NO₂, sulfur dioxide, respirable particulate matter (PM₁₀ and PM_{2.5}), and lead. Similarly, the State of California has required CARB to identify California Ambient Air Quality Standards (CAAQS) for O₃, CO, NO₂, sulfur dioxide, respirable particulate matter (PM₁₀ and PM_{2.5}), and lead. **Table 4.2-3** shows current national and State ambient air quality standards, as well as the Bay Area attainment status and common sources for each pollutant.

The ambient air quality standards are intended to protect the public health and welfare and they incorporate an adequate margin of safety. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels somewhat above the ambient air quality standards before adverse health effects are observed.

Attainment Status

Under amendments to the federal Clean Air Act, the U.S. EPA has classified air basins or portions thereof, as either “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the national standards have been achieved. **Table 4.2-3** shows the current attainment status for the State and the Bay Area Air Basin. The California Clean Air Act, which is patterned after the federal Clean Air Act, also requires areas to be designated as “attainment” or “nonattainment” for the state standards. Thus, areas in California have two sets of attainment / non-attainment designations: one set with respect to the national standards and one set with respect to the state standards.

As shown in **Table 4.2-3**, the Bay Area is currently designated “nonattainment” for state and national (1 hour and 8 hour) ozone standards and for the state PM₁₀ and PM_{2.5} standards. The Bay Area is designated “attainment” or “unclassified” with respect to the other ambient air quality standards.

Air Quality Plans

The 1977 Federal Clean Air Act amendments require that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the Clean Air Act. The 1988 California Clean Air Act also requires development of air quality plans and strategies to meet State air quality standards in areas designated as non-attainment (with the exception of areas designated as non-attainment for the State PM standards). Maintenance plans are required for attainment areas that had previously been designated non-attainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as SIPs, discussed above.

**TABLE 4.2-3
 AMBIENT AIR QUALITY STANDARDS AND BAY AREA ATTAINMENT STATUS**

Pollutant	Averaging Time	State Standard	Bay Area Attainment Status for California Standard	Federal Primary Standard	Bay Area Attainment Status for Federal Standard	Major Pollutant Sources
Ozone	8 hour	0.070 ppm	Non-Attainment	0.070 ppm	Marginal Non-Attainment	Formed when ROG and NOx react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/ industrial mobile equipment.
	1 hour	0.090 ppm	Non-Attainment	---	---	
Carbon Monoxide	8 hour	9.0 ppm	Attainment	9.0 ppm	Attainment (maintenance area)	Internal combustion engines, primarily gasoline-powered motor vehicles
	1 Hour	20 ppm	Attainment	35 ppm	Attainment	
Nitrogen Dioxide	Annual Average	0.030 ppm	---	0.053 ppm	Attainment	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads
	1 Hour	0.180 ppm	Attainment	0.100 ppm	Unclassified	
Sulfur Dioxide	Annual Average	---	---	0.03 ppm	Attainment	Fuel combustion, chemical plants, sulfur recovery plants and metal processing
	24 Hour	0.04 ppm	Attainment	0.14 ppm	Attainment	
	1 Hour	0.25 ppm	Attainment	0.075 ppm	Attainment	
Particulate Matter (PM10)	Annual Arithmetic Mean	20 µg/m3	Non-Attainment	---	---	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays)
	24 hour	50 µg/m3	Non-Attainment	150 µg/m3	Unclassified	
Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 µg/m3	Non-Attainment	12 µg/m3	Unclassified/Attainment	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	24 hour	---	---	35 µg/m3	Non-Attainment	
Lead	Calendar Quarter	---	---	1.5 µg/m3	Attainment	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	30 Day Average	1.5 µg/m3	Attainment	---	---	
Hydrogen Sulfide	1 hour	0.03 ppm	Unclassified	No Federal Standard	---	Geothermal Power Plants, Petroleum Production and refining

SOURCE: BAAQMD, 2017b.

The Clean Air Plan for the Bay Area is prepared with the cooperation of the BAAQMD, the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On April 19, 2017, the BAAQMD adopted the most recent revision to the Clean Air Plan, the *Bay Area 2017 Clean Air Plan* (BAAQMD, 2017c). The *Bay Area 2017 Clean Air Plan* serves to:

- Update the most recent Bay Area ozone plan, the *2010 Clean Air Plan*, pursuant to air quality planning requirements defined in the California Health & Safety Code;
- Include all feasible measures to reduce emissions of ozone precursors (ROG and NO_x) and reduce transport of ozone and its precursors to neighboring air basins; and
- Build upon and enhance the BAAQMD's efforts to reduce emissions of fine particulate matter and toxic air contaminants.

The 2017 Clean Air Plan includes a wide range of proposed “control measures,” or actions to reduce combustion-related activities, decrease fossil fuel combustion, improve energy efficiency, and decrease emissions of potent greenhouse gases. Numerous measures reduce multiple pollutants simultaneously: for example, ozone, particulate matter, air toxics, and GHGs. Others focus on a single type of pollutant, such as “super GHGs” – defined as those GHGs with very high global warming potential such as methane – or are progressive actions to remove harmful particles in the air (BAAQMD, 2017c).

Toxic Air Contaminants (TACs)

The ambient background of toxic air contaminants (TACs) is the combined result of many diverse human activities, including gasoline stations, automobiles, dry cleaners, industrial operations, hospital sterilizers, and painting operations. In general, mobile sources contribute more significantly to health risks than do stationary sources. Both BAAQMD and the California Air Resources Board (CARB) operate a network of monitoring stations that measure ambient concentrations of certain TACs that are associated with strong health-related effects and are present in appreciable concentrations in the Bay Area, as in all urban areas. Ambient concentrations of TACs are similar throughout the urbanized areas of the Bay Area.

Growing evidence indicates that exposure to emissions from diesel-fueled engines, about 95 percent of which come from diesel-fueled mobile sources, may result in cancer risks that exceed those attributed to other measured TACs. In 1998, the Office of Environmental Health Hazard Assessment (OEHHA) issued a health risk assessment that included estimates of the cancer potency of diesel particulate matter (DPM) (OEHHA, 2009). Because DPM cannot be directly monitored in the ambient air, however, estimates of cancer risk resulting from DPM exposure must be based on concentration estimates made using indirect methods (e.g., derivation from ambient measurements of a surrogate compound).

Asbestos is also a TAC of concern, particularly in association with demolition of older buildings and structures. Asbestos is a fibrous mineral, which is both naturally occurring in ultramafic rock (a rock type commonly found in California) and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, including

asbestosis and lung cancer, it is strictly regulated based on its natural widespread occurrence and its former use as a building material.

Regulations of Construction Vehicles

On July 26, 2007, CARB adopted new regulations intended to reduce emissions of PM10 and PM2.5 and NOx from certain diesel-powered vehicles by requiring businesses to retrofit or "turnover" their fleets over time (13 California Code of Regulations [CCR] Section 2449). The regulations apply to any person, business or government agency that owns or operates any diesel-powered off-road vehicle in California with 25 or greater horsepower, including vehicles used in construction (i.e., backhoes, tractors).

The emission requirements are intended to require fleets to apply exhaust retrofits that capture pollutants before they are emitted, and to accelerate turnover of fleets to newer, less-polluting engines. "Turnover" means retrofitting an engine to capture pollutants, replacing a dirty engine with a clean engine, retiring a dirty vehicle, replacing a vehicle with a new or used piece, or redesignating a vehicle as "low-use." "Low-use" vehicles (which operate for less than 100 hours per year) are exempt from emission requirements, but still must be properly labeled and reported to CARB.

Fleets are subject to compliance dates based on fleet size. Fleet size is determined by combined horsepower. Small fleets are those with less than 2,500 hp, medium fleets are those with 2,501 to 5,000 hp, and large fleets are those with over 5,000 hp. For small fleets implementation of regulations did not begin until 2019. Medium fleets began in 2017, while large fleets began in 2014.

In addition, medium and large fleets are banned from adding vehicles with engines that meet only Tier 1 off-road emission standards to their fleets as of January 1, 2014, and small fleets are banned from adding vehicles with engines that meet only Tier 1 off-road emission standards to their fleets as of January 1, 2016. Medium and large fleets are banned from adding vehicles with engines that meet only Tier 2 off-road emission standards to their fleets as of January 1, 2018, and small fleets are banned from adding vehicles with engines that meet only Tier 2 off-road emission standards to their fleets as of January 1, 2023. After these respective dates, fleets may only add vehicles with engines that meet Tier 3 off-road emission standards. For fleets with 500 hp or less, there is an optional compliance schedule which achieves 100% Tier 2 engines by 2029.

BAAQMD Rules, Regulations, and CEQA Guidelines

The BAAQMD is the regional agency responsible for rulemaking, permitting, and enforcement activities affecting stationary sources in the Bay Area. BAAQMD does not have authority to regulate emissions from motor vehicles. Specific rules and regulations adopted by the BAAQMD limit the emissions that can be generated by various stationary sources, and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the six criteria air pollutants, but also TACs emissions sources subject to these rules are regulated through the BAAQMD's permitting process and standards of operation. Through this permitting process, including an annual permit review, the BAAQMD

monitors generation of stationary emissions and uses this information in developing its air quality plans. Any sources of stationary emissions constructed as part of the Project would be subject to the BAAQMD Rules and Regulations. Both federal and State ozone plans rely heavily upon stationary source control measures set forth in BAAQMD's Rules and Regulations.

With respect to construction activities associated with Project development, applicable BAAQMD regulations would relate to portable equipment (e.g., concrete batch plants, and gasoline- or diesel-powered engines used for power generation, pumps, compressors, pile drivers, and cranes), architectural coatings, and paving materials. Equipment used during Project construction would be subject to the requirements of BAAQMD Regulation 2 (Permits), Rule 1 (General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and BAAQMD Regulation 8 (Organic Compounds), Rule 15 (Emulsified and Liquid Asphalts).

BAAQMD adopted updated *CEQA Air Quality Guidelines* (Guidelines), including new thresholds of significance in June 2010, and revised them in May 2011 (BAAQMD, 2017a). The Guidelines advise lead agencies on how to evaluate potential air quality impacts, including establishing quantitative and qualitative thresholds of significance. The thresholds BAAQMD adopted were called into question by a minute order issued January 9, 2012 in *California Building Industry Association v. BAAQMD*, Alameda Superior Court Case No. RGI0548693. The minute order states that "The Court finds [BAAQMD's adoption of thresholds] is a CEQA Project, the court makes no further findings or rulings." The claims made in the case concerned the CEQA impacts of adopting the thresholds, particularly, how the thresholds would affect land use development patterns. Petitioners argued that the thresholds for Health Risk Assessments encompassed issues not addressed by CEQA. As a result, the BAAQMD resolutions adopting and revising the significance thresholds in 2011 were set aside by a judicial writ of mandate on March 5, 2012. In May of 2012, BAAQMD updated its CEQA Air Quality Guidelines to continue to provide direction on recommended analysis methodologies, but without recommended quantitative significance thresholds. On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA thresholds. *California Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.*, Case No. A135335 & A136212 (Court of Appeal, First District, August 13, 2013).

The California Supreme Court granted review of the appeal, but only to address whether or not CEQA requires an analysis of how existing environmental conditions will impact future residents or users of a proposed project and did not review or address the adequacy of specific thresholds adopted by the BAAQMD in 2011. On December 17, 2015, the Supreme Court concluded 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, reversing the Court of Appeal's judgment on that issue. The case was remanded back to the Court of Appeal on August 12, 2016 which concluded that "the challenged thresholds are not invalid on their face, but may not be used for the primary purpose envisioned by District, namely, to routinely assess the effect of

existing environmental conditions on future users or occupants of a project” (CBIA v. BAAQMD [2016] 1 Cal.App.5th 715).

In May 2017, the BAAQMD released an updated version of its *CEQA Air Quality Guidelines* which include revisions made to the 2010 Guidelines to address the California Supreme Court’s 2015 opinion in *CBIA v. BAAQMD*. The air quality impact analysis in this EIR uses the adopted thresholds and methodologies from the 2017 BAAQMD *CEQA Air Quality Guidelines* to determine the potential impacts of the Project on the environment. Per the published appellate decision in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 387, the CEQA does not require an analysis of the existing air pollution sources on a project’s future users or future receptors. Contra Costa County General Plan

The Contra Costa County General Plan (“General Plan”) Conservation Element (Contra Costa, 2010) contains an Air Quality Resources discussion (Section 8.14) that identifies general goals and policies designed to address air pollution. While the goals and policies apply to development projects throughout the unincorporated County, the majority of them are not directly applicable to the Project because they tend to focus on improvements to the transportation system, reducing long distance commuting, encouraging and supporting non-auto transportation, and reducing future land use conflicts related to air pollution. However, policies directly applicable to the CEQA review of projects are summarized as follows:

- *Policy 8-103*: Mitigation measures are to be imposed when there is a finding that air quality would be significantly affected.
- *Policy 8-104*: Proposed projects should be reviewed for potential to generate hazardous air pollutants.
- *Policy 8-105*: Land uses which are sensitive to air pollution shall be separated from sources of air pollution.
- *Policy 8-106*: Air quality planning efforts shall be coordinated with other local, regional, and State agencies.
- *Policy 8-107*: New housing in infill and peripheral areas which are adjacent to existing residential development shall be encouraged.

Contra Costa County Climate Action Plan

On December 15, 2015, the CCCCAP was approved by the Board of Supervisors. The CCCCAP outlines how the County will achieve the 15 percent below baseline levels by 2020, as per the AB 32 GHG emissions reduction target. Additionally, the CCCCAP aims to support other public health, energy efficiency, water conservation, and air quality goals identified in the County’s General Plan and other policy documents. The CCCCAP is a tiered document, which relies on the CEQA and BAAQMD’s guidelines for air quality standards, and GHG reduction strategies.

4.2.4 Significance Criteria

Consistent with Appendix G of the CEQA *Guidelines*, the impact of the project on air quality would be considered significant if it would:

- a) Conflict with or obstruct implementation of the applicable air quality plan;
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- d) Expose sensitive receptors to substantial pollutant concentrations; or
- e) Create objectionable odors affecting a substantial number of people.

Analysis Methodology

The thresholds for air quality are based upon the BAAQMD 2017 *CEQA Guidelines and Thresholds*, which does not address outdated references, links, analytical methodologies or other technical information that may be in the Guidelines or the BAAQMD's 2009 *Justification Report* (BAAQMD, 2009), an associated document. The BAAQMD is currently working to update any outdated information in the Guidelines.

Criteria Pollutant Emissions

The potential for Project operations to result in a cumulatively considerable net increase in criteria air pollutants that may contribute to an existing or projected air quality violation is based on the state and federal Clean Air Act emissions limits for stationary sources. To ensure that new stationary sources do not cause or contribute to a violation of a state air quality standard, BAAQMD Regulation 2, Rule 2 requires that any new source that emits criteria air pollutants above specified emissions limits (54 pounds per day or 10 tons per year for ozone precursors ROG and NO_x) must offset those emissions (BAAQMD, 2009). To ensure that new stationary sources are consistent with attainment of federal air quality standards, the federal New Source Review program enforces emissions limits for PM₁₀ and PM_{2.5} of 15 tons per year (82 pounds per day) and 10 tons per year (54 pounds per day), respectively. These emissions limits represent levels below which a new source is not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants.

Potential impacts are assessed by modeling the estimated daily emissions generated by Project construction and Project operations using the CalEEMod land use emissions model version 2016.3.1. Project emissions are then compared to the significance criteria in the BAAQMD 2017 *CEQA Air Quality Guidelines*, determining whether the Project would:

- Result in total construction emissions of ROG, NO_x, or PM_{2.5} (exhaust) of 10 tons per year or greater or 54 pounds per day or greater.

- Exceed a construction emission threshold for PM₁₀ (exhaust) of 15 tons per year or greater, or 82 pounds per day or greater.
- Result in total operational emissions of ROG, NO_x, or PM_{2.5} of 10 tons per year or greater or 54 pounds per day or greater.
- Exceed an operational emission threshold for PM₁₀ of 15 tons per year or greater or 82 pounds per day.
- Result in CO concentrations of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average) as estimated by roadway vehicle volumes exceeding 44,000 vehicles per hour at any intersection.

For PM₁₀ and PM_{2.5} that would be part of fugitive dust generated during construction, the BAAQMD Guidelines specify compliance with Best Management Practices as the threshold.

Per the BAAQMD Guidelines, a project's contribution to cumulative impacts for criteria pollutants is considered significant if the project's impact individually would be significant (i.e., if it exceeds the BAAQMD's quantitative thresholds).

Health Risk Impacts of the Project

The results of the Project-level health risk analysis contained herein are based on a Health Risk Assessment (HRA) conducted to address exposure impacts that would result from construction or operational activities under the Project and presented in Appendix B to this EIR. This analysis assesses the increased cancer risk and localized PM_{2.5} concentrations attributable to the proposed Project at off-site receptors. The proposed Project would be considered to have a significant health risk impact if Project emissions would result in exposure of persons to substantial levels of TAC resulting in (a) an incremental cancer risk level greater than 10 in one million, (b) a noncancerous risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average PM_{2.5} of greater than 0.3 micrograms per cubic meter (µg/m³).

While the BAAQMD 2011 *CEQA Air Quality Guidelines* provided methodology for analysis of potential adverse effects of a project on the environment, potential effects of the environment on a project are generally not required to be analyzed or mitigated under CEQA (*CBIA v. BAAQMD* [2016] 1 Cal.App.5th 715).

Cumulative Criteria Pollutant Emissions

Regarding the assessment of cumulative impacts, a project's contribution to cumulative impacts to regional air quality from emission of criteria air pollutants would be considered cumulatively considerable and significant if the impact individually would be significant (i.e., exceeds the BAAQMD's quantitative thresholds). The BAAQMD's quantitative thresholds are based on the trigger levels for the federal New Source Review Program and BAAQMD's Regulation 2, Rule 2 for new or modified sources. These New Source Review Program rules provide that any new source that will emit pollutants above the levels stated must impose "Best Available Control Technology" (BACT). New Source Review increments were established within federal Clean Air Act programs, aimed at regulating stationary sources of air pollution, and are keyed quantitatively

to an area's air quality designations. For a project or plan that would not result in a significant impact individually, the project or plan contribution to any cumulative impact would be considered less than significant if the project or plan is consistent with the local General Plan and the local general plan is consistent with the applicable regional air quality plan. In this case, the applicable regional air quality plan is the BAAQMD's *Bay Area 2017 Clean Air Plan*.

Cumulative Risk and Hazard Impacts

Cumulative air quality impacts of the Project from exposure to TACs or PM_{2.5} are assessed by evaluating whether the Project's contribution to cancer risk or localized PM_{2.5} concentrations would be cumulatively considerable. For increased cancer risk, a cumulatively considerable contribution would be an incremental increase of 10 in one million. Additionally, a cumulative cancer risk to off-site receptors is estimated by combining the increased risk of the Project with those estimated for other projects proposed within 1,000 feet, as available, and comparing those risks to the 100 in one million cumulative cancer risk developed by the BAAQMD.

For localized PM_{2.5} concentrations, a cumulatively considerable contribution would be an incremental concentration of 0.8 ug/m³.

Odor Impacts

For odors, BAAQMD recommends that potential impacts be evaluated if a potential source of objectionable odors is proposed at a location near existing sensitive receptors or if sensitive receptors are proposed to be located near an existing source of objectionable odors. The first step in assessing potential odor impacts is to gather and disclose applicable information regarding the characteristics of the buffer zone between the sensitive receptor(s) and the odor source(s), local meteorological conditions, and the nature of the odor source. Consideration of such parameters assists in evaluating the potential for odor impacts as a result of the proposed Project. The impact of an existing odor source on surrounding sensitive receptors should also be considered. Lead agencies may identify the number of confirmed complaints received for that specific odor source. BAAQMD recommends comparing the odor parameters (i.e., distance and wind direction) associated with the odor complaints that have been filed with those of the proposed Project (BAAQMD, 2017a).

4.2.5 Impact Analysis

Air Quality Plan

Impact AIR-1: The Project could conflict with or obstruct implementation of the applicable air quality plan. (Criterion a) (*Less than Significant, No Mitigation Required*)

The most recently adopted air quality plan in the San Francisco Bay Area Air Basin is the BAAQMD's *Bay Area 2017 Clean Air Plan* (2017 CAP; BAAQMD, 2017c). The 2017 CAP is an integrated, multi-pollutant air quality plan created to address the air quality and climate protection. The 2017 CAP was also produced to comply with State air quality planning requirements as codified in the California Health & Safety Code, to update the most recent ozone

plan, the 2010 Clean Air Plan. The 2017 CAP presents a strategy for how the San Francisco Bay Area will achieve compliance with the State eight-hour and one-hour ozone standards as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary source control measures to be implemented through BAAQMD regulations; mobile source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the MTC, local governments, transit agencies, and others. The 2017 CAP also represents the Bay Area's most recent triennial assessment of the region's strategy to attain the State one-hour ozone standard.

BAAQMD guidance states that "if approval of a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation, the project would be considered consistent with the 2017 CAP." As indicated in the discussion below (**Impact AIR-2**), the Project would not result in significant and unavoidable air quality impacts, because the Project would have a less-than-significant construction impact on air quality after implementation of feasible mitigation measures, as well as a less-than-significant operational impact on air quality. Consequently, based on BAAQMD guidance, the Project is also considered consistent with the 2017 CAP. This would be a less-than-significant impact.

Mitigation: None required.

Criteria Air Pollutants

Impact AIR-2: Emissions from construction and operation of the Project would result in increased emissions of criteria air pollutants and contribute to existing air quality violations (Criteria b and c) (Potentially Significant prior to Mitigation)

Construction

Construction of the Project would result in emissions of criteria pollutants from the use of heavy-duty construction equipment, haul truck trips, and vehicle trips generated from construction workers traveling to and from the site. In addition, fugitive dust PM₁₀ emissions would result from excavation, trenching, and other construction activities.

Construction-related emissions from the Project were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2, based on the anticipated construction of 144 single-family detached homes and a conservative estimate of the Project footprint. Off-site improvements to Palms Drive and the extension of a water line through Central Avenue, under Pacheco Creek and the neighboring Conco property, were also included, along with an assumption that on-site earthwork would result in an overall balanced design which would not require any import or export of material. The Project site is currently undeveloped; therefore, no demolition activities would be necessary during construction of the Project. Construction was assumed to occur over an approximately three-year period beginning in late 2018, and it was

conservatively assumed for the purposes of a thorough analysis of air quality impacts that construction of all Project elements would occur in a single phase with overlapping components of building construction, paving, and architectural coating. All model inputs and outputs are provided in Appendix B. The approximately three-year construction period is now anticipated to start with grading in late 2021 and house completion in 2024. Thus, this analysis represents a conservative analysis (showing greater emissions than actually would occur), based on a nearer-term construction period and prior emissions factors. As shown in **Table 4.2-4**, estimated peak daily construction-related exhaust emissions would not exceed the thresholds for ROG, NO_x, PM₁₀ or PM_{2.5}. Because estimated average daily construction emissions are less than the thresholds for NO_x, ROG, PM₁₀ and PM_{2.5} the impact of exhaust emissions is less than significant.

**TABLE 4.2-4
 AVERAGE DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS
 (POUNDS PER DAY) WITHOUT MITIGATION**

	ROG	NO _x	Exhaust PM ₁₀	Exhaust PM _{2.5}
Project Construction Emissions	13.38	21.85	0.75	0.69
<i>BAAQMD Threshold for Significant Construction Impacts</i>	54	54	82	54
Potential Significant Impact?	No	No	No	No

SOURCE: ESA, Draft EIR Appendix B

Construction-related effects from fugitive dust from the proposed Project would be greatest during the site preparation and grading phases due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions in the area of the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM₁₀ emissions would vary from day to day, depending on the nature and magnitude of construction activity (amount of equipment operating), local weather conditions (such as wind speed), and characteristics such as soil moisture and silt content of the soil. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

For mitigation of fugitive dust emissions, the BAAQMD recommends implementing best management practices (BMPs), as a pragmatic and effective approach to controlling fugitive dust emissions (BAAQMD, 2017a). The BAAQMD notes that individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent. The BAAQMD considers any project’s construction-related impacts to be less than significant if the required dust-control measures are implemented. Without these measures, the impact is generally considered to be significant, particularly if sensitive land uses are located in the Project vicinity. There are a number of residences located along the northern border of the Project site that would be impacted by fugitive dust generated by construction activities. Therefore, implementation of these BMPs would ensure the Project’s fugitive dust emissions remained below a level of

significance. These BMPs are included as **Mitigation Measure AIR-1**, which would ensure the Project's impact would be less than significant with mitigation (see BAAQMD, 2017a, Table 2-1).

Mitigation Measure AIR-1: Best Management Practices for Controlling Particulate Emissions. The Project applicant shall implement the following BAAQMD Best Management Practices for particulate control. These measures will reduce particulate emissions primarily during soil movement, grading and demolition activities but also during vehicle and equipment movement on unpaved areas.

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, § 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in accordance with manufacturer's specifications prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Operation

Operational emissions of criteria pollutants were estimated using the CalEEMod version 2016.3.2 emissions inventory model (**Table 4.2-5**). All model inputs and outputs are provided in Appendix B.

Vehicle emissions from residential traffic associated with commuting and other daily travel would be the primary source of Project operational emissions. Traffic volumes used to estimate vehicle-related emissions were derived from the traffic study prepared for the Project (as discussed and presented in Section 4.13, *Transportation*). Project operations would

conservatively generate an estimated 1,371 daily vehicle trips.³ In addition to exhaust emissions, vehicles would also generate PM₁₀ and PM_{2.5} from entrained road dust and tire and brake wear.

Emissions would also be generated by on-site natural gas combustion, operation of landscape maintenance equipment, and maintenance application of paint and other architectural coatings.

As shown in Table 4.2-5, estimated operational emissions would not exceed the thresholds for ROG, NO_x, PM₁₀ or PM_{2.5}. Because average daily operational emissions are less than the thresholds for NO_x, ROG, PM₁₀ and PM_{2.5} this impact is less than significant.

**TABLE 4.2-5
UNMITIGATED AVERAGE OPERATIONAL CRITERIA POLLUTANT EMISSIONS**

Air Pollutant	Estimated Emissions (lbs/day)			
	ROG	NO _x	Exhaust PM ₁₀	Exhaust PM _{2.5}
Area Sources ^a	35.45	0.11	0.05	0.05
Energy Sources ^a	0.16	1.53	0.11	0.11
Mobile Sources ^a	1.97	9.04	0.05	0.05
Total	37.64	10.68	0.22	0.22
<i>BAAQMD Threshold for Significant Operations Impacts^b</i>	54	54	82	54
Significant Impact?	No	No	No	No

NOTES:

- a Mobile sources are motor vehicles and trucks. Area sources include landscape maintenance (equipment used for these activities such as gasoline-powered lawnmowers and blowers), maintenance application of paints and other interior and exterior surface coatings, and use of consumer products that result in emissions of ROG. Energy sources include natural gas combustion for space and water heating.
- b Operational thresholds are from Table 2-1 of BAAQMD's 2017 CEQA Air Quality Guidelines (BAAQMD, 2017a).

SOURCE: ESA, Draft EIR Appendix B

Additionally, emissions from traffic at congested intersections can, under certain circumstances, cause a localized build-up of CO concentrations. The BAAQMD has established a screening methodology that provides a conservative indication of whether the implementation of a proposed project would result in significant CO emissions. According to the BAAQMD's CEQA Guidelines, a proposed project would result in a less-than significant impact due to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.
- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

³ Project vehicle trip generation estimated in the September 2020 traffic study, and shown in Table 4.13-1 in this section of the Draft EIR, totaled 1,360 daily vehicle trips, 11 fewer than the 1,371 daily vehicle trips factored into this air quality analysis, the resulting emissions of which are negligibly overstated.

- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

The proposed Project would not conflict with the Contra Costa County Transportation Authority's (CCTA) program for designated roads or highways, a regional transportation plan, or other agency plans (see Section 4.13, *Transportation*). Additionally, traffic generated by the proposed Project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour. The study intersection volumes [Pacheco Blvd / Arthur Rd] would experience fewer than 107 AM and 143 PM vehicles per peak hour under existing plus Project and cumulative scenarios. Also, the Project traffic would not increase traffic volumes at affected intersections where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Because each of the three criteria would be met, Project-related traffic would not lead to violations of the CO standards; therefore, impacts related to CO would be considered less than significant.

Summary

As shown in Table 4.2-4, construction emissions associated with the Project would be less than significant for ROG, NO_x and PM_{2.5} and PM₁₀ exhaust emissions. The BAAQMD requires implementation of Best Management Practices to reduce construction dust-related impacts to a less than-significant level. Implementation of **Mitigation Measure AIR-1**, would reduce impacts to less than significant levels. The results shown in Table 4.2-5 indicates that the Project would not exceed the BAAQMD operational thresholds for ROG, NO_x, PM₁₀ or PM_{2.5} and, thus, would have a less than significant effect on regional air quality. Additionally, elevated concentrations of localized CO from congested traffic would not cause a violation of ambient air quality standards; therefore, impacts would be less than significant.

Mitigation Measure: Implement Mitigation Measure AIR-1 (see under Impact AIR-1).

Significance after Mitigation: Less Than Significant.

Toxic Air Contaminants

Impact AIR-3: Construction of the Project could increase emissions of toxic air contaminants (TACs), and increase health risks for nearby residents, and Project operations could expose sensitive receptors to substantial pollutant concentrations including toxic air contaminants and increase health risks for existing and proposed residents. (Criterion d) (Potentially Significant prior to Mitigation)

The proposed Project would constitute a new, temporary emission source of DPM and PM_{2.5} due to its construction activities. Studies have demonstrated that DPM from diesel-fueled engines is a

human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. The proposed Project would also locate sensitive receptors near existing permitted stationary sources. To assess risks associated with TACs that would be generated by construction equipment and stationary sources, a Health Risk Assessment (Appendix C to this Draft EIR) was prepared for the proposed Project.

Health Impacts on Existing Residences

As stated in the Approach to Analysis, based on BAAQMD-developed thresholds, the proposed Project would be considered to have a significant health risk impact if Project emissions would result in exposure of persons to substantial levels of TACs resulting in (a) an incremental cancer risk level greater than 10 in one million, (b) a noncancerous risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average PM_{2.5} of greater than 0.3 micrograms per cubic meter (µg/m³).

The following describes the HRA results associated with existing receptors due to unmitigated proposed Project construction activities. The maximum cancer risk from unmitigated proposed Project construction emissions for a residential-adult receptor would be 2.6 per million and for a residential-child receptor would be 47.2 per million. As shown in **Table 4.2-6**, the total maximum cancer risk from unmitigated proposed Project construction emissions for a residential receptor would be 47.2 per million.⁴ The maximum concentrations would occur at a residential receptor (also known as the maximum exposed individual or MEI) along Central Avenue to the north of the Project site (shown in **Figure A-1** within **Appendix C**). Thus, the cancer risk due to construction activities are above the BAAQMD threshold of 10 per million and would be potentially significant.

**TABLE 4.2-6
ESTIMATED HEALTH IMPACTS FOR EXISTING RECEPTORS WITHOUT MITIGATION**

	Increased Cancer Risk (adult/child)	Hazard Impact (acute/chronic)	Exhaust PM _{2.5}
Unmitigated Project Construction	2.63/47.2	0.22/0.03	0.17
Total Project	2.63/47.2	0.22/0.03	0.17
<i>BAAQMD Construction Threshold</i>	10	1.0	0.3
Potential Significant Impact?	Yes	No	No

NOTE: **Bolded** figures indicate values exceed significance threshold.

SOURCE: RCH, Draft EIR Appendices B and C

Therefore, the proposed Project would be required to implement **Mitigation Measure AIR-2**; BAAQMD’s *Enhanced Exhaust Emission Reduction Measures*.

⁴ This theoretical individual would be born on construction year 2 and subsequently be exposed to the construction period. Individuals born on construction year 1 or after construction year 2 would be exposed to shorter construction duration and/or less emissions and thus, result in a lower risk and health impacts.

Mitigation Measure AIR-2: Enhanced Exhaust Emissions Reduction Measures. The applicant shall implement the following measures during construction to further reduce construction-related exhaust emissions:

All off-road equipment greater than 25 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall meet the following requirements:

1. Where access to alternative sources of power are available, portable diesel engines shall be prohibited; and
2. All off-road equipment shall have:
 - a. Engines that meet or exceed either USEPA or CARB Tier 3 off-road emission standards, and
 - b. Engines that are retrofitted with a CARB Level 3 Verified Diesel Emissions Control Strategy. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such are available.

As shown in **Table 4.2-7**, with the implementation of **Mitigation Measure AIR-2**, the maximum cancer risk from proposed Project construction for a residential-adult receptor would be 0.4 per million and for a residential-child receptor would be 7.1 per million. The total maximum cancer risk from mitigated proposed Project construction emissions for a residential receptor would be 7.1 per million. Thus, the cancer risk due to construction activities are below the BAAQMD threshold of 10 per million and would be less than significant with mitigation.

**TABLE 4.2-7
 ESTIMATED HEALTH IMPACTS FOR EXISTING RECEPTORS WITH MITIGATION**

	Increased Cancer Risk (adult/child)	Hazard Impact (acute/chronic)	Exhaust PM_{2.5}
Mitigated Project Construction	0.39/7.07	0.03/0.01	0.03
Total Project	0.39/7.07	0.03/0.01	0.03
<i>BAAQMD Construction Threshold</i>	10	1.0	0.3
Potential Significant Impact?	No	No	No

NOTE: **Bolded** figures indicate values exceed significance threshold.

SOURCE: RCH, Appendix C

CalEEMod results (see **Appendix B** to this Draft EIR) estimated total proposed Project exhaust PM_{2.5} emissions (assumed to be DPM) for the off-road construction equipment. The total unmitigated exhaust PM_{2.5} emissions would be approximately 0.70 tons over the construction period. The total mitigated exhaust PM_{2.5} emissions would be approximately 0.10 over the construction period, which is an 85 percent control efficiency. Impacts from Project operation are expected to be minimal due to the use of motor vehicles, which emit only negligible levels of TAC.

Non-Cancer Health Hazard Associated with Existing Receptors

Both acute (short-term) and chronic (long-term) adverse health impacts unrelated to cancer are measured against a hazard index (HI), which is defined as the ratio of the predicted incremental DPM exposure concentration from the proposed Project to a reference exposure level (REL) that could cause adverse health effects. The REL are published by OEHHA based on epidemiological research. The ratio (referred to as the Hazard Quotient [HQ]) of each non-carcinogenic substance that affects a certain organ system is added to produce an overall HI for that organ system. The overall HI is calculated for each organ system. The impact is considered to be significant if the overall HI for the highest-impacted organ system is greater than 1.0.

There is no acute REL for DPM. However, diesel exhaust does contain acrolein, formaldehyde and other compounds, which do have an acute REL. Based on DPM speciation data, acrolein emissions are approximately 1.3 percent of the total DPM emissions (CARB, 2017). The acute REL for acrolein was established by the California OEHHA as $2.5 \mu\text{g}/\text{m}^3$ (OEHHA, 2016). In total, acrolein emissions represent over 90 percent of the acute health impacts from diesel engines.

The unmitigated acute HI would be 0.22, based on a Project-related maximum 1-hour diesel concentration of $43.0 \mu\text{g}/\text{m}^3$, respectively (per dispersion modeling analysis) and acrolein speciation of 1.3 percent for DPM or $43.0 \mu\text{g}/\text{m}^3 / 2.5 \mu\text{g}/\text{m}^3$ times 1.3 percent, which is 0.22. The mitigated acute HI would be 0.03. The acute HI would be below the Project-level threshold of 1 and the impact of the proposed Project would therefore be less than significant.

The chronic reference exposure level for DPM was established by the California OEHHA as $5 \mu\text{g}/\text{m}^3$ (OEHHA, 2016). Thus, the proposed Project-related annual concentration of DPM cannot exceed $5.0 \mu\text{g}/\text{m}^3$; resulting in a chronic acute HI of greater than 1.0 (i.e., DPM annual concentration/ $5.0 \mu\text{g}/\text{m}^3$).

The unmitigated chronic HI would be 0.03, based on a proposed Project-related maximum annual diesel concentration of $0.17 \mu\text{g}/\text{m}^3$ (per dispersion modeling analysis) or $0.17 \mu\text{g}/\text{m}^3 / 5.0 \mu\text{g}/\text{m}^3$, which is 0.03. The mitigated chronic HI would be less than 0.01. The chronic HI would be below the Project-level threshold of 1 and the impact of the proposed Project would therefore be less than significant.

PM_{2.5} Concentration

The proposed Project's unmitigated annual PM_{2.5} concentration from construction activities would be $0.17 \mu\text{g}/\text{m}^3$. With implementation of **Mitigation Measure AIR-2**, the annual PM_{2.5} concentration would be reduced to $0.03 \mu\text{g}/\text{m}^3$. Thus, the annual PM_{2.5} concentration due to Project construction would be below the BAAQMD threshold of $0.3 \mu\text{g}/\text{m}^3$ and would be considered less than significant (see **Tables 4.2-6 and 4.2-7**).

Impact AIR-4: The Project would locate sensitive receptors near existing sources of objectionable odors. (Criterion e) (*Less than Significant, No Mitigation Required*)

Typical odor sources of concern include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing facilities, fiberglass manufacturing facilities, auto body shops, rendering plants, and coffee roasting facilities. None of these sources are proposed as part of the Project, and the Project would have a less than significant impact with respect to generating odor.

During construction, diesel exhaust from construction equipment would generate some odors. However, construction-related odors would be temporary and would not persist upon Project completion. Therefore, odor impacts from operation and construction would be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact C-AIR-1: The Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative regional air quality impacts. (Criteria b and c) (*Potentially Significant prior to Mitigation*)

Regional air quality impacts are by their nature cumulative impacts. Emissions from past, present, and future projects contribute to adverse regional air quality impacts on a cumulative basis. According to the BAAQMD, in the case of criteria pollutants, no single project would be sufficient in size, by itself, to result in emissions that are considered significant (BAAQMD, 2017a). Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. As such, significance thresholds for regional air quality impacts are designed to establish cumulatively considerable contributions. Therefore, if a project exceeds the identified significance thresholds for criteria pollutants, its emissions would be cumulatively considerable and would result in significant adverse impacts to the region's existing air quality conditions. Conversely, if a project does not exceed the identified significance thresholds for criteria pollutants, its emissions would not be cumulatively considerable.

As described above under Impact AIR-2, emissions of oxides of ROG, NO_x, PM₁₀ and PM_{2.5} due to the construction and operation of the proposed Project would be below BAAQMD CEQA thresholds of significance, with implementation of **Mitigation Measure AIR-1**. Additionally, elevated concentrations of localized CO from congested traffic would not cause a violation of ambient air quality standards per the BAAQMD threshold of significance and screening methodology.

These thresholds are based on the federal Clean Air Act New Source Review Program, under which the BAAQMD requires that new stationary sources of pollutants must offset a portion of their emissions above a specified threshold, to ensure that these new sources do not cause or contribute to a violation of an air quality standard. Thus, the BAAQMD CEQA thresholds for regional criteria pollutants represent emissions levels at which new sources would not contribute to an air quality violation or result in a considerable net increase in criteria air pollutants, within

the context of existing and future cumulative air quality conditions. Consequently, although the region is in non-attainment for pollutants including ozone, PM₁₀ and PM_{2.5}, because the Project would not exceed the applicable CEQA thresholds with respect to criteria pollutants, according to the BAAQMD, the Project would not make a considerable contribution to cumulative air quality impacts with the implementation of mitigation, and the cumulative impact of the Project would be less than significant.

Mitigation Measure: Implement Mitigation Measure AIR-1.

Significance after Mitigation: Less than Significant.

Impact C-AIR-2: The Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative health risk impacts on sensitive receptors. (Criterion d) (Less than Significant, No Mitigation Required)

Table 4.0-1 identifies cumulative projects and plans within the Contra Costa County. The BAAQMD considers the relevant zone of influence for an assessment of air quality health risks to be within 1,000 feet of a project site. Of the cumulative projects and plans identified in Table 4.0-1, some would be located within 1,000 feet of the Project site.

**TABLE 4.2-8
ESTIMATED CUMULATIVE HEALTH IMPACTS FOR EXISTING RECEPTORS**

Source	Cancer Risk (in one million)	Hazard Impact (acute/chronic)	PM _{2.5} Concentration (µg/m ³)
Interstate 680	Beyond 1,000 feet		
Rail Activities	Beyond 1,000 feet		
Central Contra Costa Sanitary District ^a	10.0	0.003	0.001
Mitigated Proposed Project Construction ^b	7.07	0.03	0.03
Palms 10 Subdivision Construction ^c	N/A	N/A	N/A
Total Impacts	17.07	.033	0.031
BAAQMD Significance Threshold	100	10	0.8
Potentially Significant Impact?	No	No	No

NOTES: **Bolded** figures indicate values exceed significance threshold

- ^a Cancer Risk, Hazard Impact, and PM_{2.5} Concentration values for permitted stationary sources are based on the BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*, dated May 30, 2012. Cancer Risk was adjusted by a factor of 2.6 to account for the Revised OEHHA Guidance Manual, See Appendix B (Attachment A) for details.
- ^b Cancer Risk, Hazard Impact, and PM_{2.5} Concentration values are based on AERMOD dispersion modeling analysis, See Appendix B (Attachment A) for details.
- ^c The applicant is the developer for the Palms 10 Subdivision Project and can confirm that the two projects would not occur simultaneously, but would be sequenced consecutively.

SOURCE: Draft EIR Appendix C

As discussed under Impact AIR-3, the maximally exposed sensitive receptor with respect to the Project site are residences located north along Central Avenue.

As shown in Table 4.2-8, the conservative maximum cancer risk from proposed Project construction and other existing and foreseeable pollutant sources would, with **Mitigation Measure AIR-2** for a residential-child receptor, be 17.07 per million, with a Hazard Impact of 0.033 and a PM_{2.5} concentration of 0.031 µg/m³. Each of these very conservative estimates are well below the corresponding BAAQMD cumulative significance threshold.

Overall, the Project, as mitigated, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed Project would have a cumulatively considerably contribution.

Mitigation: None required.

References – Air Quality

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4.3 Biological Resources

4.3.1 Introduction

This section assesses the potential for the Project to result in significant adverse impacts to biological resources that occur or have potential to occur on the Project site. This section identifies the Project study area, defined as the Project site and surrounding habitat in the immediate vicinity that may support sensitive or regulated biological resources, generally within 0.5-mile of the Project site boundaries. These resources are described in the *Environmental Setting* and include vegetation communities and associated wildlife habitat, wetlands and other water bodies, and special-status plants and animals (federal or state listed as endangered, threatened, proposed, and candidate species, and state or local species of concern). The section also presents regulations and guidelines relevant to analysis of potential biological resources impacts associated with the proposed Project.

The information on natural communities, plant and animal species, and sensitive biological resources used in the preparation of this section was obtained from: the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB; CDFW, 2021), the California Native Plant Society (CNPS) Electronic Inventory (CNPS, 2021), the U.S. Fish and Wildlife Service (USFWS; USFWS, 2021), standard biological literature, and birding community observations (eBird, 2020). A floristic analysis of the Project site was performed by Wood Biological Consulting in 2007 (WBC, 2007b) and is referenced throughout this section. A rare plant survey of the Project site was also performed by ESA in 2008 (ESA, 2008). In addition, on June 15, 2017, ESA staff conducted reconnaissance botanical and wildlife surveys of the Project site to characterize existing conditions, assess habitat quality, and assess the availability of habitat for special-status species and potential presence of sensitive natural communities. Moore Biological Consultants performed biological surveys of the site in November and December 2020, including an updated delineation of potentially jurisdictional Waters of the U.S.

4.3.2 Environmental Setting

Regional Setting

The Project site is located in the San Francisco Bay Area-Delta region, which hosts a diverse variety of natural communities ranging from the open waters of San Francisco Bay and the Delta to salt and brackish marshes to chaparral and oak woodlands. The climate is Mediterranean in nature, with relatively mild, wet winters and warm, dry summers. The high diversity of vegetation and wildlife found in the region is a result of soils, topography, and microclimate diversity that promotes relatively high levels of endemism.¹

The Project site encompasses approximately 78 acres of undeveloped land located northeast of I-680 in unincorporated Contra Costa County. The site is situated among gently rolling hills

¹ Endemism refers to the degree to which organisms or taxa are restricted to a geographical region or locality and are thus individually characterized as endemic to that area.

approximately two miles south of the tidal brackish marshes that border the southern shores of Suisun Bay. To the northwest, the hills continue along the southern shore of the Carquinez Strait. Topography of the site slopes toward Pacheco Creek which borders the Project site to the east. Pacheco Creek receives flows from Walnut Creek and Grayson Creek approximately 0.5-mile east of the site and subsequently flows north into Suisun Bay. Pacheco Creek also flows through the southern part of the site.² A segment of the Contra Costa Canal borders the Project site to the west.

Adjacent properties to the west and northwest of the site support a mixture of residential, commercial, and light industrial uses. Lands to the northeast, east and south are largely undeveloped properties zoned and partly used for heavy industrial purposes. Burlington Northern Santa Fe Railroad (BNSF) tracks border the southeastern Project site boundary. The site itself consists of nearly level to gently sloping land on the east side, rising sharply to the hill summit to the west. Elevations range from approximately 4 feet to 283 feet above mean sea level (msl).

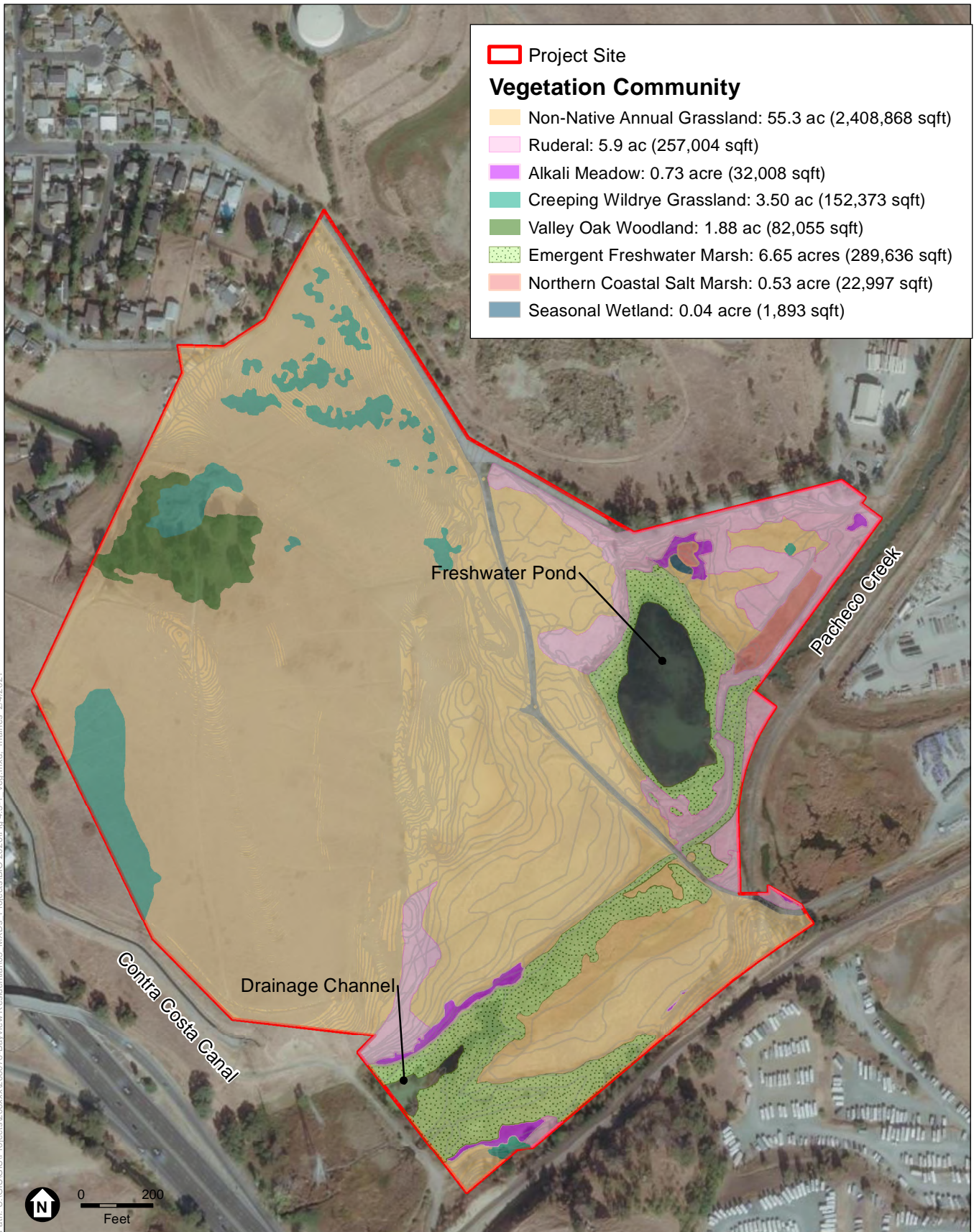
Vegetation Communities and Wildlife Habitats

The Project site supports both terrestrial and aquatic habitats. The predominant vegetation communities include non-native annual grassland, ruderal grassland, alkali meadow, creeping wildrye grassland, valley oak woodland, emergent freshwater marsh and muted northern coastal salt marsh (i.e., brackish marsh). The following descriptions and referenced acreages for each vegetation community are derived from a floristic analysis prepared by Wood Biological Consulting (WBC, 2007b), which is incorporated by reference and confirmed by ESA during the June 2017 reconnaissance survey, and information from the Moore (2021) surveys. Changes to the species composition of these communities since the 2007 survey are reflected in the descriptions below. **Figure 4.3-1** depicts the vegetation communities of the Project site as identified in the floristic analysis, and as described below (WBC, 2007b).

Non-Native Annual Grassland

Non-native annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California (Holland, 1986). It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub and woodland as a result of human disturbance. Scattered native wildflowers and grasses, representing remnants of the original vegetation may also be common. Within the Project site, non-native annual grassland is the dominant vegetation community covering approximately 55.3 acres, including most of the hill and flat portions of the site abutting the various wetland plant communities, described below (Figure 4.3-1). Where site topography is more flat and soils

2 Due to channel realignments and flood control improvements, the nomenclature of the creeks that converge near the southeast part of the site is complicated and seems to be variably interpreted on USGS and Flood Control Maps. “Pacheco Creek” is the drainage that flows through the south part of the site as depicted on historical USGS maps (see 1940 USGS map). Walnut and Grayson Creeks are clearly depicted at two creeks southeast of the site that converge near the southeast part of the site. A third blue line stream is shown on the 1940 USGS map flowing west to east through the marsh in the south part of the site; this stream is the upstream section of Pacheco Creek.



SOURCE: WBC, 2007b; Nomad Ecology, 2007

Bayview Estates Residential Project

Figure 4.3-1
Vegetation Communities and Wildlife Habitats

have been subject to higher levels of disturbance, non-native annual grassland intergrades with ruderal vegetation. Slender oat, foxtail barley, Italian rye grass, soft chess (*Bromus hordeaceus*) rigput brome (*Bromus diandrus*), big quaking grass (*Briza maxima*), and rattail fescue (*Festuca myuros*) are dominant grass species in these grasslands. Non-native forbs included wild radish (*Raphanus sativus*), shortpod mustard

(*Hirschfeldia incana*), Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), bristly ox-tongue, yellow star-thistle, and long-beaked storksbill (*Erodium botrys*).

Northeast of the freshwater pond, non-native annual grassland occurs on slightly alkaline and more mesic, *i.e.*, moist, soils, where it occurs in smaller patches and intergrades with alkali meadow habitat. These areas are dominated by Italian ryegrass, rabbitsfoot grass (*Polypogon monspeliensis*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), bristly ox-tongue, sourclover (*Melilotus indica*), common vetch (*Vicia sativa*), and five-hook bassia (*Bassia hyssopifolia*). Characteristic wildlife associated with annual grassland habitats of on the site include the western fence lizard (*Sceloporus occidentalis*), black-tailed jackrabbit (*Lepus californicus*), California ground squirrel, western meadowlark (*Sturnella neglecta*), western kingbird (*Tyrannus verticalis*), and mourning dove (*Zenaida macroura*). The grassland habitats on the site are also used by foraging raptors such as red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*).

Ruderal Grassland

The Project site supports approximately 5.9 acres of ruderal vegetation. Ruderal (disturbed and weedy) grassland communities are most prevalent in areas subject to frequent and often severe vegetation and soil disturbances such as disked or fallow fields, construction sites, levees, vehicle parking lots, and railroad or other public utility rights of way. Within the Project site, this habitat type occurs in the relatively flat areas southeast of the hill and north, east and south of the freshwater marsh and pond located in the north east portion of the site (see Figure 4.3-1). As observed during the 2017 reconnaissance visit, recent disking and cattle grazing within the flat portion of the site east of the hill and where much of the housing would be constructed, has expanded this community type from 2007 and minimal live vegetation was observed.

Plants in this community of the Project site include the non-native grasses slender oat (*Avena barbata*), foxtail barley (*Hordeum murinum*) and Italian rye grass (*Festuca perennis*) among large areas of bare soil and patches of the invasive plant species bristly ox-tongue (*Helminthotheca echioides*), yellow star-thistle (*Centaurea solstitialis*) and stinkwort (*Dittrichia graveolens*). Ruderal vegetation provides some foraging and occupational opportunity for disturbance-tolerant birds such as European starling (*Sturnus vulgaris*) and house finch (*Haemorhous mexicanus*), and small mammals like the Norway rat (*Rattus norvegicus*), California ground squirrels (*Spermophilus beecheyi*), and California vole (*Microtus californicus*).

Alkali Meadow

Alkali meadow is typically a sparsely- to densely-vegetated plant community consisting of relatively few low growing plant species. This community most closely corresponds to the saltgrass series described in Sawyer and Keeler-Wolf (1995) and portions of this plant community within the Project site would be classified as a palustrine emergent persistent seasonally flooded wetland, as described by Cowardin, *et al.* (1979). It occurs on fine-textured, more or less permanently moist, alkaline soils.

Within the Project site, approximately 0.73 acre of alkali meadow is located near the margins of the freshwater marsh and pond in the northeast corner of the site and along the margins of the freshwater marsh in the southwest portion of the site (Figure 4.3-1). Plant species within the alkali meadow areas include dispersed patches of saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), alkali weed (*Cressa truxillensis*), and fat hen (*Atriplex prostrata*), interspersed with typical non-native associates bird's foot trefoil (*Lotus corniculatus*), Mediterranean barley and rabbitsfoot grass. The alkali meadow hosts similar wildlife as those in the adjacent non-native annual grasslands described above.

Creeping Wildrye Grassland

Creeping, or valley wildrye grassland typically forms dense patches of the native grass creeping wildrye (*Elymus triticoides*). This plant community generally occurs on moist sites at low elevations, often adjacent to riparian or freshwater marsh habitat (Holland, 1986). Soils are frequently sub-alkaline and are seasonally inundated. In the San Francisco Bay Area, it also commonly occurs on clayey or sandy slopes near seeps or where the soil remains moist through spring and into the summer months. In northern California, creeping wildrye grassland occurs throughout the Central Valley and surrounding foothills, but often in riparian or wetland settings. Therefore, this vegetation type is considered sensitive by CDFW.

Creeping wildrye grassland covers approximately 3.50 acre of the Project site. Dense stands of creeping wildrye occur on the lower west-facing slope of the hill near the highway and below the saddle on a gentle southeast-facing slope near the northern end of the property (Figure 4.3-1). The stands at the western property boundary support between 25 and 40 percent cover of creeping wildrye, with the remainder of the vegetative cover consisting of non-native annual grasses and weeds. The stand at the northern end of the property is very dense, supporting nearly 100 percent cover of creeping wildrye. Wildlife associated with this native grassland are similar to those occurring in the non-native annual grasslands on the site.

Valley Oak Woodland

Valley oak woodland is better characterized as an oak savanna with a grassy understory rather than a closed woodland, with valley oak (*Quercus lobata*) typically the only tree species present. Valley oak is winter deciduous and California's largest broad-leaved tree. Canopy cover of this community is open, seldom exceeding 30 to 40 percent absolute cover. It occurs on deep well-drained soils, usually in valley bottoms but can also occupy non-alluvial settings. Blue oak (*Quercus douglasii*), poison oak (*Toxicodendron diversilobum*), and creeping wildrye are other

native species typically characteristic of this community. Valley oak woodland is considered a sensitive natural community by CDFW.

There is approximately 3.5+/- acres of valley oak woodland positioned mid-slope on the north-facing side of the hill within the Project site (Figure 4.3-1). A few coast live oak (*Quercus agrifolia*) and California bay (*Umbellularia californica*) trees co-occur in the valley oak woodland. Many of these trees have been vandalized and exhibit chainsaw cuts on the west side of their trunks approximately four feet off of the ground. A dense and pronounced stand of poison oak (*Toxicodendron diversilobum*) is a dominant associate in the shrub layer of this woodland throughout the site. Other species observed within this community include poison oak, California pipevine (*Aristolochia californica*), Pacific sanicle (*Sanicula crassicaulis*), soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*), bedstraw (*Galium aparine*), as well as species found in non-native annual grassland.

Oak woodlands provide food and cover for many species of wildlife. Red-tailed hawk (*Buteo jamaicensis*), American kestrel, and northern flicker (*Colaptes auratus*) were observed in the valley oak woodland on the site (Moore, 2021). Species including such as western rattlesnake (*Crotalus viridis*), gopher snake (*Pituophis catenifer*), wild turkey (*Meleagris gallopavo*), acorn woodpecker (*Melanerpes formicivorus*), tree swallow (*Tachycineta bicolor*), oak titmouse (*Baeolophus inornatus*), western bluebird (*Sialia mexicana*), western gray squirrel (*Sciurus griseus*), and black-tailed deer (*Odocoileus hemionus*) are also expected to occur in the valley oak woodland. Several bat species are also known to roost in oak woodlands within tree hollows or among tree bark.

Emergent Freshwater Marsh

Emergent freshwater marsh typically occurs in low-lying sites that are permanently flooded with fresh water and lacking significant current. It is found on nutrient-rich mineral soils that are saturated for all or most of the year. Freshwater marsh is distributed along the coast and in coastal valleys near river mouths and around the margins of lakes, springs, and streams (Holland, 1986).

Emergent freshwater marsh vegetation covers approximately 6.65 acres of the Project site. Dense stands of emergent freshwater marsh surround the pond on the site and also border Pacheco Creek (Figures 4.3-1 and 4.3-2). Water within the pond and Pacheco Creek is somewhat brackish due to the hydrologic connection to Suisun Bay, approximately two miles north of the Project site, with salinity levels low enough for freshwater marsh vegetation to dominate. Native species observed within this community of the Project site include southern cattail (*Typha domingensis*) and broadleaf cattail (*Typha latifolia*), common reed (*Phragmites australis*), prairie bulrush (*Bolboschoenus robustus*), and punctuate smartweed (*Polygonum punctatum*). Non-native water beard grass (*Polypogon viridis*), wild carrot (*Daucus carota*) and non-native, invasive perennial pepperweed (*Lepidium latifolium*) and poison hemlock (*Conium maculatum*) occur in dense stands along the upland fringes of this community. Wildlife common to freshwater marsh of the region include American bullfrog (*Lithobates catesbeianus*), Sierran tree frog (*Pseudacris sierra*), marsh wren (*Cistothorus palustris*), red-winged blackbird (*Agelaius phoeniceus*), pied-billed

grebe (*Podilymbus podiceps*), green heron (*Butorides virescens*) and common muskrat (*Ondatra zibethicus*).

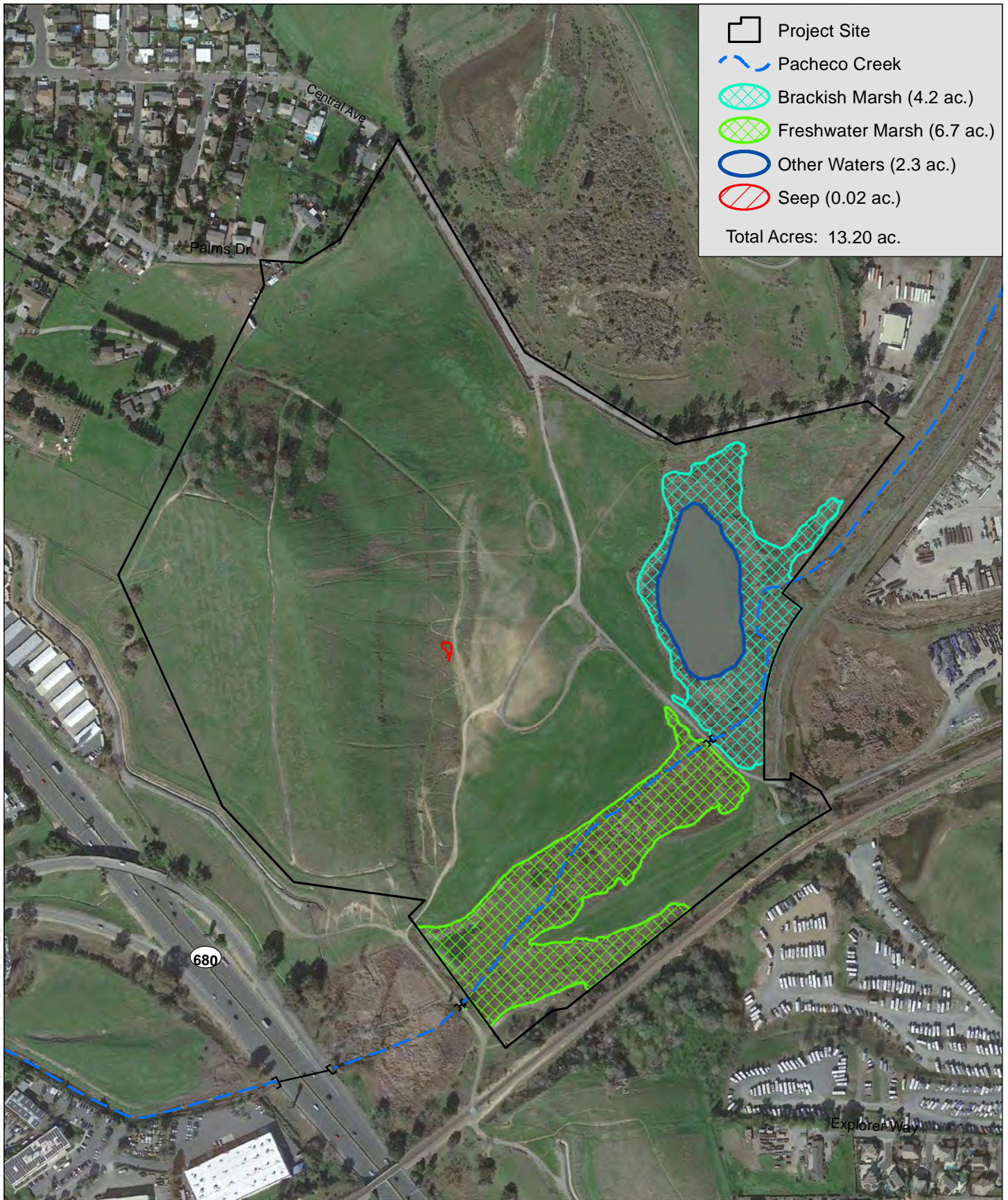
Northern Coastal Saltmarsh (Brackish Marsh)

Well-developed northern coastal saltmarshes consist of highly productive, herbaceous perennials up to three to four feet tall which develop dense vegetative cover and typically occur along sheltered margins of bays, lagoons, and estuaries (Holland, 1986). Subject to continuously fluctuating salinity and water levels, northern coastal saltmarsh is typically dominated by a low diversity of salt-tolerant (*i.e.*, halophytes) aquatic plants. Depending on topography, clear transitions in species composition are frequently evident in the progression from the lower to middle to high estuarine (brackish) marsh zones. Within the Project site, the northern coastal saltmarsh vegetation community is muted by its inland position and limited tidal influence and can also be described as brackish marsh.

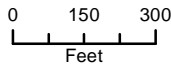
Northern coastal salt marsh vegetation covers approximately 0.53 acre of the Project site. This plant community occurs at two locations in the northeastern portion of the Project site, in small patch northeast of the freshwater pond and a larger area on the north bank adjacent to Pacheco Creek (see Figures 4.3-1 and 4.3-2). Due to the presence of saltmarsh community plants, water within Pacheco Creek is at least of brackish salinity. The patch of salt marsh plants disconnected from the creek channel which is not directly subject to tidal influence has likely formed on fill soils placed into historic tidal saltmarshes associated with Pacheco Creek at the edge of Suisun Bay. In such situations, it is not uncommon for fill soils placed on top of salt marshes to become alkaline by the effects of capillary action, which brings salts to the surface. In addition, tidal pumping, *i.e.*, the effects of tides on the water table far from the actual shoreline, can move salts through the soil profile. Where this community occurs, pickleweed (*Salicornia pacifica*) is the dominant plant species among alkali heath, alkali weed, salt grass, Mediterranean barley, rabbitsfoot grass, fat hen, and brass buttons (*Cotula coronopifolia*). Northern coastal saltmarsh within the Project site is of insufficient size to support the assemblage of common and special-status wildlife species that occur in the well-developed northern coastal saltmarshes in Suisun Bay, approximately two miles north of the Project site. Therefore, wildlife using the northern coastal saltmarsh vegetation on the Project site are primarily the same as those using surrounding and adjacent vegetation community types, such as non-native annual grassland and freshwater marsh.

Seasonal Wetland

The plant association for seasonal wetlands typically resembles a wetland community only following the wet season, and dries up rapidly with the onset of hot, dry conditions when the wetland plant species go seasonally dormant. During the dry season, such sites may not be readily recognizable as wetlands because the wetland plant species go to seed and co-occurring upland grasses and forbs become dominant. Depending on the hydrologic conditions, seasonal wetlands often support a distinctive and diverse flora of native plant species.



Project Site
 Pacheco Creek
 Brackish Marsh (4.2 ac.)
 Freshwater Marsh (6.7 ac.)
 Other Waters (2.3 ac.)
 Seep (0.02 ac.)
 Total Acres: 13.20 ac.



Map Date: 03/04/2021
 Aerial Source: Google Earth (02/2020)

Potential Waters of the U.S. and Wetlands

Bayview
 Contra Costa County, CA

Bayview Estates Residential Project 208078

Figure 4.3-2
 Aquatic Resources

Within the Project site, a single seasonal wetland (approximately 0.04 acre) is present northeast of the freshwater pond near the patch of northern coastal saltmarsh and alkali meadow vegetation (see Figures 4.3-1 and 4.3-2). Based on the plant species present observations of supportive hydrology, this seasonal wetland would be classified as a palustrine seasonally flooded wetland (Cowardin, *et al.*, 1979). This area contains the native wetland plant species alkali weed, fat hen, alkali heath, salt grass, pickleweed, and slim aster (*Symphyotrichum divaricatum*), among others. Also present are non-native annual grasses and forb species which dominate the ruderal and non-native annual grassland vegetation communities, including rabbit’s foot grass, Mediterranean barley, Italian ryegrass, bristly ox-tongue, curly dock (*Rumex crispus*), brass buttons, and bird’s foot trefoil, among others.

**TABLE 4.3-1
 SUMMARY OF AQUATIC RESOURCES WITHIN THE PROJECT SITE**

Aquatic Resource	Area	Jurisdictional Authority
Other Waters	2.3 acres	USACE, RWQCB and CDFW
Emergent Freshwater Marsh	6.7 acres	USACE, RWQCB and CDFW
Brackish Marsh	4.2 acres	USACE, RWQCB and CDFW
Seasonal Wetland	0.02 acres	USACE, RWQCB and CDFW
Total	13.22 acres	

NOTE:

Table reflects the Moore (2021) preliminary delineation findings, which are more conservative (i.e., larger) than the results of the 2007 delineation.

SOURCE: WBC 2007a; WBC, 2008; Hicks, 2009; Moore, 2021.

Sensitive Natural Communities

A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, state, or federal agencies. Most sensitive natural communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. The CDFW *Sensitive Natural Communities Lists* (CDFW, 2020) describes natural communities that are of special-status given the current state of the California classification.

Based on observations from the 2007 floristic assessment and the 2017 and 2020 biological surveys, creeping wildrye grassland, valley oak woodland, and northern coastal saltmarsh are CDFW sensitive communities that occur within the Project site (WBC, 2007b; Moore, 2021).

Wetlands and Other Waters

Natural hydrological processes in the low-lying portions of the Project site and vicinity have been severely altered by grading, filling, the construction of levees and other flood control measures. An 1898 historic USGS topographic map depicts tidal salt marshes of Pacheco Slough extending from the edge of Suisun Bay across the southern portion of the site, to the location of Highway 680 (USGS, 1898). The eastern and southeastern portions of the Project site are situated on low-lying flats that were presumably part of the historical tidal salt marsh at the confluence of Pacheco Creek, Walnut Creek and Grayson Creek and presently support northern coastal salt marsh vegetation. In the late 1980s, lower Pacheco Creek was realigned to better serve as a flood control channel contained within earthen levees and connected to Suisun Bay approximately two miles north of the Project site.

Due to channel realignments and flood control improvements, the nomenclature of the creeks that converge near the southeast part of the site is complicated and seems to be variably interpreted on USGS and Contra Costa County Flood Control and Water Conservation and Flood Control Maps. Walnut Creek and Grayson Creek are clearly depicted at two creeks southeast of the site that converge near the southeast part of the site on an historical (i.e., 1940) USGS topographic map and flow into Pacheco Creek. The drainage that meanders through the marsh in the south part of the site is the upstream section of Pacheco Creek. An artificial basin or pond (referred to as the freshwater pond throughout this section) located in the northeast part of the Project site supports open water and freshwater marsh vegetation year-round, is connected to Pacheco Creek, and is subject to tidal influence.

A wetland delineation was prepared for the Project in 2007 and revised in 2008 following a field verification with the U.S. Army Corps of Engineers (USACE) (WBC, 2007a; WBC, 2008; Hicks, 2009); the results of this delineation were confirmed by an ESA biologist on June 15, 2017 and by Moore (2020) and found to be generally comparable to current conditions in the Project footprint. The 2007 wetland delineation identified 9.62 acres of wetlands and waters subject to federal and/or state jurisdiction and 0.73 acre of alkali meadow wetland subject to state jurisdiction only, for a total of 10.35 acres of regulated aquatic resources within the Project site (WBC 2008; see Section 4.3.3, *Regulatory Framework*, for a description of the current federal and State regulations related to wetlands and other waters). These aquatic resources include the open water drainage channel and freshwater marsh in the southern part of the site, permanent freshwater pond and associated freshwater marsh in the northeast part of the site, alkali meadow, seasonal wetland and wetlands dominated by pickleweed *i.e.*, northern coastal saltmarsh. **Figure 4.3-2** depicts the location of these wetland and open water features within the Project site as of 2007. Based on more recent survey findings, the extend of some of aquatic features has changed since 2007 (Moore, 2021). **Table 4.3-1** summarizes the delineation results by resource type and identifies the jurisdictional authority of federal and state regulatory agencies over each feature as documented in the 2009 USACE verification letter (Hicks, 2009).

Due to changes in federal and state regulations regarding aquatic resources since the delineation and field verification of federally-regulated features by the USACE, the jurisdictional authority of federal and state agencies over delineated aquatic resources within the Project site may be different than described in the delineation and as shown in Table 4.3-1. Presently, Moore (2021),

describes approximately 13.22 acres of potentially jurisdictional Waters of the U.S. or wetlands on the Project site (Figure 4.3-2 and Table 4.3-1). This total includes approximately 4.2 acres of brackish marsh, a 2.3-acre constructed pond associated with the tidally influenced portion of Pacheco Creek, approximately 6.7 acres of freshwater marsh associated with Pacheco Creek, and an 0.02-acre seep located near the base of the hill. An updated aquatic resources delineation of the site is scheduled for spring 2021.

Wildlife Movement Corridors

Wildlife movement corridors are considered an important ecological resource by CDFW and the USFWS, and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas, such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing animals to move between various locations within their range. Topography and other natural factors, in combination with human developments, can fragment or separate large open-space areas. Areas of human disturbance can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated “islands” of vegetation that may not provide sufficient area to accommodate sustainable populations, and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations. Pacheco Creek and the freshwater marsh along the creek within the southern portion of the Project site facilitate wildlife movement for both aquatic and terrestrial species.

Special-Status Species

Section 15380(b) of the CEQA *Guidelines* provides a definition of rare, endangered, or threatened species that are not included in any listing, but whose “survival and reproduction in the wild are in immediate jeopardy” (endangered) or which are “in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens” or “is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered ‘threatened’ as that term is used in the federal Endangered Species Act.”³ Taken as a whole, all of these species are described as “special-status” for the purposes of the EIR analysis.

For the purpose of this evaluation, special-status species include:

1. Species listed or proposed or are candidate species for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (50 CFR 17.12 [listed plants], 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species]);
2. Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 40, February 28, 1996);

³ For example, vascular plants identified as rare or endangered or as List 1 or 2 by CRPR are considered to meet Section 15380(b).

3. Species listed or proposed for listing as rare, threatened, or endangered by the CDFW under the California Endangered Species Act (14 Cal. Code Regs. 670.5);
4. Species formerly designated by the USFWS as species of concern or species designated by the CDFW as species of special concern;⁴
5. Species designated by the State as “fully protected” (there are 37 species designated by the State as fully protected, most of which are also listed as either endangered or threatened);⁵
6. Raptors (birds of prey), which are specifically protected by California Fish and Game Code Section 3503.5, thus prohibiting the take, possession, or killing of raptors and owls, their nests, and their eggs;
7. Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
8. Species that meet the definitions of rare and endangered under CEQA. CEQA *Guidelines* Section 15380 provides that a plant or animal species may be treated as rare, threatened, or endangered even if not on one of the official lists (CEQA *Guidelines*, Section 15380); and,
9. Plants considered by the CDFW to be “rare, threatened or endangered in California” under the CNPS California Rare Plant Ranking system which include Rank 1A, 1B, 2A, and 2B as well as some Rank 3 and 4 plant species.⁶

A list of special-status plant and animal species that have the potential to occur within the proposed Project site was compiled based on data contained in the CNDDDB (CDFW, 2021) and CNPS Rare Plant Inventory (CNPS, 2021) for the Vine Hill, Fairfield South, Cordelia, Denverton, Benicia, Honker Bay, Briones Valley, Walnut Creek, and Clayton U.S. Geological Survey 7.5-minute topographic quadrangles, in addition to those included on the official USFWS list of federal endangered and threatened species that occur in the proposed Project area (USFWS, 2021). **Table D-1**, Special-Status Species, in **Appendix D** to this Draft EIR, present the special-status plant and animal species, their status, their habitat requirements, and period of identification or plant blooming periods, and considers the potential for each species to occur within the Project site.

Based on a review of the biological literature of the region, information presented in previously prepared environmental documentation, and an evaluation of the habitat conditions of the Project site, a species was designated as “absent” if: (1) the species’ specific habitat requirements (e.g., serpentine grasslands, as opposed to grasslands occurring on other soils) are not present, or (2) the species is presumed, based on the best scientific information available, to be extirpated from

⁴ A California species of special concern is one that: has been extirpated from the state; meets the state definition of threatened or endangered but has not been formally listed; is undergoing or has experienced serious population declines or range restrictions that put it at risk of becoming threatened or endangered; and/or has naturally small populations susceptible to high risk from any factor that could lead to declines that would qualify it for threatened or endangered status.

⁵ The “fully protected” designation can be found in the Fish and Game Code.

⁶ Rank 3 plants may be analyzed under CEQA *Guidelines* Section 15380 if sufficient information suggests potentially significant impacts to such plant populations. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a Rank 3 or 4 plant are significant, even if individual project impacts are not. CRPR Rank 3 and 4 plants may be considered regionally significant if, e.g., the occurrence is located at the periphery of the species’ range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate. For these reasons, CRPR Rank 3 and 4 plants are sometimes included in the special-status species analysis.

the Project site or region. A species was designated as having a “low potential” for occurrence if: (1) its known current distribution or range is outside of the Project site and vicinity or (2) only limited or marginally suitable habitat is present within the Project site and vicinity. A species was designated as having a “moderate potential” for occurrence if: (1) there at least moderate quality habitat present within the Project site or immediately adjacent areas or (2) the Project site is within the known range and potentially accessible of the species, even though the species was not observed during biological surveys. A species was designated as having a “high potential” for occurrence if: (1) moderate to high quality habitat is present within the Project site, and (2) the Project site is within the known range of the species. Many of the species listed in Table D-1 in Appendix D to this Draft EIR have only a low potential for occurrence or are absent from the Project site and were eliminated from further evaluation, primarily because the Project site does not provide suitable habitat for them or the Project site is outside of their understood range.

Special-Status Plants

Most of the special-status plant species listed in Table D-1 in Appendix D to this Draft EIR are considered to have a low potential to occur on the Project site due to the absence of suitable habitat. Several special-status plant species were determined to have at least a moderate potential to occur in the study area due to the presence of suitable habitat and/or the presence of nearby populations. Congdon’s tarplant (*Centromadia parryi* ssp. *congdonii*) is the only special-status plant species that has been previously documented within the study area.

Focused rare plant surveys were conducted of the Project site by Wood Biological Consulting in 2007 and ESA in 2008 (WBC, 2007b; ESA, 2008). The Moore (2021) biological report additionally included a cursory review of botanical conditions; however, did not include focused in-season botanical surveys. Although these surveys resulted in no observations of rare plants, potentially suitable habitat for several species was observed within the Project site, particularly within the northern coastal salt marsh, freshwater marsh, alkali meadow, and grassland communities. The findings of these surveys are useful in describing the site baseline and broadly identifying potential rare plant impacts based on historic plant distribution; however, because more than 12 years have elapsed since appropriately-timed rare plant surveys were last conducted in 2007 and 2008, updated surveys are warranted in all suitable habitat that would be potentially disturbed by the Project. Based on a review of previous analysis of the Project site to support rare plants, database results for regional rare plant occurrences, and observations of current site conditions, the following special-status plants, which are described below, were determined to have at least a moderate potential to occur within the Project site:

- Congdon’s tarplant
- Soft bird’s-beak
- Bolander’s water hemlock
- Small spikerush
- Fragrant fritillary
- Delta tule pea
- Mason’s lilaeopsis
- Delta mudwort
- Suisun marsh aster

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)

Congdon's tarplant is a CRPR 1B.2 herbaceous annual member of the sunflower family (Asteraceae), which is generally found in grasslands of low, often alkaline fields, in heavy clay soil. It is highly restricted in its distribution, being found in the San Ramon and Tassajara Valleys in Contra Costa County, the lower end of the San Francisco Bay in Alameda and Santa Clara counties, and in the lower Salinas Valley in Monterey County, where the type collection was made. It has also been reported from Solano, Santa Cruz and San Luis Obispo counties. A single specimen of Congdon's tarplant was collected from the subject property in 2005 (CDFW 2021; occurrence 74), though no individuals of the subspecies were detected during the properly timed surveys in 2007 and 2008 (WBC, 2007b; ESA, 2008). Also in 2005, a population consisting of 50-60 individuals of Congdon's tarplant was recorded approximately one mile to the northwest of the Project site (CDFW 2021; occurrence 73). Several other occurrences of this species are documented in annual grasslands near coastal saltmarsh and brackish marsh habitats within five miles of the Project site. Suitable habitat for this species is present within the alkali meadow and adjacent grasslands on the Project site.

Soft bird's-beak (*Chloropyron molle* ssp. *molle*)

Soft bird's-beak is a federally-listed endangered, California rare, and CRPR 1B.2 annual herb in the broomrape (Orobanchaceae) family. This species occurs in coastal salt marsh and wetland-riparian communities. It is currently known to occur in Contra Costa, Napa, and Solano counties. This species is documented within two miles of the Project site along the southern border of Suisun Bay within the upper edges of coastal saltmarsh vegetation in dry sites which appear to be seasonally flooded (CDFW, 2021; occurrence 14). This species was not identified on the Project site during appropriately-timed survey botanical surveys in 2007 and 2008 (WBC, 2007b; ESA, 2008). Suitable habitat for this species is present within the coastal salt marsh and alkali meadow of the Project site.

Bolander's water-hemlock (*Cicuta maculata* var. *bolanderi*)

Bolander's water-hemlock is a CRPR 2B.1 perennial forb in the carrot family (Apiaceae) that blooms from July to September. It typically occurs in freshwater or brackish marsh and swamp habitat at elevations ranging from 0 to 650 feet. This species was not observed on the Project site during appropriately-timed survey botanical surveys in 2007 and 2008 (WBC, 2007; ESA, 2008). Bolander's water-hemlock has potential to occur within the brackish and freshwater marsh habitat on the Project site. The nearest documented occurrence is three miles west of the Project site (CDFW, 2021a)

Small spikerush (*Eleocharis parvula*)

Small spikerush is a CRPR 4.3 perennial grasslike herb in the sedge (Cyperaceae) family. This species occurs in coastal salt marsh and wetland and riparian communities at elevations ranging from 11 to 1,950 meters and flowers between July and August. The CRPR 4.3 rank indicates small spikerush is of limited distribution or infrequently found throughout California and should be monitored; a watch list species. It is currently known to occur in Contra Costa, Butte, Glenn, Humboldt, Mono, Napa, Orange, Plumas, Siskiyou, San Luis Obispo, Sonoma, and Ventura

counties. Small spikerush has been documented within the Vine Hill quadrangle which contains the Project site though no other locational details are provided with that occurrence record (Calflora 2020; ID cn1623) The next closest small spikerush occurrence recorded in the vicinity of the Project site is located on Brown Island within Suisun Bay (Calflora, 2020; ID eb8785) and at Antioch Dunes (Calflora, 2020; ID eb661), approximately 10 and 12 miles northeast of the Project site. This species was not identified on the Project site during appropriately-timed survey botanical surveys in 2007 and 2008 (WBC, 2007b; ESA, 2008). Suitable habitat for this species is present within the coastal saltmarsh and emergent freshwater marsh communities of the Project site.

Fragrant fritillary (*Fritillaria liliacea*)

Fragrant fritillary is CRPR 1B.2 bulb-forming perennial member of the lily (Liliaceae) family. This species is supported by clay or serpentinite soils in cismontane woodlands, coastal prairies, coastal scrub, valley and foothill grasslands near the coast at elevations between 3 and 410 meters and blooms from February to April. It is currently known to occur in Alameda, Contra Costa, Monterey, Marin, San Benito, Santa Clara, San Francisco, San Mateo, Solano and Sonoma counties. Fragrant fritillary has been recorded in similar grassland habitats and soils approximately 10 miles southeast of the Project site in Diablo Foothills Regional Park (CDFW, 2021; occurrences 34 and 74). This species was not identified on the Project site during appropriately-timed survey botanical surveys in 2007 and 2008 (WBC, 2007b; ESA, 2008). Suitable habitat for this species is present in grasslands within the Project site.

Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*)

Delta tule pea is a CRPR 1B.2 perennial herb in the (Fabaceae) family which occurs in freshwater marshes or wetlands and brackish marshes. Delta tule pea flowers from May through July. It is currently known to occur in Contra Costa, Napa, Sacramento, San Joaquin, Solano and Yolo counties. Delta tule is documented within 1 mile of the Project site within marshes of the Waterbird Regional Preserve (CDFW, 2021; occurrence 160). Several other occurrences are documented within two miles of the Project site in the brackish marsh communities along the southern border of Suisun Bay and Pacheco Creek (CDFW, 2021; occurrences 136, 129, 128, and 5). This species was not identified on the Project site during appropriately-timed survey botanical surveys in 2007 and 2008 (WBC, 2007b; ESA, 2008). Suitable habitat for this species is present within freshwater and coastal salt marsh communities of Project site.

Mason's liliaeopsis (*Liliaeopsis masonii*)

Mason's liliaeopsis is a California rare and CRPR 1B.1 perennial rhizomatous herb in the carrot (Apiaceae) family. This species occurs in freshwater and brackish marshes and swamps and riparian scrub from 0 to 10 meters and blooms from April through November. The CRPR 1B.1 rank indicates that its occurrence is limited to only a few highly restricted populations, it is considered by CNPS to be endangered in a portion of its range, it is endemic to California and seriously threatened within the state. Mason's liliaeopsis is locally common to Suisun Bay and known to Alameda, Contra Costa, Marin, Napa, Sacramento, San Joaquin, Solano, and Yolo counties. Several extant populations are documented along the near-water margins of the

saltmarsh on the southern border of Suisun Bay and the mouth of Pacheco Creek within five miles north of the Project site (CDFW, 2020; occurrences 102, 161, 79, 131, and 114). This species was not identified on the Project site during appropriately-timed survey botanical surveys in 2007 and 2008 (WBC, 2007b; ESA, 2008). Suitable habitat for this species is present within freshwater and coastal salt marsh communities of Project site.

Delta mudwort (*Limosella australis*)

Delta mudwort is a CRPR 2B.2 perennial herb in the figwort (Scrophulariaceae) family that usually occurs on mud banks in marshes, swamps (both freshwater and brackish), and within riparian scrub communities from 0 to 3 meters. This species blooms from May to August. The CRPR 2B.2 rank indicates that its occurrence is limited within California and considered by CNPS to be endangered throughout its range but is found commonly outside of the state. Delta mudwort is known to Contra Costa, Sacramento, San Joaquin, and Solano counties. This species is documented at Brown Island located near the southern border of Suisun Bay within five miles north of the Project site (Calflora, 2020; ID eb15759 and svy1386), at Antioch Dunes (Calflora, 2020; ID jgr9575 and svy1370), and numerous locations along the nearshore borders of tributaries to Suisun Bay east of the Project site. It has also been documented within the Honker Bay quadrangle but without more specific locational information (Calflora 2020; ID cn1618). Delta mudwort was not identified on the Project site during appropriately-timed survey botanical surveys in 2007 and 2008 (WBC, 2007b; ESA, 2008). Suitable habitat for this species is present within the exposed banks of Pacheco Creek and freshwater and coastal salt marsh communities of Project site.

Special-Status Animals

Of the special-status animals identified in Table D-1 in Appendix D to this Draft EIR, only species known to be present within the Project site or study area or classified as having at least a moderate potential for occurrence in the Project site area were considered in the impact analysis and described in further detail, below. With the exception of the salt-marsh harvest mouse and Ridgway's rail, the special-status animals listed below were determined to have at least a moderate potential to occur within the Project site or surrounding vicinity. While the potential for occurrence of salt-marsh harvest mouse has been determined to be low, the species is discussed herein out of an abundance of caution due to its reported occurrence within one mile of the Project site in 2008. Similarly, the potential for occurrence of Ridgway's rail is low, but it is discussed below as it was a focal species of a nearby creek restoration project.

- Western pond turtle
- Tricolored blackbird
- White-tailed kite
- Northern harrier
- Suisun song sparrow
- California red-legged frog
- California black rail
- Ridgway's rail
- Other nesting and migratory birds
- Salt-marsh harvest mouse
- Special-status bats

California red-legged frog (*Rana draytonii*)

California red-legged frog is federally listed as a threatened species throughout its range in California and considered a SSC by CDFW. This frog historically occurred over much of the State from the Sierra Nevada foothills to the coast and from Mendocino County to the Mexican border. California red-legged frog typically inhabit ponds, slow-moving creeks, and streams with deep pools that are lined with dense emergent marsh or shrubby riparian vegetation. Submerged root masses and undercut banks are important habitat features for this species. However, this species is capable of inhabiting a wide variety of perennial aquatic habitats. Where water sources are not permanent, red-legged frogs require access to dry-season upland aestivation habitat in the form of mammal burrows. Red-legged frogs require at least 11 weeks of permanent water after egg laying for larval development. Factors that have contributed to the decline of this species include destruction of riparian habitat from development, agriculture, flood control practices, or the introduction of exotic predators such as American bullfrog (*Lithobates catesbeianus*), crayfish, and a variety of non-native fish. The nearest occurrence of California red-legged frog is documented in Briones Regional Park, five miles south of the Project site, in two freshwater ponds surrounded by grazed annual grassland (CDFW, 2021; occurrence 158). However, potential habitat is available much closer, such as pond habitat at the former Concord Naval Weapons Station. Freshwater marsh vegetation and ponded perennial water of the Project site provide potentially suitable aquatic habitat for this species and adjacent grasslands provide upland refugia though small mammal burrows to support aestivation were not observed during field surveys.

Western pond turtle (*Actinemys marmorata*)

Western pond turtle is considered a SCC by CDFW. This cosmopolitan species inhabits rivers, streams, natural and artificial ponds, lakes, marshes and irrigation ditches with abundant vegetation and either rocky or muddy bottoms. Basking sites are necessary for western pond turtle and may include exposed logs, rocks, vegetation mats or open mud banks. Adjacent terrestrial habitat is typically woodland, forest or grassland with pliable soils for nesting and egg laying, winter refuge, and dispersal. Nest sites are most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks. Habitat destruction and stream course degradation are the primary threats to this species. The nearest occurrence for this species is documented in Pacheco Creek which borders the Project to the east and within Grayson Creek located one-mile southeast of the Project site (CDFW, 2021; occurrences 644 and 1340). Freshwater emergent marsh and perennial waters within the pond and drainage channel provide suitable habitat for this species within the Project site and western pond turtle was observed in the perennial pond during the November 2020 survey.

Tricolored Blackbird (*Agelaius tricolor*)

Tricolored blackbird is a state threatened species. Tricolored blackbirds are a colonial species that nest in marsh vegetation such as cattails, tules, and blackberry thickets. This species has been known to forage both along edges of ponds in the immediate vicinity of the nest site and in grasslands and croplands up to four miles from the nest site. Loss of habitat has reduced species nesting sites, and hence species numbers. Because of the ephemeral nature of their habitat, these

blackbirds typically nest in different locations from year to year. Brackish marsh vegetation in the Project site could provide suitable habitat for this species. The nearest documented occurrence of tricolored blackbirds is 1.5 miles northwest of the Project site (CDFW, 2021a).

White-tailed Kite (*Elanus leucurus*)

White-tailed kite is a CDFW fully protected species that could forage over the annual grasslands, freshwater marsh, and northern coastal salt marsh communities. White-tailed kite may forage in the grasslands and nest in the valley oak woodland or other trees in the Project site.

Northern Harrier (*Elanus leucurus*)

Northern harrier is a CDFW Species of Special Concern (SSC) that nest and forage along wet meadows, sloughs, savanna, prairie, and marshes, feeding on small mammals, such as California vole and mice. Northern harrier may use the wetlands and grasslands on the Project site for foraging and nesting.

Suisun song sparrow (*Melospiza melodia maxillaris*)

Suisun song sparrow is considered SSC by CDFW and a BCC by USFWS. It is a resident of salt marshes bordering Suisun Bay from Martinez eastward along the south bayshore to Pittsburg. They inhabit pickleweed marshes and nest low in grindelia and pickleweed vegetation. Suisun song sparrow could forage in salt marsh vegetation of the Pacheco Creek tributary and non-tidal seasonal wetlands of the Project site though is unlikely to nest as far south as the Project site from Suisun Bay.

California Black Rail (*Laterallus jamaicensis coturniculus*)

California black rail is a State-listed threatened species, fully protected species in California, and Bird of Conservation Concern (BCC). California black rail inhabit freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. This species needs water depths of about 1 inch that does not fluctuate during the year and dense vegetation for nesting habitat. Several extant occurrences for California black rail are documented within five miles of the Project site. The nearest occurrences are documented one-mile north in brackish marshes bordering Carquinez Strait and in brackish marsh vegetation west of Pacheco Creek as recently as 2016 (CDFW, 2020a; occurrences 127, 284, 126, 75, 184, and 284). Limited suitable habitat is present within the emergent freshwater marsh and northern coastal salt marsh and freshwater marsh of the Project site.

Ridgway's Rail (*Rallus obsoletus obsoletus*)

Ridgway's rail is a federal and State-listed endangered species and considered a fully protected species in California. Ridgway's rail inhabits salt-water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. It is associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs. A small, widely distributed population is known to occur in Suisun Marsh and several occurrences are documented within five miles of the Project site within the coastal salt marshes along the south border of Suisun Bay and at the mouth of Pacheco Creek (CDFW, 2020a; occurrences 114, 88,

82, 100, and 81). Ridgway's rail has not been documented in the 2019 and 2020 surveys conducted in the study area of the Contra Costa County Flood Control and Water Conservation District's (CCCFCWCD)'s Lower Walnut Creek Restoration Project (ESA Associates, 2019a, 2020), which abuts the Project site. Limited suitable habitat is present within the emergent freshwater marsh and northern coastal salt marsh of the Project site though Ridgway's rail is not expected to nest in saltmarsh of this size.

Other Nesting and Migratory Birds

Mature trees, shrubs and grassland upland habitat of the Project site provide nesting and foraging opportunity for a variety of resident and migratory birds. Tree nesting raptors such as red-tailed hawk, great horned owl (*Bubo virginianus*), and American kestrel could nest in the relatively large trees in the site. Passerine species which could nest in the area include but are not limited to Anna's hummingbird (*Calypte anna*), Bewick's wren (*Thryomanes bewickii*), American crow (*Corvus brachyrhynchos*), California towhee (*Melospiza fusca*), northern mockingbird (*Mimus polyglottos*), among others. The federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code protect raptors, most native migratory birds, and nesting birds that would occur at the Project site and/or nest in the surrounding vicinity.

Salt marsh harvest mouse (*Reithrodontomys raviventris*)

Salt marsh harvest mouse are listed as federally and state endangered species. This species is considered a California fully protected species. Salt marsh harvest mice are small, native rodents that are endemic to the salt marshes and adjacent diked wetlands of San Francisco Bay. Suitable habitat for salt marsh harvest mouse is present in the brackish marshes adjacent to Lower Walnut Creek. In addition, CNDDDB records exist from trapping efforts in the locality of Shell Marsh, Peyton Slough, and Pacheco Creek. Salt marsh harvest mouse was also trapped in the Pt. Edith Wildlife Area throughout the 1970s, 1980s and 1990s; as well as in Avon-Port Chicago Marsh in 1997 (CDFW, 2021). In 2008, four salt marsh harvest mice were captured during trapping efforts in pickleweed dominated vegetation along Walnut Creek approximately 1 mile northwest of the site (CDFW, 2021). It is possible salt marsh harvest mouse may occupy suitable pickleweed and marsh habitats within the Project site.

Special-Status Bats

Townsend's big-eared bat (*Corynorhinus townsendii*) and western red bat (*Lasiurus blossevillii*) are considered SSC by CDFW and high-priority species by the Western Bat Working Group (WBWG)⁷. Townsend's big-eared bat inhabits caves and mines, but may also roost beneath bridges, in buildings, and within rock crevices and tree hollows within coastal lowlands, cultivated valleys, and foothills with mixed vegetation throughout California below 3,300 meters. This species will forage moths over edge habitats near streams or woodlands and is very sensitive to human disturbance. The nearest occurrence is documented 7 miles south of the Project site in the vicinity of Walnut Creek (CDFW, 2021; occurrence 432). Western red bat occurs from mid-

⁷ Non-profit organization of agencies, organizations, and individuals which facilitates communication among interested parties to reduce risks of bat species decline or extinction, share bat ecology information and research, and develop a forum for management and conservation strategies in western North America and Canada.

state in California southward, roosts in dense foliage, and feeds primarily on moths. Roosting sites are found in the foliage of trees and shrubs in forests, predominantly in edge habitats adjacent to streams and open fields. Western red bat feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Currently there are no occurrences of western red bat documented in the CNDDDB within ten miles of the Project site (CDFW, 2021). Hoary bat (*Lasiurus cinereus*) is considered a California special animal by CDFW and a medium-priority species by the WBWG. This species is highly associated with forests of the western U.S. and prefers to roost on clearing edges in dense foliage of medium to large deciduous or coniferous trees. Hoary bat feeds primarily on moths and will forage in open areas or habitat edges. This species may roost in trees onsite, particularly during migration periods in spring and fall. Two occurrences documented 5 miles southeast of the Project site within urbanized area of Concord (CDFW, 2021; occurrences 19 and 20). Suitable roosting habitat is present for each of these species within the trees on the hill and suitable foraging habitat is present within the annual grassland, emergent freshwater marsh, and over open water of the Project site.

Critical Habitat

The USFWS can designate critical habitat for species that have been listed by the federal government as threatened or endangered. “Critical habitat” is defined in Section 3(5)(A) of the federal Endangered Species Act as those lands (or waters) within a listed species’ current range that contain the physical or biological features that are considered essential to its conservation. No designated critical habitat is located in the Project site.

4.3.3 Regulatory Framework

Federal Regulations

Federal Endangered Species Act

The federal Endangered Species Act (FESA) (16 USC Section 1531 et seq.) provides for designation of species, both plant and animal, as threatened and endangered, and requires the establishment of measures for their protection and recovery. The term endangered refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range. The term threatened refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

The “take” of listed plant or wildlife species is prohibited without first obtaining a federal permit. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage the habitat of (i.e., harm) listed wildlife species require approval from the USFWS or National Marine Fisheries Service

(NMFS). Take of listed species can be authorized through either the Section 7⁸ consultation process (for actions by federal agencies) or the Section 10 permit process (for actions by non-federal agencies). Federal agency actions include activities on federal land or that are conducted by, funded by, or authorized by a federal agency (including issuance of federal permits and licenses).

The FESA also generally requires determination of critical habitat for listed species. The Secretary of the Interior (or the Secretary of Commerce, as appropriate) formally designates critical habitat for certain federally listed species and publishes these designations in the Federal Register. Critical habitat is defined as the specific areas that are essential to the conservation of a federally listed species and that may require special management consideration or protection.

Migratory Bird Treaty Act

The federal MBTA (United States Code, Title 16, Section 703, Supplement I, 1989) prohibits the killing, possessing, or trading in migratory birds, bird parts, eggs, and nests, except as provided by statute. This act authorizes the Secretary of the Interior to regulate the taking of migratory birds. It further provides that it is unlawful, except as permitted by regulations, “to pursue, hunt, take, capture, kill or attempt to take, capture, or kill any migratory bird, or any part, nest or egg of any such bird...” Solicitor opinions for various U.S. administrations have varied in their interpretation of “take,” and current guidance excludes incidental take as a violation of the Migratory Bird Treaty Act.

Federal Regulation of Wetlands and Other Waters

Waters of the United States are areas subject to federal jurisdiction pursuant to section 404 of the Clean Water Act and sections 9 and 10 of the Rivers and Harbors Act. Waters of the United States are typically divided into two types: (1) wetlands and (2) other waters of the United States. Wetlands are a subset of waters of the United States and receive protection under section 404 of the act. The term “waters of the United States,” as defined in the Code of Federal Regulations under the Navigable Waters Protection Rule (33 CFR Part 328), includes:

1. Territorial seas and navigable waters;
2. perennial and intermittent tributaries that, in a typical year, contribute surface water flow to such [territorial seas and navigable] waters;
3. certain lakes, ponds, and impoundments of jurisdictional waters; and
4. wetlands adjacent to other jurisdictional waters.

Wetlands are "adjacent" if they: (a) abut (i.e., physically touch at least one point or side) a jurisdictional water; (b) are inundated by flooding from a jurisdictional water in a typical year; (c)

⁸ Under section 7, the federal lead agency must consult with the USFWS to ensure that the proposed action would not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a project “may affect” a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the expected effect. The USFWS then issues a biological opinion determining whether (1) the proposed action may either jeopardize the continued existence of one or more listed species or result in the destruction or adverse modification of critical habitat or (2) that the proposed action would not jeopardize the continued existence of any listed species or result in adverse modification of critical habitat.

are separated from a jurisdictional water by a natural berm, bank, or dune; or (d) are separated from jurisdictional waters by an artificial barrier and the structure allows for a direct hydrologic surface connection. (33 CFR § 328.3(c)(1).)

Title 33, chapter II, Part 328.3 of the Code of Federal Regulations:

“[t]hose 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. Wetlands generally include swamps, marshes, bogs, and similar areas.”

For the purposes of identifying or delineating a wetland under federal jurisdiction, an area must meet three diagnostic environmental characteristics in order to be considered a wetland. These three characteristics include the presence of 1) wetland hydrology, 2) hydrophytic vegetation, and 3) hydric soils in order to meet the federal definition.

Other waters of the United States are perennial or intermittent water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for the three wetland parameters.

The regulations and policies of various federal agencies (e.g., U.S. Army Corps of Engineers [USACE], U.S. Environmental Protection Agency [EPA], and USFWS) mandate that the filling of wetlands be avoided unless it can be demonstrated that there is no practicable alternative to filling. The USACE has primary federal responsibility for administering regulations that concern waters and wetlands in the Project area under statutory authority of the Clean Water Act (CWA; Section 404) and the Rivers and Harbors Act (Sections 9 and 10)).

Section 404 of the federal CWA (33 USC 1251-1376) prohibits the discharge of dredged or fill material, or placement of structures into waters of the U.S., including wetlands, without a permit from the USACE. The CWA prohibits the discharge of any pollutant without a permit. Implicit in the CWA definition of “pollutant” is the inclusion of dredged or fill material regulated by Section 404 (33 USC 1362). The discharge of dredged or fill material typically means adding into waters of the U.S. materials such as concrete, dirt, rock, pilings, or side cast material that are for the purpose of replacing an aquatic area with dry land or raising the elevation of an aquatic area. Activities typically regulated under Section 404 include the use of construction equipment such as bulldozers, and the leveling or grading of sites where jurisdictional waters occur.

Pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899 (RHAA; 33 USC 403), the USACE regulates the construction of structures in, over, or under, excavation of material from, or deposition of material into “navigable waters.” Navigable waters under the act are those “subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce” (33 CFR Section 3294). In tidal areas, the limit of navigable water is the mean high tide line; in nontidal waters it is the ordinary high water mark (OHWM). Larger streams, rivers, lakes, bays, and oceans are examples of navigable waters regulated under Section 10. The RHAA prohibits the

unauthorized obstruction or alteration of any navigable water (33 USC Section 403). Typical activities requiring Section 10 permits are construction of piers, wharves, bulkheads, marinas, ramps, floats, intake structures, cable or pipeline crossings, and dredging and excavation.

State Regulations

California Endangered Species Act

Under the California Endangered Species Act (CESA), CDFW has the responsibility for maintaining a list of threatened species and endangered species (California Fish and Game Code Section 2070). CDFW also maintains a list of “candidate species,” which are those formally under review for addition to either the list of endangered species or the list of threatened species.

The CESA prohibits the take of plant and animal species that the California Fish and Game Commission has designated as either threatened or endangered in California. “Take” in the context of the CESA means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill a listed species (California Fish and Game Code Section 86). The take prohibitions also apply to candidates for listing under the CESA. However, Section 2081 of the CESA allows the CDFW to issue permits for the minor and incidental take of species by an individual or permitted activity listed under the act (e.g., for educational, scientific, or management purposes). Take coverage is not issued for species designated by CDFW as fully protected (see additional discussion below.)

In accordance with the requirements of the CESA, an agency reviewing a project within its jurisdiction must determine if any state-listed endangered or threatened species could be present in the project area. The agency also must determine if the project could have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation on any project that could affect a candidate species.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (CNPPA), which directed the CDFW to carry out the legislature’s intent to “preserve, protect, and enhance endangered plants in this state.” The CNPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. As of January 2015, CDFW has the authority to permit take of state-listed rare plants under CNPPA, similar to how it has historically regulated state endangered and threatened plants. This new regulation elevates the protection of rare plants, potentially requiring the need to obtain a permit from CDFW to remove rare plants, contingent upon impacts addressed in the project’s CEQA process. The CESA expanded on the original CNPPA and enhanced legal protection for plants. The CESA established threatened and endangered species categories, and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, three listing categories for plants are employed in California: rare, threatened, and endangered.

California Rare Plant Rankings

CDFW works in collaboration with the California Native Plant Society (CNPS) and botanical experts to maintain an Inventory of Rare and Endangered Plants, and the similar Special Vascular Plants, Bryophytes, and Lichens List. The plant species on these lists may meet the CEQA definition of rare or endangered. As a trustee agency for the plants and wildlife of California, ecological communities, and the habitat upon which they depend, CDFW advises public agencies during the CEQA process to help ensure that the actions they approve do not significantly impact such resources. CDFW often advises that plant species with an appropriate California Rare Plant Rank in the Inventory be properly analyzed by the lead agency during project review to ensure compliance with CEQA. The following identifies the definitions of the California Rare Plant Rankings (CRPR):

Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.

Rank 1B: Plants Rare, Threatened, or Endangered in California and elsewhere.

Rank 2A: Plants presumed extirpated in California, but more common elsewhere.

Rank 2B: Plants Rare, Threatened, or Endangered in California, but more common elsewhere.

Rank 3: Plants about which more information is needed – A Review List.⁹

Rank 4: Plants of limited distribution – A Watch List.

Special-Status Natural Communities

The CDFW's Natural Heritage Division identifies special-status natural communities, which are those that are naturally rare and those whose extent has been greatly diminished through changes in land use. The CNDDDB tracks 135 such natural communities in the same way that it tracks occurrences of special-status species: Information is maintained on each site for the natural community's location, extent, habitat quality, level of disturbance, and current protection measures. The CDFW is mandated to seek the long-term perpetuation of the areas in which these communities occur. While there is no statewide law that requires protection of all special-status natural communities, CEQA requires consideration of the potential impacts of a project on biological resources of statewide or regional significance.

California Fish and Game Code

Fully Protected Species

Certain species are considered fully protected, meaning that the California Fish and Game Code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. Fully protected amphibians and reptiles, fish, birds, and mammals are listed in sections 5050, 5515, 3511, and 4700 of Fish and Game Code, respectively.

⁹ Rank 3 plants may be analyzed under CEQA Guidelines section 15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a Rank 4 plant are significant even if individual project impacts are not. CRPR Rank 3 and 4 may be considered regionally significant if, e.g., the occurrence is located at the periphery of the species' range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate.

Protection of Birds and Their Nests

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided in the code or any regulation made pursuant thereto. Section 3503.5 of the code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Migratory non-game birds are protected under Section 3800, while other specified birds are protected under Section 3505. California Fish and Game Code Section 3513 adopts the federal definition of migratory bird take, which is defined by the Secretary of the Department of the Interior under provisions of the MBTA. Section 3513 does not prohibit the incidental take of birds if the underlying purpose of the activity is not to take birds.

Stream and Lake Protection

CDFW has jurisdictional authority over streams and lakes and the wetland resources associated with these aquatic systems under California Fish and Game Code through administration of Lake or Streambed Alteration Agreements. Such agreements are not a permit, but rather a mutual accord between CDFW and the project proponent. California Fish and Game Code Sections 1600-1616 authorize CDFW to regulate work that will “substantially divert or obstruct the natural flow of, or 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 lake or stream.” Because CDFW includes under its jurisdiction streamside habitats that may not qualify as waters or wetlands under the federal Clean Water Act definition (see Federal Regulations), CDFW jurisdiction may be broader than USACE jurisdiction.

Under Fish and Game Code Section 1602 (Lake and Streambed Alteration Agreements), the CDFW takes jurisdiction over the stream zone which is defined top of bank or outside extent of riparian vegetation, whichever is the greatest. Under the Section 1602 regulatory program, CDFW enters into a Streambed Alteration Agreement with the project proponent and can impose conditions in the agreement to minimize and mitigate impacts to fish and wildlife resources.

State Regulation of Wetlands and Waters

The state’s authority in regulating activities in wetlands and waters in the Project area resides primarily with the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB). Together the “Boards” are the principal state agencies with primary responsibility for the coordination and control of water quality. The SWRCB, acting through the RWQCB under CWA Section 401, must certify that a USACE CWA Section 404 and RHA Section 10 permit action meets state water quality objectives. Any condition of water quality certification is then incorporated into the USACE section 404/10 permit authorized for the Project.

The SWRCB adopted procedures for discharges of dredged or fill material to the waters of the state on April 2, 2019, which became effective May 28, 2020, and includes the following definition of wetlands.

An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

In December 2020, the Sacramento Superior Court in its decision in *San Joaquin Tributaries Authority v. State Water Resources Control Board* (Case No. 34-2019-80003133) enjoined application of this definition finding that the SWRCB exceeded its policy-making authority in promulgating the procedures. SWRCB has since proposed a state policy that aims to restore the definition's state-wide application.

The state and regional boards have jurisdiction over waters of the state under the Porter Cologne Water Quality Control Act. The Water Code defines "Water of the state" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state." "Waters of the state" includes all "water of the U.S."

The state and regional boards also have jurisdiction over waters of the state under the Porter-Cologne Water Quality Control Act. The state and regional boards evaluate proposed actions for consistency with the RWQCB's Basin Plan, and authorize the discharges of dredged or fill material to waters of the state by issuing waste discharge requirements or, in some cases, a waiver of discharge requirements. The San Francisco RWQCB, with jurisdiction over the Project site, has a policy of no net loss of wetlands and typically requires mitigation for all impacts to wetlands before it will issue a water quality certification. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state, and prospective dischargers are required to submit a report of waste discharge to the regional board.

For certain minor discharges to waters of the state, that are not waters of the U.S., the SWRCB has adopted general water discharge requirements set forth in Water Quality Order No. 2004-0004-DWQ.

Local Plans and Policies

Contra Costa County General Plan

Contra Costa County sets forth a number of natural resource policies in the *Contra Costa County General Plan* (2010) ("General Plan") that may be pertinent to the activities in the vicinity of the Project site. In particular, the General Plan Conservation Element adopted policies and designated Significant Ecological Areas throughout the County. A number of these areas occur in general proximity to the Project site, of which #14, Shoreline between Martinez Waterfront and Concord Naval Weapons Station is the closest, located approximately 1.9 miles north of the Project site. According to the area description: "Tidal marsh supports salt marsh harvest mouse, California clapper rail and possibly black rail. Ornate shrew, black-shouldered kite and Suisun song sparrow also occur here."

General Plan policies, and where particularly relevant to the proposed Project, General Plan goals, related to biological resources include:

Overall Conservation Goals and Policies

- *Goal 8-A:* To preserve and protect the ecological resources of the County.
- *Goal 8-B:* To conserve the natural resources of the County through control of the direction, extent and timing of urban growth.
- *Goal 8-C:* To achieve a balance of uses of the County's natural and developed resources to meet the social and economic needs of the County's residents.
- *Policy 8-3:* Watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.
- *Policy 8-4:* Areas designated for open space/agricultural uses shall not be considered as a reserve for urban uses and the 65 percent standard¹⁰ for non-urban uses must not be violated.

Overall Vegetation and Wildlife Goals and Policies

- *Goal 8-D:* To protect ecologically significant lands, wetlands, plant and wildlife habitats.
- *Goal 8-E:* To protect rare, threatened and endangered species of fish, wildlife and plants, significant plant communities, and other resources which stand out as unique because of their scarcity, scientific value, aesthetic quality or cultural significance. Attempt to achieve a significant net increase in wetland values and functions within the County over the life of the General Plan. The definition of rare, threatened and endangered includes those definitions provided by the Federal Endangered Species Act, the California Endangered Species Act, the California Native Plant Protection Act and the California Environmental Quality Act.
- *Policy 8-6:* Significant trees, natural vegetation, and wildlife populations generally shall be preserved.
- *Policy 8-7:* Important wildlife habitats which would be disturbed by major development shall be preserved, and corridors for wildlife migration between undeveloped lands shall be retained.
- *Policy 8-8:* Significant ecological resource areas in the County shall be identified and designated for compatible low-intensity land uses. Setback zones shall be established around the resource areas to assist in their protection.
- *Policy 8-9:* Areas determined to contain significant ecological resources, particularly those containing endangered species, shall be maintained in their natural state, and carefully regulated to the maximum legal extent. Acquisition of the most ecologically sensitive properties within the County by appropriate public agencies shall be encouraged.
- *Policy 8-10:* Any development located or proposed within significant ecological resource areas shall ensure that the resource is protected.

¹⁰ In 1990, Contra Costa residents approved Measure C-1990, which applies to the unincorporated part of the County and restricts urban development to 35 percent of the land in the County. The remaining 65 percent of the land is preserved for agriculture and open space.

- *Policy 8-11:* The County shall utilize performance criteria and standards which seek to regulate uses in and adjacent to significant ecological resource areas.
- *Policy 8-12:* Natural woodlands shall be preserved to the maximum extent possible in the course of land development.
- *Policy 8-13:* The critical ecological and scenic characteristics of rangelands, woodlands, and wildlands shall be recognized and protected.
- *Policy 8-14:* Development on hillsides shall be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion. Development on open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.
- *Policy 8-15:* Existing vegetation, both native and non-native, and wildlife habitat areas shall be retained in the major open space areas sufficient for the maintenance of a healthy balance of wildlife populations.
- *Policy 8-17:* The ecological value of wetland areas, especially the salt marshes and tidelands of the bay and delta, shall be recognized. Existing wetlands in the County shall be identified and regulated. Restoration of degraded wetland areas shall be encouraged and supported whenever possible.
- *Policy 8-21:* The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.
- *Policy 8-22:* Applications of toxic pesticides and herbicides shall be kept at a minimum and applied in accordance with the strictest standards designed to conserve all the living resources of the County. The use of biological and other non-toxic controls shall be encouraged.
- *Policy 8-23:* Runoff of pollutants and siltation into marsh and wetland areas from outfalls serving nearby urban development shall be discouraged. Where permitted, development plans shall be designed in such a manner that no such pollutants and siltation will significantly adversely affect the value or function of wetlands. In addition, berms, gutters, or other structures should be required at the outer boundary of the buffer zones to divert runoff to sewer systems for transport out of the area.
- *Policy 8-24:* The County shall strive to identify and conserve remaining upland habitat areas which are adjacent to wetlands and are critical to the survival and nesting of wetland species.
- *Policy 8-27:* Seasonal wetlands in grassland areas of the County shall be identified and protected.
- *Policy 8-28:* Efforts shall be made to identify and protect the County's mature native oak, bay, and buckeye trees.

Development Review Process

- *Policy 8-F:* Prepare a list of standard mitigation measures from which the County could select appropriate measures to mitigate the effect of projects in or adjacent to significant ecological resources.

Wetland Areas

- *Policy 8-J:* A setback from the edge of any wetland area may be required for any new structure. The breadth of any such setback shall be determined by the County after environmental review examining (a) the size and habitat value of the potentially affected wetland, and (b) potential impact on the wetland, and adjacent uplands, arising out of the development and operation of the new structure. Unless environmental review indicates that greater or lesser protection is necessary or adequate, setbacks generally will be between 50 and 100 feet in breadth. Expansions or other modifications of non-habitable agriculturally related structures existing as of 1990 shall be exempt from this setback requirement. Parcels which would be rendered un-buildable by application of this standard shall also be exempt.
- *Policy 8-I:* The County shall require avoidance, minimization, and/or compensatory mitigation techniques to be employed with respect to specific developments projects having a potential to affect a wetland. In evaluating the level of compensation to be required with respect to any given project, (a) on-site mitigation shall be preferred to off-site and in-kind mitigation shall be preferred to out-of-kind, (b) functional replacement ratios may vary to the extent necessary to incorporate a margin of safety reflecting the expected degree of success associated with the mitigation plan, and (c) acreage replacement ratios may vary depending on the relative functions and values of those wetlands being lost and those being supplied. To the extent permitted by law, the County may require 3:1 compensatory mitigation of any project affecting a “Significant Wetland.”

Water Resources Goals

- *Goal 8-U:* To maintain the ecology and hydrology of creeks and streams and provide an amenity to the public, while at the same time preventing flooding, erosion and danger to life and property.
- *Goal 8-W:* To employ alternative drainage system improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible.
- *Goal 8-X:* To enhance opportunities for public accessibility and recreational use of creeks, streams, drainage channels and other drainage system improvements.

Policies for New Development Along Natural Watercourses

- *Policy 8-85:* Natural watercourses shall be integrated into new development in such a way that they are accessible and provide a positive visual element.
- *Policy 8-87:* On-site water control shall be required of major new developments so that no increase in peak flows occurs relative to the site’s pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.
- *Policy 8-89.* Setback areas shall be provided along natural creeks and streams in areas planned for urbanization. The setback areas shall be of a width adequate to allow maintenance and to prevent damage to adjacent structures, the natural channel and associated riparian vegetation. The setback area shall be a minimum of 100 feet; 50 feet on each side of the centerline of the creek.

- *Policy 8-90*: Deeded development rights for lands within established setback areas along creeks or streams shall be sought to assure creek preservation and to protect adjacent structures and the loss of private property.
- *Policy 8-91*: Grading, filling, and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.
- *Policy 8-92*: Revegetation of a watercourse shall employ native vegetation, providing the type of vegetation is compatible with the watercourse's maintenance program and does not adversely alter channel capacity.

Contra Costa County Tree Protection Ordinance

Chapter 816-6, Tree Protection and Preservation, of the Contra Costa County Code of Ordinances outlines a variety of measures for the protection of trees in the County. As per County Code Chapter 816-6.6004, relevant criteria defining protected trees includes the following:

A protected tree is any one of the following:

- (1) On all properties within the unincorporated area of the County:
 - (A) Where the tree to be cut down, destroyed or trimmed by topping is adjacent to or part of a riparian, foothill woodland or oak savanna area, or part of a stand of four or more trees, measures twenty inches or larger in circumference (approximately 6.5 inches in diameter) as measured four and one-half feet from ground level, and is included in the following list of indigenous trees: big leaf maple (*Acer macrophyllum*), box elder (*A. negundo*), California buckeye (*Aesculus californica*), white alder (*Alnus rhombifolia*), madrone (*Arbutus menziesii*), toyon (*Heteromeles arbutifolia*), California black walnut (*Juglans hindsii*), California juniper (*Juniperus californica*), tanoak (*Notholithocarpus densiflora*), knob cone pine (*Pinus attenuata*), digger pine (*P. sabiniana*), California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), black cottonwood (*P. trichocarpa*), coast live oak (*Quercus agrifolia*), canyon live oak (*Q. chrysolepis*), blue oak (*Q. douglasii*), black oak (*Q. kelloggii*), valley oak (*Q. lobata*), interior live oak (*Q. wislizenii*), Pacific willow (*Salix lasiandra*), red willow (*S. laevigata*), arroyo willow (*S. lasiolepis*), Pacific red elderberry (*Sambucus racemosa*), coast redwood (*Sequoia sempervirens*), and California bay (*Umbellularia californica*);
 - (B) Any tree shown to be preserved on an approved tentative map, development or site plan or required to be retained as a condition of approval;
 - (C) Any tree required to be planted as a replacement for an unlawfully removed tree.
- (2) On any of the properties specified in subsection (3) of this section:
 - (A) Any tree measuring twenty inches or larger in circumference (approximately six and one-half inches diameter), measured four and one-half feet from ground level including the oak trees listed above;

- (B) Any multi-stemmed tree with the sum of the circumferences measuring forty inches or larger, measured four and one-half feet from ground level;
 - (C) And any significant grouping of trees, including groves of four or more trees.
- (3) Specified properties referred to in subsection (2) of this section includes:
- (A) Any developed property within any commercial, professional office or industrial district;
 - (B) Any undeveloped property within any district;
 - (C) Any area designated on the general plan for recreational purposes or open space;
 - (D) Any area designated in the county general plan open space element as visually significant riparian or ridge line vegetation and where the tree is adjacent to or part of a riparian, foothill woodland or oak savanna area.

Normally, a Tree Permit is required when implementation of a project necessitates removal or work within the dripline of one or more protected trees. Under the County Tree Protection Ordinance, submittal of a Tree Permit application is unnecessary when a project requires approval of another development application, such as a subdivision or development plan. Any development approval may be conditioned to include the conditions of approval normally incorporated into a stand-alone Tree Permit. These conditions typically require restitution for trees to be removed and submittal of a bond or other financial security for protection of trees to be preserved. Additional conditions prohibiting storage of equipment and materials within the driplines of trees to be preserved, requiring installation of tree protection fencing as recommended by the consulting arborist, and requiring implementation of any other measures deemed necessary by the arborist to protect the trees' health may also be adopted (Contra Costa County, 2017).

4.3.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, the Project would cause significant adverse impacts to biological resources if it would:

- 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 or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- e) Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance; or
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

Approach to Analysis

Project components were evaluated using the above significance criteria. For purposes of this EIR, three principal components were considered:

- Magnitude of the impact (e.g., substantial/not substantial),
- Uniqueness of the affected resource (rarity), and
- Susceptibility of the affected resource to perturbation (sensitivity).

The evaluation of significance considers the interrelationship of these three components. For example, a relatively small magnitude impact to a state or federally listed species could be considered significant because the species is very rare and is believed to be very susceptible to disturbance. Conversely, a plant community such as California annual grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to result in a significant impact. Impacts are generally considered less than significant if the habitats and species affected are common and widespread in the region and the state. Impacts are considered beneficial if the action causes no detrimental impacts and results in an increase of habitat quantity and quality.

Topics with No Impact or Otherwise Not Addressed in this EIR

The boundary for the East Contra Costa Habitat Conservation Plan is located approximately 3 miles east of the proposed Project site, and thus Project development would not conflict with this adopted plan. The proposed Project is not located within any other approved Habitat Conservation Plan, Natural Community Conservation Plan or other approved local regional, or state habitat conservation plan area; thus no impact would occur (**Criterion f**) and no mitigation is required.

4.3.5 Impact Analysis

Special-Status Plants

Impact BIO-1: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (Potentially Significant prior to Mitigation)

Northern coastal salt marsh, freshwater marsh, alkali meadow, and grassland communities within and adjacent to the Project site provide suitable habitat for special-status plants including Bolander's water hemlock, soft bird's-beak, Mason's lilaopsis, Congdon's tarplant, small spikerush, fragrant fritillary, delta tule pea, Suisun marsh aster, and delta mudwort. Special-status plants were not identified on previous comprehensive botanical surveys of the site conducted in 2007 and 2008, hence, the likelihood of encountering these species is considered moderate, at best (WBC, 2007b; ESA, 2008). However, with the age of the surveys (over 12 years), presence of potentially suitable habitat on the Project site, and regional presence of these plant species in similar habitat, follow-up surveys are warranted to verify prior survey findings. .

If rare plants are present, Project construction activities, including vegetation removal, site grading and general ground disturbance, and installation of the new water transmission and distribution pipelines, could result in impacts to special-status plant populations through direct effects such as vegetation removal, ground disturbance, or trampling, and indirectly through habitat modifications. This is a potentially significant impact. Implementing **Mitigation Measure BIO-1a**, Avoidance and Minimization for Impacts to Special-Status Plants, would reduce potential construction-related impacts on special-status plants to a less-than-significant level by requiring preconstruction protocol-level surveys, implementing avoidance measures, relocating extant populations, and monitoring to ensure success of relocated/reintroduced populations.

Mitigation Measure BIO-1a: Avoidance and Minimization for Impacts to Special-Status Plants. A qualified botanist with a minimum of four years of academic training and professional experience in botanical sciences and a minimum of two years of experience conducting rare plant surveys shall conduct appropriately timed surveys for special-status plant species with a moderate or high potential to occur in the Project site (i.e., Bolander's water hemlock, soft bird's-beak, Mason's lilaopsis, Congdon's tarplant, small spikerush, fragrant fritillary, delta tule pea, delta mudwort, and Suisun Marsh aster) in all suitable habitat that would be potentially disturbed by the Project.

1. If no special-status plants are found during focused surveys, the botanist shall document the findings of found species in a letter to CDFW and the County, and no further mitigation will be required.
2. If special-status plants are found during focused surveys, the following measures shall be implemented:

- a) Information regarding the special-status plant populations shall be reported to the CNDDDB, mapped, and documented in a technical memorandum provided to the County.
- b) If federally or state listed species are identified during floristic preconstruction surveys, the Project proponent shall mark these plants for avoidance and comply with applicable laws (i.e., the federal and State Endangered Species Acts) including through coordination or consultation with regulatory agencies (i.e., USFWS and/or CDFW), as appropriate, and as described in items d and e, below.
- c) If other special-status plant populations (i.e., California Rare Plant Ranked or locally significant plants) are identified during floristic preconstruction surveys and can be avoided during project implementation, they shall be clearly marked in the field by a qualified botanist and avoided during construction activities. If a Rank 3 or Rank 4 plant species is detected during the survey, the survey report shall analyze species rarity consistent with CEQA Guidelines (Section 15380) to determine if species protection is warranted. If the plants do not warrant protection, then no further action is needed for these species.
- d) If special-status plant populations are identified and cannot be avoided, the Project proponent shall coordinate or consult with the County and regulatory agencies, as appropriate, on relocation of special-status plants. To the extent feasible, special-status plants that would be impacted by the Project shall be relocated within local suitable habitat. This can be done either through salvage and transplanting or by collection and propagation of seeds or other vegetative material. Any plant relocation or reintroduction through seeds or other vegetative material would be done under the supervision of a qualified botanist or restoration ecologist.
- e) If rare plants can be avoided, prior to vegetation removal, ground clearing or ground disturbance, all on-site construction personnel shall be instructed as to the species' presence and the importance of avoiding impacts to rare plant species and their habitat through the Worker Environmental Awareness Program training (see Mitigation Measure BIO-2a, below).
- f) The Project proponent shall prepare a Rare Plant Relocation/Reintroduction and Monitoring Plan for relocated or reintroduced special-status plants which shall detail relocation or reintroduction methods or appropriate replacement ratios (e.g., at least 1:1 based on number of relocated plants or the area occupied by rare plants, as appropriate for the species) and methods for implementation (e.g., planting methods, need for supplemental irrigation, or weed control), success criteria (e.g., greater than 70% survival or ground coverage following 5 years), monitoring and reporting protocols, and contingency measures that shall be implemented if the initial mitigation fails (e.g., replanting to achieve success criteria). The plan shall be developed in coordination with the appropriate agencies prior to the start of local construction activities with the objective of providing equal or better habitat and populations than the impacted area(s). The County shall approve the plan.

- g) If special-status plants are relocated from the Project or reintroduction of plants or seed is implemented, the Project proponent shall maintain and monitor the relocation sites and/or restored areas for 5 years following the completion of construction and restoration activities. The Project proponent shall submit monitoring reports to the County at the completion of restoration and for 5 years following restoration implementation. Monitoring reports shall include photo-documentation, planting specifications, a site layout map, descriptions of materials used, and justification for any deviations from the mitigation plan.

Mitigation Measure BIO-2a: See under Impact BIO-2.

Significance after Mitigation: Less than Significant.

Special-Status Amphibian and Reptiles

Impact BIO-2: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on amphibian or reptile species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (Potentially Significant prior to Mitigation)

The Project site contains potential aquatic habitat for California red-legged frog and western pond turtle within the freshwater pond, Pacheco Creek, and the freshwater marsh in the northeast portion of the site and within the open water drainage channel and associated freshwater marsh in the southern portion of the site. Western pond turtle was observed within the pond on the site and has been previously documented within a half-mile of the Project site. Regional occurrence records for California red-legged frog are more than five miles from the Project site; however, the presence of perennial aquatic habitat and adjacent upland grasslands for dispersal and refugia suggest that on-site habitat elements may support this species. With the exception of the storm drain outfall into Pacheco Creek, project development would avoid direct disturbance to aquatic habitats which might host these species. However, construction activities involving ground disturbance, particularly ground disturbance in the upland grasslands proximate to aquatic habitats such as site grading and construction of the new bioretention pond and other site utility infrastructure, could have a substantial adverse effect on these species directly or through habitat modification if present in non-aquatic habitats. If California red-legged frogs are present in these areas at the time of construction they could be subject to injury or mortality.

Implementation of **Mitigation Measure BIO-2a**, Worker Environmental Awareness Program Training, and **Mitigation Measure BIO-2b**, General Conservation Measures during Construction, would reduce potential Project-related impacts on California red-legged frog and western pond turtle to a *less-than-significant* level. These measures require all Project personnel to attend an environmental training prior to beginning work to educate workers on sensitive resources within and surrounding Project site, general protection measures to be implemented during construction,

and consequences for non-compliance with Project-specific protection measures. Implementation of **Mitigation Measure BIO-2c**, Avoidance, Minimization and Protection Measures for Sensitive Amphibians and Reptiles, would reduce potential impacts on California red-legged frog and western pond turtle to a *less-than-significant* level by requiring the installation of species exclusion fencing around these aquatic habitats, conducting preconstruction surveys, and requiring additional measures during site construction.

Mitigation Measure BIO-2a: Worker Environmental Awareness Program Training.

A Project-specific Worker Environmental Awareness Program (WEAP) training shall be developed and implemented by a qualified biologist for the Project and attended by all construction personnel prior to beginning work onsite. Typical credentials for a qualified biologist include a minimum of four years of academic training and professional experience in biological sciences and related resource management activities, and a minimum of two years of experience conducting surveys for each species that may be present within the Project area. The training could consist of a recorded presentation that could be reused for new personnel. The WEAP training shall generally address but not be limited to the following:

1. Applicable State and federal laws, environmental regulations, project permit conditions, and penalties for non-compliance;
2. Special-status plant and animal species with potential to occur at or in the vicinity of the Project site, their habitat, the importance of these species and their habitat, the general measures that are being implemented to conserve these species as they relate to the Project, and the boundaries within which the project construction shall occur, avoidance measures, and a protocol for encountering such species including a communication chain;
3. Pre-construction surveys associated with each phase of work;
4. Known sensitive resource areas in the Project vicinity that are to be avoided and/or protected as well as approved Project work areas; and
5. Best management practices (BMPs) and their location on the Project site for erosion control and/or species exclusion.

Mitigation Measure BIO-2b: General Conservation Measures during Construction. The County shall ensure that the following general measures are implemented by the contractor during construction to prevent and minimize impacts on special-status species and sensitive biological resources:

1. Ground disturbance and construction footprints will be minimized to the greatest degree feasible.
2. Vehicles shall observe a 15 mile-per-hour speed limit within the Project site.
3. The contractor shall provide closed garbage containers for the disposal of all food-related trash items. All garbage shall be collected daily from the Project site and placed in a closed container from which garbage shall be removed weekly. Construction personnel shall not feed or otherwise attract fish or wildlife to the Project site.

4. As necessary, erosion control measures shall be implemented to prevent any soil or other materials from entering any nearby aquatic habitat. Erosion control measures shall be installed at work site boundaries adjacent to aquatic habitat to prevent soil from eroding or falling into the area.
5. Erosion control measures shall be implemented as described in the Project SWPPP. Sediment control measures shall be furnished, constructed, maintained, and later removed. Plastic monofilament of any kind (including those labeled as biodegradable, photodegradable, or UV-degradable) shall not be used. Only natural burlap, coir, or jute wrapped fiber rolls that are certified weed-free shall be used.
6. All fueling and maintenance of vehicles and equipment and the location of Project staging areas shall occur at least 100 feet from any aquatic habitat and associated freshwater and saltmarsh vegetation. Spill kits containing cleanup materials shall be available on-site.
7. No equipment used in support of Project implementation (e.g. excavator) shall enter or cross waters in the Project area while water is flowing.
8. Project personnel shall be required to report immediately any harm, injury, or mortality of a listed species (federal or state) during construction, including entrapment, to the construction foreman, qualified biologist, or County staff. The County or their consultant shall provide verbal notification to the USFWS Endangered Species Office in Sacramento, California, and/or to the local CDFW warden or biologist (as applicable) within 1 working day of the incident. The County or their consultant shall follow up with written notification to the appropriate agencies within 5 working days of the incident. All special-status species observations shall be recorded on California Natural Diversity Data Base (CNDDB) field sheets/IPaC and sent to the CDFW/USFWS and by County staff or their consultant.

Mitigation Measure BIO-2c: Avoidance, Minimization, and Protection Measures for Sensitive Amphibians and Reptiles. The following conservation measures shall be implemented to minimize or eliminate potential adverse impacts on California red-legged frog (CRLF) and western pond turtle (WPT) during Project construction:

1. Consistent with the USFWS *California Red-legged Frog Survey Protocol*, a habitat assessment shall be prepared and submitted to the USFWS to support their determination of the species' potential to occur on site. If the USFWS agrees that the habitat assessment establishes species absence, or if subsequent protocol-level surveys requested by the USFWS following their review of the habitat assessment establish species absence, then no further action shall be needed to protect this species. In the absence of USFWS coordination, CRLF shall be presumed present within suitable aquatic habitat on the site and protective measures described below shall be followed.
2. A qualified biologist shall survey the work sites within 5 calendar days prior to the onset of construction for CRLF and WPT to determine presence (and life stage) of these species on the Project site.

Additionally, a qualified biologist shall conduct a pre-construction survey of Project aquatic habitat for CRLF and WPT immediately prior to the start of construction activities, beginning with installation of exclusion fencing (see 3, below). The

surveys will consist of walking the Project work limits adjacent to areas where natural habitat is present to ascertain presence of these species (e.g., grasslands adjacent to suitable aquatic habitat within the Project site).

3. Unless explicitly authorized by the USFWS (e.g., through issuance of a Biological Opinion, CRLF shall not be relocated if encountered within the Project site. Rather CRLF shall be allowed to disperse of their own volition while all work is halted within 50 feet of individuals. Prior to conducting preconstruction surveys, the qualified biologist shall prepare a relocation plan that describes the appropriate survey and handling methods for WPT and identifies nearby relocation sites where individuals would be relocated if found during the preconstruction surveys. The relocation plan shall be submitted to CDFW for review prior to the start of construction activities. The animal shall be relocated to equivalent or better WPT habitat relative to where it was found.
4. A qualified biologist shall monitor installation of exclusion fencing (see 4, below) to identify, capture, and relocate WPT if found, and halt or observe work in the vicinity of CRLF if encountered onsite. The qualified biologist shall have the authority to stop construction activities proximate to these species and develop alternative work practices, in consultation with construction personnel and resource agencies (as appropriate), if construction activities are likely to affect special-status species or other sensitive biological resources.

Unless explicitly authorized by the USFWS (e.g., through issuance of a Biological Opinion, CRLF shall not be relocated if encountered within the Project site. Rather CRLF shall be allowed to disperse of their own volition while all work is halted within 50 feet of individuals. If a CRLF is not dispersing on its own volition, the qualified biologist shall monitor the frog while exclusion fence installation or other work continues, as long as they can ensure the safety of the frog. The qualified biologist shall immediately inform the construction manager that work should be halted or modified (in the case of a buffer or non-dispersing individual), if necessary, to avert avoidable take of listed species. Should egg masses, metamorphs, or tadpoles of CRLF be identified within Project site aquatic habitat during these initial surveys or at any time during Project construction, the USFWS shall be contacted prior to continuation of work near the discovery.

If WPT and/or CRLF are not observed during pre-construction surveys or installation of the exclusion fence, continued biological monitoring during construction is not necessary. If either of these species are observed onsite at any time, the Project Applicant shall coordinate with USFWS and /or CDFW as necessary to determine the appropriate measures to avoid species' take.

5. The Project Applicant or its contractors shall install temporary exclusion fencing around key project boundaries (i.e., at the work limit of aquatic habitat and associated marsh vegetation to be preserved under the Project) and around all staging and laydown areas to exclude CRLF and WPT from Project construction activities.
 - Fencing shall be installed immediately prior to the start of construction activities under the supervision of a qualified biologist.
 - The Project Applicant or their contractor shall ensure that the temporary exclusion fencing is continuously maintained until all Project construction

activities are completed. Daily fence inspections shall be conducted by the qualified biologist during the first week of construction. Thereafter, the qualified biologist may train the contractor to conduct regular inspections and coordinate findings with the qualified biologist. Similarly, vehicles or equipment parked overnight at the Project staging areas or work areas shall be inspected for harboring species each morning by the qualified biologist (or the trained contractor) before they are moved.

- The wildlife exclusion fencing shall be a minimum height of 3 feet above ground surface, with an additional 4 to 6 inches of fence material buried such that animals cannot burrow under the fence.
 - The exclusion fence shall not cross the marsh associated with Pacheco Creek along the south edge of the site or bisect marsh vegetation to allow wildlife movement to continue through these areas when work is not occurring.
6. All onsite excavations of a depth of 8 inches or greater shall be either backfilled at the end of each workday, covered with heavy metal plates, or escape ramps shall be installed at a 3:1 grade to allow wildlife that fall in a means to escape.

Significance after Mitigation: Less than Significant.

Special-Status and Migratory Birds

Impact BIO-3: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on migratory birds and/or on bird species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (Potentially Significant prior to Mitigation)

Project construction, including vegetation and tree trimming or removal, ground disturbance, new construction, and a general increase in noise and visual disturbance within the Project site may adversely affect nesting birds within 1/4-mile of the Project site during the nesting season (approximately February 1 to August 31). Potentially suitable foraging and/or nesting habitat is present within the freshwater marsh, brackish marsh, grassland, and woodland habitats of the Project site and surrounding vicinity for special-status birds, including tricolored blackbird, white-tailed kite, northern harrier, Suisun song sparrow, and California black rail; Ridgeway's rail is both unlikely to occur and not expected to nest on the Project site. Other migratory and resident raptor and passerine species such as red-tailed hawk, great horned owl, Bewick's wren and northern mockingbird could forage and/or nest in the grassland or trees on the Project site.

The conversion of grasslands and woodlands on the Project site to residential development would result in the permanent loss of potential nesting and foraging habitat for special-status birds. Because the majority of the habitat that would be potentially disturbed by the Project is disturbed annual grassland, the loss of potential nesting and foraging habitat for special-status birds is considered less-than-significant.

The removal and trimming of trees and other shrub vegetation on the site, and the grading and ground disturbance of grasslands during nesting season could destroy active bird nests, if present. Site grading or ground disturbance associated with creation of the new bioretention pond could also destroy active nests located in marsh vegetation surrounding the existing pond, or disrupt nesting efforts in this area if the footprint of construction encroaches on marsh habitat. In addition, adverse effects, such as an increase in noise and visual disturbance associated with construction, could indirectly impact nesting activity by disrupting nesting efforts in the habitat within and surrounding Project disturbance areas.

The loss of an active nest occupied by a MBTA-named or otherwise special-status bird species attributable to Project activities would be considered a significant impact under CEQA.

Mitigation Measure BIO-2a (described above) requires all Project personnel involved in vegetation and/or ground-disturbing work to attend an environmental training session prior to beginning work to educate workers on sensitive resources within and surrounding the Project site and the regulatory environment protecting them, general and Project-specific protection measures and protocols to be implemented during construction, and consequences for non-compliance with protection measures. This measure, compliance with the MBTA and California Fish and Game Code, and in combination with **Mitigation Measure BIO-3a**, Nesting Bird Protection Measures, and **Mitigation Measure BIO-3a**, Avoid and Minimize Impacts to California Black Rail and Ridgway's Rail, would avoid or reduce potential impacts on migratory and special-status birds to a less-than-significant level by limiting removal of vegetation (including trees) to periods outside of the bird nesting season, conducting pre-construction nesting bird surveys to identify active nests, and establishing no work buffer zones around active nests identified on or near the project sites, and providing surveys to determine the potential presence of black rail near proposed work activities. Through adherence to these measures and compliance with State and federal regulations, the Project would not have a significant impact on nesting birds. Following construction, the new subdivision is not expected to diminish the use of the adjacent Open Space areas (i.e., the perennial pond and marshes in the site, portions of the hill) by nesting birds.

Mitigation Measure BIO-2a: See under Impact BIO-2.

Mitigation Measure BIO-3a: Nesting Bird Protection Measures.

1. Project staging, project construction, vegetation removal (e.g., clearing and grubbing), vegetation management activities requiring heavy equipment, or tree trimming shall be performed outside of the bird nesting season (February 1st through August 31st) to avoid impacts to nesting birds; if these activities must be performed during the nesting bird season, a qualified biologist shall be retained to conduct a pre-construction survey in the project construction and staging areas for nesting birds and verify the presence or absence of nesting birds no more than 5 calendar days prior to construction activities or after any construction breaks of 5 calendar days or more. Surveys shall be performed for the project construction and staging areas and suitable habitat within 250 feet of the project construction and staging areas in order to locate any active passerine (perching bird) nests and within 500 feet of the project construction and staging areas to locate any active raptor (birds of prey) nest. If nesting birds and raptors do not occur within 250 and 500 feet of the Project area,

respectively, then no further action is required if construction begins within 5 calendar days.

2. If active nests are located during the pre-construction bird nesting surveys, no-disturbance buffer zones shall be established around nests, with a buffer size established by the qualified biologist. Typically, these buffer distances are between 50 feet and 250 feet for passerines and between 300 feet and 500 feet for raptors. These distances may be adjusted depending on the level of surrounding ambient activity and if an obstruction, such as a building or structure, is within line-of-sight between the nest and construction. Reduced buffers may be allowed if a full-time qualified biologist is present to monitor the nest and has authority to halt construction if bird behavior indicates continued activities could lead to nest failure. Buffered zones shall be avoided during construction-related activities until young have fledged or the nest is otherwise abandoned.

Mitigation Measure BIO-3b: Avoid and Minimize Impacts to California Black Rail and Ridgway's Rail.

To minimize or avoid the loss of individual California black rail and Ridgway's rail, construction activities, including vegetation management activities requiring heavy equipment, adjacent to tidal marsh areas (within 500 feet [150 meters] or a distance determined in coordination with USFWS or CDFW, shall be avoided during the breeding season from February 1 through August 31.

- If areas within or adjacent to rail habitat cannot be avoided during the breeding season (February 1 through August 31), protocol-level surveys shall be conducted to determine rail nesting locations. The surveys will focus on potential habitat that could be disturbed by construction activities during the breeding season to ensure that rails are not breeding in these locations.

Survey methods for rails will follow the *Site-Specific Protocol for Monitoring Marsh Birds*, which was developed for use by USFWS and partners to improve bay-wide monitoring accuracy by standardizing surveys and increasing the ability to share data (Wood et al. 2017). Surveys are conducted during the approximate period of peak detectability, January 15 to March 25 and are structured to efficiently sample an area in three rounds of surveys by broadcasting calls of target species during specific periods of each survey round. Call broadcasting increases the probability of detection compared to passive surveys when no call broadcasting is employed. This protocol has since been adopted by Invasive Spartina Project (ISP) and Point Blue Conservation Science to survey Ridgway's rails at sites throughout San Francisco Bay Estuary. The survey protocol for Ridgway's rail is summarized below.

- Previously used survey locations (points) should be used when available to maintain consistency with past survey results. New survey points should be at least 200 meters apart along transects in or adjacent to areas representative of potentially suitable marsh habitat. Points should be located to minimize disturbances to marsh vegetation. Up to 8 points can be located on a transect.
- At each transect, three surveys (rounds) are to be conducted, with the first round of surveys initiated between January 15 and February 6, the second round performed February 7 to February 28, and the third round March 1 to March 25.

Surveys should be spaced at least one week apart and the period between March 25 to April 15 can be used to complete surveys delayed by logistical or weather issues. A Federal Endangered Species Act Section 10(a)(1)(A) permit is required to conduct active surveys.

- Each point on a transect will be surveyed for 10 minutes each round. A recording of calls available from USFWS is broadcast at each point. The recording consists of 5 minutes of silence, followed by a 30-second recording of Ridgway's rail vocalizations, followed by 30 seconds of silence, followed by a 30-second recording of California black rail, followed by 3.5 minutes of silence.
- If no breeding Ridgway's rails or black rails are detected during surveys, or if their breeding territories can be avoided by 500 feet (150 meters), then Project activities may proceed at that location.
- If protocol surveys determine that breeding Ridgway's rails or black rails are present in the Project area, the following measures would apply to project activities conducted during their breeding season (February 1- August 31):
 - A USFWS- and CDFW-approved biologist with experience recognizing Ridgway's rail and black rail vocalizations will be on site during construction activities occurring within 500 feet (150 meters) of suitable rail breeding habitat.
 - If a Ridgway's rail or black rail vocalizes or flushes within 10 meters, it is possible that a nest or young are nearby. If an alarmed bird or nest is detected, work will be stopped, and workers will leave the immediate area carefully and quickly. An alternate route will be selected that avoids this area, and the location of the sighting will be recorded to inform future activities in the area.
 - All crews working within 500 feet of aquatic habitats during rail breeding season will be trained and supervised by a USFWS- and CDFW-approved rail biologist.
 - If any activities will be conducted during the rail breeding season in Ridgway's rail- or black rail-occupied marshes, biologists will have maps or GPS locations of the most current occurrences on the site and will proceed cautiously and minimize time spent in areas where rails were detected.
- For vegetation management activities in suitable habitat for Ridgway's rail or black rail, the following measures will be implemented:
 - Any herbicides to be used will be EPA-certified for use in/adjacent to aquatic environments.
 - Vegetation management activities will be limited to areas outside of tidal marsh and non-tidal pickleweed marsh habitats.

Significance after Mitigation: Less than Significant.

Special-Status and Otherwise Protected Mammals

Impact BIO-4: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on salt marsh harvest mouse and special-status bat species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (Potentially Significant prior to Mitigation)

Salt Marsh Harvest Mouse

The perennial marsh and seasonal marsh habitats in the site provide marginal, yet potentially suitable habitat for salt marsh harvest mouse. The seasonal wetlands and upland grasslands adjacent to the marsh habitats may also be used by this species on occasion. Construction activities in close proximity to these habitats that could impact salt marsh harvest mouse include clearing and grubbing vegetation, use of heavy equipment, and presence of workers and vehicles associated with all aspects of construction in or near potentially suitable salt marsh harvest mouse habitat.

Direct impacts that could occur to salt marsh harvest mouse include mortality due to crushing by vehicles, materials staging, heavy equipment or human activity in suitable salt marsh harvest mouse habitat, or mutilation by mowers or other motorized equipment used for vegetation removal. Indirect impacts could occur if equipment staging, project construction or human activity render otherwise suitable habitat temporarily unsuitable due to the lack of accessibility, noise, vibration, and increased activity levels associated with grubbing, earth moving, and heavy equipment operation. Following construction, the new subdivision is not expected to diminish the use of potentially suitable salt marsh harvest mouse habitat in the adjacent Open Space areas.

In summary, construction-related impacts on salt marsh harvest mouse would be potentially significant. However, implementation of **Mitigation Measures BIO-2a** and **BIO-4a** would reduce potential construction and vegetation management impacts to salt marsh harvest mouse to a less-than-significant level by providing environmental training to construction personnel, providing general protection measures, conducting pre-construction surveys, identification and avoidance of suitable habitat for the species, and where avoidance is not possible, using hand tools to clear vegetation. Further, with implementation of Mitigation Measure BIO-4a, suitable marsh habitat will be protected during work activities, silt fencing will separate suitable habitat from adjacent work areas, and a qualified biological monitor will be in place to stop work if the species is detected. With implementation of Mitigation Measures BIO-2a and BIO-4a, construction-related impacts would be less than significant. Operational and long-term effects of the Project on salt marsh harvest mouse would be **less than significant**.

Mitigation Measure BIO-4a: Avoidance and Minimization Measures for Salt Marsh Harvest Mouse.

- A USFWS and CDFW-approved biologist, with knowledge of and experience with salt marsh harvest mouse habitat requirements, will conduct pre-construction surveys

for the species and identify and mark suitable salt marsh harvest mouse marsh habitat prior to Project initiation.

- Ground disturbance to suitable salt marsh harvest mouse habitat (including, but not limited to pickleweed, and emergent salt marsh vegetation including bulrush and cattails) will be avoided to the extent feasible. Where salt marsh harvest mouse habitat cannot be avoided - such as for channel excavation, access routes and grading, or anywhere else that vegetation could be trampled or crushed by work activities - vegetation will be removed from the ground disturbance work area plus a 10-foot buffer around the area, as well as any access routes within salt marsh harvest mouse habitat, utilizing mechanized hand tools or by another method approved by the USFWS and CDFW. Vegetation height shall be maintained at or below 5 inches above ground. Vegetation removal in salt marsh harvest mouse habitat will be conducted under the supervision of the USFWS- and CDFW-approved biologist.
- To protect salt marsh harvest mouse from construction-related traffic, access roads, haul routes, and staging areas within 200 feet of salt marsh harvest mouse habitat will be bordered by temporary exclusion fencing. The fence should be made of a smooth material that does not allow salt marsh harvest mouse to climb or pass through, of a minimum above-ground height of 30 inches, and the bottom should be buried to a depth of at least 6 inches so that mice cannot crawl under the fence. Any supports for the salt marsh harvest mouse exclusion fencing (e.g., t-posts) will be placed on the inside of the project area. The last 5 feet of the fence shall be angled away from the road to direct wildlife away from the road. A USFWS- and CDFW-approved biologist with previous salt marsh harvest mouse experience will be on site during fence installation and will check the fence alignment prior to vegetation clearing and fence installation to ensure no salt marsh harvest mice are present.
- All construction equipment and materials will be staged on existing roadways and away from suitable wetland habitats when not in use.
- Vegetation shall be removed from all non-marsh areas of disturbance (driving roads, grading and stockpiling areas) to discourage presence of salt marsh harvest mouse.
- A USFWS- and CDFW-approved biologist with previous salt marsh harvest mouse monitoring and/or surveying experience will be on site during construction activities occurring in suitable habitat. The biologist will document compliance with the project permit conditions and avoidance and conservation measures. The USFWS- and CDFW-approved biologist has the authority to stop project activities if any of the requirements associated with these measures is not being fulfilled. If salt marsh harvest mouse is observed in the work area, construction activities will cease in the immediate vicinity of the salt marsh harvest mouse. The individual will be allowed to leave the area before work is resumed. If the individual does not move on its own volition, the USFWS-approved biologist would contact USFWS (and CDFW if appropriate) for further guidance on how to proceed.
- If the USFWS- and CDFW-approved biologist has requested work stoppage because of take of any of the listed species, or if a dead or injured salt marsh harvest mouse is observed, the USFWS and CDFW will be notified within one day by email or telephone.
- For vegetation management activities in suitable habitat for salt marsh harvest mouse, the following measures shall be implemented:

- Any herbicides to be used will be EPA certified for use in/adjacent to aquatic environments.
- Work in upland habitat within 100 feet of salt marsh harvest mouse habitat will be scheduled to avoid extreme high tides when there is potential for salt marsh harvest mouse to move to higher, drier grounds, such as ruderal and grassland habitats.

Special Status Bats

Project construction requiring tree trimming or tree removal and grading or ground disturbance could result in disturbance to special-status or common bats roosting within trees of the Project site or nearby. Special-status bats (e.g., Townsend's big-eared bat, western red bat, and hoary bat) have the potential to roost in tree cavities and foliage of the valley oak trees on the hill or other trees bordering the Project site. Other bats, such as the commonly-found Mexican free-tailed bat (*Tadarida brasiliensis*) could also roost in similar habitat of the Project site. Maternity roosts are roosts occupied by pregnant females or females with non-flying young. Non-breeding roosts are day roosts without pregnant females or non-flying young. Destruction of an occupied, non-breeding bat roost, resulting in the death of bats; disturbance that causes the loss of a maternity colony of bats (resulting in the death of young); or destruction of hibernacula¹¹ are prohibited under CEQA and would be considered a significant impact. Bat mortality could be the result of direct or indirect Project disturbances. Direct disturbance could include tree removal, or roost destruction indirectly by construction noise. Indirect disturbance to bat species could result in behavioral alterations due to construction-associated noise or vibration in close proximity maternity roost or hibernacula.

Implementing **Mitigation Measure BIO-2a** (described above in Impact BIO-2) and **Mitigation Measure BIO-4b**, Avoidance and Minimization Measures for Special-Status Bats, would reduce potential impacts on special-status bats to a less-than-significant level by educating workers on the potential presence and sensitivities of these species, requiring pre-construction roost surveys, and implementing avoidance measures if potential roosting habitat or active roosts are identified. Through adherence to these measures, the Project would not have a significant impact on special-status bats.

Mitigation Measure BIO-4b: Avoidance and Minimization Measures for Bats. A qualified biologist who is experienced with bat surveying techniques, behavior, roosting habitat, and identification of local bat species shall conduct a pre-construction habitat assessment of the Project site to characterize potential bat habitat and identify potentially active roost sites. No further action is required if the pre-construction habitat assessment does not identify bat habitat or signs of potentially active bat roosts within the Project site (e.g., guano, urine staining, dead bats, etc.).

If the surveying biologist identifies potential roosting habitat or potentially active bat roosts within or in the immediate vicinity of the Project site, including trees that could be trimmed or removed under the Project, the following measures shall be implemented:

¹¹ Hibernaculum refers to the active winter quarters of a hibernating animal.

1. Removal of- or disturbance to trees identified as potential bat roosting habitat or active roosts shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, to the extent feasible. These dates avoid bat maternity roosting season (approximately April 15 to August 31) and period of winter torpor (approximately October 15 to February 28).
 - a. If removal of- or disturbance to trees identified as potential bat roosting habitat or active roosts during the periods when bats are active is not feasible, a qualified biologist will conduct pre-construction surveys within 5 calendar days prior to disturbance to further evaluate bat activity within the potential habitat or roost site.
 - b. If active bat roosts are not identified in potential habitat during pre-construction surveys, no further action is required prior to removal of- or disturbance to trees within the pre-construction survey area.
 - c. If active bat roosts or evidence of roosting is identified during pre-construction surveys, the qualified biologist shall determine, if possible, the type of roost and species.
 - i. If special-status bat species or maternity or hibernation roosts are detected during these surveys, appropriate species- and roost-specific avoidance and protection measures shall be developed by the qualified biologist. Such measures may include postponing the removal of or disturbance to trees, or establishing exclusionary work buffers while the roost is active. A minimum 100-foot no disturbance buffer shall be established around special-status species, maternity, or hibernation roosts until the qualified biologist determines they are no longer active. The size of the no-disturbance buffer may be adjusted by the qualified biologist, in coordination with CDFW, depending on the species present, roost type, existing screening around the roost site (such as dense vegetation), as well as the type of construction activity that would occur around the roost site, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals.

Active maternity roosts shall not be disturbed without advance CDFW approval until the roost disbands at the completion of the maternity roosting season or otherwise becomes inactive, as determined by the qualified biologist.
 - ii. If a common species, non-maternity or hibernation roost (e.g., bachelor daytime roost) is identified, disturbance to- or removal of trees or structures may occur under the supervision of a qualified biologist as described under 3).
2. The qualified biologist shall be present during tree disturbance or removal if active non-maternity or hibernation bat roosts or potential roosting habitat are present. Trees with active non-maternity or hibernation roosts of common species or potential habitat shall be disturbed or removed only under clear weather conditions when precipitation is not forecast for three days and when daytime temperatures are at least 50°F to ensure bats are active and can abandon any potential roosts as disturbance from the clearing activities occurs, and when wind speeds are less than 15 mph.

Trimming or removal of trees with active (non-maternity or hibernation) or potentially active roost sites of common bat species shall follow a two-step removal process:

- a. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using hand tools (e.g., chainsaws).
 - b. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using hand tools or other equipment (e.g. excavator or backhoe).
 - c. All felled trees shall remain on the ground for at least 24 hours prior to chipping, off-site removal, or other processing to allow any bats to escape, or be inspected once felled by the qualified biologist to ensure no bats remain within the tree and/or branches.
3. Bat roosts that begin during construction are presumed to be unaffected as long as a similar type of construction activity continues, and no buffer would be necessary. Direct impacts on bat roosts or take of individual bats will be avoided.

Mitigation Measure BIO-2a: See under Impact BIO-2.

Significance after Mitigation: Less than Significant.

Sensitive Natural Communities

Impact BIO-5: Construction of the Project could have a substantial adverse effect on sensitive natural communities. (Criterion b) (Potentially Significant prior to Mitigation)

Creeping Wildrye Grassland

The Project site contains two areas of creeping wildrye grassland located on the lower west-facing slope of the hill near the highway and below the saddle on the southeast-facing slope near the northern end of the Project site. Creeping wildrye grassland receives consideration under CEQA because it is considered a sensitive plant community by the CDFW and is locally uncommon. Project development plans depict the west-facing slope of the hill occupied by creeping wildrye grassland as open space which would not be directly disturbed during construction; however, necessary changes to site topography in the north end of the site occupied by creeping wildrye grassland would require grading and/or ground disturbance to accommodate site development. Based on floristics surveys, approximately 3.5 acres of creeping wildrye grassland would be impacted by the proposed development (WBC, 2007b; Moore, 2021). Permanent impacts to creeping wildrye grassland resulting from Project development would be potentially significant due to the scarcity of this vegetation community in the region. Implementation of **Mitigation Measure BIO-5a, Salvage and Reintroduction of Creeping Wildrye Grassland**, would reduce Project-related impacts to this sensitive natural community to a less-than-significant level by identifying the location of this community onsite for avoidance,

harvesting the perennial grasses from locations where avoidance is infeasible (e.g., where grading and /or ground disturbance would occur onsite), and reintroducing them to locations within the Project site that would be preserved as open space following development.

Mitigation Measure BIO-5a: Salvage and Reintroduction of Creeping Wildrye Grassland. The following measures shall be implemented prior to construction to avoid or minimize impacts to creeping wildrye grassland within the Project site.

1. A qualified botanist shall identify the boundaries of creeping wildrye grassland within the Project site during the flowering season (between June and July) and prior to site grading. Boundaries of this sensitive natural community shall be mapped and flagged for avoidance, if feasible.
2. Where avoidance of this community is infeasible, the perennial grasses shall be harvested at the appropriate time and under the direction of the qualified botanist from locations where grading and/or ground disturbance will occur within the Project site.
3. Harvested grasses shall be stored for reintroduction into suitable habitat within upland portions of the Project site that will be preserved as open space.
4. The Project applicant shall contract a qualified restoration ecologist to prepare a Monitoring Plan for relocated / transplanted creeping wildrye grasses within the Project site. The plan shall detail methods and location for relocating or reintroducing the grasses, success criteria, monitoring methods and maintenance for successful establishment, reporting protocols, and contingency measures to be implemented if the initial mitigation fails. The plan shall be developed in coordination with the appropriate agencies prior to the start of local construction activities, with the objective of providing equal or better habitat and populations than the impacted area(s). The recommended success criteria for relocated plants shall be 0.75:1 ratio [number of plants established: number of plants impacted] after two years, unless otherwise specified by CDFW.
5. The plan shall be submitted to the County and CDFW prior to the start of local construction activities within the creeping wildrye grassland.
6. Monitoring reports shall include photo-documentation, planting specifications, a site layout map, descriptions of materials used, and justification for any deviations from the monitoring plan.

Valley Oak Woodland

Valley oak woodland occurs on the north-facing slope of the hill within the Project site. Disturbance to this valley oak woodland may be necessary during grading and may require removal of approximately 30 trees. Oak woodland is considered a sensitive natural community by CDFW for its local rarity. Additionally, valley oak, coast live oak, and California bay trees on the hill are protected under the Contra Costa County Tree Protection and Preservation Ordinance. Permanent impact to this valley oak woodland community as a result of the Project through removal of protected trees is potentially significant. Implementation of **Mitigation Measure BIO-5b**, Enhancement and Creation of Valley Oak Woodland, would reduce Project-related impacts to this sensitive natural community to a less-than-significant level by requiring areas of

oak woodland disturbed under the Project be mitigated at a ratio of 1:1 (restored/enhanced/preserved area: impacted area) through planting of valley oak trees on the hill within the Project site in areas to be preserved as open space or through payment of an in-lieu fee. Project impacts to individual protected trees are discussed under Impact BIO-8, below.

Mitigation Measure BIO-5b, Enhancement and Creation of Valley Oak Woodland:

The Project applicant shall mitigate for temporary disturbance of oak woodland in support of the Project through restoration or preservation / enhancement / creation of oak woodland at a ratio of 1:1 (restored/enhanced/preserved area: impacted area) through one of the following options:

1. Planting replacement trees within the Project site on areas of the hill that will be preserved as open space following development.

The Project sponsor shall contract with a qualified restoration ecologist to prepare a Habitat Mitigation and Monitoring Plan (HMMP) for oak woodland habitat to be restored as part of the Project. The HMMP would be subject to approval by Contra Costa County. The HMMP shall include a detailed description of restoration/enhancement/preservation actions proposed such as a planting plan, a weed control plan to prevent the spread of invasive and non-native species within restored areas, and erosion control measures to be installed around the restored area following mitigation planting to avoid or minimize sediment runoff throughout the Project site; restoration performance criteria for the restored area that establish success thresholds over a period of 5 years; and proposed monitoring/maintenance program to evaluate the restoration performance criteria, under which progress of restored areas are tracked to ensure survival of the mitigation plantings. The program shall document overall health and vigor of mitigation plantings throughout the monitoring period and provide recommendations for adaptive management as needed to ensure the site is successful, according to the established performance criteria. An annual report documenting the results and providing recommendations for improvements throughout the year shall be provided to the County.

In designing the Tree Replacement Plan, the arborist shall review the final project grading plans to ensure that adequate tree preservation methods, guidelines, and conditions are in place. The project arborist shall host pre-demolition meetings with the general contractor and demolition contractor to determine clearance pruning, stump removal techniques, fencing placement and, timing to establish a Tree Protection Zone (TPZ). The arborist shall conduct post-demolition meetings to review and confirm tree protection fencing for grading and construction. All vehicles, equipment, and storage of job site materials and debris, shall be kept outside of the TPZ. The arborist shall incorporate standard protocols set forth in the American National Standards Institute (ANSI) *A300 Construction Management Standard, Part 5* and the International Society of Arboriculture's *Best Management Practices: Managing Trees During Construction*.

2. Paying an in-lieu fee to a natural resource agency or a non-profit organization that would use the fees to protect or enhance oak woodland habitat of the region.

If an in-lieu fee is used for mitigation, the amount of the in-lieu fee shall be determined either by calculating the value of the land with oak woodland habitat proposed for removal, or by some other calculation. An alternate calculation shall reflect differences in the quality of habitat proposed for removal, and may consider the cost of comparable habitat (fee title or easement) in nearby areas. The amount of

the in-lieu fee and entity receiving the funds shall be subject to review and approval by Contra Costa County.

Northern Coastal Saltmarsh

Northern coastal salt marsh northeast of the perennial pond is expected to be fully avoided, pending USACE verification of the updated wetland delineation and final project design. While not anticipated, site grading along the northern boundary of Parcel E or during construction of the future overflow spillway connecting the C3 bioretention pond to the park area within Parcel E could result in impacts to northern coastal salt marsh. Protection measures described in **Mitigation Measure BIO-6a**, Protection of Jurisdictional Wetlands and Other Waters, would ensure that potential impacts to this northern coastal saltmarsh are avoided or minimized during construction. Should the Project require minor fill of northern coastal salt marsh, compensatory mitigation would be required for temporary and/or permanent impacts to this sensitive natural community. Implementation of **Mitigation Measure BIO-6b**, Compensation for Impacts to Wetlands and Waters, below, would ensure that potential impacts to northern coastal salt marsh would be less than significant.

Mitigation Measure BIO-6a: See under Impact BIO-6.

Mitigation Measure BIO-6b: See under Impact BIO-6.

Significance after Mitigation: Less than Significant.

Jurisdictional Wetlands and Other Waters

Impact BIO-6: Construction of the Project could have a substantial adverse effect on wetlands or other Waters of the U.S. and the State. (Criterion c) (Potentially Significant prior to Mitigation)

The drainage channel and freshwater marsh along the southern boundary of the site, the perennial pond and associated freshwater marsh in the northeast part of the site, and the seasonal wetlands and wetlands dominated by pickleweed (i.e., northern coastal saltmarsh) along the edges of the marshes, and the seep near the base of the hill are potentially jurisdictional wetlands and waters of the U.S. and/or waters of the state within the Project site, as those terms are described in *Section 4.3.3. Regulatory Framework*.

Fill of Jurisdictional Waters

Collectively, the regulatory framework established to protect waters of the U.S. and state requires that fill of wetlands and waters be avoided or minimized to the maximum extent practicable (e.g., design project elements to be placed outside waters of the U.S./waters of the state) while still accomplishing the project's purpose. Where impacts to such waters cannot be avoided, permits or approvals from one or more agencies with jurisdiction over the aquatic resource (e.g., USACE, CDFW, RWQCB) may be required, and those permits or approvals may specify measures and

performance standards to avoid and/or mitigate such effects. In addition, most direct impacts to wetlands and other waters trigger a requirement for compensatory mitigation aimed at creating, restoring, or enhancing similar ecological functions and services as those displaced. The types, amounts, and methods of compensatory measures required often differ between the permitting agencies depending on the specific resources they regulate and the policies and guidelines they implement.

While site development includes several components in proximity to wetlands and/or waters subject to state and federal regulatory authority, the Project has been designed to avoid or minimize construction or other work activities that would result in the temporary or permanent fill of these features to the maximum extent practicable. The fill of the seep near the base of the hill and the placement of fill in Pacheco Creek associated with the storm drain outfall cannot be avoided and these actions would require approval from applicable regulatory agencies.

Preservation of Parcel B

The drainage channel, freshwater marsh and alkali meadow in the southern portion of the site and perennial pond and freshwater marsh in the northeastern portion of the site are potential federal and/or state jurisdictional wetlands and waters within Parcel B of the Project site. This area collectively includes 19.8 acres of land that would be preserved in its current condition as open space under the Project. As Parcel B would be preserved as open space, no direct impact to these federal and/or state jurisdictional aquatic features through placement of fill is anticipated under the Project.

Water Supply Pipeline

The Project includes installation of a new 12-inch water supply line located within C Drive that would connect to new 6-inch distribution lines within Central Avenue and Palms Drive. The new 12-inch water line within C Drive would extend south of the development onto property owned by Conco Inc. following a 20-foot wide easement beneath an existing gravel road between the brackish and freshwater marshes in the southern portion of the Project site. The new water supply pipeline would continue east along the BNSF railroad grade and through a parking lot to tie in to an existing Contra Costa Water District 12-inch water supply pipeline in the driveway of the Conco property. The pipelines would be installed using conventional open-cut trenching. The alignment of the water transmission lines within the Project site and connection points with existing Contra Costa County Water District infrastructure has been selected to avoid direct fill of wetlands or waters of the U.S. and/or state.

Parklands and Bioretention Pond

Due to the scale of development planned for the site, the Project applicant has prepared a Stormwater Control Plan to address stormwater treatment of the site which consist of installing and/or maintaining self-treating areas (open space, park and landscaped areas) and a bioretention area (Parcel F) that would treat and hydromodify runoff from the development (Balance Hydrologics, Inc., 2020). Runoff from the hilltop open space would be collected and conveyed in a pipe to outfall in the self-treating areas adjacent to the drainage channel and associated

freshwater marsh (Parcel B). The future park/open space in Parcel E (approximately 4.5-acres) in the northeastern portion of the site would also be self-treating. Park amenities and landscaping would be established in upland portions of Parcel B to avoid direct fill of these potential jurisdictional wetlands and waters.

The bioretention area would control and contain increased stormwater runoff anticipated with the increase of impervious surfaces associated with the development during the operation phase of the Project. The bioretention area would collect site runoff for treatment prior to discharge into the improved portion of Pacheco Creek immediately east of the site. The water would be conveyed from the pond to Pacheco Creek via a new pipe. The new bioretention pond in Parcel F has been designed to avoid or minimize placement of fill within wetlands and waters of the U.S. and/or state with the only anticipated placement of fill associated with the bioretention area being the outfall infrastructure into Pacheco Creek. An overflow spillway would connect the bioretention pond in Parcel F to Parcel B but the footprint of this infrastructure has been designed to avoid proximate freshwater marsh, alkali meadow and seasonal wetland vegetation.

Development of the proposed Project is expected to result in the fill of approximately 0.02 acres of the side-hill seep and the fill of less than 0.1 acre for construction of the storm drain outfall in Pacheco Creek. Further, though not anticipated, temporary and/or permanent fill of other potential jurisdictional wetlands or waters of the site could occur or be necessary during construction (e.g., during equipment access or implementation of the site grading plan). The placement of fill in jurisdictional wetlands and waters of the U.S. and/or waters of the State would be considered a significant impact.

Implementation of **Mitigation Measure BIO-6a**, Protection of Jurisdictional Wetlands and Other Waters, would specify avoidance and protection measures around wetlands and waters of the U.S. and/or state within the Project site that will be fully avoided. Implementation of **Mitigation Measure BIO-6b**, Compensation for Impacts to Wetlands and Waters, would reduce the impacts associated with this direct loss to a less-than-significant level.

Mitigation Measure BIO-6a: Protection of Jurisdictional Wetlands and Other Waters. For Project development within or adjacent to state and federal jurisdictional wetlands and waters, protection measures shall be applied to protect these features. These measures shall include the following:

1. An updated wetland delineation shall be submitted to USACE for verification to establish the boundaries and current jurisdictional status of the aquatic features in the site. The verified wetland delineation shall be used to quantify the Project impacts to aquatic resources for permitting purposes.
2. To the maximum extent feasible, Project construction activities within or adjacent to wetlands or waters shall be conducted during the dry season (between June 15 and October 15) and the disturbance footprint shall be minimized in these areas.
3. Stabilize disturbed, exposed slopes immediately upon completion of construction activities (e.g., following cut and fill activities and installation of bioretention pond infrastructure) to prevent any soil or other materials from entering aquatic habitat.

Plastic monofilament of any kind (including those labeled as biodegradable, photodegradable, or UV-degradable) shall not be used. Only natural burlap, coir, coconut or jute wrapped fiber rolls and mats shall be used.

4. A protective barrier (fence) shall be erected around any wetlands or waters designated for complete avoidance in Project construction plans and regulatory permits to isolate it from construction or other ground-disturbing activities.
5. A fencing material meeting the requirements of both water quality protection and wildlife exclusion may be used. Fences must be properly installed with final approval by a County representative, including adequate supports or wire backing for use if windy conditions are anticipated, and with the lower edge keyed in to the soil to ensure a proper barrier. Signage shall be installed on the fencing to identify sensitive habitat areas and restrict construction activities;
6. No equipment mobilization, grading, clearing, or storage of vehicles, equipment or machinery, or similar activity shall occur until a County representative has inspected and approved the wetland protection fence; and
7. The Project proponent shall ensure that the temporary fence is continuously maintained until all construction or other ground-disturbing activities are completed.
8. Drip pans and/or liners shall be stationed beneath all equipment staged nearby jurisdictional features overnight to minimize spill of deleterious materials into jurisdictional waters. Equipment maintenance and refueling in support of project implementation shall be performed in designated upland staging areas and work areas, and spill kits shall be available on-site. Maintenance activity and fueling must occur at least 100 feet from jurisdictional wetlands and other waters or farther as specified in the project permits and authorizations.

Mitigation Measure BIO-6b: Permits and Compensation for Impacts to Wetlands and Waters.

To offset unavoidable permanent impacts to approximately 0.02 acres of the side-hill seep and the fill of less than 0.1 acres for construction of the storm drain outfall along the bank of Pacheco Creek, the Project applicant shall secure the appropriate permits and provide compensatory mitigation as determined by the regulatory agencies with jurisdiction over the impacted aquatic resources during the permitting process. To establish the jurisdictional status of the various aquatic features in the site, the updated wetland delineation will be submitted to USACE for verification. The necessary permits will depend on the jurisdictional status of the features. While the outfall in Pacheco Creek is expected to require permits from USACE (Nationwide 7), CDFW (1602 Streambed Alteration Agreement), and RWQCB (401 Certification), the permitting scenario of the side-hill seep is less predictable. It is possible USACE will verify this feature as outside Clean Water Act jurisdiction due to spatial and hydrological isolation from other Waters of the U.S. If the seep is verified as non-jurisdictional, the Regional Water Quality Control Board Water would be expected to issue a Notice of Applicability to authorize its fill pursuant to Water Quality Order No. 2004-0004-DWQ.

At a minimum, compensation acreage for impacted wetlands and waters would meet a 1:1 ratio (created/restored/enhanced: impacted) to achieve no net loss of aquatic resources. Compensation may include on-site or off-site creation, restoration, or enhancement of jurisdictional resources, as determined by the permitting agencies. On-

site or off-site creation/restoration/enhancement plans must be prepared by a qualified biologist prior to construction, include a planting plan and planting methods, monitoring and reporting requirements, performance criteria (e.g., species diversity and vegetative cover thresholds), and maintenance requirements, and is subject to review and modification by resource agency permits. Implementation of creation/restoration/enhancement activities by the Project applicant (or permittee) shall occur prior to Project impacts, whenever possible, to avoid temporal loss. On- or off-site creation/restoration/enhancement sites shall be monitored by the applicant for at least five years to ensure their success, or as otherwise required by resource agencies.

Water Quality Effects of Construction

As discussed in Section 4.9, *Hydrology and Water Quality*, Project development would disturb more than 1 acre of land and therefore the County would be required to submit a notification to the SWRCB to secure coverage under the CWA Section 402 National Pollutant Discharge Elimination System (NPDES) Construction General Permit. This permit regulates construction-related discharge activities that may result in increased surface run-off, erosion, or siltation and subsequent water quality degradation of Pacheco Creek and other wetlands and waters of the Project site associated with site grading and/or ground disturbance, and accidental release of deleterious materials during construction (e.g., gasoline, oils, grease, lubricants, or other petroleum-based products). Preparation and implementation of a project Stormwater Pollution Prevention Plan (SWPPP), as required under the Construction General Permit, would avoid or minimize potential impacts to water quality of wetlands and waters of the Project site associated with construction-related discharges to a less-than-significant level. This is because the SWPPP would specify BMPs whose deployment would help control runoff, sedimentation, erosion, and contamination from petroleum products, which in turn would reduce the Project's potential impact on aquatic communities to a less than significant level. Additionally, implementation of **Mitigation Measures BIO-2a** and **BIO-2b** (described above under *Special-Status Amphibians and Reptiles* under Impact BIO-2), would reduce potential impacts to onsite wetlands and waters during construction to a less-than-significant level through worker environmental awareness training, installation of exclusion fencing, and implementation of general construction measures.

Mitigation Measure BIO-2a: See under Impact BIO-2.

Mitigation Measure BIO-2b: See under Impact BIO-2.

Significance after Mitigation: Less than Significant.

Wildlife Movement and Wildlife Nursery Sites

Impact BIO-7: The Project would not interfere substantially with the movement of native resident or migratory bird species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Criterion d) (*Potentially Significant prior to Mitigation*)

The drainage channel and associated freshwater marsh along the southern portion of the site and Pacheco Creek along the eastern Project boundary facilitate wildlife movement from the Project

site and surrounding area west of the site through the Pacheco Creek corridor to larger northern coastal salt marsh habitat areas along the southern border of Suisun Bay. The Project would preserve the freshwater marsh and drainage channel in the southern portion of the site and Pacheco Creek corridor as open space and park lands and does not propose infrastructure within these features which would affect wildlife movement through this corridor. Therefore, no impact would occur.

The perennial pond, Pacheco Creek and the marshes in the site, have potential to support California red-legged frog and western pond turtle, as discussed in Impact BIO-2. Following Project construction, the perennial pond and freshwater marsh habitat would be preserved as open space and park lands, which would not disrupt (potential) continued use of the pond by these species, if present.

As discussed above under Impact BIO-3, with mitigation, construction of the Project would not impact birds attempting to nest within the Project site directly through nest destruction or avian mortality, or indirectly through an increase in the ambient noise environment that might disrupt breeding behavior, discourage nesting, or cause nest abandonment. Following construction of the new subdivision, the use of the adjacent Open Space areas (i.e., the perennial pond and marshes in the site, portions of the hill) by nesting birds is expected to be comparable to current conditions. Implementation of **Mitigation Measure BIO-2a** (described above in Impact BIO-2) and **Mitigation Measure BIO-3a**, Nesting Bird Protection Measures, and Project compliance with the Migratory Bird Treaty Act and California Fish and Game Code, will reduce potential construction-related effects on birds nesting within the Project site and surrounding vicinity to *less-than-significant* levels by requiring pre-construction nesting bird surveys and establishing protective buffers around active nests during construction.

Special-status bats (Townsend's big-eared bat, western red bat, and hoary bat) and the common Mexican free-tailed bat have the potential to roost in tree cavities and foliage of the valley oak trees on the hill or other trees in or bordering the Project site. Removal of trees and general site disturbance could result in disturbance to special-status or common bat maternity roosts should they be established within trees of the Project site and surrounding vicinity, particularly within trees to be removed under the Project, which would be a significant impact. Implementing **Mitigation Measure BIO-2a** (described above) and **Mitigation Measure BIO-4b** (see in Impact BIO-4) would reduce potential Project-related impacts on bat maternity roosts to a less-than-significant level by educating workers on the potential presence and sensitivities of these species, requiring pre-construction roost surveys, and implementing avoidance measures if potential roosting habitat or active roosts are identified.

Through adherence to these measures, the Project would not have a significant impact on wildlife movement corridors or wildlife nursery sites.

Mitigation Measure BIO-2a: See under Impact BIO-2.

Mitigation Measure BIO-2b: See under Impact BIO-2.

Mitigation Measure BIO-2c: See under Impact BIO-2.

Mitigation Measure BIO-3a: See under Impact BIO-3.

Mitigation Measure BIO-3a: See under Impact BIO-3.

Mitigation Measure BIO-4a: See under Impact BIO-4.

Mitigation Measure BIO-4b: See under Impact BIO-4.

Significance after Mitigation: Less than Significant

Local Policies and Ordinances Protecting Biological Resources

Impact BIO-8: The Project would not conflict with any local policies or ordinances protecting biological resources. (Criteria e). (Potentially Significant prior to Mitigation)

As discussed under Impact BIO-5, the Project may require removal of approximately 30 trees within the valley oak woodland located on the north-facing slope of the hill. Valley oak, coast live oak, and California bay trees within the woodland with a trunk circumference of 20 inches or larger (6.5 inches in diameter or larger) when measured at 4.5 feet above the ground qualify as “protected trees” under the Contra Costa County Tree Protection and Preservation Ordinance. County approval would be required prior to the removal of any protected trees.

Development of the Project would be subject to, and consistent with, all the regulatory requirements identified in the General Plan. Additionally, as discussed above under *Local Plans and Policies*, the Project Applicant will be required to apply for development approval from the County. The County would condition Project approval for replacement of protected trees removed under the Project and protection of trees to be retained under the Project at a 2:1 replacement ratio, in accordance with the Contra Costa County Tree Protection and Preservation Ordinance. These measures would typically require restitution for trees to be removed, prohibiting storage of equipment and materials within the driplines of trees to be preserved, and requiring installation of tree protection fencing as recommended by the consulting arborist. Project compliance with conditions specified by the County for replacement of protected trees removed under the Project and protection of trees to remain under the Project, in combination with **Mitigation Measure BIO-5b**, Enhancement and Creation of Valley Oak Woodland, would ensure that Project-related impacts to protected trees would be less than significant and the Project would not conflict with local ordinances or policies regarding protected trees.

Mitigation Measure BIO-5b: See under Impact BIO-5.

Significance after Mitigation: Less than Significant

Cumulative Impacts

Impact C-BIO-1: The proposed Project, in conjunction with cumulative development in the region, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S., to which the Project would have a cumulatively considerable contribution. (All Criteria) (Potentially Significant prior to Mitigation)

Geographic Context

The geographic context for potential cumulative impacts on biological resources encompasses special-status species occurrences and their habitats within the Project site, the presence of sensitive natural communities, and biologically linked areas, such as the surface waters and northern coastal saltmarsh of the Project site with the larger Suisun Bay ecosystem. Past projects within this context, including the development of residential neighborhoods, commercial and industrial areas, and infrastructure, have already caused adverse cumulative changes to biological resources within the Project site and adjacent areas.

Cumulative Analysis

This analysis evaluates whether the impacts of the Project, together with the impacts of cumulative past, present and other reasonably foreseeable development in the area, as specified in Section 4.0, *Introduction to the Environmental Analysis* (4.0.6, Cumulative Analysis), would result in a cumulatively significant impact on special-status plants and animals or their habitat, special-status natural communities, wetlands and other waters of the U.S., or other biological resources protected by federal, State, or local regulations or policies (based on the significance criteria and thresholds presented earlier). This analysis then considers whether the incremental contribution of the Project to this cumulative impact would be considerable. Both conditions must apply in order for a project's cumulative effects to rise to the level of significance.

Natural communities near the Project site include open space areas such as northern coastal salt marsh and freshwater marsh within Waterbird Regional Preserve or areas that were historically industrial and have been restored or revegetated to natural communities such as wetlands and grasslands over time. These areas, in addition to ongoing industrial activities, provide a “new normal” in terms of habitat that is sometimes simplified in terms of diversity, and supports an altered suite of species than once existed. Overall, this is true of many areas surrounding the Bay.

According to the General Plan EIR, future development in the County would result in the destruction of significant ecological resources. The majority of projects considered for the cumulative scenario involve development of residential uses within undeveloped areas adjacent to existing developed areas. Many of these areas have limited habitat value for wildlife, as they are already surrounded by disturbed and/or industrial lands. However, removal of existing vegetation communities within these project footprints that might support special-status plant and animal species could lead to cumulative impacts on an individual species or multiple species groups. All of the cumulative projects considered in this analysis (see Chapter 4.0) have or are currently undergoing, or will undergo, environmental review. Consistent with CEQA and applicable environmental regulations, environmental impacts have been avoided or minimized to the extent

feasible. Some of these projects are expected to have mostly temporary impacts on biological resources during the construction phase of the project, similar to the proposed Project, and will comply with applicable federal, state, and local regulations and implementation of project-specific mitigation measures (where applicable).

As explained in Impact BIO-1, vegetation removal and ground disturbance in support of Project construction could result in direct impacts on special-status plants should they be present where these activities would occur. As discussed, the impacts would be reduced to a less-than-significant level with mitigation. Cumulative projects could also adversely affect the special-status plant species with potential to occur on the Project site if their respective project areas also provide suitable habitat or currently support these species. Most of the cumulative projects considered are residential subdivision developments in the vicinity of the proposed Project which are likely to require (or required, if already constructed) similar degree of vegetation removal and ground disturbance (grading) to manipulate site topography for development. These areas generally abut existing development and are therefore exposed to some human disturbance which could affect the potential for special-status plants to be present. Of the cumulative projects not yet constructed, the Palms Ten residential project would develop a small area of grasslands to the northwest with similar opportunity to host the special-status plants with potential to occur within grassland habitat of the Project site, including Congdon's tarplant, and fragrant fritillary. The nearby Lower Walnut Creek Restoration Project area hosts soft bird's-beak, delta tule pea, Mason's lilaeopsis, and potentially other species, some of which also have potential to occur within suitable habitat of the Project site. The Lower Walnut Creek Restoration project contains mitigation to avoid, minimize, and compensate for impacts to special-status plants. The File #SD17-9459 & LP14-2046 project is located in uplands between the Pacheco Creek and Lower Walnut Creek tidal channels included in the restoration project area and would be developed into industrial yards. Following a review of aerial imagery, the File #SD17-9459 & LP14-2046 project area appears to be primarily upland grasslands containing potential seasonal wetlands and coastal saltmarsh vegetation bordering the tidal channels.

Due to the similarity in habitat type and overlap in potential special-status plant species that could be impacted by these proximate projects, the combined, localized effect of development on rare plants is potentially significant. As discussed, no special-status plants have been observed during comprehensive botanical surveys of the Project site in 2007 and 2008. While it is possible that special-status plants might have colonized suitable habitat of the Project site since these surveys, it is unlikely that a significant population of any single species or several species are now present to be impacted by the Project. In addition, the wetlands habitat where most of the rare species may occur would be largely avoided by the Project. For these reasons, the residual effects of the Project on rare plants combined with anticipated effects of the cumulative projects would not be cumulatively considerable.

As explained in Impact BIO-2, Project construction could adversely affect California red-legged frog and/or western pond turtle should they occupy the perennial pond, freshwater marsh, or upland grassland habitats of the Project site during site grading or construction of Project components adjacent to aquatic habitat. As discussed, the impacts would be reduced to a less-

than-significant level with mitigation. Cumulative projects could also adversely affect these species should their respective project areas provide suitable or occupied habitat. The Lower Walnut Creek Restoration Project area provides suitable habitat for western pond turtle and the File #SD17-9459 & LP14-2046 project provides similar potential aquatic habitat for California red-legged frog as the Project site. Although the Project and these cumulative projects could each impact California red-legged frog and/or western pond turtle individuals or their habitat, the combined effects on these species would not be substantially adverse. With the exception of the storm drain outfall on Pacheco Creek, the Project would avoid direct impacts to aquatic habitat for western pond turtle. The Project would avoid direct impacts to aquatic habitat for these species thereby minimizing risk of encounters to upland habitat. It is possible western pond turtle may occupy the banks of Pacheco Creek within the Project site; however, the development setback from this feature would be of sufficient distance that direct impacts to this species are unlikely. While the timing of Project construction may overlap with construction of the restoration project (planned for 2021 or 2022 and lasting one year) or the File #SD17-9459 & LP14-2046 project (construction timing unknown) the combined effects of these development projects on suitable habitat for these species would not be substantially adverse due to the abundance of both suitable aquatic and upland habitat for these species in the local vicinity. For these reasons, the combination of the residual Project effects on California red-legged frog and western pond turtle with anticipated effects of the cumulative projects would be less than significant.

As explained in Impact BIO-3, Project construction would result in noise and visual disturbance which could adversely affect birds nesting within the Project site and remove trees and other vegetation which could host bird and their nests during breeding season. As discussed, the potential Project impacts on nesting birds would be reduced to a less-than-significant level with mitigation. Many of the identified cumulative projects would generate excess noise and or create visual disturbance during construction similar to the proposed Project which could impact nesting birds. Further, some of these projects not yet constructed may require vegetation removal that could cause nest failure or abandonment if active bird nests are present, including the Palms Ten, Lower Walnut Creek Restoration Project, and File #SD17-9459 & LP14-2046 project. Few (if any) trees occur within these respective project areas, however these cumulative projects would require at least some vegetation removal prior to site grading and development; activities which present a higher risk to nesting birds should this work occur during the nesting season. Because these projects would be required to comply with the same regulations protecting birds and their nests from direct impacts as the Project, the combined effect of the Project after mitigation with the potential effects of cumulative projects on nesting birds would be less than significant.

As explained in Impact BIO-4, Project construction would include removal of trees and construction activities that generate noise and increase human activity above pre-Project conditions during construction which could have a substantial adverse effect on special-status bats and/or maternal roosts, if present; these impacts would be reduced to a less-than-significant level with mitigation. Cumulative projects which also involve removal of trees or involve demolition of buildings which provide suitable roosting habitat for bats could result in similar impacts as the Project. While the Project and some of the cumulative projects listed above could

impact special-status and roosting bats if present, the combined effect would not be substantially adverse. Of the cumulative projects not yet constructed, few (if any) trees occur within their project areas which could host tree roosting bats. Artificial structures without human occupants which might attract bats to establish maternity roosts are scarce in this portion of Contra Costa County and few, if any of the cumulative projects involve building demolition that could directly impact roosts if present. Therefore, the risk for cumulative projects to substantially effect special-status bats and/or bat maternity roosts is low and combined with the residual effect of the Project after mitigation the resulting impact on bats would be less than significant.

Impact BIO-5 explains how the Project could impact creeping wildrye grassland during grading. As discussed, this impact would be reduced to a less-than-significant level through mitigation. Some of the cumulative projects considered could also adversely affect this sensitive natural community should it be present within development footprints. The Lower Walnut Creek Restoration Project would temporarily impact a small area of creeping wildrye grassland in its project area; however, the impacts to this community would be temporary, occurring only during construction. As described in the restoration project Initial Study/Mitigated Negative Declaration, vegetation management as part of the project would include collection, propagation and re-vegetation of creeping wildrye, resulting in no net loss of this sensitive natural community (ESA, 2019). This species would also be planted among other native species in restored areas of native grassland throughout the restoration project area. Upon project completion, this community may cover a larger area than current conditions as the proposed project includes creation of 36.36 acres of native (lower) grasslands (ESA, 2019). This sensitive natural community may also occur within the Palms 10 and/or File #SD17-9459 & LP14-2046 project areas. If present, impacts to creeping wildrye grassland are expected to be permanent due to the nature of these projects as residential and industrial yard developments. Given the creation of native grasslands containing creeping wildrye under the Lower Walnut Creek Restoration Project area and commitment to no net loss of this sensitive natural community, the residual impacts on this community from the Project combined with the anticipated impacts of the other cumulative projects considered would be less than significant.

Impact BIO-5 also explains how the proposed Project would impact Valley Oak Woodland through removal of approximately 30 trees from the site's hilltop woodland. As discussed, this impact on the sensitive natural community would be reduced to a less-than-significant level through mitigation. None of the cumulative projects considered would contribute to a cumulative impact on Valley Oak Woodland. There is therefore no cumulative impact to Valley Oak Woodland.

The Project has been designed to avoid the sensitive natural community northern coastal saltmarsh within the site, impacts may occur during site grading and construction of infrastructure associated with the Project's bioretention area and spillway, as explained in Impact BIO-5. This impact would be reduced to a less-than-significant level through mitigation. The Lower Walnut Creek Restoration Project would impact this sensitive natural community during construction and this community may be present within the File #SD17-9459 & LP14-2046 project area. Impacts to this community associated with the Lower Walnut Creek Restoration project would be

temporary during construction as the project's purpose is to restore and enhance the wetlands and associated native plant communities of the project area, including northern coastal saltmarsh. As already discussed, the File #SD17-9459 & LP14-2046 project area appears to be primarily grasslands and may contain some seasonal wetlands and areas of northern coastal saltmarsh bordering the Pacheco Creek and Lower Walnut Creek tidal channels which occur on three sides of the project area. As this community likely occurs only along the fringes of this development area, the anticipated loss of northern coastal salt marsh under this cumulative project would be minor relative to the presence of this community bordering tidal channels in the immediate Project vicinity. For these reasons, and due to the enhancement and creation of northern coastal salt marsh under the Lower Walnut Creek Restoration project, the residual effects of the Project combined with the anticipated impacts of the cumulative projects would be less than significant.

Impact BIO-6 explains how Project construction may result in direct impacts on potential federal or state regulated wetlands through placement of fill or indirect impacts through degradation of water quality. These impacts would be reduced to a less-than-significant level with mitigation and through participation in the regulatory permit process and compliance with permit conditions. As with the proposed Project, some of the cumulative projects considered could result in impacts to jurisdictional wetlands or waters, either through the direct placement of fill in these aquatic resources, or through indirect impacts to water quality. The Lower Walnut Creek Restoration Project would result in direct impacts to federal and state regulated wetlands and waters. Construction of the File #SD17-9459 & LP14-2046 project may also impact regulated wetlands and waters if present within the development footprint. As with the proposed Project, the cumulative projects would be required to obtain and comply with regulatory permits that specify measures to avoid and minimize potential direct and indirect impacts, and compensate for any unavoidable impacts to wetlands or waters. Through securing the required permits and approvals, and implementation of permit conditions, including compensation for unavoidable impacts to wetlands and waters, the combined residual effects of the Project with potential effects of the cumulative projects on regulated wetlands and waters would be less than significant.

With the implementation of **Mitigation Measures BIO-1, Avoidance and Minimization for Impacts to Special-Status Plants; BIO-2a, Worker Environmental Awareness Program Training, BIO-2b, General Conservation Measures during Construction; BIO-2c, Avoidance, Minimization, and Protection Measures for Sensitive Amphibians and Reptiles; BIO-3a, Nesting Bird Protection Measures; BIO-3b, Avoid and Minimize Impacts to California Black Rail and Ridgway's Rail; BIO-4a, Avoidance and Minimization Measures For Salt Marsh Harvest Mouse; BIO-4b, Avoidance and Minimization Measures for Bats; BIO-5a, Salvage and Reintroduction of Creeping Wildrye Grassland; BIO-5b, Enhancement and Creation of Valley Oak Woodland; BIO-6a, Protection of Jurisdictional Wetlands and Other Waters; and BIO-6b, Permits and Compensation for Impacts to Wetlands and Waters**, the impact analysis in this section has shown that the Project would result in less than significant impacts on biological resources within and in the vicinity of the Project site. When considered in the context of past, present and reasonably foreseeable similar projects, the Project would have minor direct and indirect impacts to special-status plant and animal species or their habitat, sensitive natural communities, and jurisdictional wetlands and waters. The combined residual

effects of the Project when considered with the potential effects of the cumulative projects would be less than significant in all instances. The Project's contribution would therefore not be considered cumulatively considerable. In general, future projects would be required to demonstrate that they would not have significant effects on these biological resources. Overall, in combination with past, present, and reasonably foreseeable future projects within the geographic context for this analysis, the Project would not result in a cumulatively considerable contribution to a cumulative impact on biological resources.

Mitigation: None required.

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4.4 Cultural Resources and Tribal Cultural Resources

4.4.1 Introduction

This section evaluates the potential for cultural resources and tribal cultural resources to be located on or beneath the surface of the Project site. Cultural resources include historic architectural resources, prehistoric and historic-era archaeological resources, and human remains. A tribal cultural resource is a site, feature, place, landscape, sacred place or object, that is of cultural value to a Native American tribe. Information presented in this chapter is based on a cultural resources inventory completed by the archaeological consulting firm Archeo-Tec, Inc. (Archeo-Tec), supplemented by information presented in the *Contra Costa County General Plan*, previously published EIRs, and *The History of Contra Costa County, California*. Although the numerous original sources cited in the Archeo-Tec report have not been included in this chapter, the Archeo-Tec report may be reviewed at the Contra Costa County Department of Conservation and Development.

Archeo-Tec conducted an archival records search at the Northwest Information Center (NWIC) at Sonoma State University to review all cultural resources studies and recorded resources within a half-mile radius of the Project site. ESA updated the records search. Archeo-Tec also contacted the staff of the Native American Heritage Commission in Sacramento. Two Archeo-Tec archaeologists conducted a surface reconnaissance of the Project site. The results of the archival and field research are summarized in this chapter.

4.4.2 Environmental Setting

Natural Context

The San Francisco Bay region is located within the Coast Ranges Geomorphic Province of California, which probably began to form 2 to 3 million years ago and is characterized by a system of northwest-southeast trending longitudinal mountain ranges and valleys, such as the Las Trampas Ridge and the San Ramon Valley, that are controlled by faulting and folding. Two major faults—the Las Trampas and Bollinger faults—are in the immediate area.

Alluvial deposits from the creeks that flow from the East Bay Hills created today's flatlands, such as the alluvial fan on which the present Project site is situated. The Project site is situated very close to Pacheco Creek, which connects with the series of bays to the north. This water source and the associated marshy environment created a hospitable environment for the region's prehistoric and early historic-era inhabitants.

Prehistoric Background

The Project site is located at the northeastern edge of an area that was occupied by the Penutian-speaking Bay Miwok at the time the Spanish arrived in northern California in the 18th century. Their territory encompassed much of the San Francisco Bay area and extended eastward to the

Central Valley. The Bay Miwok are known to have occupied this region at least since 300 A.D., though their presence may date back as far as 2500 B.C. The language spoken in the area prior to the Miwok's presence is unknown, but was probably a Hokan language. The archaeological record indicates that Contra Costa County has been inhabited for at least 9,000 years.

At the time of contact with the Europeans, there were an estimated 7,000 to 10,000 Native Americans living in the coastal area stretching from Point Sur in Monterey County, northward through the Coast Ranges to the Sacramento River Delta and eastward to the San Joaquin River. The Bay Miwok were one of five geographically and linguistically distinct groups in the area, including Costanoan, Patwin, Wappo, Coast Miwok and Bay Miwok.

The Costanoans are often referred to in anthropological literature as the Ohlone. "Costanoan" was the name the Spanish used to refer to the Ohlone; the name was derived from "Los Costanos," which is Spanish for "the coastal people." Ohlone was the most widespread of the five local languages and was spoken on the San Francisco Peninsula, in the Santa Clara Valley and the mountains to the east and west of the valley and throughout much of the East Bay. Bay Miwok was spoken in the interior valleys of the East Bay, perhaps extending as far as the shoreline in the vicinity of present-day East Oakland. Coast Miwok was spoken throughout the Marin Peninsula. Patwin was spoken on the north shores of Suisun Bay. Wappo was spoken in the upper Napa and Sonoma Valleys. Although mutually unintelligible, the Costanoan, Bay Miwok and Coast Miwok languages all derive from Utian stock; Utian is one of four language families collectively described as Penutian languages (the others being Wintuan, Maiduan and Yokutsan).

Like other west-central California Native American Groups, the Bay Miwok were organized into autonomous territorial political groups. Each territorial group was a community of interrelated families that occupied and occasionally defended a common territory, seasonally cooperated to harvest various food resources and jointly participated in ceremonies viewed as intrinsic to cosmological maintenance or successful passage through life events. The Bay Miwok were divided into five autonomous tribelets: Saclan, Chupcan, Volvon, Julpun and Tatcan. The Project site was likely within Chupcan territory. The size of most tribelet populations ranged between 200 and 400 people. Settlements were often located adjacent to water sources—permanent or seasonal.

The Bay Miwok subsisted on the bountiful natural food resources that characterized the Bay Area. Much of their diet was seasonal, focusing on foods that were particularly abundant at different times of the year. Staples of their diet included fish (principally salmon), shellfish, water fowl, tule elk and acorns. Acorns were pounded by mortar and pestle to form a mush that was often flavored with berries. Other plant foods, gathered predominantly by women, included seeds (such as wild oats, balsam root, ripgut grass, redmaids and buttercup), nuts (buckeye, laurel, hazelnut and pine), roots and greens. Men contributed to the food supply by fishing and hunting for game. Larger animals were hunted with bows and obsidian-tipped arrows and traps and snares were set for smaller mammals such as rabbits. The Bay Miwok fished from creeks using nets and/or basket traps deployed from small rafts constructed of tule rushes, propelled by double-bladed paddles.

The Bay Miwok relied on the natural environment in other aspects of their lives as well. They utilized local rock and mineral sources to manufacture cutting, scraping and other tools and local sandstone for grinding and pounding tools. Cinnabar and hematite could be used to barter with non-coastal groups for more exotic materials, such as obsidian. Animal remains were also particularly useful. In addition to the use of pelts and feathers for clothing and bedding, sinew was used for bow strings and teeth, bones, claws and beaks were employed as tools, including awls, pins, daggers, scrapers and knives. Feathers, bones and shells were used in a wide variety of personal ornamentation.

The houses of the Bay Miwok were conical or dome-shaped structures of interlaced poles and twigs covered with brush or tule bulrushes. The houses were grouped together around a central cleared area. The small villages were generally located near sources of fresh water such as creeks and springs, though they were also found on alluvial flats and along the first set of ridges between valleys and mountain ranges.

An extended family household averaging about 15 persons comprised the basic Miwok social unit, though the size could vary considerably. Bay Miwok society was divided into moieties and further divided into clans. The largest social unit was the tribelet, which consisted of a group of interrelated villages under the leadership of a single headman. As previously noted, tribelets ranged in size from 200 to 400 individuals and were politically and socially autonomous.

Infiltration of Europeans into the Bay Area rapidly led to the decimation of the Bay Miwok people. They were forced into servitude on the Spanish missions and large “rancherias” in northern Alameda and Contra Costa counties. Disease and overwork, as well as conflicts with other tribal groups, led to their decline. By the beginning of the American historical period (1848), the Bay Miwok had ceased to exist as an ethnic or linguistic entity.

Historic Background

Spanish/Mexican and Early American Eras (1769–1848)

The first expedition into the East Bay occurred in 1772 when Pedro Fages and his party explored the San Francisco Bay and Carquinez Strait, including the Diablo and Livermore Valleys near Concord. In the spring of 1776, Captain Juan Bautista de Anza established the San Francisco Presidio and by April 1, de Anza’s men had traveled through San Francisco, down the peninsula and up the East Bay shoreline, passing through Antioch and the plains of eastern Contra Costa County toward Tracy.

The establishment of the Mission Dolores in San Francisco in the same year began the “Mission Period” in the San Francisco Bay area, part of an effort by the Spanish to spread Christianity through the establishment of 21 Roman Catholic missions in Alta California in the late 18th and early 19th centuries. The missions in the East Bay were used to graze thousands of cattle and sheep, as well as for grain production and housed several hundred native Bay Miwok Indian converts. The first Bay Miwok to be missionized were the Saclan (south) at Mission San Francisco in 1794.

Most of California south of Sonoma was under Mexican rule from the 1820s to 1848. In the years following the 1810 Mexican Revolution, Mexican political instability added to the diminishing conditions at and funding to, the Missions. As a result, the Mission's power and influence waned during this period. Historic settlement in the region began in 1823 when large grants of land were awarded by the Mexican government to settlers. In 1833-34, the Mexican government secularized the Spanish missions and many mission lands were also subsequently granted to individuals who established the great ranchos, or vast cattle raising estates. The Project site was part of the *Rancho Las Juntas*, which was subsequently obtained in 1832 by William Welch, a Scotsman and after which was known as the Welch Rancho.

At the end of the Mexican War in 1848, all of Alta California was ceded to the United States under the Treaty of Guadalupe Hidalgo. The date of July 8, 1846 marked the conversion of California from Mexican to American jurisdiction. On this day, a landing party from the sloop-of-war *Portsmouth*, under the command of Captain John B. Montgomery, waded ashore at the town of Yerba Buena (present-day San Francisco) and raised the stars and stripes to the top of the flagpole in the town's dusty plaza, thereby claiming California for the United States.

Middle to Late Nineteenth Century (1848–1900)

In the mid-nineteenth century, much of the former rancho lands were subdivided and sold off to the influx of settlers brought to California by the Gold Rush. Contra Costa County was one of the original 27 counties established when the State was founded in 1850. The County originally encompassed 1,500 square miles of territory, but that was reduced by nearly one-half when southern and western portions of the County were ceded, along with northern portions of Santa Clara County, to create Alameda County in 1853. Following this land transfer, Contra Costa County covered an area of 877 square miles.¹

The County was originally called Mt. Diablo County, but the name was changed to Contra Costa County prior to its incorporation. The name derives from the Spanish language, in which “contra costa” means “opposite coast.” This refers to the County's location on the opposite side of San Francisco Bay from the town of Yerba Buena (present-day City of San Francisco). Many local names in the County—such as Martinez, Pacheco and Moraga—also have roots in the Spanish language, representing the family names of the recipients of large land grants from the King of Spain.

The City of Martinez, first settled by Europeans in 1823, was laid out as a surveyed and subdivided town in 1849; its name is in honor of the *commandante* of the San Francisco Presidio, Ignacio Martinez. Initially incorporated by the Court of Sessions in 1851, the Supreme Court subsequently declared the incorporation act void. Martinez continued functioning as a robust village until it was successfully incorporated in 1867. Martinez has been the county seat of Contra Costa County since 1851. The City developed as a center for wheat shipping, following the gradual decline of nearby Pacheco in that role.

¹ According to the *General Plan*, the current jurisdictional area of the County is 805 square miles, including 73 square miles of water.

Twentieth Century

The twentieth century brought about further development in and around Martinez. Shell Oil built an oil refinery on a 400-acre site adjacent to Martinez in 1915, employing over 2,000 men and precipitating significant population and building growth in the area. Additional oil refineries and other industries, such as ore mining and fertilizer manufacture, located in or near Martinez during the early years of the twentieth century. The region continues to be an important petroleum port and processing location.

Archaeological Record

Prehistoric research in the San Francisco Bay Area is one of the oldest archaeological traditions in California. When U.C. Berkeley archaeologist N.C. Nelson conducted the first intensive archaeological survey of the region between 1907 and 1908, he recorded no less than four hundred and twenty-five shellmounds on or near the shoreline of the Bay. They were encountered in a wide variety of places, including adjacent to springs or streams, on exposed bluffs or headlands, or in salt marshes, but the majority were located within 50 feet of the Bay and the largest mounds were typically encountered at the head of sheltered coves.

The large prehistoric population of the San Francisco Bay region resulted in the creation of a prolific archaeological record, with some of the most important sites located in Contra Costa County. The nearest recorded prehistoric site to the Project site is CA-CCO-249, located approximately 1 mile to the northeast and originally recorded by Nelson. This prehistoric habitation site is thought to have been partially destroyed by development.

Archeo-Tec conducted a record search at the NWIC of the California Historical Resources Information System at Sonoma State University on April 25, 2007 (File No. 06-1677). Three previous cultural resources surveys have been conducted within the Project site. David Chavez and Associates conducted a survey (S-14337) in 1992 that included roughly the southwestern half of the Project site. No evidence of archaeological deposits or historic-period resources were identified during this survey. William Self Associates, Inc. conducted a survey (S-25311) in 2002 for a 70-mile-long Kinder Morgan Energy Partners gas pipeline extending between Concord and Sacramento. Approximately 0.3 kilometer of the pipeline alignment crossed the northeastern portion of the Project site. This survey also failed to identify any significant cultural resources. William Self Associates conducted an additional survey (P-07-002675) on the northeastern tip of the current Project site in 2004 for the same Kinder Morgan pipeline project. The Pacheco Slough Historic Dump (P-07-002747), a mid-twentieth century domestic refuse dump, was recorded and evaluated.

Archeo-Tec's archival research identified 12 prior cultural resources surveys conducted within 0.25 miles of the Project site, three of which returned positive results. The Guzzetti House (P-07-002747), recorded by Solano Archaeological Services in 2006, is a residence originally constructed in 1948. Located at 576 Palms Drive, this house is located just outside the northwestern boundary of the Project site. The Contra Costa Canal (P-07-002695), constructed

between 1937 and 1948, is a concrete-lined canal that carries water from the Delta to Martinez. It is located near the southeastern boundary of the Project site, running roughly parallel to I-680.

The third site, referenced as the Pacheco Slough Historic Dump (P-07-002674), consists of a historic-period artifact concentration and associated foundation remains recorded by William Self Associates in June 2004 during construction monitoring of the Kinder Morgan gas pipeline discussed above. Recovered artifacts were characteristic of a rural residential deposit and appear to date from 1880 to 1930. The foundations appear to be those of an out-building, despite the residential character of the artifacts themselves. The site was recommended not significant due to the relatively late date of manufacture of its constituents and a general lack of association.

The remainder of the cultural resources surveys conducted within 0.25 miles of the Project site had negative results, with no cultural materials from either the prehistoric or historic period identified. The Archeo-Tec report also listed ten previous cultural resources surveys performed within 0.5 miles of the Project, nine of which also had negative results. The tenth survey, conducted by David Chavez and Associates in 1992, documents California Historical Landmark No. 722. Located just over 0.25 miles south of the Project site, this California Landmark is the location of the 1856 murder of Dr. John Marsh, a prominent figure in Contra Costa County history, who established the Los Meganos Ranch about 30 miles outside of Martinez in 1837.

ESA conducted an addendum records search at the NWIC for the Project on July 19, 2011 (File No. 11-0061), October 30, 2017 (File No. 17-1271), and July 16, 2020 (File No. 20-0047). The addendum records searches identified one additional cultural resource and three additional studies within the 0.5-mile search radius. The resource is the Peyton Marsh Drainage System (P-07-002685), a twentieth-century public works mosquito abatement project located approximately 1/3-mile west of the Project site. This resource has been recommended not eligible for the National Register (Linn, 1997).

Native American Consultation

As part of the cultural resources assessment, Archeo-Tec consulted with the staff of the Native American Heritage Commission in Sacramento to determine whether any sites deemed sacred by members of the local Native American Community are located within the confines of the Project site. Following a search of the sacred lands file, Ms. Debbie Pilas-Treadway of the Native American Heritage Commission sent Archeo-Tec a letter dated May 7, 2007 indicating that the search failed to indicate the presence of Native American cultural resources in the immediate Project area. Nonetheless, the letter cautioned that the “absence of specific site information in the sacred land file does not indicate the absence of cultural resources in the Project area.”

Based on the requirements of Public Resources Code (PRC) Section 21084.3 (see Section 4.4.3 – Regulatory Setting below), the County updated the tribal consultation in 2017. The County sent letters to the Native American tribes provided by the Native American Heritage Commission as having an interest in the proposed Project vicinity. The letter included a Project description and a map of the Project site. The County also sent the 2007 Archeo-Tec report to the Wilton Rancheria,

who requested by letter (dated June 16, 2017) information regarding cultural resources studies completed for the Project. No response was received at the time this Draft EIR was prepared.

Archaeological Surface Reconnaissance

Two Archeo-Tec archaeologists trained in the identification of prehistoric and historic-period resources surveyed the Project site on May 2nd and 3rd, 2007. The Project site was divided into four arbitrary “quadrants” to facilitate pedestrian transects. Identified as Q1 through Q4 on a survey map, the findings of the survey are described by quadrant below. The most prominent hill on the Project site is Vine Hill. The steepest flanks of Vine Hill could not be surveyed due to excessive slope. In addition, the pond and several other areas could not be surveyed due to standing water. Areas not surveyed can be reasonably assumed not to contain historical resources, based on previous studies consulted and surveys of other areas conducted.

Q1 Survey

Q1 is the northwest quadrant, which was surveyed in 10-meter intervals in a northwest/southeast direction. The quad is sloped to the northeast at approximately 10 to 30 degrees. Surface visibility was poor at the time of the survey due to thick vegetation consisting of tall grass, weeds and patches of stinging nettles. The soil is hard-packed grey silty clay. Evidence of disturbance in this area was observed in the form of bulldozer push piles containing large sandstone boulders. Graded road cuts were identified parallel to the fence line and at the base of the hill. No sites or cultural deposits were encountered in this quadrant.

Q2 Survey

Quadrant Q2, the northeast quadrant, was surveyed in a north/south direction. This quad is in a roughly level area and is dominated by a large pond. When surveying near the north edge of the pond, the transects were changed to an east/west direction. The vegetation around the pond is very thick and included wild mustard, horsetails and papyrus reeds. The soil is hard-packed grey silty clay. Numerous bulldozer push piles were also observed in this quad, along with a modern trash deposit in the northwest corner. Two major underground gas lines are located in the quad and graded road cuts are located parallel to the fence line. No sites or cultural deposits were encountered in this quadrant.

Q3 Survey

The Q3 southeast quadrant was surveyed in a northeast/southwest direction. This quad is in a level area east of Vine Hill and is bisected by a large water channel. The vegetation is very dense along the channel but thins out to knee-high grass. Similar to the other quadrants, the surface soils consist of hard-packed grey silty clay. At the base of the hill, the vegetation is very sparse, with numerous roads and trails crossing the area. Bulldozer push piles were also observed and two major underground gas lines are located in the northeast portion of this quad. No archaeological sites or cultural deposits were encountered.

Q4 Survey

Q4 is the southwest quadrant, which was surveyed in 10-meter intervals in a north/south direction and by topographic methods when necessary. This quad is dominated by the large rounded Vine Hill, which contains soil similar to that on the rest of the site and is covered by knee-high grasses with a small stand of oak trees on the north slope. With slopes on the shoulder of the hill ranging from 35 to 50 degrees, it was not feasible to survey these areas; however, as previously stated, areas not surveyed can be reasonably assumed not to contain historical resources, based on previous studies consulted and surveys of other areas conducted. A USGS survey marker dated 1946 was found upside down at the high point of the hill, next to one of the many road cuts that crisscross the top of the hill. Some of the road cuts have exposed bedrock outcrops of sandstone. Elsewhere, the quad has been very disturbed by numerous bulldozer push piles. No archaeological sites or cultural deposits were encountered in the quadrant.

Pipeline Survey

Much of the pipeline route was obscured by paved or gravel roads, heavy vegetation, and industrial equipment (in the Conco storage yard); all areas of natural soil within the Central Avenue right-of-way were inspected, along with opportunistic inspection of graded cuts, animal burrows, and other areas of natural soil exposure. Buildings and structures adjacent to the pipeline alignment were inspected for indices of historic age.

In general, the pipeline alignment was highly disturbed from construction/installation and maintenance of existing roads, pipelines, and other facilities. Vegetation within the western end of the pipeline alignment on the Seal Island Subdivision property was dense, consisting of shrubs, small trees, grasses and forbs with dense mats of dried oak leaves. The portions of the Central Avenue right-of-way that were not covered by paved or gravel roads contained similar vegetation, although it was possible in areas to scrape away the grasses and leaf litter to make a clear observation of the soil. Pacheco Creek contains dense riparian/wetland vegetation, including reeds, grasses, and forbs. A few broken chunks of concrete, discarded tires, and other pieces of modern trash were observed in this portion of the pipeline alignment. The Conco property was almost entirely surfaced and/or developed, with piled pallets, concrete molds, equipment, tools, and machinery stored within the pipeline alignment along the north side of the existing Contra Costa County Sanitation District easement.

4.4.3 Regulatory Setting

Federal Regulations

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to take into consideration the potential effects of proposed undertakings on cultural resources listed on or determined eligible for inclusion in the NRHP, and to allow the Advisory Council on Historic Preservation the opportunity to comment on the proposed undertaking. The regulations implementing Section 106 are promulgated by the Secretary of the Interior, as codified in Title 36

Code of Federal Regulations (CFR) Part 800. Section 106 requirements apply to properties not formally determined eligible, but which are considered to meet eligibility requirements. Archaeological resources are typically considered eligible for inclusion in the NRHP because of the information they have or may be likely to convey. Intensity of impacts to archaeological resources relates to the importance of the information they contain and the extent of the disturbance or degradation. Determining the NRHP eligibility of a site or district is guided by the specific legal context of the site's significance as set out in 36 CFR Section 60.4. The NHPA authorizes the Secretary of the Interior to expand a National Register of districts, sites, buildings, structures and objects of significance in American history, architecture, archaeology, engineering and culture. A property may be listed in the NRHP if it meets criteria for evaluation as defined in 36 CFR Section 60.4. Section 110(d)(6)(A) of the NHPA allows properties of traditional religious and cultural importance to a tribe to be determined eligible for inclusion in the NRHP. The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That 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
- That have yielded, or may be likely to yield, information important in prehistory or history.

The Project site was surveyed for cultural and historically significant resources, none of which were determined eligible for the NRHP.

California State Regulations

The State of California consults on implementation of the National Historic Preservation Act (NHPA) of 1966, as amended, and also oversees statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation, as an office of the California Department of Parks and Recreation, implements the policies of the NHPA statewide. The Office of Historic Preservation also maintains the California Historical Resources Inventory. The State Historic Preservation Officer is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Register of Historic Resources

The California Office of Historic Preservation (OHP) administers the CRHR, which was established in 1992 through amendments to the Public Resources Code (PRC), to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected from substantial adverse change. The CRHR includes resources that have been formally determined eligible for, or listed in, the NRHP, State Historical

Landmark Number 770 or higher, Points of Historical Interest recommended for listing by the State Historical Resources Commission (SHRC) for listing, resources nominated for listing and determined eligible in accordance with criteria and procedures adopted by the SHRC, and resources and districts designated as city or county landmarks when the designation criteria are consistent with CRHR criteria. PRC Section 5024.1 requires evaluation of historical resources to determine their eligibility for listing on the CRHR. The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP, which is described above. As defined by Section 15064.5(a)(3)(A-D) of the CEQA Guidelines, a resource shall be considered historically significant if the resource meets the following criteria:

- It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- It is associated with the lives of persons important in our past;
- It 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
- It has yielded, or may be likely to yield, information important in prehistory or history. (Criterion D is usually applied only to archaeological sites, rather than in the evaluation of most historic architectural structures, see below.)

Automatic CRHR listings include NRHP listed and determined eligible historic properties (either by the Keeper of the NRHP or through a consensus determination on a project review); State Historical Landmarks from number 770 onward; Points of Interest nominated from January 1998 onward. Landmarks prior to 770 and Points of Historical Interest may be listed through an action of the SHRC (CAL/OHP ca. 1999b).

The Project area was surveyed for cultural and historically significant resources. None of the sites within the Project area have been determined eligible for the CRHR.

California Environmental Quality Act

The California Environmental Quality Act (CEQA), as codified in PRC Section 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a project would have a significant effect on historical resources, including archaeological resources. The CEQA Guidelines define a historical resource as: (1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

CEQA requires lead agencies to determine if a project would have a significant effect on important archaeological resources, either historical resources or unique archaeological resources. If a lead agency determines that an archaeological site is a historical resource, the provisions of Public Resources Code Section 21084.1 would apply, and CEQA Guidelines Sections 15064.5(c) and 15126.4 and the limits in Public Resources Code Section 21083.2 would not apply. If a lead agency determines that an archaeological site is an historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique archaeological resource is “an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria.

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person” (PRC Section 21083.2 [g]).

The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

Assembly Bill 52

In September 2014, the California Legislature passed Assembly Bill (AB) 52, which added provisions to the PRC regarding the evaluation of impacts on tribal cultural resources under CEQA, and consultation requirements with California Native American tribes. In particular, AB 52 now requires lead agencies to analyze project impacts on tribal cultural resources separately from archaeological resources (PRC Section 21074; 21083.09). PRC Section 21074 defines tribal cultural resources as follows:

a) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

- 1) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
- 2) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

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 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.

A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “non-unique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

AB 52 also requires lead agencies to engage in additional consultation procedures with respect to California Native American tribes (PRC Section 21080.3.1, 21080.3.2, 21082.3). Specifically, PRC Section 21084.3 states:

- a) Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.
- b) If the lead agency determines that a project may cause a substantial adverse change to a tribal cultural resource, and measures are not otherwise identified in the consultation process provided in Section 21080.3.2, the following are examples of mitigation measures that, if feasible, may be considered to avoid or minimize the significant adverse impacts:
 - 1) Avoidance and preservation of the resources in place, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
 - 2) Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - A. Protecting the cultural character and integrity of the resource.
 - B. Protecting the traditional use of the resource.
 - C. Protecting the confidentiality of the resource.
 - 3) Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
 - 4) Protecting the resource.

Further, AB 52 protects tribal cultural resources by requiring that lead agencies seek tribal consultation prior to the release of any CEQA documentation. Lead agencies must notify tribes traditionally and culturally affiliated with a potential project area within 14 days of a development application being complete. Upon this initial notification, tribes would confirm consultation within 30 days of notification if consultation is deemed necessary. In addition, the Office of Planning and Research updated Appendix G of the CEQA Guidelines to provide sample questions regarding impacts to tribal cultural resources (PRC Section 21083.09).

Other California Laws and Regulations

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and PRC Sections 5097.94 and 5097.98 and fall within the jurisdiction of the NAHC.

The Project will follow the procedures required by the California Health and Safety Code as outlined below in Impact CUL-1 and Mitigation Measures CUL-1a and CUL-1b if any Native American remains are uncovered during Project construction. The Project would therefore be consistent with these requirements.

Local Plans and Policies

Contra Costa County General Plan

The *Contra Costa County General Plan* (General Plan) contains goals and policies that could be applicable to the Project. These goals and policies, primarily located in Open Space Element policies 9-32 through 9-34, are summarized as follows:

- To identify and preserve important archaeological and historic resources within the County.
- To preserve areas with identifiable and important archaeological or historic significance.

The Project would be in compliance with General Plan policies related to cultural resources.

4.4.4 Significance Criteria

Based on Appendix G of the CEQA *Guidelines*, implementation of the Project would have a significant effect on cultural resources if it would:

- a) Cause a substantial adverse change in the significance of an historical resource as defined in 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 formal cemeteries; or
- d) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Section 21074.

Section 15064.5 refers to Public Resources Code Section 21083.2 for a definition of a unique archaeological resource, which means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- it contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;

- it has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- it is directly associated with a scientifically recognized important prehistoric or historic event;
- has yielded, or may be likely to yield, information important in prehistory or history.²

PRC Section 21074 defines a tribal cultural resource as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources, included in a local register of historical resources, or determined by the lead agency to be significant.

Analysis Methodology

This section assesses potential impacts to cultural resources as a result of the implementation of the Project based on data from the cultural resources inventory completed by the archaeological consulting firm Archeo-Tec, Inc., updated by ESA, as well as information presented in the *General Plan*. Archeo-Tec and ESA conducted archival records searches at the Northwest Information Center at Sonoma State University to review all archaeological studies and recorded sites within a 0.5-mile radius of the Project site. Archeo-Tec consulted with the staff of the Native American Heritage Commission in Sacramento to determine whether any portion of the Project property may encroach upon any sites deemed sacred by members of the local Native American Community. The County initiated consultation efforts with local Native American tribes who might have interest in the Project site. Two Archeo-Tec archaeologists trained in the identification of prehistoric and historic period resources conducted a surface reconnaissance of the Project site to search for signs of cultural deposits. An ESA archaeologist conducted a survey of the pipeline alignment that would connect to the Contra Costa Water District water supply.

Topics with No Impact or Otherwise Not Addressed in this EIR

The Project site contains no historical resources on the Project site or in the vicinity of the Project's off-site improvements (e.g., Central Avenue and Palms Drive improvements, installation of the Project waterline) that would be affected significantly by Project-related development, including off-site infrastructure, and therefore there are no historical resources to which the Project could cause a substantial adverse change (**Criterion a**).

² Public Resources Code, Section 21083.2(g).

4.4.5 Impact Analysis

Archaeological Resources, Human Remains, and Tribal Cultural Resources

Impact CUL-1: The Project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered archaeological resources, human remains, and tribal cultural resources. (Criteria b, c and d) (*Potentially Significant prior to Mitigation*)

Although no recorded prehistoric or historic archaeological sites or tribal cultural resources were identified on the Project site or in the vicinity of off-site Project improvements, the inadvertent discovery of archaeological resources, human remains, both of which can be considered tribal cultural resources, cannot be entirely discounted. Impacts to previously undiscovered archaeological resources, human remains, or tribal cultural resources would be a potentially significant impact. This impact would be reduced to a less-than-significant level by implementation of Mitigation Measure CUL-1a and CUL-1b. These measures would ensure that proper procedures are followed in the event of a find, including stopping work in the vicinity and contacting a qualified archaeologist, or the County Coroner and the Native American Heritage Commission, as applicable.

Mitigation Measure CUL-1a: If prehistoric or historic-period archaeological resources are encountered during Project implementation, including ground disturbance associated with project construction, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior’s Professional Qualification Standards for Archeology, shall inspect the find within 24 hours of discovery and notify the County of their initial assessment. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If the County determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is Native American-related), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided if feasible. If avoidance is not feasible, the County shall consult with appropriate Native American tribes (if the resource is Native American-related), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource, determined by a qualified professional or California Native American tribe, as is appropriate (according to PRC Section 21084.3). All significant cultural materials

recovered shall, at the discretion of the consulting professional, be subject to scientific analysis, professional museum curation, and documentation according to current professional standards.

In considering any suggested mitigation proposed by the consulting professional to mitigate impacts to cultural resources, the County shall determine whether avoidance is feasible in light of factors such as the nature of the find, project design, costs, and other considerations.

If avoidance is infeasible, other appropriate measures, such as data recovery, shall be instituted. The resource shall be treated with the appropriate dignity, taking into account the resource's historical or cultural value, meaning, and traditional use, as determined by a qualified professional or California Native American tribe, as is appropriate. Work may proceed on other parts of the project site while mitigation for cultural resources is carried out. All significant cultural materials recovered shall, at the discretion of the consulting professional, be subject to scientific analysis, professional museum curation, and documentation according to current professional standards. At the County's discretion, all work performed by the consulting professional shall be paid for by the proponent and at the County's discretion, the professional may work under contract with the County.

Mitigation Measure CUL-1b: In the event of discovery or recognition of any human remains during construction activities, the following steps shall be taken:

1. There shall be no further excavation or disturbance of the location where human remains are found or within 100 feet until:
 - A. The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and
 - B. If the coroner determines the remains to be Native American:
 - (1) The coroner shall contact the Native American Heritage Commission within 24 hours;
 - (2) The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American;
 - (3) The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98; or
2. Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance:

- A. The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the Commission;
- (1) The identified descendant fails to make a recommendation; or
 - (2) The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

Significant after Mitigation: Less than Significant.

Cumulative Impacts

Impact C-CUL-1: The Project, in conjunction with cumulative development, could contribute to cumulative impacts on cultural resources. (Criteria b, c and d) (*Less than Significant, No Mitigation Required*)

Geographic Context

The geographic area considered for the cumulative effects of cultural resources is generally the Vine Hill/Pacheco Boulevard area.

Cumulative Analysis

No significant archaeological resources are known to exist on the Project site or in off-site areas where Project-related improvements will be undertaken, and archival research performed as background to this EIR did not identify any recorded archaeological sites in the Project site or in the relevant off-site areas. As noted above, while there remains some potential for buried cultural resources from historic, protohistoric, or prehistoric eras to be encountered during ground-disturbing activities, implementation of Mitigation Measure CUL-1a and 1b would reduce any potential impacts to such resources to less-than-significant levels.

With respect to cumulative impacts, the Palms 10 subdivision is located within close proximity to the Project site, but impacts to cultural resources are generally site specific and do not cumulate. As provided in Section 15130 of the *CEQA Guidelines*, 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. A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. With implementation of the mitigations measures identified in this analysis, the proposed Project would not result in a considerable contribution to any potential cumulative effect on cultural resources, and implementation of Mitigation Measures CUL-1a and 1b would satisfy this criterion. Therefore, although no

cumulative impacts to cultural resources have been identified for the proposed Project, the mitigation for potential project impacts to cultural resources would also serve as mitigation ensuring there was no considerable contribution to a potential cumulative impact to cultural resources.

Mitigation: None required.

References - Cultural Resources

Archeo-Tec, Inc., *Phase I Cultural Resources Assessment Report for the Bayview Residential Subdivision Project, Martinez, Contra Costa County, California*, Prepared for Herring and Associates, El Cerrito, CA, May 4, 2007.

Contra Costa County, *Contra Costa County General Plan 2005 - 2020*, January 18, 2005.

Environmental Science Associates (ESA), Northwest Information Center of the California Historical Resources Information System at Sonoma State University (File No. 11-0061), July 2011.

_____, Northwest Information Center of the California Historical Resources Information System at Sonoma State University (File No. 17-1271), October 30, 2017.

_____, Northwest Information Center of the California Historical Resources Information System at Sonoma State University (File No. 20-0047), July 16, 2020.

4.5 Geology and Soils

4.5.1 Introduction

This section describes the geologic and seismic conditions in the Project vicinity and evaluates the potential for the proposed Project to result in significant impacts related to exposing people or structures to unfavorable geologic hazards, soils and/or seismic conditions. This section also describes unique paleontological resource in the Project area and evaluates the potential for the project to adversely affect such resources. General descriptions of geology, soils and seismic hazards rely primarily upon information gathered from maps and publications issued by the United States Geologic Survey (USGS), the California Geologic Survey (CGS), the Natural Resource Conservation Service (NRCS), and the Association of Bay Area Governments (ABAG). In addition, geotechnical investigations and supplements (Engeo, 2003, 2006, 2019 and 2020) and related peer reviews (DMA, 2006a, 2006b and 2020) were used as a basis to describe site-specific conditions and identify potential issues of concern. Project elements are evaluated for their potential to alter geologic conditions, or increase risks associated with geologic and seismic hazards. If any changes are found to be significant under CEQA, such issues are discussed and appropriate mitigation measures are identified.

4.5.2 Environmental Setting

Regional Geology

The Project site lies within the geologically complex region of California referred to as the Coast Ranges geomorphic province. The Coast Ranges province lies between the Pacific Ocean and the Great Valley and stretches from the Oregon border to the Santa Ynez Mountains near Santa Barbara. Much of the Coast Ranges province is composed of marine sedimentary deposits and volcanic rocks that form northwest-trending mountain ridges and valleys, running roughly parallel to the San Andreas Fault Zone. These older consolidated rocks are characteristically exposed in the mountains but are buried beneath younger, unconsolidated alluvial fan¹ and fluvial sediments in the valleys and lowlands. In coastal and bay margins, these younger sediments commonly interfinger with a variety of marine deposits (e.g. bay mud).

Site Geology

The Project is proposed south and east of Vine Hill, the prominent hill on the Project site, which is adjacent to the tidal marshes of Suisun Bay. Elevations on the Project site range from near sea level on its south and east sides, to a high of 283 feet at the top of the hill. Natural slopes are nearly flat-lying at lower elevations and increase to over 25 percent on the flanks of the hill with upland regions containing slopes that are 25 to 50 percent. Less than a mile to the east, Pacheco Creek flows north, draining into Suisun Bay about 2 miles north of the site. Thus, the property is

¹ An alluvial fan consists of unconsolidated mixtures of gravel, sand, clay and silt deposited by running water (e.g., river or stream) at the base of hills or mountain ranges.

located on the margin between older sedimentary rocks that make up Vine Hill and younger hill slope and estuarine deposits.

Geologic Materials and Hillside Deposits

Geologic materials at the Project site vary with location and depth, with the southern and eastern portions of the property underlain by Bay Mud and artificial fill. The rest of the site, the upland portion, is underlain by consolidated Tertiary and Cretaceous sedimentary rock and associated hillslope deposits (colluvium). The following describes the location and character of these deposits from youngest to oldest:

Artificial Fill (Historic)

Existing fills have been identified at the Project site, associated with the construction of the railroad tracks that border the southern portion of the Project site. Fills may also be associated with the suspected quarrying activities on the eastern slope of the hill. These existing fills consist of intermixed loose to dense silty and gravelly sands, silty clays and rock fragments (Engeo, 2003).

Colluvium

Colluvium are land derived deposits that originate upslope and are deposited generally at the base of slopes either through landslides or as sheetwash. The colluvial soils at the site consist of sandy and silty clays. These soils range in thickness from 3 to approximately 12 feet and are considered to be highly expansive (Engeo, 2003). These soils were also described as relatively unstable due to susceptibility to slope instability and also as having a potential to be compressible and weak (Engeo, 2003).

Bay Mud

Fine silts and clays that have accumulated below the San Francisco Bay and other tidal flats areas with waters over the last twelve thousand years are commonly referred to as Bay Muds. These deposits are generally characterized as water saturated, predominantly gray, green and blue clay and silty clay underlying marshes and tidal mud flats. Due to fluctuations in sea levels during this time, the mud typically interfingers with the outer edges of alluvial fans and alluvial sediments, though occasionally, the mud abuts much older bedrock that forms the hills in the region.² The thickness of the mud ranges from 0-40 meters, with deposits thinning towards the margins of the bay.

Bay Mud underlies the low-lying south and southeastern portions of the Project site and was found to be up to 30 feet thick (Engeo, 2003). Bay mud typically poses a number of engineering challenges because it is soft and highly compressible with a shallow water table. In the Project area, it is encountered under thin soils, from 2 to 11 feet below the ground surface and its thickness varies from place to place (Engeo, 2003). The portion of the site proposed for development generally avoids the locations underlain by Bay Mud; however, there are some fills that are proposed for areas that may be underlain by relatively thin layers of Bay Mud (Engeo, 2006).

² Alluvial sediments are deposits that originate from running water (e.g., river or stream) processes at the base of hills or mountain ranges.

Vine Hill Sandstone

The Vine Hill Sandstone is a formation consisting of marine sedimentary rocks that are 55 to 65 million years in age. The bedrock consists mainly of massive, medium to coarse-grained, brown sandstone and silty shale (Graymer et al., 2002). The unit is hard and massive relative to the geology that surrounds it and therefore forms the bulk of Vine Hill on the Project site. Tectonic processes have folded this rock so that its layers are oriented in a northwest direction and dip toward the southwest at moderate to steep angles below horizontal (Engeo, 2003).

Great Valley Sequence

Sedimentary rocks of the Great Valley Sequence underlie the Vine Hill Sandstone at the Project site and occur along the northwest base of Vine Hill. The Great Valley Sequence is a large, regional sequence of alternating layers of sandstone, siltstone and shale. The unit that has been mapped at the Project site consists of grey, massive sandstone that is 65 to 100 million years in age according to the US Geological Survey (Graymer et al., 2002). Its layers are oriented in a similar fashion to the Vine Hill Sandstone (Engeo, 2003). The unnamed sandstone unit is considered friable to moderately strong and can also include sandstones interbedded with siltstone and claystone (Engeo, 2003).

Soils

A soil is generally defined as a natural body consisting of horizons (layers) of mineral and/or organic constituents of variable thickness, which differ from the parent materials in their morphological, physical, chemical and mineralogical properties and their biological characteristics (Birkeland, 1999). The Project site has a variety of soils whose composition and character are strongly influenced by the bedrock from which they were formed, climatic conditions, topography and their age.

The NRCS operates a web soil survey that provides access to soil data and information produced by the National Cooperative Soil Survey. The online soil database was queried for information on the soils in the Project area (NRCS, 2017). The characteristics of the soil and their spatial extent are described below.

Omni Silty Clay

The Omni Silt Clay underlies approximately 41 percent of the Project site, on flat-lying areas south and east of Vine Hill. A typical soil profile is 60 inches deep, poorly drained, with a moderately low to moderately high saturated permeability. The Omni Silty Clay usually forms on sedimentary alluvium, but has formed over the Bay Mud described earlier.

Lodo Clay Loam³

The Lodo Clay Loam is mapped on approximately 54 percent of the Project site. The Lodo Clay Loam is further differentiated between when it is found on slopes that are between 9 and

³ A loam is a soil that is made up of approximately equal quantities of sand, silt and clay. Often, the term is qualified to indicate which material occurs in greater proportion. For example, a clay loam has a greater proportion of clay relative to sand and silt.

30 percent in grade and slopes that are between 30 and 50 percent in grade. The Project site contains both of these slope inclinations. The soil is characterized by being somewhat excessively drained with a very low to moderately high capacity to transmit water.

Dibble Silty Clay Loam

The Dibble Silty Clay Loam is found on slopes of 30 to 50 percent and is found on less than 2 percent of the total Project site area. These soils are mapped along the southern border of the Project site adjacent to the railroad tracks. The Dibble soils are characterized as well drained with a very low to moderately high capacity to transmit water.

Altamont Clay

The remaining soil unit mapped within the Project site is the Altamont Clay which is shown as covering a little more than 3 percent of the site. The Altamont Clay is found on 15 to 30 percent slopes is also considered to be well drained with a very low to moderately high capacity to transmit water. However, the Altamont Clay generally has a better (moderate) available capacity to retain water.

Groundwater

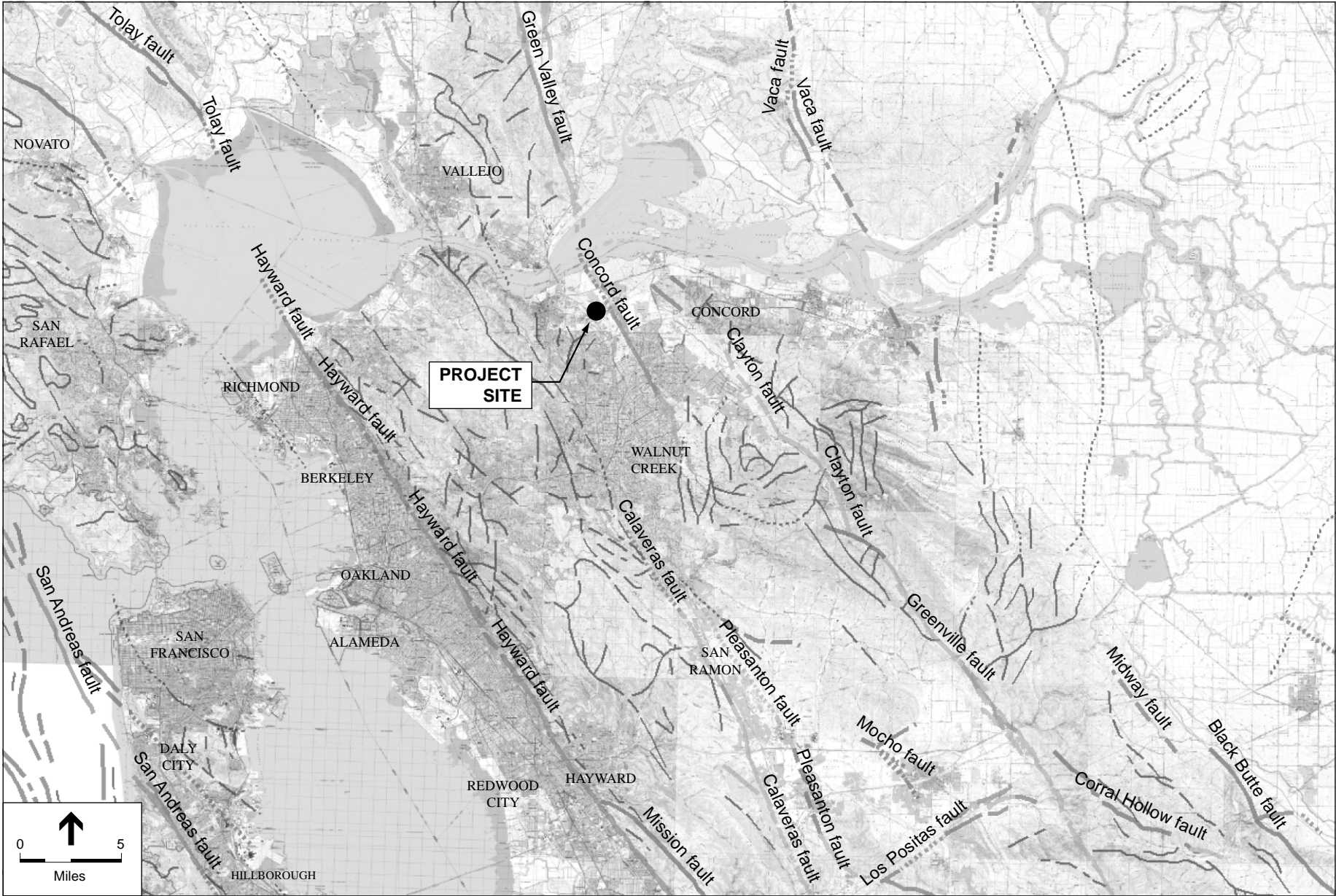
The Project site contains groundwater, through the actual groundwater levels could not be established. Bay Mud samples at the Project Site appeared to be saturated below a depth of 6 feet. Fluctuations in groundwater levels occur seasonally and over a period of years because of variations in precipitation, temperature, irrigation, and other factors.

Seismicity

The Project lies within a region of California that contains many active and potentially active faults and is considered an area of high seismic activity; see **Figure 4.5-1, Regional Faults Map**.⁴ Using information from recent earthquakes, improved mapping of active faults, and a new model for estimating earthquake probabilities, the 2014 Working Group on California Earthquake Probabilities updated the 30-year earthquake forecast for California. The Group reported that there is a 72 percent probability of at least one earthquake of magnitude 6.7 or greater striking somewhere in the San Francisco Bay region before 2043 (USGS, 2016).

Richter magnitude is a measure of the size of an earthquake as recorded by a seismograph, a standard instrument that records groundshaking at the location of the instrument. The reported Richter magnitude for an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically with each whole number step representing a ten-fold increase in the amplitude of

⁴ An “active” fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A “potentially active” fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive. “Sufficiently active” is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches (Hart, 1997).



SOURCE: ESA

Bayview Estates Residential Project . 208078

Figure 4.5-1
Regional Fault Map

the recorded seismic waves. Earthquake magnitudes are also measured by their Moment Magnitude (M_w) which is related to the physical characteristics of a fault including the rigidity of the rock, the size of fault rupture and movement or displacement across a fault (CGS, 2002).

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. The Modified Mercalli (MM) intensity scale shown in **Table 4.5-1** is commonly used to measure earthquake damage due to ground shaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total) and intensities ranging from IV to X could cause moderate to significant structural damage.⁵ The intensities of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

Regional Faults

The faults in the region with the highest estimated probability of generating damaging earthquakes over the next approximate 30 years are the Hayward, Rodgers Creek, Calaveras, and San Andreas Faults (USGS, 2016). These four faults exhibit strike-slip orientation and have experienced movement within the last 150 years.⁶ Other principal faults capable of producing significant ground shaking in the Bay Area are listed on **Table 4.5-2, Active Faults in the Project Vicinity**, and include the Concord–Green Valley and Marsh Creek–Greenville faults.

San Andreas Fault

The San Andreas Fault Zone is a major structural feature that forms at the boundary between the North American and Pacific tectonic plates, extending from the Salton Sea in Southern California near the border with Mexico to north of Point Arena, where the fault trace extends out into the Pacific Ocean. The main trace of the San Andreas fault through the Bay Area trends northwest through the Santa Cruz Mountains and the eastern side of the San Francisco Peninsula. As the principal strike-slip boundary between the Pacific plate to the west and the North American plate to the east, the San Andreas is often a highly visible topographic feature, such as between Pacifica and San Mateo, where Crystal Springs Reservoir and San Andreas Lake clearly mark the rupture zone. Near San Francisco, the San Andreas fault trace is located immediately off-shore near Daly City and continues northwest through the Pacific Ocean approximately 6 miles due west of the Golden Gate Bridge.

In the San Francisco Bay Area, the San Andreas Fault Zone was the source of the two major seismic events in recent history that affected the San Francisco Bay region. The 1906 San Francisco earthquake was estimated at M_w 7.9 and resulted in approximately 290 miles of surface fault rupture, the longest of any known continental strike slip fault. Horizontal displacement along the

⁵ The damage level represents the estimated overall level of damage that will occur for various MM intensity levels. The damage, however, will not be uniform. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size and shape of a building all affect its performance.

⁶ A strike-slip fault is a fault on which movement is parallel to the fault's strike or lateral expression at the surface (Bates and Jackson, 1984).

fault approached 17 feet near the epicenter. The more recent 1989 Loma Prieta earthquake, with a magnitude of Mw 6.9, resulted in widespread damage throughout the Bay Area (ABAG, 2003).

**TABLE 4.5-1
MODIFIED MERCALLI INTENSITY SCALE**

Intensity Value	Intensity Description	Average Peak Acceleration (% g^a)
I	Not felt except by a very few persons under especially favorable circumstances.	< 0.17 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.17-1.4 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.17-1.4 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	1.4-3.9g
V	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	3.5 – 9.2 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	9.2 – 18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	18 – 34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	34 – 65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	65 – 124 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 124 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

NOTES:

a g (gravity) = 980 centimeters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCE: ABAG, 2003; Worden et al., 2017.

**TABLE 4.5-2
 ACTIVE FAULTS IN THE PROJECT SITE VICINITY**

Fault	Distance and Direction from Project	Recency of Movement	Fault Classification^a	Historical Seismicity^b	Maximum Moment Magnitude Earthquake (Mw)^c
Concord–Green Valley	1 miles East	Historic (1955)	Active	Historic active creep	6.7
Marsh Creek–Greenville	10 miles Southeast	Historic (1980 rupture)	Active	M 5.6 1980	6.9
Hayward	11 miles West	Historic (1868 rupture)	Active	M 6.8, 1868 Many <M 4.5	7.1
Calaveras	18 miles South	Historic (1861 1911, 1984)	Active	M 5.6–M 6.4, 1861 M 6.2, 1911, 1984	6.8
Rodgers Creek	20 miles North	Historic	Active	M 6.7, 1898 M 5.6, 5.7, 1969	7.0
San Andreas	30 miles Southwest	Historic (1906; 1989 ruptures)	Active	M 7.1, 1989 M 8.25, 1906 M 7.0, 1838 Many <M 6	7.9

NOTES:

a See footnote 2.

b Richter magnitude (M) and year for recent and/or large events. The Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave.

c Moment Magnitude (Mw) is related to the physical size of a fault rupture and movement across a fault. Moment magnitude provides a physically meaningful measure of the size of a faulting event (CGS, 2002). The Maximum Moment Magnitude Earthquake, derived from the joint CGS/USGS Probabilistic Seismic Hazard Assessment for the State of California, 1996 (Peterson, 1996).

SOURCES: Hart, 1997; Jennings and Bryant, 2010; Peterson, 1996; USGS, 2003a.

The Northern San Andres Fault has a 22 percent likelihood of one of more magnitude 6.7 or greater quakes by 2043 (USGS, 2016).

Hayward Fault

The Hayward Fault Zone is the southern extension of a fracture zone that includes the Rodgers Creek Fault (north of San Pablo Bay), the Healdsburg fault (Sonoma County) and the Maacama fault (Mendocino County). The Hayward fault trends to the northwest within the East Bay, extending from San Pablo Bay in Richmond, 60 miles south to San Jose. The Hayward fault in San Jose converges with the Calaveras fault, a similar type fault that extends north to Suisun Bay. The Hayward fault is designated by the Alquist-Priolo Earthquake Fault Zoning Act as an active fault.

Historically, the Hayward fault generated one sizable earthquake in the 1800s.⁷ In 1868, a Richter magnitude 7 earthquake on the southern segment of the Hayward Fault ruptured the ground for a distance of about 30 miles. Recent analysis of geodetic data indicates surface deformation may

⁷ Prior to the early 1990s, it was thought that a Richter magnitude 7 earthquake occurred on the northern section of the Hayward Fault in 1836. However, a study of historical documents by the California Geological Survey concluded that the 1836 earthquake was not on the Hayward Fault (Bryant, 2000).

have extended as far north as Berkeley. Lateral ground surface displacement during these events was at least 3 feet.

A characteristic feature of the Hayward fault is its well-expressed and relatively consistent fault creep. Although large earthquakes on the Hayward fault have been rare since 1868, slow fault creep has continued to occur and has caused measurable offset. Fault creep on the East Bay segment of the Hayward fault is estimated at 9 millimeters per year (mm/yr) (Peterson, et al., 1996). However, a large earthquake could occur on the Hayward fault with an estimated moment magnitude (M_w) of about 7.1 (see Table 4.5-2). The USGS Working Group on California Earthquake Probabilities includes the Hayward–Rodgers Creek Fault Systems in the list of those faults that have the highest probability of generating earthquakes of magnitude (M) 6.7 or greater in the Bay Area (USGS, 2003b). The Hayward-Rodgers Creek Fault has a 33 percent probability of one of more magnitude 6.7 or greater quakes by 2043 (USGS, 2016).

Calaveras Fault

The Calaveras fault is a major right-lateral strike-slip fault that has been active during the last 11,000 years. The Calaveras Fault is located in the eastern San Francisco Bay region and generally trends along the eastern side of the East Bay Hills, west of San Ramon Valley and extends into the western Diablo Range and eventually joins the San Andreas Fault Zone south of Hollister. The northern extent of the fault zone is somewhat conjectural and could be linked with the Concord Fault.

The fault separates rocks of different ages, with older rocks west of the fault and younger sedimentary rocks to the east. The location of the main, active fault trace is defined by youthful geomorphic features (linear scarps and troughs, right-laterally deflected drainage, sag ponds) and local groundwater barriers. The Calaveras fault is designated as an Alquist-Priolo Earthquake Hazard Zone (see discussion on this zone designation below). There is a distinct change in slip rate and fault behavior north and south of the vicinity of Calaveras Reservoir. North of Calaveras Reservoir, the fault is characterized by a relatively low slip rate of 5-6 mm/yr and sparse seismicity. South of Calaveras Reservoir, the fault zone is characterized by a higher rate of surface fault creep that has been evidenced in historic times. The Calaveras Fault has been the source of numerous moderate magnitude earthquakes and the probability of a large earthquake (greater than $M_{6.7}$) is much lower than on the San Andreas or Hayward Faults (USGS, 2003b). However, this fault is considered capable of generating earthquakes with upper bound magnitudes ranging from M_w 6.6 to M_w 6.8. The Calaveras Fault has a 26 percent probability of one of more magnitude 6.7 or greater quakes by 2043 (USGS, 2016).

Concord-Green Valley Fault

The Concord-Green Valley Fault extends from Walnut Creek north to Wooden Valley (east of Napa Valley). Historical record indicates that no large earthquakes have occurred on the Concord or Green Valley Faults (USGS, 2003a). However, a moderate earthquake of magnitude $M_{5.4}$ occurred on the Concord Fault segment in 1955. The Concord and Green Valley Faults exhibit active fault creep and are considered to have a small (4 percent) probability of causing a significant (greater than $M_{6.7}$ earthquake according to the USGS). The Concord-Green Valley

Fault has a 16 percent probability of one of more magnitude 6.7 or greater quakes by 2043 (USGS, 2016).

Rodgers Creek Fault

The Rodgers Creek Fault Zone (RCFZ) is the southern segment of a fracture zone that includes the Rodgers Creek fault (north of San Pablo Bay) and the Healdsburg fault (northern Sonoma County). The most recent significant earthquakes on the RCFZ both occurred on October 1, 1969. On this date, two earthquakes of Richter magnitude 5.6 and 5.7 occurred within an 83-minute period. Buildings in Santa Rosa sustained serious damage during these quakes. Prior to these events, the last major earthquake (estimated Richter magnitude 6.7) was generated in 1898 with an epicenter near Mare Island at the north margin of San Pablo Bay. The USGS estimates the probability of a large earthquake (moment magnitude 6.7 or greater) on the Hayward-Rodgers Creek Fault during the period 2003 to 2032 to be 27 percent, the highest probability for all San Francisco Bay fault zones (USGS, 2003b). CGS and ABAG estimate the RCFZ is capable of generating a maximum moment magnitude 7.0 earthquake. The Hayward-Rodgers Creek Fault has a 33 percent probability of one of more magnitude 6.7 or greater quakes by 2043 (USGS, 2016).

Greenville Fault

The Greenville Fault, also known as the Marsh Creek-Greenville fault, extends along the base of the Altamont Hills, which form the eastern margin of the Livermore Valley. The fault is recognized as a major structural feature and has demonstrated activity in the last 11,000 years. A magnitude 5.6 earthquake on the Greenville fault in 1980 produced a small amount of surface rupture (approximately 3 centimeters) on the fault near Vasco Road. The Greenville Fault has a 16 percent probability of one of more magnitude 6.7 or greater quakes by 2043 (USGS, 2016).

Seismic Hazards

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults, which are referenced in Table 4.5-1.

The site is not within an Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act and no mapped active faults are known to pass through the immediate Project region. Therefore, the risk of ground rupture at the site is very low.

Ground Shaking

Strong ground shaking from a major earthquake could affect the Project site during the next 30 years. Earthquakes on the active faults (listed in Table 4.5-1) are expected to produce a range of ground shaking intensities at the Project site. Ground shaking may affect areas hundreds of miles distant from the earthquake's epicenter. Historic earthquakes have caused strong ground shaking and damage in the San Francisco Bay Area, the most recent being the M 6.9 Loma Prieta

earthquake in October 1989. The epicenter was more than 60 miles south of the Project site, but this earthquake nevertheless caused strong ground shaking for about 20 seconds and resulted in varying degrees of structural damage throughout the Bay Area.

The 1906 San Francisco earthquake, with an estimated moment magnitude of 7.9, produced moderate (VI) shaking intensities in the Project area (USGS, 2017a). The 1989 Loma Prieta earthquake, with an Mw of 6.9, produced light (V) shaking intensities in the Project area (USGS, 2017b).

The common way to describe ground motion during an earthquake is with the motion parameters of acceleration and velocity in addition to the duration of the shaking. A common measure of ground motion is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. In terms of automobile accelerations, one “g” of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum peak acceleration value recorded during the Loma Prieta earthquake was in the vicinity of the epicenter, near Santa Cruz, at 0.64 g. The highest value measured in the East Bay was 0.29 g, recorded at the Oakland Wharf near the Naval Supply Center where the soils are artificial fill overlying Bay Mud. The lowest values recorded were 0.06 g in the bedrock on Yerba Buena Island. However, an earthquake on the nearby Concord-Green Valley fault, for example, could produce more severe ground shaking at the site than was observed during the Loma Prieta earthquake. Probabilistic seismic hazard maps indicate that peak ground acceleration in the Project region could reach or exceed 0.5g (CGS, 2008).⁸ The potential hazards related to ground shaking are discussed further in the Impacts and Mitigations section of this chapter.

Liquefaction

Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt and some low-plasticity clay deposits. Four kinds of ground failure commonly result from liquefaction: lateral spread, flow failure, ground oscillation and loss of bearing strength. Liquefaction and associated failures could damage foundations, roads, underground cables and pipelines and disrupt utility service.

In addition, liquefaction can occur in unconsolidated or artificial fill sediments and other reclaimed areas along the margin of San Francisco Bay. The depth to groundwater influences the potential for liquefaction, in that sediments need to be saturated to have a potential for liquefaction.

⁸ Ground Motion values were interpolated from a grid (0.05-degree spacing) of values calculated using the 2008 Probabilistic Seismic Hazard Assessment model.

Hazard maps produced by the ABAG depict liquefaction and lateral spreading hazards for the entire Bay Area in the event of a significant seismic event.⁹ According to these maps, the upland portion of the Project site is in an area expected to have a very low potential to experience liquefaction for the majority of the Project site. However, the portion of the site where Bay Mud has been mapped, in the low lying areas of the southeastern portion of the site, has been mapped by ABAG as having a high liquefaction potential (ABAG, 2017a). According to the geotechnical investigation prepared for the Project site, the clay content observed in the soil samples taken from this area indicate a low potential for liquefaction within the portion of the site proposed for residential development (Engeo, 2003).

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, uncompacted and variable sandy sediments above the water table) due to the rearrangement of soil particles during prolonged ground shaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different amounts). Undocumented artificial fill would be the most susceptible to this type of settlement, if it were present. However, the Project would include significant earthwork and create engineered fill (up to 59 feet thick) for all areas that would meet or exceed standards intended to prevent significant earthquake-induced settlement.

Geologic Hazards

Expansive Soils

Expansive soils possess a “shrink-swell” behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. The clayey soils found on the Project site were found to have a moderate to high expansion potential (Engeo, 2003). The hazard can be minimized through appropriate grading and foundation design measures consistent with standard geotechnical engineering practices.

Soil Erosion

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting and the action of waves, wind and underground water. Excessive soil erosion can eventually lead to damage of building foundations and roadways. At the Project site, areas that are most susceptible to erosion are any disturbed soils located on steeper terrain. Typically, the soil erosion potential is reduced once the soil is graded and vegetated, covered with concrete, structures, asphalt, or slope protection. Soil erosion is a potential issue at the site and is discussed in the Impacts and Mitigations section below.

⁹ Lateral spreading is a ground failure associated with liquefaction and generally results from predominantly horizontal displacement of materials toward relatively unsupported free slope faces.

Settlement

Settlement can occur from immediate settlement, consolidation, shrinkage of expansive soil and liquefaction (discussed below). Immediate settlement occurs when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs quickly and is typically complete after placement of the final load. Consolidation settlement occurs in saturated clay from the volume change caused by squeezing out water from the pore spaces. Consolidation occurs over a period of time and is followed by secondary compression, which is a continued change in void ratio under the continued application of the load.

Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement. Some of the low lying areas of the Project site are underlain by compressible Bay Mud. When placed under new loads from either structures or placement of new fill, Bay Muds can settle in the short term, referred to as primary settlement, or over a long duration, referred to as secondary settlement. However, geotechnical engineering methods can effectively reduce the damaging effects of settlement either through surcharging the soils (placing temporary fills on the Bay Mud prior to development), drainage design, or use of deep foundation systems.

Landslides and Slope Failure

Ground failure is dependent on the slope and geology as well as the amount of rainfall, excavation, or seismic activities. A slope failure is a mass of rock, soil and debris displaced down slope by sliding, flowing, or falling. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. Debris flows consist of a loose mass of rocks and other granular material that, if present on a steep slope and saturated, can move down slope.

The rate of rock and soil movements can vary from a slow creep over many years to sudden mass movements. Landslides occur throughout the state of California but the density of incidents increases in zones of active faulting. As reported in the geotechnical investigation, a previously mapped landslide from a 1975 study was shown on the northeast-facing slope of the Project site was evaluated as part of the investigation. This study was based on geologic interpretation and aerial photography from the 1960s and used to primarily identify areas where slope failure may be a potential hazard (DMA, 2006a). Following exploratory test pits and borings, the geotechnical investigation found no evidence supporting the existence of this landslide (Engeo, 2003).

Paleontology Resources

Paleontological resources are the fossilized remains or impressions of plants and animals, including vertebrates (animals with backbones; mammals, birds, fish, etc.), invertebrates (animals without backbones; starfish, clams, coral, etc.), and microscopic plants and animals (microfossils). They are valuable, non-renewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived. Fossils can be used to determine the relative ages of the depositional layers in which they occur and of the geologic events that created those deposits. The age, abundance, and distribution of fossils

depend on the geologic formation in which they occur and the topography of the area in which they are exposed. The geologic environments within which the plants or animals became fossilized usually were quite different from the present environments in which the geologic formations now exist.

The Society of Vertebrate Paleontology (SVP) established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources (SVP, 2010). Most practicing paleontologists in the United States adhere closely to the SVP's assessment, mitigation, and monitoring requirements as outlined in these guidelines, which were approved through a consensus of professional paleontologists. Many federal, state, county, and city agencies have either formally or informally adopted the SVP's standard guidelines for the mitigation of adverse construction-related impacts on paleontological resources. The SVP has helped define the value of paleontological resources and, in particular, indicates that geologic units of high paleontological potential are those from which vertebrate or significant invertebrate or plant fossils have been recovered in the past (i.e., are represented in institutional collections). Geologic units of low paleontological potential are those that are not known to have produced a substantial body of significant paleontological material. As such, the sensitivity of an area with respect to paleontological resources hinges on its geologic setting and whether significant fossils have been discovered in the area or in similar geologic units (SVP, 2010).

The online collections database of the University of California Museum of Paleontology (UCMP) was searched for fossil localities within the geologic units mapped as occurring in the Project site (i.e., Great Valley Sequence and Vine Hill Sandstone). Data provided through the UCMP's online database includes taxonomic identification, locality number and name, age, and county, and sometimes geologic formation. Precise locality data is not always provided; however, in some cases the locality name can be used to further refine the general vicinity of the locality within the county. While the Great Valley Sequence is not specifically named in the UCMP database for Contra Costa County fossil localities, the Chico and Panoche formations are. The Chico and Panoche formations, while not in Contra Costa County, are members of the Great Valley Sequence. There are three vertebrate fossil localities listed in the database from the Chico Formation (bony and cartilaginous fish, and cetaceans), one locality from the Panoche Formation (reptile), and one locality from an unnamed formation (cartilaginous fish) of the same age (UCMP, 2020a). The database does not include any vertebrate fossil localities from the Vine Hill Sandstone, however, there are approximately 60 microfossil (foraminifera) and invertebrate fossil (mostly gastropods and bivalves) localities identified in Contra Costa County (UCMP, 2020b).

4.5.3 Regulatory Setting

Federal Regulations

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1997 to “reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program.” To accomplish this, the Act

established the National Earthquake Hazards Reduction Program (NEHRP). Congress has periodically reviewed and reauthorized NEHRP (1980, 1981, 1983, 1984, 1985, 1988, 1990, 1994, 1997, 2000, and 2004).

NEHRP's mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it with several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide planning and building code requirements such as emergency evacuation responsibilities and seismic code standards.

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction activities. The Occupational Safety and Health Administration's (OSHA) Excavation and Trenching standard, Title 29 of the Code of Federal Regulations (CFR), Part 1926.650, covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

Paleontological Resources

A variety of federal statutes specifically address paleontological resources. They are generally applicable to a project if that project includes federally owned or federally managed lands or involves a federal agency license, permit, approval, or funding. The first of these is the Antiquities Act of 1906 (54 U.S.C. 320301–320303 and 18 U.S.C. 1866(b)), which calls for protection of historic landmarks, historic and prehistoric structures, as well as other objects of historic or scientific interest on federally administered lands, the latter of which would include fossils. The Antiquities Act both establishes a permit system for the disturbance of any object of antiquity on federal land and also sets criminal sanctions for violation of these requirements. The Antiquities Act was extended to specifically apply to paleontological resources by the Federal-Aid Highways Act of 1958. More recent federal statutes that address the preservation of paleontological resources include the National Environmental Policy Act, which requires the consideration of important natural aspects of national heritage when assessing the environmental impacts of a project (P.L. 91-190, 31 Stat. 852, 42 U.S.C. 4321–4327). The Federal Land Policy Management Act of 1976 (P.L. 94-579; 90 Stat. 2743, U.S.C. 1701–1782) requires that public lands be managed in a manner that will protect the quality of their scientific values, while Title 40 Code of Federal Regulations Section 1508.2 identifies paleontological resources as a subset of scientific resources. The Paleontological Resources Preservation Act (Title VI, Subtitle D of the Omnibus Land Management Act of 2009) is the primary piece of federal legislation.

Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act offers provisions of paleontological resources identified on federal, Native American, or state lands and guidance for their management and protection, and promotes public awareness and scientific education regarding vertebrate fossils. The law also requires federal agencies to develop plans for inventory, collection, and monitoring of paleontological resources and establishes stronger criminal and civil penalties for the removal of scientifically significant fossils on federal lands.

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was signed into state law in 1972. Its primary purpose is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. The Act requires the State Geologist to delineate “Earthquake Fault Zones” along faults that are “sufficiently active” and “well defined.” The Act also requires that cities and counties withhold development permits for sites within an Earthquake Fault Zone until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting. Pursuant to this Act, structures for human occupancy are not allowed within 50 feet of the trace of an active fault. Therefore, if a project site is located in an Earthquake Fault Zone, the County must withhold development permits for sites within the fault zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting.

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2019 CBC is based on the 2018 International Building Code (IBC) published by the International Code Conference. In addition, the CBC contains necessary California amendments, which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction (AISC), and the American Concrete Institute (ACI). ASCE Minimum Design Standards 7-16 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (e.g., flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a Seismic Design Category (SDC) for a project as described in Chapter 16 of the CBC. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC in accordance with Chapter 16 of the CBC. Chapter 16, Section 1613 provides earthquake loading specifications for every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, which shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7-16.

Chapter 18 of the CBC covers the requirements of geotechnical investigations (Section 1803), excavation, grading, and fills (Section 1804), load-bearing of soils (1805), as well as foundations (Section 1808), shallow foundations (Section 1809), and deep foundations (Section 1810). Chapter 18 also describes analysis of expansive soils and the determination of the depth to groundwater table. For Seismic Design Categories D, E, and F, Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also addresses mitigation measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting appropriate structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

Seismic Hazards Mapping Act

The Seismic Hazard Mapping Act was adopted by the California Legislature in 1990 to reduce public health and safety treats and to minimize property damage caused by earthquakes. The act directs the CGS to identify and map areas prone to earthquake hazards, such as liquefaction, earthquake induced landslides, and ground shaking. The act requires site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within Zones of Required Investigation.

A geotechnical investigation completed for the Project site and assessed the site conditions based on collecting subsurface soil samples and concluded that the Project is feasible from a geotechnical standpoint, provided that recommendations made in the report are included into the design (Engeo, 2003). The geotechnical review of the proposed preliminary grading plans was conducted separately and contained supplemental recommendations to be implemented during construction (Engeo, 2006). Both of these documents were peer reviewed by an independent engineering geologist on behalf of the County, as further described in Impact GEO-1 (DMA 2006a, -2006b, and -2020a).

Public Resources Code Section 5097.5 and Section 30244

Other state requirements for paleontological resource management are included in Public Resources Code (PRC) Section 5097.5 and Section 30244. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, district) lands.

Local Plans and Policies

Contra Costa County Code – Title 7 Building Code

Division 716 of the Contra Costa County Code provides the County Grading Ordinance which sets forth regulations for the control of excavating, grading, earthwork construction, including fills or embankments and related work. The following requirements are found within Chapter 716-8 of the Code:

- Cuts shall not be steeper in slope than one vertical to two horizontal unless the applicant furnishes a soil engineering or an engineering geology report, or both, certifying that the site has been investigated and giving an opinion that a cut at a steeper slope will be stable and not create a hazard to public or private property. The county building official may require the excavation to be made with a cut face flatter in slope than one vertical to two horizontal if he finds it necessary for stability and safety.
- Cut slopes exceeding forty feet in vertical height shall have drainage terraces not less than five feet (1.524 meters) in width, measured from the outer edge of the terrace to the invert of the drain, at vertical intervals not exceeding thirty feet (9.144 meters) except that where only one such terrace is required it shall be located at mid-height. For cut slopes exceeding one hundred feet (30.48 meters) in vertical height, the drainage terrace near mid-height shall be not less than twelve feet (3.657 meters) in width. Design and construction of drainage terraces shall conform to the requirements of Sections 716-8.602 -- 716-8.614.
- Cut slopes shall be rounded off at the top and toe to blend and conform to existing terrain.
- Variations from the regulations in Sections 716-8.202 -- 716-8.206 may be allowed by the county building official if they will provide equivalent safety, stability, and protection against erosion, as recommended by a soil engineer or engineering geologist.
- Where fill is to be placed above the top of an existing or proposed cut or natural slope steeper than one vertical to three horizontal, the toe of the fill shall be set back from the top edge of the slope a minimum distance of six feet, (1.829 meters) measured horizontally or such other distance as may be specifically recommended by a soil engineer or engineering geologist and approved by the county building official. Fills shall not toe out on slopes steeper than one vertical to three horizontal.
- Fill slopes shall be tapered into the existing terrain at the toe and shall be rounded off at the top.

- Variations from the regulations in Sections 716-8.402 -- 716-8.422 may be allowed by the county building official if they will provide equivalent safety, stability, and protection against erosion, as recommended by a soil engineer or engineering geologist.

Contra Costa County General Plan

The Conservation Element and Safety Element of the *Contra Costa County General Plan* ("General Plan") categorizes County areas by susceptibility to seismic damage. (General Plan Figure 10-4). The Project Site includes Susceptibility Zones I and IV.

Contra Costa County has also established goals, policies, and programs in regards to geologic hazards, which are outlined in the Conservation Element and Safety Element of the General Plan. Policies especially relevant to seismic hazards liquefaction hazards, slope stability and erosion control applicable to the proposed Project are as follows:

Seismic Hazard Policies

- *Policy 10-3:* Because the region is seismically active, structures for human occupancy shall be designed to perform satisfactorily under earthquake conditions.
- *Policy 10-6:* Structures for human occupancy, and structures and facilities whose loss would substantially affect the public safety or the provision of needed services shall not be erected in areas where there is a high risk of severe damage in the event of an earthquake.
- *Policy 10-8:* Ground conditions shall be a primary consideration in the selection of land use and in the design of development projects.
- *Policy 10-9:* In areas susceptible to high damage from ground shaking (i.e., Zone IV on Map 10-4), geologic-seismic and soils studies shall be required prior to the authorization of major lands developments and significant structures (public or private).
- *Policy 10-10:* Policies regarding liquefaction shall apply to other ground failures which might result from groundshaking but which are not subject to such well-defined field and laboratory analysis.

Liquefaction Policies

- *Policy 10-18:* This General Plan shall discourage urban or suburban development in areas susceptible to high liquefaction dangers and where appropriate subject to the policies in 10-20 below, unless satisfactory mitigation measures can be provided, while recognizing that there are low intensity uses such as water related recreation and agricultural uses that are appropriate in such areas.
- *Policy 10-20:* Any structures permitted in areas of high liquefaction danger shall be sited, designed and constructed to minimize the dangers from damage due to earthquake-induced liquefaction.
- *Policy 10-21:* Approvals to allow the construction of public and private development projects in areas of high liquefaction potential shall be contingent on geologic and engineering studies which define and delineate potentially hazardous geologic and/or soils conditions, recommend means of mitigating these adverse conditions; and on proper implementation of the mitigation measures.

Ground Failure and Landslide Hazard Policies

- *Policy 10-22:* Slope stability shall be a primary consideration in the ability of land to be developed or designated for urban uses.
- *Policy 10-23:* Slope stability shall be given careful scrutiny in the design of developments and structures and in the adoption of conditions of approval and required mitigation measures.
- *Policy 10-24:* Proposed extensions of urban or suburban land uses into areas characterized by slopes over 15 percent and/or generally unstable land shall be evaluated with regard to the safety hazard prior to the issuance of any discretionary approvals. Development on very steep open hillsides and significant ridgelines throughout the County shall be restricted and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.
- *Policy 10-26:* Approvals of public and private development projects in areas subject to slope failures shall be contingent on geologic and engineering studies which define and delineate potentially hazardous conditions and recommend adequate mitigation.
- *Policy 10-27:* Soil and geological reports shall be subject to the review and approval of the County Planning Geologist.
- *Policy 10-28:* Generally, residential density shall decrease as slope increases, especially above a 15 percent slope.
- *Policy 10-29:* Significant very steep hillsides shall be considered unsuitable for types of development which require extensive grading or other land disturbance.
- *Policy 10-30:* Development shall be precluded in areas when landslides cannot be adequately repaired.
- *Policy 10-31:* Subdivisions approved on hillsides which include individual lots to be resold at a later time shall be large enough to provide flexibility in finding a stable buildable site and driveway location.
- *Policy 10-32:* The County shall not accept dedication of public roads in unstable hillside areas, or allow construction of private roads there which would require an excessive degree of maintenance and repair costs.

4.5.4 Significance Criteria

Consistent with Appendix G of the CEQA *Guidelines*, the Project would have a significant effect on geology or soils if it would:

- 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 Map¹⁰ issued by the State Geologist for the area or based on other substantial evidence of a known fault;
 - ii. Strong seismic ground shaking;
 - iii. Seismic-related ground failure, including liquefaction; or
 - iv. Landslides;
- b) Result in substantial soil erosion or the loss of topsoil;
 - c) Be located on 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 1 B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property; or
 - 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.

Analysis Methodology

The following section identifies specific impacts pertaining to geology, soils, and seismicity and assesses the change from the existing conditions. The approach to the analysis is based on site-specific conditions, potential issues of concern, and recommendations in the site-specific geotechnical investigations and supplements (Engeo, 2003, 2006, 2019 and 2020) and related peer reviews (DMA, 2006a, 2006b, and 2020a) relevant to the potential risk or changes to geologic conditions addressed by the significance criteria under CEQA. The analysis also considers general conditions established for the Project site and vicinity, as documented in several other published sources discussed in the *Regulatory Setting* in this section (e.g., USGS, CGS, NRCS and ABAG).

Topics with No Impact or Otherwise Not Addressed in this EIR

The analysis of the Project impacts is based on the significance criteria listed above. Certain significance criteria do not apply to the Project or do not represent a significant Project impact and therefore are not discussed further in this analysis. The Project site is not located within an Alquist Priolo Fault Zone and has a very low potential for fault rupture (**Criterion a.i**); the presence of liquefiable soils was not found on the Project site during the geotechnical investigation (**Criterion a.iii**); and the Project does not include the construction of any septic tanks or other alternative wastewater disposal systems (**Criterion e**).

¹⁰ Per CEQA *Guidelines*, a known earthquake fault is one that has been 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.

Mineral Resources

The CGS (formerly the California Division of Mines and Geology) has classified lands within the San Francisco Bay Region into Mineral Resource Zones (“MRZs”). The classification of MRZs is based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act (SMARA) of 1975 (Stinson et al., 1982).¹¹ The project site is mapped by the CGS as containing both an MRZ-1 zone, an area where no significant mineral deposits are present, and an MRZ-4 zone, an area where available information is inadequate for assignment to any other MRZ zone (Stinson et al., 1982). In general, the MRZ-1 zone is limited to the low-lying areas covered by colluvium and Bay Mud while the MRZ-4 zone covers the majority of Vine Hill. MRZ-2 zones, which are not mapped anywhere near the proposed project site, are areas where significant mineral deposits are present. Therefore, there would be no significant impacts related to mineral resources and they are not discussed further in this document.

Environmental Analysis

As discussed in Section 4.0, *Introduction to the Environmental Analysis*, of this chapter, CEQA requires only the analysis of potential adverse effects of the Project on the environment, however, this analysis of geology and soils addresses each of the significance criteria above, including those that address potential effects of the environment on the Project. Also, the County’s approach to the analysis conservatively identifies certain mitigation measures that are also existing local or State regulatory requirements to which the Project is required to comply, regardless of environmental effects.

4.5.5 Impact Analysis

Slope Stability

Impact GEO-1: The Project could directly or indirectly cause substantial adverse effects involving slope instability hazards, including landslides, debris flows, and rockfalls caused by seismic or nonseismic mechanisms. (Criteria a.iv and c) (Potentially Significant prior to Mitigation)

The Project site includes a prominent hill with relatively steep slopes (referred to as Vine Hill), composed of bedrock in varying stages of weathering. Bedrock contacts, fractures and shear zones provide areas of weakened rock that can become dislodged and then fall or roll towards the lower areas. As mentioned above in the *Environmental Setting*, landslides or slope failures can occur slowly over time or as sudden releases of debris. Slope failures occur as a function of slope and type of materials and may be triggered by events such as heavy precipitation, human activities such as excavation, changes in groundwater levels, or seismic activity. The existing slopes on the hill include inclines that are over 25 percent (or 4:1 horizontal: vertical) and approach 50 percent (or 2:1 horizontal:vertical).

¹¹ Stinson, et al, California Department of Mines and Geology (CDMG), 1987. Aggregate Materials in the San Francisco – Monterey Bay Area Port Chicago Quadrangle, Special Report 146, Part II.

The preliminary grading plan proposes to reconfigure the existing slopes by creating gentler slopes through excavation of materials in the upper regions and filling in the lower regions of the site. The majority of the graded slope area will be at 2.5:1 or flatter, compared to the existing slope of 2:1 or steeper. The proposed graded slope will enhance the slope stability of the existing hill. As illustrated in Figure 3-4, Proposed Cut and Fill (Grading) Areas Map, in Chapter 3 (*Project Description*) of this Draft EIR, areas below the upper portion of Vine Hill and above the proposed residential development area would be substantially graded and include cut and fill slopes of approximately 215 vertical feet with inclines as steep as 50 percent (or 2:1 horizontal:vertical). The preliminary grading plan proposes to create slopes that range up to approximately 50 percent slope (2:1 horizontal:vertical) in the south east portion of the site (Parcel B marsh areas).

In addition to engineered slopes, the preliminary grading plan calls for construction of retaining walls, debris benches with drainage control features and revegetation for the purposes of increasing slope stability. The resulting steep slopes in the residential development area would be separated by J-ditches (for drainage) extending horizontally along the hillside at approximately 30-vertical-foot intervals, unless final geotechnical design plans demonstrate the slope can be safely graded and maintained without the ditches. Excavation of steep slopes would also take place within the residential development area (see Figure 3-2, Preliminary Vesting Tentative Map and Grading, in Chapter 3 [*Project Description*] of this Draft EIR). The steep hillside slope would terminate in a 10-foot debris bench uphill from the first tier of residential lots at the bottom of the slope (generally west of Drive D and Palms Drive, see Figure 3-2).

If unstable slopes in weak material remain during and after development, landsliding, rockfalls and debris flows could occur over time, potentially exposing people and property to injury and damage. The analysis of slope stability for the Project was initially performed by Engeo in its geotechnical investigation in 2003. In that report, Engeo recommended that constructed slopes that are less than 15 feet high should not exceed 45 percent (or 2:1 horizontal:vertical), and slopes that are greater than 15 feet high should not exceed approximately 34 percent slopes (3:1 slopes horizontal:vertical) (Engeo, 2003). However, Engeo's investigation noted that slopes greater than 2:1 were possible if they are reinforced (Engeo, 2003).

In 2006, Engeo prepared supplemental recommendations and findings that, with incorporation of drainage terraces (8 feet wide, spaced at 30 foot intervals with the lowest bench being 20 feet wide) and with remedial grading (i.e., slope stabilization techniques, such as geogrid reinforcement), the Project's preliminary grading plan that included slopes greater than 15 feet high that exceeded 3:1 would be acceptable (Engeo, 2006).

Darwin Myers Associates (DMA), the consulting geologist to the County, subsequently peer reviewed the 2003 and 2006 Engeo reports for completeness, consistency with General Plan policies, and technical adequacy. In general, DMA found the Engeo reports were based on an adequate analysis of subsurface conditions that included appropriate laboratory testing and engineering analysis. In those peer reviews, DMA found that the majority of slope stability hazards with the proposed Project would be reduced by the proposed grading design with

implementation of the Engeo recommendations summarized above (DMA 2006a and DMA 2006b). The preliminary grading plan was subsequently revised to incorporate other recommendations from DMA's 2006 review. Additional changes have since been made in a 2020 preliminary grading plan, which was also peer reviewed and found to address previous issues identified by DMA (DMA 2020a). However, this peer review did also include recommendations for improvements to access to Parcel A as well as the maintenance easement to Lot 143 (DMA, 2020a).

Summary

The Project would reduce the potential for debris flows and rockfalls by engineered cut-and-fill slopes with additional stabilizing features including use of retaining walls, debris benches and drainage controls. The County Grading Ordinance includes maximum slope requirements for cut slopes, fill slopes, along with drainage terrace requirements, as noted above in the *Local Plans and Policies* section. In addition, the County Grading Ordinance allows for variations to occur, provided the variations are accompanied by recommendations from a professional soils engineer or engineering geologist. The recommendations in their respective reports and peer reviews will ensure stability of the currently proposed slopes that align with the most conservative recommendations. Ultimately, the County building official reviewing the grading permit will determine if the final proposed grading plan has met the County Grading Ordinance and adequately provides for the safety of future residents and stability of graded slopes. With implementation of the mitigation measure below, the potentially significant impact associated with the potential for slope stability to create safety hazards for people and structures would be reduced to less than significant.

Mitigation Measure GEO-1: Grading Plans. The Project applicant shall include in the Project's preliminary grading plan the recommendations made in Engeo's *Geotechnical Exploration Bay View Subdivision* report dated August 15, 2003, the *Geotechnical Review of Rough Grading Plan and Supplemental Recommendations* dated June 27, 2006, and supplemental *Plan Review and Response to Peer Review Comments Memo* dated June 19, 2019, and *Response to CCCFCD Comments Regarding Geotechnical Feasibility Bayview* dated May 29, 2020, except as superseded by specific geotechnical recommendations related to engineering or the physical aspects of Project construction in the *Geologic Peer Reviews* dated August 9, 2006, April 14, 2006 and June 30, 2020 by Darwin Myers Associates (DMA) on behalf of the County, to the extent that all recommendations apply to the proposed grading plan. These recommendations include oversight of grading operations which shall be conducted by a California Certified Engineering Geologist or Registered Professional Geotechnical Engineer.

The final grading plans shall be in accordance with the *Contra Costa County Grading Ordinance (Title 7 Division 716)* and reviewed and approved by the Contra Costa Department of Conservation and Development prior to the commencement of Project construction. If any slopes or areas of concern are observed to be unstable during grading, the California certified engineering geologist or registered professional geotechnical engineer shall oversee the removal of the suspected material and reconstruction of the slope as a buttress fill slope with engineered slope stabilization features such as geogrid reinforcement.

Final inspection of excavated slopes and graded slopes shall be completed by a California certified engineering geologist or registered professional geotechnical engineer with knowledge of the Project conditions. The slope stability considerations for the site shall be submitted to and approved of by the Contra Costa Department of Conservation and Development prior to the commencement of Project construction.

Significance after Mitigation: Less than Significant.

Seismic Ground Shaking

Impact GEO-2: The Project could directly or indirectly expose people or structures to strong ground shaking from a seismic event on one of the regional active faults, causing substantial risk of loss, injury, or death. (Criterion a.ii) (Potentially Significant prior to Mitigation)

The Project site would likely experience at least one major earthquake (Richter magnitude (M) 6.7 or higher) within the next 30 years. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude and the duration of shaking. A characteristic earthquake on the Concord-Green Valley fault with an estimated M 6.7 could produce very strong (VIII) shaking in the Project area (ABAG, 2017b). Probabilistic seismic hazard maps indicate that peak ground acceleration in the Project region could reach or exceed 0.5g (CGS, 2008).¹² Based on the MMI scale and equivalent peak ground accelerations, an earthquake of this intensity could cause considerable structural damage in poorly designed structures and slight damage in well-designed structures, which would be considered a potentially significant impact. For comparison purposes, the maximum peak acceleration value recorded during the 1989 Loma Prieta earthquake was in the vicinity of the epicenter, near Santa Cruz, at 0.64 g. The highest value measured in the East Bay was 0.29 g, recorded at the Oakland Wharf near the Naval Supply Center where the soils are artificial fill overlying Bay Mud.

A preliminary geotechnical investigation were completed for the Project site and assessed the site conditions based on collecting subsurface soil samples and concluded that the Project is feasible from a geotechnical standpoint, provided that recommendations made in the report are included into the design (Engeo, 2003). The geotechnical review of the proposed preliminary grading plans was conducted separately and contained supplemental recommendations to be implemented during construction (Engeo, 2006). Both of these documents were peer reviewed by an independent engineering geologist on behalf of the County (as described in Impact GEO-1) and largely concurred with the recommendations as they relate to groundshaking from a seismic event (DMA 2006a, -2006b, and 2020a). Also these documents address Policy 10-9 of the County General Plan requires geologic-seismic and soils studies be required prior to the authorization of major lands developments and significant structures for projects in areas susceptible to high damage from ground shaking (see *Local Plans and Policies in the Regulatory Setting* of this section).

¹² See footnote 8.

Predicting seismic events is not possible, nor is providing mitigation that can entirely reduce the potential for injury and damage that can occur during a seismic event. However, using accepted geotechnical evaluation techniques and appropriate engineering practices, potential injury and damage risk can be diminished, thereby exposing fewer people and less property to the effects of a major damaging earthquake. With implementation of the mitigation measure below, the potentially significant impact associated with the potential ground shaking hazards would be reduced to less than significant.

Mitigation Measure GEO-2: Design-level Geotechnical Compliance. The Project applicant shall prepare and submit to the County a site-specific, design level geotechnical investigation for the Project. The investigation shall analyze expected ground motions at the site from known active faults in accordance with the 2019 California Building Code (“Title 24”), which requires that all designs accommodate ground accelerations expected from known active faults. The investigation shall review improvement and grading plans and update geotechnical design recommendations for proposed walls, foundations, foundation slabs and surrounding related improvements (e.g., utilities, roadways, parking lots and sidewalks) including maintaining pipeline safety for existing pipelines. The report shall be subject to technical review and approval by a California certified engineering geologist or registered professional geotechnical engineer.

All recommendations by the engineering geologist and/or geotechnical engineer shall be incorporated into the final design. Recommendations that are applicable to foundation design, earthwork, and site preparation that were prepared prior to or during the Project design phase, shall be incorporated in the Project, all foundations and other project structures must comply with the performance standards set forth in the California Building Code. The final seismic considerations for the site shall be submitted to and approved of by the Contra Costa Department of Conservation and Development prior to the commencement of Project construction.

Significance after Mitigation: Less than Significant.

Differential and Earthquake Induced Settlement

Impact GEO-3: The Project site would be susceptible to settlement from static forces or earthquake induced forces, posing substantial risk of structural damage or personal injury. (Criterion c) (Potentially Significant prior to Mitigation)

The Project site is underlain by bedrock, colluvium, Bay Mud and some artificial fill. The preliminary grading plan proposes the excavation and fill placement of substantial volumes of material over the entire Project site, the maximum fill depth would be approximately 50 feet, and the maximum cut depth would be approximately 105 feet. The excavation of steep slopes would also take place within the area of residential development, with residential lots having steep sloping rear and side yards.

The onsite materials proposed for excavation have previously been evaluated and determined satisfactory for reuse as fill placement (Engeo, 2003). Typically, fill materials, according to long standing adopted specifications, are placed in thin layers, given appropriate moisture content if necessary and compacted to pre-determined levels. This process becomes what is known as placing engineered fills that are monitored as they are placed to meet or exceed established standards contained in grading ordinances and building codes.

The presence of Bay Muds in some areas of the Project site will require special consideration. These deposits are well known for their compressibility and general weakness to support any kind of loading. There are established methods for improving their suitability for development which include surcharging prior to development and removal. Surcharging soils is accomplished through temporary pre-loading of soils through the placement of stockpiled materials, essentially causing the Bay Muds to consolidate as much as possible prior to development. However, if the Bay Mud thicknesses are relatively minor, then excavation and removal of these layers can also reduce the hazard by replacement with engineered fill materials.

Differential settlement could occur at the Project site due to the presence of differing conditions across the site. Differential settlement could damage building foundations, affect underground utilities and cause settlement of streets and roads. The proposed preliminary grading plan calls for areas that will transition from native materials to engineered fill areas. Improvements located within or across this transition zone may be susceptible to differential settlement where settlement rates differ based on differing engineering properties, which is considered a potentially significant impact. Earthquake-induced settlement or densification is generally associated with loose sands above the groundwater table that are subjected to earthquake shaking. This densification can cause settlement somewhat similar to the effects seen from liquefiable soils where the loose sand grains are reoriented, and also result in a potentially significant impact.

Implementation of the following measure would ensure industry standard grading, fill placement, and geotechnical practices are employed and would reduce the potential differential settlement within transition zones, together reducing the potentially significant impacts associated with settlement to less than significant.

Mitigation Measure GEO-3: Fill Placement. The Project applicant shall incorporate the geotechnical recommendations pertaining to proposed fill placement and site preparation including the fill transition zone areas for the grading plan for the Project, as specified in Engeo's *Geotechnical Exploration Bay View Subdivision* report dated August 15, 2003, and the *Geotechnical Review of Rough Grading Plan and Supplemental Recommendations* dated June 27, 2006, and supplemental *Plan Review and Response to Peer Review Comments Memo* dated June 19, 2019 and *Response to CCCFCD Comments Regarding Geotechnical Feasibility* dated May 29, 2020, except as superseded by specific geotechnical recommendations related to engineering or the physical aspects of Project construction in the *Geologic Peer Reviews* dated August 9, 2006, April 14, 2006, and June 30, 2020 by Darwin Myers Associates (DMA) on behalf of the County. In addition, the Project applicant shall adhere to County grading and construction policies to reduce the potential for geologic hazards, including settlement and differential settlement. All construction activities and design criteria shall comply with applicable codes and

requirements of the 2019 California Building Code (“Title 24”). The final grading plan reflecting the applicant recommendation for the site pertaining to fill placement shall be submitted to and approved by the Contra Costa Department of Conservation and Development prior to the commencement of Project construction.

Significance after Mitigation: Less than Significant.

Soil Loss and Erosion

Impact GEO-4: Project construction would loosen and expose substantial volumes of surface soils susceptible to loss of topsoil and erosion. (Criterion b) (*Potentially Significant prior to Mitigation*)

Construction activities such as excavation, backfilling, grading, and compaction can expose areas of loose soil that, if not properly stabilized, could be subjected to soil loss and erosion by wind and storm water runoff. Concentrated water erosion, if not managed or controlled, can eventually result in significant soil loss. Rates of erosion can vary depending on the soil material and structure, placement and human activity. Excessive soil erosion can eventually damage building foundations and roadways. Erosion is most likely to occur on sloped areas with exposed soil, especially where unnatural slopes are created by extensive cut-and-fill activities, as for the proposed Project, resulting in a potentially significant impact. Typically, soil erosion potential is reduced once exposed soils are graded and covered with structures, paving, or vegetation. During construction, the Project applicant will comply with erosion and sediment control measures in accordance with Contra Costa County requirements, construction best management practices for the reduction of pollutants in runoff, and the State Water Resources Control Board National Pollution Discharge Elimination System (NPDES) General Construction Permit requirements, including the development and implementation of a stormwater pollution prevention plan (SWPPP) incorporating Best Management Practices (BMPs) (see Section 4.8, *Hydrology and Water Quality*, in this chapter of the Draft EIR). The SWPPP will identify BMPs for implementation during construction activities, such as detention basins, straw bales, silt fences, check dams, geofabrics, drainage swales and sandbag dikes, together minimizing the potential for substantial erosion during construction.

After construction, over the long term operational phase of the Project, some erosion effects could develop on the upland exposed slope of the Project site. The exposed slope will consist of a heterogeneous surface that could expose bedrock to varying degrees. Some areas may be more susceptible to weathering from storm events than others. While the proposed drainage terraces will retain any minor slumps or rock falls, focused maintenance of these terraces will ensure long term stability. Proposed hydroseeding and vegetative control of the upland slopes may also present challenges given the proposed slopes and nutrient-poor condition of the bedrock, which could increase susceptible to erosion in those areas. With implementation of the mitigation measure below, the potentially significant impact would be reduced to less than significant.

Mitigation Measure GEO-4: Terraced Slopes/Drainage. The Project applicant shall ensure routine inspections and maintenance of terraced slopes conducted by qualified professionals. Maintenance measures shall include maintaining vegetative cover of exposed slopes upland of the proposed development after construction, for the operational life of the Project, consistent with the provisions of the Project's SWPPP, as identified in Section 4.7, *Hydrology and Water Quality*, if this EIR. Drainage conveyances on the cut terraces shall be maintained to ensure a minimum of 85 percent of total conveyance capacity, as specified in the Stormwater Management Facilities Operation and Maintenance Agreement. Any evidence of gully or rill erosional effects shall be remedied immediately by the Project applicant through additional hydroseeding or other industry standard measures and best practices for erosion control.

Significance after Mitigation: Less than Significant.

Expansive Soils

Impact GEO-5: The Project site would be susceptible to expansive soils, posing substantial risk of structural damage or personal injury. (Criterion d) (Potentially Significant prior to Mitigation)

The Project site is underlain by bedrock, colluvium, Bay Mud and some artificial fill. According to the preliminary geotechnical investigation, the clayey soils present at the site have a moderate to high potential for expansion (Engeo, 2003). As with other hazards described in this analysis, there are established methods for improving the suitability of existing site soils for development, including either in-situ treatment or replacement with engineered fill materials.

Chapter 18 of the CBC provides standards and requirements for addressing expansive soils. As required by **Mitigation Measure GEO-3**, the placement of engineered fill and design criteria of the foundation would be consistent with the California Building Code. Implementation of the measures in Mitigation Measure GEO-3 could incorporate industry standard and best practice requirements for the type of fill, as well as fill placement and geotechnical practices, and these measures would reduce the potentially significant hazard regarding expansive soils to less than significant.

Mitigation: Implement **Mitigation Measure GEO-3**.

Significance after Mitigation: Less than Significant.

Paleontological Resources / Unique Geological Features

Impact GEO-6: The Project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered buried paleontological resources or unique geological features. (Criterion f) (Potentially Significant prior to Mitigation)

As discussed above in the Setting, there is some potential to encounter paleontological resources within the geologic units to be excavated within the confines of the Project site. Subsurface fossils or other paleontological features, if present, could be damaged through excavation and other ground disturbing activities resulting in a potentially significant impact.

Mitigation Measure GEO-5: Paleontological Resources Treatment. If paleontological resources are encountered, all construction activities within 100 feet shall halt and the County shall be notified. A qualified paleontologist, defined as a paleontologist meeting the Society for Vertebrate Paleontology's Professional Standards shall inspect the findings within 24 hours of discovery. If it is determined that the Project could damage a paleontological resource or a unique geologic feature (as defined pursuant to the CEQA Guidelines), mitigation shall be implemented in accordance with PRC Section 21083.2 and Section 15126.4 of the CEQA *Guidelines*, with a preference for preservation in place. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance is not feasible, a qualified paleontologist shall prepare and implement a detailed treatment plan in consultation with the County. Treatment of unique paleontological resources shall follow the applicable requirements of PRC Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the Project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.

Significant after Mitigation: Less than Significant.

Cumulative Impacts

Impact C-GEO-1: The Project, in conjunction with cumulative development, would not result in significant cumulative impacts with respect to geology, soils, or seismicity to which the Project would have a cumulatively considerable contribution. (All Criteria) (*Less than Significant; No Mitigation Required*)

Geographic Context

The geographic area considered for the cumulative effects of geologic hazards, soils and/or seismic conditions is generally the Vine Hill/Pacheco Boulevard area since, as discussed below, these conditions can vary widely within a short distance.

Cumulative Analysis

Development of the Project with implementation of **Mitigation Measures GEO-1 through GEO-5** would have less-than-significant impacts related to exposing persons or structures to geologic, soils, or seismic hazards. The Project, combined with cumulative past, present and other reasonably foreseeable development in the area, as specified in Section 4.0, *Introduction to the*

Environmental Analysis (4.0.6, Cumulative Analysis), would result in increased population and development in an area subjected to seismic risks and hazards. However, the entire San Francisco Bay Area is located within a seismically active region with a wide range of geologic and soil conditions relating to varying degrees of hazards. These conditions can vary widely within a short distance, making the cumulative context for potential impacts more localized and even site-specific. Cumulative projects on severely steep property, and that have or would involve substantial grading like that proposed by the Project, have or may be required to implement project-level mitigation measures similar to those identified for the Project. Cumulative projects also have and would be required to adhere to all federal, State, and local programs, requirements and policies pertaining to building safety and construction permitting. Further, all cumulative projects also would be required to adhere to the County's Building Code and Grading Ordinance as well as the CBC Title 24 building standards. With regard to the Palms 10 subdivision, located adjacent to the Project site, the robust regulations and mitigation measure prescribed above would ensure the Project's geological impacts would not have the potential to cumulate with any impacts from nearby grading or other development activities, ensuring the Project does not make any considerable contribution to a cumulative impact. It should be noted, too, that any other project would have to abide by the same regulations and protocols as the proposed Project. Therefore, the proposed Project, combined with cumulative projects in the area, would not result in a significant impact by exposing people or structures to substantial risk related to geologic hazards, soils and/or seismic conditions.

Mitigation: None required.

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4.6 Greenhouse Gas Emissions and Energy

4.6.1 Introduction

This section identifies and evaluates the impacts related to greenhouse gas (GHG) emissions and energy that could result from development of the Project. This section presents an overview of global and local climate change, and examines the potential for development of the Project to result in increased GHG emissions, which contribute to climate change. The impact analysis also includes an evaluation of the Project's consistency with statewide and local planning efforts to reduce GHG emissions.

In addition, the section examines the project energy usage characteristics to determine whether the project could result in any significant environmental impacts during construction or operation activities. This section also describes the California energy profile (i.e. mix of energy resources and consumption characteristics) and identifies regulatory and policy frameworks that govern the production and consumption of energy resources and aim to increase energy efficiency while reducing reliance on fossil fuels.

4.6.2 Environmental Setting

“Global warming” and “global climate change” are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continued rise in temperature. Warming of the climate system is now considered to be unequivocal (IPCC, 2007), with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years (CCCC, 2006).

Increases in GHG concentrations in the earth's atmosphere are the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has reached the earth. Some GHGs occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Greenhouse Gases

Carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) are the principal GHGs. When concentrations of these gases exceed natural concentrations in the atmosphere, the greenhouse effect may be enhanced. CO₂, CH₄, and N₂O occur naturally but are also generated through human activity. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing¹ associated with agricultural practices and landfills. Other human-generated GHGs, which have much higher heat-absorption potential than CO₂, include

¹ Off-gassing is defined as the release of chemicals under normal conditions of temperature and pressure.

fluorinated gases such as hydrofluorocarbons (HFCs), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆), which are byproducts of certain industrial processes.

CO₂ is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO₂, CH₄, and N₂O are substantially more potent GHGs than CO₂, with GWPs of 25 and 310 times that of CO₂, respectively.

In emissions inventories, GHG emissions are typically reported in terms of pounds or metric tons (MTs) of CO₂ equivalents (CO₂e). CO₂e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH₄ and N₂O have much higher GWPs than CO₂, CO₂ is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO₂e.

Impacts of Climate Change

Impacts in California

Global warming impacts in California include loss in snow pack, rise in sea level, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include the displacement of thousands of coastal businesses and residences, loss of infrastructure, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. Global warming would cause detrimental effects to some of the state's largest industries, including agriculture, winemaking, tourism, skiing, commercial and recreational fishing, forestry, and electrical power generation: “[t]he impacts of global warming are already being felt in California. The Sierra snowpack, an important source of water supply for the state, has shrunk 10 percent in the last 100 years. It is expected to continue to decrease by as much as 25 percent by 2050. World-wide changes are causing sea levels to rise – about 8 inches of increase has been recorded at the Golden Gate Bridge over the past 100 years – threatening low coastal areas with inundation and serious damage from storms” (CARB, 2008).

Greenhouse Gas Emissions Estimates

State of California Emissions

In 2017, California emitted approximately 424 million tons of CO₂e. At 10.7 tons/ person/ year California has one of the lowest per capita GHG emission rates in the country (CARB, 2019). This is in part due to the success of the state's energy efficiency and renewable energy programs and commitments that have lowered the GHG emissions rate of growth by more than half of what it would have been otherwise (CEC, 2007). Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The latest California Air Resources Board (CARB) inventory found that transportation is the source of approximately 40 percent of the state's GHG emissions in 2017, followed by industrial sources at 21 percent and electricity generation (both in-state and out-of-state) at 15 percent.

Agriculture is the source of approximately 8 percent, and residential activity is the source of about 6 percent, followed by commercial activities at 4 percent (CARB, 2019).

Bay Area Emissions

In the San Francisco Bay Area, the last inventory prepared by the Bay Area Air Quality Management District (BAAQMD; dated 2011, and updated in 2015) indicates that the transportation sector and industrial/commercial sector represent the largest sources of GHG emissions, accounting for 39.7 percent and 35.7 percent, respectively, of the Bay Area's 86.6 million tons of CO₂e in 2011. Electricity/co-generation sources account for about 14 percent of the Bay Area's GHG emissions, followed by residential fuel usage at about 7.7 percent. Off-road equipment sources currently account for approximately 1.5 percent of total Bay Area GHG emissions (BAAQMD, 2015).

Unincorporated Contra Costa County Emissions

On December 15, 2015, the Contra Costa County Board of Supervisors approved a Climate Action Plan containing a 2005 baseline GHG inventory and a 2013 GHG inventory update with stationary source emissions included. Emissions of GHGs in unincorporated Contra Costa County in 2005 totaled 18,730,640 MTCO₂e and 18,292,510 MTCO₂e in 2013. In 2013, 47 percent of the county's emissions were attributed to on-road transportation. Residential energy was the second-largest source of emissions with approximately 19 percent, followed by landfills with approximately 14 percent of emissions (Contra Costa, 2015).

Setting: Energy

State Energy Profile

Total energy usage in California was 7,881 trillion British Thermal Units (Btus) in 2017 (the most recent year for which specific data are available), which equates to an average of 200 million Btu per capita. These figures place California second among the nation's 50 states in total energy use and 48th in per capita consumption (EIA, 2020).

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Approximately 66 percent of the electrical power needed to meet California's demand is produced in the state; the balance, approximately 32 percent, is imported from the Pacific Northwest and the Southwest. In 2018, California's in-state electricity was derived from natural gas (46.5 percent), coal (0.2 percent), large hydroelectric resources (11.3 percent), nuclear sources (9.4 percent), oil (0.2 percent), and renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (32.4 percent). Other sources including oil, petroleum coke, and waste heat accounted for 0.2 percent of California's in-state electricity (CEC, 2019).

In recent years, electricity demand has been flat or slightly declining as energy efficiency programs have resulted in end-use energy savings and as customers install behind-the-meter (BTM) solar photovoltaic (PV) systems that directly displaces utility-supplied generation. In

2018, BTM solar generation was estimated to be 13,582 gigawatt hours (GWh), a 20 percent increase from 2017. The strong growth in solar PV has had a measurable impact on utility served load and, consequently, on the total system electric generation summary (CEC, 2019a).

Transportation Fuels

Gasoline and diesel, both derived from petroleum (also known as crude oil), are the two most common fuels used for vehicular travel. According to the California Energy Commission (CEC), the state relies on petroleum-based fuels for 95 percent of its transportation needs (EIA, 2018). In 2019, approximately 30 percent of California's crude oil was produced within the state, about 12 percent was produced in Alaska, and the remaining 58 percent was produced in foreign lands (CEC, 2020b).

Refineries in California are located largely within two sub-regions: Southern California (primarily Los Angeles County) and the San Francisco Bay Area. Refining capacity in California has been decreasing over the years due to the closure of older and smaller refining operations that found compliance with the state's strict environmental regulations to be cost prohibitive. The permitting of new facilities is likewise limited, and therefore any potential increase in oil refining capacity in the future in California appears highly unlikely. In Contra Costa County, the oil and gas industry is responsible for approximately 10 percent of employment within the county, directly and indirectly (Western States Petroleum Association 2014).

In 2019, taxable gasoline sales (including aviation gasoline) in California accounted for approximately 15.4 billion gallons of gasoline (CDTFA, 2020a), and taxable diesel fuel sales accounted for approximately 3.1 billion gallons of diesel fuel (CDTFA, 2020b). Statewide, there was an overall decrease in gasoline and diesel consumption from 2007 to 2011 due to the economic recession, but consumption has increased since then. The corona virus outbreak also is expected to decrease gasoline and diesel consumption throughout 2020. The CEC estimates that 389 million gallons of gasoline and approximately 34 million gallons of diesel were sold in 2018 in Contra Costa County (CEC, 2019b).

Pacific Gas and Electric Company

Pacific Gas and Electric Company (PG&E) is an investor-owned utility company that provides electricity and natural gas supplies and services throughout a 70,000-square-mile service area that extends from Eureka in the north, to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. The nine-county Bay Area is within its service area for both kinds of energy. Operating characteristics of PG&E's electricity and natural gas supply and distribution systems are provided below.

PG&E Electric Utility Operations

PG&E provides "bundled" services (i.e., electricity, transmission and distribution services) to most of the six million customers in its service territory, including residential, commercial, industrial and agricultural consumers. Customers also can obtain electricity from alternative providers such as municipalities or Customer Choice Aggregators (CCAs), as well as from self-generation resources, such as rooftop solar installations. In recent years, PG&E has continued to

make improvements to its electric transmission and distribution systems to accommodate the integration of new renewable energy resources, distributed generation resources, and energy storage facilities, and to help create a platform for the development of new Smart Grid technologies. As required by California law, on July 1, 2015, PG&E filed its proposed electric distribution resources plan for approval by the California Public Utilities Commission (CPUC). The plan identifies optimal locations on its electric distribution system for deployment of distributed energy resources. PG&E’s proposal is designed to allow energy technologies to be interconnected with each other and integrated into the larger grid. The CPUC also is considering PG&E’s request for approval of the deployment of electric vehicle charging infrastructure in response to the CPUC’s December 2014 decision adopting a policy to expand the California utilities’ role in developing an EV (electrical vehicle) charging infrastructure to support California’s climate goals.

In 2018 PG&E generated and/or procured a total of 48,832 GWh of electricity.² Of this total, PG&E owns 7,686 megawatts (MW) of generating capacity, itemized below (PG&E, 2019). The remaining electrical power is purchased from other sources in and outside of California (see **Table 4.6-1**).

Renewable Energy Resources

California law requires load-serving entities, such as PG&E, to gradually increase the amount of renewable energy they deliver to their customers to at least 33 percent of their total annual retail sales by 2020. This program, known as the RPS program, became effective in December 2011, established three multi-year compliance periods that have gradually increasing RPS targets: 2011 through 2013, 2014 through 2016, and 2017 through 2020. After 2020, the RPS compliance periods will be annual.

**TABLE 4.6-1
 PG&E-OWNED ELECTRICITY GENERATING SOURCES**

Source	Generating Capacity (Megawatts MW)
Nuclear (Diablo Canyon-2 reactors)	2,240
Hydroelectric	3,891
Fossil Fuel-Fired	1,400
Fuel Cell	3
Solar Photovoltaic (13 units-12 in Fresno County, 1 in Kings County)	152
Total	7,686

SOURCE: PG&E, 2019. *2018 Annual Report*.

² This amount excludes electricity provided to direct access customers and CCAs who procure their own supplies of electricity.

**TABLE 4.6-2
PG&E RENEWABLE ENERGY SOURCES**

Source	Percent of Total Energy Portfolio
Biopower	4.4
Geothermal	3.7
Wind	10.0
RPS-Eligible Small Hydroelectric	2.7
Solar	18.1
Total	38.9

SOURCE: PG&E, 2019. *2018 Annual Report*.

Renewable generation resources, for purposes of the RPS program, include bioenergy such as biogas and biomass, certain hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. During 2018, 38.9 percent of PG&E's energy deliveries were from renewable energy sources, exceeding the annual RPS target of 28.0 percent (PG&E, 2019).

Electricity Consumption

Table 4.6-3 shows the electricity consumption by sector in the PG&E service area based on the latest available data from the California Energy Commission (CEC).

**TABLE 4.6-3
ELECTRICITY CONSUMPTION IN PG&E SERVICE AREA (2019)**

Agricultural and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total Usage
All Usage Expressed in Millions of kWh (GWh)							
4,490	29,560	4,349	9,710	1,642	28,014	308	78,072

SOURCE: CEC, 2020. Energy Consumption Data Management System, *California Energy Consumption Database*, interactive web tool.

As shown in the table above, PG&E produced approximately 78 billion kilowatt-hours (kWh) in 2019, of which approximately 28 billion kWh were consumed by residential uses and 2 billion kWh were consumed by mining and construction, those sectors which are relevant to the proposed project.

PG&E Natural Gas Operations

PG&E provides natural gas transportation services to “core” customers and to “non-core” customers (i.e., industrial, large commercial, and natural gas-fired electric generation facilities) that are connected to its gas system in its service territory. Core customers can purchase natural gas procurement service (i.e., natural gas supply) from either PG&E or non-utility third-party gas

procurement service providers (referred to as core transport agents). When core customers purchase gas supply from a core transport agent, PG&E continues to provide gas delivery, metering and billing services to customers. When PG&E provides both transportation and procurement services, PG&E refers to the combined service as “bundled” natural gas service. Currently, more than 97 percent of core customers, representing nearly 80 percent of the annual core market demand, receive bundled natural gas service from PG&E.

PG&E does not provide procurement service to non-core customers, who must purchase their gas supplies from third-party suppliers. PG&E offers backbone gas transmission, gas delivery (local transmission and distribution), and gas storage services as separate and distinct services to its non-core customers. Access to PG&E’s backbone gas transmission system is available for all natural gas marketers and shippers, as well as non-core customers. PG&E also delivers gas to off-system customers (i.e., outside of PG&E’s service territory) and to third-party natural gas storage customers (PG&E, 2019).

Natural Gas Supplies

PG&E can receive natural gas from all the major natural gas basins in western North America, including basins in western Canada, the Rocky Mountains, and the southwestern United States. PG&E also is supplied by natural gas fields in California. PG&E purchases natural gas to serve its core customers directly from producers and marketers in both Canada and the United States. The contract lengths and natural gas sources of PG&E’s portfolio of natural gas purchase contracts have fluctuated generally based on market conditions. During 2018, PG&E purchased approximately 287,000 MMcf of natural gas (net of the sale of excess supply of gas). Substantially all of this natural gas was purchased under contracts with a term of one year or less. PG&E’s largest individual supplier represented approximately 15 percent of the total natural gas volume that PG&E purchased during 2018 (PG&E, 2019).

Natural Gas Consumption

Table 4.6-4 shows the natural gas consumption by sector in the PG&E service area with the latest data available from CEC.

**TABLE 4.6-4
 NATURAL GAS CONSUMPTION IN PG&E SERVICE AREA (2019)**

Agricultural and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Total Usage
All Usage Expressed in Millions of Therms						
34.3	926.6	61.6	1,847.2	169.6	1,902.8	4,942.1

SOURCE: CEC, 2020. Energy Consumption Data Management System, California Energy Consumption Database, interactive web tool.

As shown in the table above, PG&E produced approximately 4.9 billion therms in 2019, of which approximately 1.9 billion therms were consumed by residential uses and 169.6 million therms

were consumed by mining and construction, those sectors which are relevant to the proposed project.

4.6.3 Regulatory Setting

Greenhouse Gas Emissions: International Treaties and Other Developments

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. It was adopted in Kyoto, Japan, on December 11, 1997 and entered into force on February 16, 2005. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions. The targets amount to a reduction of overall GHG emissions by at least five percent in the commitment period from 2008 to 2012. Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.” (UN, 1997).

Negotiations after Kyoto have continued in an attempt to address the period after the first “commitment period” of the Kyoto Protocol, concluded at the end of 2012. In Durban, South Africa in 2011, parties to the protocol agreed in principle to negotiate a new comprehensive and legally binding climate agreement by 2015 and to enter it into force for all parties starting from 2020. Intensive negotiations took place under the Ad Hoc Group on the Durban Platform for Enhanced Action (ADP) throughout 2012 through 2015 and culminated in the adoption of the Paris Agreement by the Conference of the Parties (COP) on December 12, 2015. The Paris Agreement seeks to accelerate and intensify the actions and investment needed for a sustainable low carbon future. Its central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (UN, 2015).

In accordance with Article 21, paragraph 1, of the Paris Agreement, the Agreement shall enter into force after 55 Parties to the Convention, accounting in total for at least an estimated 55 percent of the total global GHG emissions, have deposited their instruments of ratification, acceptance, approval or accession. On October 5, 2016, the threshold for entry into force of the Paris Agreement was achieved, and the agreement entered into force on November 4, 2016. The United States ratified the Paris agreement on September 3, 2016 (UN, 2017). On June 1, 2017, President Trump announced that he would withdraw the United States from the agreement (The White House, 2017).

Greenhouse Gas Emissions: Federal

U.S. Environmental Protection Agency “Endangerment” and “Cause or Contribute” Findings

In *Massachusetts v. Environmental Protection Agency* et al., 12 states and cities, including California, together with several environmental organizations, sued to require the USEPA to regulate GHGs as pollutants under the Clean Air Act (127 S. Ct. 1438 (2007)). The U.S. Supreme Court ruled that GHGs fit within the Clean Air Act’s definition of a pollutant and the USEPA had the authority to regulate GHGs.

On December 7, 2009, the USEPA Administrator signed two findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- **Endangerment Finding:** The current and projected concentrations of six key GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the USEPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required the USEPA to develop “...mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy...” The Reporting Rule applies to most entities that emit 25,000 MT of CO₂e or more per year. Starting in 2010, facility owners were required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for the USEPA to verify annual GHG emissions reports.

Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

In response to the *Massachusetts v. EPA* ruling discussed above, the Bush Administration issued an Executive Order on May 14, 2007, directing the United States Environmental Protection Agency (USEPA), the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008.

On October 10, 2008, the National Highway Traffic Safety Administration (NHTSA) released a final environmental impact statement analyzing proposed interim standards for passenger cars and light trucks in model years 2011 through 2015. The NHTSA issued a final rule for model year 2011 on March 30, 2009 (NHTSA, 2009).

On May 7, 2010, the USEPA and the NHTSA issued a final rule regulating fuel efficiency and GHG pollution from motor vehicles for cars and light-duty trucks for model years 2012–2016 (USEPA, 2010). On May 21, 2010, President Obama issued a memorandum to the Secretaries of Transportation and Energy, and the Administrators of the USEPA and the NHTSA calling for establishment of additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. (GPO, 2010). In response to this directive, USEPA and NHTSA issued a Supplemental Notice of Intent announcing plans to propose stringent, coordinated federal GHG and fuel economy standards for model year 2017-2025 light-duty vehicles (GPO, 2011). The agencies proposed standards projected to achieve 163 grams/mile of CO₂ in model year 2025, on an average industry fleet wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. California has announced its support of this national program (CARB, 2011). The final rule was adopted in October 2012, and NHTSA intends to set standards for model years 2022-2025 in a future rulemaking (USEPA, NHTSA, 2012).

On January 12, 2017, USEPA Administrator Gina McCarthy issued a final determination with a recommendation to maintain the current GHG emissions standards for model year 2022-2025 vehicles, finding that “automakers are well-positioned to meet the standards at lower costs than previously estimated.” In August 2018, the USEPA revised its 2017 determination, and issued a proposed rule that maintains the 2020 Corporate Average Fuel Economy (CAFE) and CO₂ standards for model years 2021 through 2026 (83 Fed. Reg. 42986). The estimated CAFE and CO₂ standards for model year 2020 are 43.7 miles per gallon (mpg) and 204 grams of CO₂ per mile for passenger cars and 31.3 mpg and 284 grams of CO₂ per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. On May 1, 2018, California, joined by 16 other states and the District of Columbia, filed a petition challenging the USEPA’s proposed rule to revise the vehicle emissions standards, arguing that the USEPA had reached erroneous conclusions about the feasibility of meeting the existing standards. On October 25, 2019, the D.C. Circuit dismissed the challenges, concluding that it did not have jurisdiction to consider the US EPA’s withdrawal of the Obama administration’s mid-term determination that model year 2022 to 2025 GHG emission standards promulgated in 2012 remained appropriate. The court noted that the withdrawal did not itself change the emission standards established in 2012 but only created the possibility that the standards could be modified in the future, similar to an agency’s grant of a petition for reconsideration of a rule.³ Accordingly, due to the uncertainty of future federal regulations, this analysis assumes that the existing CAFE standards will remain in place.

Energy Independence and Security Act

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law (GPO, 2007). Among other key measures, the Act would do the following, which would aid in the reduction of national mobile and non-mobile GHG emissions:

³ The State of California’s May 1, 2018 petition, the October 25, 2019 decision by the U.S. Court of Appeals for the D.C. Circuit, and other materials in the docket for Case No. 18-1114 are available online: <http://climatecasechart.com/case/california-v-epa-4>. Accessed December 10, 2019.

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Prescribe or revise standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.
3. While superseded by NHTSA and USEPA actions described above, EISA also set miles per gallon targets for cars and light trucks and directed the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

Energy: Federal

National Energy Conservation Policy Act

The National Energy Conservation Policy Act (NECPA) serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it has been regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements. NECPA established energy-efficiency standards for consumer projects and includes a residential program for low-income weatherization assistance, grants and loan guarantees for energy conservation in schools and hospitals, and energy-efficiency standards for new construction. Furthermore, the NEPCA established fuel economy standards for on-road motor vehicles in the United States. The National Highway Traffic and Safety Administration (NHTSA), which is part of the U. S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and revising existing standards under the NEPCA. The NHTSA requires manufacturers of light duty vehicles to meet an estimated combined passenger car and light truck average fuel economy level of 34.1 miles per gallon (mpg) by model year 2016 (NHTSA 2010). The USDOT is authorized to assess penalties for noncompliance. In the course of more than 30 years, this regulatory program has resulted in improved fuel economy throughout the United States' vehicle fleet, and has also protected against inefficient, wasteful, and unnecessary use of energy.

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; and constructing energy-efficient buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government and sets more challenging goals than the Energy Policy Act of 2005. The energy reduction and environmental performance requirements of Executive Order 13423 were expanded upon in Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), signed in 2009.

Greenhouse Gas Emissions: State

The legal framework for GHG emission reduction in California has come about through Executive Orders, legislation, and regulation. The major components of California's climate change initiative are reviewed below.

Assembly Bill 32 and the California Climate Change Scoping Plan

In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). AB 32 anticipates that the GHG reduction goals will be met, in part, through local government actions. CARB has identified a GHG reduction target of 15 percent from current levels for local governments themselves and notes that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.

Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008 (re-approved by CARB on August 24, 2011 [CARB, 2008]) outlining measures to meet the 2020 GHG reduction goals. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from 2008 levels. The Scoping Plan recommends measures for further study and possible State implementation, such as new fuel regulations. It estimates that a reduction of 174 million MT of CO₂e (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and other sources could be achieved should the State implement all of the measures in the Scoping Plan. The Scoping Plan relies on the requirements of Senate Bill (SB) 375 (discussed below) to implement the carbon emission reductions anticipated from land use decisions.

The Scoping Plan is required by AB 32 to be updated at least every five years. The first update to the AB 32 Scoping Plan, approved on May 22, 2014 by CARB (CARB, 2014), described the state's progress towards AB 32 goals. It found that, "California is on track to meet the near-term 2020 greenhouse gas limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32." In addition, the update stated, "if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts [MW] of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758,

and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050” (CARB, 2016).

The 2017 Scoping Plan Update was adopted on December 14, 2017. The Scoping Plan Update addresses the 2030 target established by Senate Bill 32 (SB 32) (Pavley), as discussed below, and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, increasing the use of renewable energy in the state, and reduction of methane emissions from agricultural and other wastes (CARB, 2017).

California Supreme Court Ruling in Center for Biological Diversity v. Department of Fish and Wildlife

In its 2015 decision, *Center for Biological Diversity v. Department of Fish and Wildlife*, S217763 (Newhall), the California Supreme Court evaluated the California Department of Fish and Wildlife’s (DFW) analysis of potential impacts caused by GHG emissions contained in the EIR for the proposed land development called Newhall Ranch (California, 2015). In the EIR, the DFW analyzed GHG emissions under AB 32, using the business-as-usual (BAU) comparison as its sole criterion of significance.

In Newhall, the California Supreme Court concluded that a finding of consistency with meeting statewide emission reduction goals is a legally permissible criterion of significance when analyzing potential impacts of GHG emissions under CEQA. However, the Court found that the EIR’s conclusion that the project’s emissions would be less than significant under that criterion was not supported by substantial evidence, and remanded back to the appellate court the narrow issue of whether substantial evidence supported the application of AB 32 statewide GHG reduction goal of 29 percent to new land use projects.

The Court then identified “potential options” for lead agencies evaluating cumulative significance of a proposed land use development’s GHG emissions in future CEQA documents, but the Court was careful to note that there was no “guarantee” that any of these would be sufficient. These include: substantiation of project reductions from BAU, compliance with regulatory programs or performance based standards, compliance with GHG reduction plans or climate action plans, or compliance with local air district thresholds.

The “potential pathways to compliance” suggested by the Court include the numerical GHG significance thresholds used in this EIR. Specifically, the Court favorably cites to the Bay Area Air Quality Management District (BAAQMD) GHG significance thresholds, which are based on compliance with AB 32 and use a “service population” GHG ratio threshold for land use projects and a 10,000 ton annual GHG emission threshold for industrial projects.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Arnold Schwarzenegger established Executive Order S-3-05 (EO S-3-05), which announced target dates by which Statewide GHG emissions would be progressively reduced. These included a reduction of GHG emissions to 2000 levels by 2010; a reduction of GHG emissions to 1990 levels by 2020; and a reduction of GHG emissions to 80 percent below 1990 levels by 2050. As discussed below, the 2020 reduction target was codified in 2006 as Assembly Bill 32. However, the 2050 reduction target has not been codified and the California Supreme Court has ruled that CEQA lead agencies are not required to use it as a significance threshold. *Cleveland National Forest Foundation v. San Diego Association of Governments* (2017) 3 Cal.5th 497.

Executive Order B-30-15 and SB 32

California EO B-30-15 (April 29, 2015) set an "interim" statewide emission target to reduce greenhouse emissions to 40 percent below 1990 levels by 2030, and directed state agencies with jurisdiction over GHG emissions to implement measures pursuant to statutory authority to achieve this 2030 target and the 2050 target of 80 percent below 1990 levels. Specifically, the Executive Order directed CARB to update the Scoping Plan to express this 2030 target in MT.

On September 8, 2016, Governor Jerry Brown signed Senate Bill 32 (SB 32) which builds on the AB 32 goals and requires the State to reduce GHG emissions to 40 percent below 1990 levels by 2030. SB 32 codifies the interim 2030 GHG target included in EO B-30-15. The interim target is intended to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. Along with SB 32, the Legislature passed companion legislation AB 197, which provides additional direction for developing the Scoping Plan. In December 2017, CARB approved the 2017 Climate Change Scoping Plan Update, outlining the proposed framework of action for achieving the 2030 GHG target codified by SB 32.

Senate Bill 605

On September 21, 2014, Governor Jerry Brown signed Senate Bill 605 (Chapter 523, Statutes of 2014), which requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the state no later than January 1, 2016. As defined in the statute, short-lived climate pollutant means "an agent that has a relatively short lifetime in the atmosphere, from a few days to a few decades, and a warming influence on the climate that is more potent than that of carbon dioxide." SB 605, however, does not prescribe specific compounds as short-lived climate pollutants or add to the list of GHGs regulated under AB 32.

The final strategy released by CARB in March 2017 focuses on methane, black carbon, and fluorinated gases, particularly hydrofluorocarbons, as important short-lived climate pollutants. The final strategy recognizes emission reduction efforts implemented under AB 32 (e.g., refrigerant management programs) and other regulatory programs (e.g., in-use diesel engines, solid waste diversion) along with additional measures to be developed. The measures identified in the final strategy and their expected emission reductions will feed into the update to the CARB Scoping Plan that is currently being developed. The 2017 Scoping Plan Update will establish a broad

framework for meeting all of California's climate-related targets and will include an evaluation of all proposed GHG reducing activities, for both short-lived and longer-lived pollutants.

Senate Bill 375

In addition to policy directly guided by AB 32, the legislature in 2008 passed SB 375 (Chapter 728, Statutes of 2008), which provides for regional coordination in land use and transportation planning and funding to help meet the AB 32 GHG reduction goals. SB 375 aligns regional transportation planning efforts, regional GHG emissions reduction targets, and land use and housing allocations. SB 375 requires Regional Transportation Plans (RTPs) developed by the state's 18 metropolitan planning organizations (MPOs) to incorporate a "sustainable communities strategy" (SCS) that will achieve GHG emission reduction targets set by CARB and coordinate regional housing and transportation. MTC is the federally recognized metropolitan planning organization (MPO) for the nine county Bay Area, which includes Contra Costa County.

Plan Bay Area, which includes the region's SCS and the 2040 RTP, was jointly approved by the Association of Bay Area Governments' (ABAG) Executive Board and the Metropolitan Transportation Commission (MTC) on July 18, 2013. The SCS lays out how the region will meet certain GHG reduction targets, which include reducing per capita emissions by seven percent by 2020 and 15 percent by 2035 from a 2005 baseline. On July 26, 2017, the updated Plan Bay Area 2040 and an associated EIR were approved by ABAG and MTC.

Assembly Bill 1493 (Pavley Standards)

In 2002, then-Governor Gray Davis signed Assembly Bill 1493 (Chapter 200, Statutes of 2002), which required the CARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, CARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to Title 13 CCR, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Because the Pavley standards (named for the bill's author, State Senator Fran Pavley) would impose stricter standards than those under the Federal Clean Air Act, California applied to the

USEPA for a waiver under the Federal Clean Air Act; this waiver was denied in 2008. In 2009, however, the USEPA granted the waiver. The waiver has been extended consistently since 2009; however, in 2018 the US EPA and NHTSA indicated their intent to revoke California's waiver, and prohibit future State emissions standards enacted under the CAA. As of October 2020, the status of the federal government's revocation of the waiver was uncertain.

Executive Order S-1-07

Executive Order S-1-07, signed by then-Governor Arnold Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed CARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

In September 2018, CARB extended the Low Carbon Fuel Standard program to 2030, making significant changes to the design and implementation of the Program including a doubling of the carbon intensity reduction to 20 percent by 2030 (CARB, 2018).

Advanced Clean Cars

In January 2012, CARB approved the Advanced Clean Cars Program, a new emissions-control program for model year 2017 through 2025.

The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, the new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

The program also requires car manufacturers to offer for sale an increasing number of zero-emission vehicles (ZEVs) each year, including battery electric, fuel cell, and plug-in hybrid electric vehicles.

In December 2012, CARB adopted regulations allowing car manufacturers to comply with California's GHG emissions requirements for model years 2017-2025 through compliance with the EPA GHG requirements for those same model years (CARB, 2012).

CEQA and Senate Bill 97

In 2007, the State Legislature passed SB 97, which required amendment of the *CEQA Guidelines* to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The California Natural Resources Agency adopted these amendments on December 30, 2009. They took effect on March 18, 2010, after review by the Office of Administrative Law and filing with the Secretary of State for inclusion in the California Code of Regulations.

The Guidelines revisions include a new section (§ 15064.4) that specifically addresses the potential significance of GHG emissions. § 15064.4 calls for a “good-faith effort” to “describe, calculate or estimate” GHG emissions. § 15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with “regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.” The new guidelines also state that a project may be found to have a less-than-significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Sec. 15064(h)(3)). Importantly, however, the *CEQA Guidelines* do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

No quantitative significance threshold is included in the Amendments.

The Amendments also include a new Subdivision 15064.7(c) which clarifies that in developing thresholds of significance, a lead agency may appropriately review thresholds developed by other public agencies, or recommended by other experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (CNRA, 2009).

Senate Bill 1368

SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed by then-Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The California Energy Commission was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Renewable Portfolio Standards (Senate Bills 1078 and 107 and Executive Orders S-14-08 and S-21-09)

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which increased the state’s Renewables Portfolio Standard (RPS) to 33 percent renewable power by 2020. In September 2009, Governor Schwarzenegger continued California’s commitment to the RPS by signing Executive Order S-21-09, which directs CARB under its AB 32 authority to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020.

The 33 percent by 2020 goal was codified in April 2011 with Senate Bill X1-2 (Chapter 1, Statutes of 2011-12 First Extraordinary Session), which was signed by Governor Brown. This new RPS preempted the CARB 33 percent Renewable Electricity Standard and applied to all electricity retailers in the state, including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. California's RPS has since been updated by SB 350 and SB 100 (see below).

Senate Bill 1

Senate Bill 1 of 2006 (Chapter 132, Statutes of 2006) established the statewide California Solar Initiative, also required the California Energy Commission (CEC) to implement regulations that required sellers of production homes to offer a solar energy system option to all prospective homebuyers. Besides offering solar as an option to prospective homebuyers, sellers of homes constructed on land for which an application for a tentative subdivision map has been deemed complete on or after January 1, 2011, must disclose to the prospective homebuyer the total installed cost of the solar option, the estimated cost savings associated with the solar energy system option, information about California solar energy system incentives, and information about the Go Solar California website.

Assembly Bill 1109

Assembly Bill 1109 (Chapter 534, Statutes of 2007), the Lighting Efficiency and Toxic Reduction Act, required the establishment of minimum energy efficiency standards for all general purpose lights. The standards are structured to reduce average statewide electrical energy consumption by not less than 50 percent from the 2007 levels for indoor residential lighting and not less than 25 percent from the 2007 levels for indoor commercial and outdoor lighting by 2018.

Senate Bill 350

Senate Bill 350 (Chapter 547, Statutes of 2015), signed October 7, 2015, is the *Clean Energy and Pollution Reduction Act of 2015*. SB 350 is the implementation of some of the goals of EO B-30-15. The objectives of SB 350 are

1. To increase from 33 percent to 50 percent, the procurement of our electricity from renewable sources.
2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both investor-owned utilities and publicly-owned utilities from 50 percent to 60 percent by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered

achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

Title 24 Building Energy Efficiency Standards

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The current Title 24, Part 6 standards (2019 standards) were made effective on January 1, 2020.

California Green Buildings Standards Code (CALGreen)

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11, Title 24) was adopted as part of the California Building Standards Code (Title 24 CCR). CALGreen is a Statewide regulatory code for all buildings, including residential and commercial buildings. The regulations are intended to encourage more sustainable and environmentally-friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment.

California Integrated Waste Management Act of 1989 and Assembly Bill 341

The California Integrated Waste Management Act of 1989 (Public Resources Code Sections 40000 et seq.) required each jurisdiction's source reduction and recycling element to include an implementation schedule that shows (1) diversion of 25 percent of all solid waste by January 1, 1995, through source reduction, recycling, and composting activities; and (2) diversion of 50 percent of all solid waste on and after January 1, 2000, through source reduction, recycling, and composting facilities.⁴ Additionally, jurisdictions were not prohibited from implementing source reduction, recycling, and composting activities designed to exceed these requirements.⁵

AB 341 (Chapter 476, Statutes of 2011) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020, and annually thereafter.⁶ In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal.⁷

⁴ Cal. Pub. Res. Code Section 41780(a).

⁵ Cal. Pub. Res. Code Section 41780(b).

⁶ Cal. Pub. Res. Code Section 41780.01(a).

⁷ Cal. Pub. Res. Code Section 41780.02.

State Model Water Efficient Landscape Ordinance (MWELo) and Executive Order B-29-15

The MWELo (CCR Title 23, Division 2, Chapter 2.7) establishes an outdoor water budget for new and renovated landscaped areas that are 500 square feet or larger. EO B-29-15 calls for revising the Model Ordinance to increase water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and by limiting the portion of landscapes that can be covered in turf. It also establishes a goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. The revised Ordinance became effective December 15, 2015. New development projects that include landscape areas of 500 square feet or more are subject to the Ordinance.

Energy: State

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Act established a State policy to reduce wasteful, uneconomical and unnecessary uses of energy by employing a range of measures. The Act also requires EIRs to consider wasteful, inefficient, and unnecessary consumption of energy and was the driving force behind the creation of Appendix F to the *CEQA Guidelines*.

California Energy Action Plan

California's 2008 *Energy Action Plan Update* updates the 2005 *Energy Action Plan II*, which is the State's principal energy planning and policy document. The plan maintains the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. First-priority actions to address California's increasing energy demands are to promote energy efficiency, demand response (i.e., reducing customer energy usage during peak periods to address power system reliability and support the best use of energy infrastructure), and use of renewable power sources. To the extent that these strategies are unable to satisfy increasing energy and capacity needs, the plan supports clean and efficient fossil-fuel fired generation.

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the CEC to develop an integrated energy plan biannually for electricity, natural gas, and transportation fuels, for the California Energy Report. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

An overarching goal of the Integrated Energy Policy Report (IEPR) is to achieve the statewide greenhouse gas reduction targets, while improving overall energy efficiency is the main focus. The IEPR has replaced the Energy Action Plan as the chief program intended to provide a comprehensive statewide energy strategy to guide energy investments, energy-related regulatory efforts and greenhouse gas reduction measures.

Greenhouse Gas Emissions: Regional Bay Area Air Quality Management District

The BAAQMD adopted updated *CEQA Air Quality Guidelines* (Guidelines), including new thresholds of significance for GHGs in June 2010, and revised them in May 2011 (BAAQMD, 2012). The Guidelines advise lead agencies on how to evaluate potential air quality and GHG impacts, including establishing quantitative and qualitative thresholds of significance. The thresholds BAAQMD adopted were called into question by a minute order issued January 9, 2012 in *California Building Industry Association v. BAAQMD*, Alameda Superior Court Case No. RGI0548693. The minute order states that “The Court finds [the BAAQMD’s adoption of thresholds] is a CEQA Project, the court makes no further findings or rulings.” The claims made in the case concerned the CEQA impacts of adopting the thresholds, and in particular, how the thresholds would affect land use development patterns. Petitioners argued that the thresholds for Health Risk Assessments encompassed issues not addressed by CEQA. As a result, the BAAQMD resolutions adopting and revising the significance thresholds in 2011 were set aside by a judicial writ of mandate on March 5, 2012. In May 2012, the BAAQMD updated its Guidelines to continue to provide direction on recommended analysis methodologies, but without recommended quantitative significance thresholds. On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD’s CEQA thresholds (*California Building Industry Association v. Bay Area Air Quality Management District*, Case No. A135335 & A136212 [Court of Appeal, First District, August 13, 2013]).

The California Supreme Court granted review of the appeal, but only to address whether or not CEQA requires an analysis of how existing environmental conditions will impact future residents or users of a proposed project and did not review or address the adequacy of specific thresholds adopted by the BAAQMD in 2011. On December 17, 2015, the Supreme Court concluded 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, reversing the Court of Appeal’s judgment on that issue. The case was the remanded back to the Court of Appeal on August 12, 2016 which concluded that “the challenged thresholds are not invalid on their face, but may not be used for the primary purpose envisioned by District, namely, to routinely assess the effect of existing environmental conditions on future users or occupants of a project” (*CBIA v. BAAQMD* [2016] 1 Cal.App.5th 715).

BAAQMD has not formally readopted these thresholds. Notwithstanding formal adoption, the 2011 Thresholds are based on substantial evidence provided by BAAQMD (BAAQMD, 2009), and have been accepted by Contra Costa County for use in this EIR.

The threshold for stationary sources is 10,000 MT of CO₂e per year (i.e., emissions above this level may be considered significant). For non-stationary sources, three separate thresholds have been established:

- Compliance with a Qualified Greenhouse Gas Reduction Strategy (i.e., if a project is found to be out of compliance with a Qualified Greenhouse Gas Reduction Strategy, its GHG emissions may be considered significant); or
- 1,100 MT of CO₂e per year (i.e., emissions above this level may be considered significant); or
- 4.6 MT of CO₂e per service population (SP) per year (i.e., emissions above this level may be considered significant). “Service population” is the sum of residents plus employees expected for a development project.

For quantifying a project’s GHG emissions, the BAAQMD recommends that all GHG emissions from a project be estimated, including a project’s direct and indirect GHG emissions from operations. Direct emissions refer to emissions produced from on-site combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project’s energy use and water consumption. The BAAQMD has provided guidance on detailed methods for modeling GHG emissions from proposed projects. The BAAQMD thresholds were designed to meet the AB32 goal of reducing GHG emissions to 1990 levels by 2020. The BAAQMD developed these thresholds by comparing emission reductions included in CARB’s Scoping Plan to those achievable in the San Francisco Bay Air Basin from CEQA projects and by dividing the AB 32 GHG reduction target for land use development emissions in California by the estimated 2020 population and employment level within the district’s jurisdiction (BAAQMD, 2017). The above stated thresholds apply only to operational emissions. To date, the BAAQMD has not adopted numeric thresholds for the assessment of construction-related emissions.

The Guidelines offer step-by-step procedures for a thorough environmental impact analysis of adverse air emissions due to land development in the Bay Area. The BAAQMD prepared the Guidelines to assist lead agencies in air quality analysis, as well as to promote sustainable development in the region. The Guidelines support lead agencies in analyzing air quality impacts and offer numerous mitigation measures and general plan policies to implement smart growth and transit oriented development, minimize construction emissions, and reduce population exposure to air pollution risks.

Greenhouse Gas Emissions and Energy: Local

Contra Costa County General Plan

The Contra Costa County General Plan Conservation Element contains an air quality resources discussion (§ 8.14) that identifies general goals and policies designed to address air pollution. The goals and policies tend to focus on improvements to the transportation system, reducing long distance commuting, encouraging and supporting non-auto transportation, and reducing future land use conflicts related to air pollution (Contra Costa County, 2010). While §8.14 is geared toward

criteria pollutants, such as ozone and particulate matter, implementation of the stated goals and policies also benefit efforts to reduce GHG emissions.

The Contra Costa County General Plan Conservation Element also discusses renewable energy resources goals and policies (§ 8.8) in order to encourage the use of renewable energy resources and to reduce energy use in the County. In addition, the following General Plan policies pertaining to GHG emissions apply to the project:

- *Policy 8-103*: When there is a finding that a proposed project might significantly affect air quality, appropriate mitigation measures shall be imposed.
- *Policy 8-104*: Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.

Policy 8-107: New Housing in infill and peripheral areas which are adjacent to existing residential development shall be encouraged.

Contra Costa County Climate Action Planning

On December 15, 2015, the Contra Costa County Board of Supervisors approved a Climate Action Plan. The Climate Action Plan identifies specific measures on how the County planned to achieve a GHG reduction target of 15 percent below baseline levels by the year 2020. In addition to reducing GHG, the Climate Action Plan includes proposed policies and actions to improve public health and provide additional community benefits, and it lays the groundwork for achieving a longer-term GHG reduction goal for 2035. This Climate Action Plan includes local sector GHG emissions projections, meets the California Environmental Quality Act (CEQA) requirements for developing a qualified GHG reduction strategy, and is consistent with the Bay Area Air Quality Management District's (BAAQMD) guidance on preparing a qualified GHG reduction strategy. A qualified reduction strategy provides CEQA tiering, or streamlining, benefits to subsequent development projects that are consistent with the CAP.

4.6.4 Significance Criteria

Greenhouse Gas Emissions

Consistent with Appendices F and G of the CEQA *Guidelines* and the BAAQMD 2017 Thresholds, the project would have a significant effect on GHG emissions if it would:

- a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;
- b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purposes of reducing GHG emissions.

Energy

Consistent with Appendix G of the CEQA *Guidelines* a project would result in a significant impact to energy if it would:

- a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Approach to Analysis – GHG Emissions

Modeling GHG Emissions

For quantifying a project's GHG emissions, BAAQMD recommends that all GHG emissions from the project be estimated, including direct and indirect GHG emissions from operations. Direct emissions include emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite by energy production and water conveyance due to a project's energy use and water consumption. BAAQMD has provided guidance on detailed methods for modeling GHG emissions from proposed projects (BAAQMD, 2017). Potential impacts are assessed by modeling the estimated CO₂ emissions generated by Project construction and operations, using the CalEEMod version 2016.3.2 land use emissions model, and comparing modeled emissions to the significance thresholds. For estimating GHG emissions from electricity use, CalEEMod was run using PG&E CO₂ intensity factors estimated for the year 2020.

To date, the BAAQMD has not adopted numeric thresholds for the assessment of construction-related emissions; for the purposes of the analysis and as discussed below, construction emissions were also calculated and assessed.

As introduced in Section 4.1 (Introduction to the Environmental Analysis) of this document, the way that the COVID-19 pandemic has directly affected human behavior - requiring people to shelter in place, implement social distancing, and make other changes to the manner in which they live. These changes have affected the demand and/or use of motor vehicles or energy consumption in the home, in the short-term and possibly permanently in some ways. However, this analysis is based on an environmental baseline without COVID-19, and it would be speculative to identify long-term consequences of the pandemic at this time.

BAAQMD Thresholds

The BAAQMD's CEQA Air Quality Guidelines establish three potential thresholds for analyzing the GHG emissions associated with land use development projects:

- A mass emissions threshold of 1,100 MTCO₂e per year, or
- A GHG efficiency threshold of 4.6 MTCO₂e per service population (SP, equal to project jobs + project residents).
- Compliance with a qualified Climate Action Plan, with a goal consistent with AB 32,

The BAAQMD mass emissions threshold of 1,100 MTCO₂e per year was designed for the District to meet the AB 32 goal of reducing GHG emissions to 1990 levels by 2020 by accounting

for the Bay Area’s share of GHG emissions reduction beyond that achievable at the state level. It is based on the AB 32 GHG reduction goals and a “gap analysis” that attributes an appropriate share of GHG emissions reductions to new land use development projects in BAAQMD’s jurisdiction. However, the District has not yet developed a corresponding mass emissions threshold that extends beyond 2020 to be aligned with the SB 32 target for 2030. Accordingly, BAAQMD’s existing mass emissions threshold is not appropriate for analyzing the GHG impacts of the proposed Project (which will occur after 2020) without adjusting it to be consistent with SB 32.

Similarly, the BAAQMD efficiency threshold (4.6 MTCO_{2e}) was derived by dividing the AB 32 GHG reduction target for land use development emissions in California by the estimated 2020 population and employment level. Similar to the mass emissions threshold, this efficiency threshold does not consider the statewide emissions target mandated by SB 32 for 2030, and for projects built out after 2020 should be adjusted to be consistent with the SB 32 target.

Derivation of Project Threshold

The use of a service population (residents + employees) threshold (or “efficiency threshold”) is a commonly used tool when assessing potential GHG impacts relative to CEQA. SB 32 sets a GHG reduction goal of 40 percent below 1990 levels by 2030. A 40 percent reduction from BAAQMD’s 2020 efficiency target (which represents 1990 emissions as required by AB 32), a regional 2030 efficiency target of 2.76 MTCO_{2e}/SP is derived for BAAQMD. The proposed Project would be fully built out in approximately 2024, and interpolating between the applicable 2020 and 2030 thresholds, the appropriate GHG threshold for the 2024 build-out date is 3.86 MTCO_{2e}/SP.

Consistency with the 2017 Scoping Plan Update is an appropriate metric by which to determine the significance of a project’s GHG emissions. CEQA Guidelines Section 15064.4(b)(3) states that a lead agency “may consider a project’s consistency with the State’s long-term climate goals or strategies” when determining the significance of a project’s impacts. In *Newhall*, the California Supreme Court sanctioned the use of such a threshold. In *Newhall*, the Court held that assessing a project’s GHG impacts based on a “consistency with a GHG emission reduction plan” threshold of significance is legally permissible under CEQA.⁸

The use of an efficiency metric as a project-specific threshold of significance is supported in the literature by a number of sources. OPR’s 2018 *Discussion Draft: CEQA and Climate Change* states that an efficiency metric is an appropriate method to determine significance:

“A significance threshold that is based on an efficiency metric—rather than an absolute number—would allow lead agencies to compare projects of various types, sizes, and locations equally, and determine whether a project is consistent with the State’s reduction goals.”⁹

⁸ The court stated, “Under these circumstances, evaluating the significance of a residential or mixed use project’s greenhouse gas emissions by their effect on the state’s efforts to meet its long-term goals makes at least as much sense as measuring them against an absolute numerical threshold. Using consistency with AB 32’s statewide goal for greenhouse gas reduction, rather than a numerical threshold, as a significance criterion is also consistent with the broad guidance provided by section 15064.4 of the CEQA Guidelines.” (CBD, *supra*, 62 Cal.4th at p. 221.)

⁹ Governor’s Office of Planning and Research, 2018. *Discussion Draft: CEQA and Climate Change*. December 2018. Available at: https://opr.ca.gov/docs/20181228-Discussion_Draft_Climate_Change_Adivsory.pdf. Accessed June 2020.

The efficiency metrics for 2030 and 2024 are derived above using the 2017 Scoping Plan’s recommendations for local land use development to contribute their “fair share” of emission reductions to the statewide GHG target for 2030. This is consistent with the Association of Environmental Professionals (AEP) 2016 white paper recommendation for “Substantial Progress” thresholds for land use development to show consistency with statewide targets.¹⁰

State and Local Emissions Reduction Targets

As discussed above under 4.6.3, *Regulatory Setting*, the County adopted a CAP and, with BAAQMD guidance, established a 2020 GHG reduction target and a longer-term GHG reduction goal that aligns with state-adopted goals and targets that were in place at the time. The CAP includes a 2020 GHG reduction target of 15 percent below 2005 levels by 2020, and a longer-term GHG reduction goal of 50 percent below 1990 levels by 2035, equivalent to approximately 57 percent below baseline (2005) levels. As also discussed under 4.6.3, *Regulatory Setting*, SB 32 established a statewide GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. The County’s CAP’s 2035 goal to reduce emissions 50 percent below 1990 levels represents a trajectory that is aligned with the SB 32 target and with the state’s longer-term 2050 goal.

The discussion under Impact GHG-2 reviews the proposed Project in terms of consistency with the County’s CAP.

Project Assumptions

The Project’s GHG emissions estimate is based on Project information available and applicable generally at the time the NOP of this Draft EIR was released. The timing and sequence of development of the Project will depend upon numerous factors. Therefore, for the estimate of emissions, one construction period is assumed, and CalEEMod default construction phase length assumptions (with the exception of grading, because a large amount of fill would be necessary) which are based on hundreds of projects throughout California, are used where necessary. The construction period for the Project is assumed to take place over approximately three years. The “unadjusted” GHG emissions estimate generated by the original CalEEMod analysis assumes first full year of operations occurs in 2021, whereas the “adjusted” emissions estimate assumes the first full year of operation occurs in 2024.¹¹

Cumulative

Both BAAQMD and the California Air Pollution Control Officers Association (CAPCOA) consider GHG impacts to be exclusively cumulative impacts, in that no single project could, by itself, result in a substantial change in climate. (BAAQMD, 2012; CAPCOA, 2008). Therefore, the evaluation of cumulative GHG impacts presented below evaluates whether the Project would make a considerable contribution to cumulative climate change effects.

¹⁰ Association of Environmental Professionals (AEP), 2016, *Final White Paper - Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*, October 18. Available at: https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf. Accessed January 2020.

¹¹ As noted in Chapter 2, *Project Description*, the Project is anticipated to be developed in up to three phases, generally from west to east across the site, with an anticipated grading start date in 2021 and house completion date in 2024.

Project Adjusted GHG Emissions

The analysis presents an updated or “adjusted” Project emissions estimate that takes into consideration increased stringency of regulatory measures and refinements in modeling methodology that have been subsequently implemented. Generally, these involve adjustments to emission factors or energy use estimates that differ from the default assumptions in the CalEEMod version 2016.3.2 land use emissions model. The analysis then identifies GHG reduction measures, which can be used to further reduce emissions.

Approach to Analysis - Energy

This impact analysis evaluates the potential for the proposed project to result in a substantial increase in energy demand, consistent with Public Resources Code 21100(b)(3), and/or wasteful use of energy during project construction and operation. The impact analysis is informed by Appendix F of the *CEQA Guidelines*. Though the analysis provides construction and operational energy use estimates for the project, the impacts are analyzed based on an evaluation of whether this energy use would be considered excessive, wasteful or inefficient taking into account energy efficiency features, as well as required compliance with applicable standards and policies aimed to reduce energy consumption including the County’s CAP and the State’s Title 24 Energy Efficiency Standards.

4.6.5 Project-Level Impacts

Impact GHG-1: The Project would generate GHG emissions that could have a significant impact on the environment. (Criterion a.) (*Significant Prior to Mitigation*)

Construction and operation of the project would generate GHG emissions. The use of fossil fuels in construction equipment used to develop the project would generate GHGs such as carbon dioxide, methane and nitrous oxide. Once operational, the project would generate GHG emissions primarily from motor vehicle use, gas, electricity, solid waste generation and water use.

GHG emissions resulting from the project were calculated using the same methodology as described in *Approach to Analysis*, above.

Short-term GHG Emissions from Construction of the Project

GHG emissions from construction of the project were estimated using CalEEMod version 2016.3.2. Project-specific data were used for equipment fleet, construction schedule, and phasing. Model default emission factors were used. An estimated total of approximately 2,292 MT of CO₂e would be emitted from construction activities during the peak construction year. Approximately 5,320 MT CO₂e would be emitted during the total construction period.

Construction emissions are annualized because the proposed operational GHG emissions thresholds are analyzed in terms of MT “per year.” This analysis assumes a 30-year development life of the Project, after which it is assumed to be demolished or remodeled for energy efficiency.¹² Total construction emissions therefore, represent approximately 177 MT per year over the assumed 30 year life of the Project.

¹² 30 years of useful life the common standard currently used in practice.

The BAAQMD 2017 *CEQA Air Quality Guidelines* do not include a specific threshold or methodology for assessing construction-related GHG emissions for CEQA analysis. Therefore, construction emissions are amortized over the expected 30-year lifetime of Project and included in the annual Project emissions calculations below.¹³ The analysis of construction emissions considers improvements in construction equipment exhaust emissions through manufacturer requirements, CARB regulated fleet improvements and turnover. The Project would incorporate dust control measures recommended by BAAQMD (as detailed in **Mitigation Measure AIR-1**, in Section 4.2 *Air Quality*, in this EIR), which primarily include dust abatement measures and measures to reduce construction exhaust emissions.

Unadjusted GHG Emissions from Operation of the Project

Table 4.6-5 summarizes the unadjusted GHG emissions that would result from operation of uses under the Project. The table includes those emission sources that are included in the BAAQMD 2017 *CEQA Air Quality Guidelines*, such as area sources, transportation, operational electricity consumption, solid waste disposal, operational fugitive emissions, water usage and wastewater generation. Emission sources that are not included in the BAAQMD 2017 *CEQA Air Quality Guidelines* or are not relevant to Project, such as emissions generated from permitted stationary source equipment, change in vegetation sequestration, fugitive refrigeration emissions, agricultural emissions, and off-road equipment emissions, are not included.

**TABLE 4.6-5
 UNADJUSTED ESTIMATED GHG EMISSIONS GENERATED BY THE PROJECT**

Emission Source	Total Emissions (MT/Year)			
	CO ₂	CH ₄	N ₂ O	Total CO ₂ e
Area Sources	14.0	<1	<1	14.1
Purchased Electricity	151	0.02	0.00	152.5
Natural Gas	325	0.01	0.01	327
Mobile Sources	1,256	0.05	0	1,258
Solid Waste	36.2	2.14	0	89.6
Water and Wastewater	12.4	0.31	0.01	22.2
Amortized Construction Emissions (averaged over 30 years)				177
Total	1,795	2.51	0.02	2,040
Service Population (residents)				356
Total Project GHG Emissions by Service Population				5.73
Project Efficiency Threshold (MTCO ₂ e/SP/yr)				3.86

NOTE: Columns may not total precisely due to rounding.
 SOURCE: ESA, 2017 (Appendix B)

¹³ The 2017 *CEQA Air Quality Guidelines* require construction emissions to be disclosed, but do *not* require construction emissions to be added to operational emissions for comparison against thresholds, therefore the inclusion of amortized construction emissions in both the unadjusted and adjusted GHG emissions threshold analysis represents very conservative estimates of GHG emissions, and a very conservative impacts analysis.

Energy use (electrical and natural gas) represents approximately 24 percent of estimated unadjusted operational GHG emissions. Solid waste represents approximately 4.4 percent of operational GHG emissions and water usage represents approximately 1.1 percent. Area sources make up less than 1 percent. Once operational and fully occupied, the proposed Project would result in an increase of an estimated 1,360 daily vehicle trips above baseline levels, as described in Section 4.13, *Transportation and Circulation*.¹⁴ Table 4.6-5 presents the incremental mobile source GHG emissions associated with the Project, which represent approximately 62 percent of the total unadjusted operational GHG emissions.

As shown in Table 4.6-5, the sum of both direct and indirect GHG emissions resulting from operation of the Project would result in an estimated 2,040 MT per year of CO₂e.¹⁵ The table also shows that the estimated unadjusted Project emissions would be approximately 5.7 MT CO₂e/SP/yr.¹⁶ The Project emissions exceed the BAAQMD’s service population threshold of 3.86 MT of CO₂e/SP/yr.

Adjusted GHG Emissions (Unmitigated)

Adjustments to the Project’s GHG emissions take into consideration increased stringency of regulatory measures and refinements in modeling methodologies that have been implemented since CalEEMod version 2016.3.2 went into effect January 1, 2017.

The adjusted GHG emissions (still unmitigated) are shown in **Table 4.6-6** and compared to unadjusted emissions (originally shown in Table 4.6-5). The individual adjustments are described in the following paragraphs.

**TABLE 4.6-6
 SUMMARY COMPARISON OF UNADJUSTED AND ADJUSTED PROJECT GHG EMISSIONS**

Emission Source	Total Emissions (MT/CO ₂ e / Year)		
	Unadjusted	Adjusted	Reduction
Area Sources	14.1	14.1	0
Purchased Electricity	152	130	-22.2
Natural Gas	327	298	-28.9
Mobile Sources	1,258	895	-362
Solid Waste	89.6	22.4	-67.2
Water and Wastewater	22.2	19.2	-3.0
Amortized Construction Emissions	177	177	0
Total Emissions (Buildout)	2,040	1,556	-484
Service Population (residents)	356	356	
GHG Emissions per Service Population (MTCO ₂ e/SP/yr)	5.73	4.37	
GHG Efficiency Target (MTCO₂e/SP/yr)	3.86	3.86	
Required Reduction to achieve Target ^a	664	182	

¹⁴ The CalEEMod analysis factored in a preliminary Project trip generation of 1,371, and therefore the emissions shown are more conservative or overstated since slightly few trips are estimated.

¹⁵ CO₂e in all calculations of Project impact include CO₂, CH₄ and N₂O, as applicable.

¹⁶ Total of 2,040 MT/year of CO₂e divided by a service population of 356 residents.

TABLE 4.6-6 (CONTINUED)
SUMMARY COMPARISON OF UNADJUSTED AND ADJUSTED PROJECT GHG EMISSIONS

NOTE: Columns may not total precisely due to rounding.

a Full Buildout emissions estimates minus 2024 target of 1,374 MT CO₂e / yr.

SOURCE: ESA, 2017 (Appendix B)

Table 4.6-6 reflects reductions from the following emissions sources described below; all adjustments are detailed in Appendix B.

- **Purchased Electricity (Not Related to Water Use).** The Project includes operational emissions associated with purchased electricity for lighting, heating, plug-in appliances, electric vehicle charging, and other uses not associated with water supply, treatment, and distribution. CalEEMod estimates emissions based on the electricity use and the carbon intensity of electricity. CalEEMod provides default electricity use rates based on the number of single-family homes associated with the Project. CalEEMod version 2016.3.2 incorporates the 2016 Title 24 building energy efficiency standards, which went into effect January 1, 2017. For estimating “unadjusted” GHG emissions from electricity use, CalEEMod was run using PG&E CO₂ intensity factors estimated for year 2020. PG&E prepared these estimates in 2011, and has since identified more stringent RPS requirements and changes in their non-renewable energy generation mix.

The adjusted emissions shown in Table 4.6-6 adjusted electricity CO₂e intensity factors that were estimated for 2024 (first operational year) based on PG&E reported emission factors and RPS reports from 2015 through 2017. This PG&E data was used in place of the default carbon intensity in CalEEMod. The adjusted factors take into account the State’s RPS requirement from SB 100 that at least 44 percent of electricity will be from renewable sources by 2024, 60 percent from renewables by 2030, and 100 percent will be carbon-neutral by 2045. The adjusted energy emissions also incorporate energy use reductions due to efficiency improvements required by the 2019 Title 24 standards, which went into effect on January 1, 2020.

The default electricity provider to unincorporated Contra Costa County is Marin Clean Energy (MCE), which as of 2019, includes 90 percent carbon-free electricity in its standard service and provides consumers the option to purchase 100 percent renewable electricity (MCE, 2021). Therefore, purchased electricity emissions shown in Table 4.6-6 remain conservative to account for the possibility that consumers opt-out of MCE and switch back to PG&E.

Since the building permits for the proposed Project will be pulled after January 1, 2020, the 2019 Title 24, Part 6 Building Energy Efficiency Standards (“Title 24”) will apply. 2019 Title 24 standards were approved after unadjusted emissions calculations were performed, and thus were not explicitly incorporated into the unadjusted emissions calculations in Tables 4.6-5 and 4.6-6. However, the 2019 standards require new residential building to install rooftop solar photovoltaic (PV) systems, so the unadjusted electricity emissions shown in Tables 4.6-5 and 4.6-6 represent very conservative estimates.

The adjusted emissions from purchased electricity in Table 4.6-6 incorporate these updates, resulting in a reduction of **22.2 MT CO₂e**.

- **Natural Gas.** The Project emits GHGs from on-site natural gas combustion. Increased efficiency required in 2019 Title 24 is expected to reduce natural gas consumption in single family residences by 9.4% compared to the 2016 Title 24 applied with the unadjusted estimated emissions in Table 4.6-5, on average (NORESO, 2018). The adjusted emissions in Table 4.6-6 incorporate this update, and this source emission are reduced by **28.9 MT CO₂e**.
- **Mobile Sources.** The Project would generate vehicle trips from residents, workers, and visitors traveling to and from the site. The mobile source emissions estimate provided in Table 4-6.5 was generated by CalEEMod using EMFAC 2014 emission factors for the operational year 2021. Since then, CARB has updated its fleet emission factors (EMFAC 2017 is now approved for use in CEQA analysis), and the first year of Project operation is now assumed to be 2024. Thus, ESA conducted an off-model adjustment to estimate on-road mobile source emissions using the Project's estimated mobile fuel consumption (see Table 4.6-8) and a standard emission factor for vehicle fuels.
- **Water Use, Including Purchased Electricity.** Electricity is required to supply, treat, and distribute water and wastewater, and as such, water use is a source of GHG emissions. The unadjusted emissions in Table 4.6-5 used the CalEEMod default for single family residences in Contra Costa County for water use. The PG&E CO₂e intensity factor for 2024 was used in place of the default electricity emissions intensity in CalEEMod. The adjusted value in Table 4.6-6 indicates emissions from this source are reduced by **3.0 MT CO₂e**.
- **Waste Disposed.** Waste generated by the Project will result in GHG emission. The unadjusted emission using CalEEMod default values in Table 4.6-5 is adjusted to reflect compliance with CCCAP Reduction Measure W1, which requires achieving 75 percent diversion of residential waste from the landfill in support of the 2020 state target diversion rate of 75 percent, as identified in Assembly Bill 341. The adjusted emissions in Table 4.6-6 incorporate this measure, resulting in a reduction from this source of **67.2 MT CO₂e**.

By incorporating the relevant regulatory changes and modeling methodology refinements to the unadjusted GHG emissions analysis, the adjusted GHG emissions at full buildout are reduced by a total of approximately 509 MT CO₂e / year to 1,531MT CO₂e / year – equivalent to 4.3 MT CO₂e per service population. This is approximately 0.44 MT/SP higher than the threshold of significance, and represents an absolute exceedance of 182 MT CO₂e over the threshold, on a total annual emissions basis. Therefore, the Project's emissions, as adjusted, would still constitute a significant impact.

GHG Emissions Mitigation

As shown Table 4.6-6, the Project would fall short of meeting the GHG emissions threshold, even with adjustments factored in to reflect relevant regulatory changes and modeling methodology refinements. The Project would require a reduction of at least approximately 182 MT CO₂e /year to achieve the efficiency threshold of 3.86 MT/SP.

Mobile Source Measures

Mobile sources are the substantial portion of GHG emissions and represent approximately 58 percent of the Project's adjusted total operational emissions (see Table 4.6-6). Given the characteristics of the proposed Project (144 single-family residences) and its context relative to

public transit, the suitability of typical measures to reduce vehicular use from the Project are not likely to be viable or effective in substantially reducing the Project's mobile emissions. Mitigation measures recommended to effectively reduce GHG mobile emissions include measures that encourage use of alternative means of transportation, such as incorporating new or enhanced bicycle and pedestrian facilities, and measures to increase access to public transit or employment nodes (e.g., shuttles). As discussed in Section 4.13, *Transportation and Circulation*, the expected demand for transit from the Project would be limited, and existing transit service connects the Project area to the Concord BART station and the Amtrak Station in downtown Martinez, operating every two hours in each direction, and no current plans to expand transit service in the vicinity of the Project site. No mitigation measures specifically addressing trip reduction are identified for the reasons above.

On-site Performance-Based Measures

Implementation of some combination of the following GHG reduction measures in **Mitigation Measure GHG-1**, below, cumulatively would achieve the required reduction to reduce the significant impact to less than significant. The most preferred location for implementation of reduction measures is at the Project site. Therefore, each of the measures are on-site approaches that target reducing the Project's energy and mobile emissions. The potential reductions from implementing certain on-site measures are provided where feasible to demonstrate the viability of achieving the target reduction of at least 182 MT CO₂e / year with combined measures (where quantified, emissions reduction assumptions and calculations are provided in Appendix X).

- **Install Roof Solar PV.** The 2019 Title 24 building energy standards require solar panels to be installed on new homes of less than three stories. Solar PV will reduce the amount of purchased electricity needed by the Project, by an amount that has not yet been determined by the project proponent. This reduction in electricity load has not been accounted for in the emissions estimates in Table 4.6-5 and 4.6-6.
- **Purchase 100% zero-carbon electricity.** As of 2021, the default electricity provider to unincorporated Contra Costa County is MCE, which provides consumers the option to purchase 100 percent renewable electricity. The Project could purchase 100% zero-carbon electricity (e.g., through MCE's "Deep Green" or "Local Sol" plans or PG&E's "Solar Choice" plan). This measure, in combination with installation of rooftop solar PV, would eliminate the **130 MT CO₂e** associated with purchased electricity in Table 4.6-6.
- **Replace natural gas with renewable electricity.** To further reduce GHG emissions from energy sources, the Project could electrify heating and cooling or all loads. Assuming the Project purchases 100% zero-carbon electricity from MCE, this measure would eliminate the **298 MT CO₂e** associated with natural gas use in Table 4.6-6.
- **Reduce number of hearths.** To further reduce GHG emissions from area sources, the Project could reduce the number of hearths installed in single family homes. CalEEMod treats hearths separately from other natural gas use, so this reduction is additive with other natural gas reduction already applied with the adjusted emissions. This measure would reduce the area source emissions shown in Table 4.6-6 by **12 CO₂e**.
- **Install residential EV chargers and promote EV capability.** To reduce mobile (on-road) emissions sources, the Project can promote EV use through installation of residential EV chargers in 100 of the 144 single family homes. The estimated reduction assumes 50 percent

of residents with EV chargers (corresponding to 35 percent of project households) would own an EV and use the EV for 80 percent of household driving by 2035 (in addition to the 8 percent default assumption for EV penetration).¹⁷ This measure would reduce the mobile source emissions shown in Table 4.6-6 by **216 CO₂e**.

Achievement of the Statewide GHG reduction targets for 2030 and 2050 will require reductions from many economic sectors, not just from land use development, and will be aided by future State and County actions. However, it is recognized that many sources of GHG emissions are outside the County's jurisdiction and control, and attainment of atmospheric concentrations of GHG that would reverse or reduce the effects of global climate change are likewise outside the County's jurisdiction and control. Despite the uncertainties associated with the GHG reductions that may be realized by 2030 and 2050 through the efforts of the State and County, with Mitigation Measure GHG-1, the proposed Project would reduce its Project-specific GHG emissions and contribute to the overall long range reduction goals established by the State and by the County CAP.

Mitigation Measure GHG-1: GHG Emissions Reduction Plan.

Prior to the County's approval of the first construction or grading-related permit for the Project, the Project applicant shall submit to the County a "GHG Emissions Reduction Plan" ("Plan") for implementation over the useful life of the Project (generally estimated to be at least 30 years) in accordance with the requirements of this mitigation measure. The Plan shall document the GHG reduction measures that will be combined and implemented to achieve the required emissions reduction of at least 182 MT CO₂e /year, and a quantification of the emissions reductions achieved with the combination of measures identified in the Plan.

A. On-Site Reduction Measures. The Project applicant shall implement any combination of the following GHG emissions reduction measures to, cumulatively, achieve the required emissions reduction of at least approximately 182 MT CO₂e /year to achieve the GHG efficiency target of 3.86 MTCO₂e/SP, as discussed in the *Approach to Analysis*.

1. Meet the Project's electricity demand with rooftop solar PV and/or through purchase of 100% zero-carbon electricity. The Project will purchase 100% zero-carbon electricity (e.g., through MCE's "Deep Green" or "Local Sol" plans, or through PG&E's "Solar Choice" plan).
2. Electrification. The Project applicant shall demonstrate on Project plans submitted to the County for review and approval that each of the 144 homes include electric heating and cooling or all loads, and will either use additional on-site solar or purchase 100 percent zero-carbon electricity (e.g., through MCE's "Deep Green" or "Local Sol" plans or PG&E's "Solar Choice" plan). Alternatively, default grid-supplied electricity would be incorporated into the Project.

¹⁷ A similar set of assumptions for the Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan (RMDP/SCP) was reviewed by the California Air Resources Board and Ascent Environmental, Inc., and determined to be supported by "an adequate technical basis." See RMDP/SCP Final Additional Environmental Analysis (2017), Appendix 1 at Available at: <http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=145723>.

3. Hearth Reduction. The Project applicant shall demonstrate on Project plans submitted to the County for review and approval that hearths will not be installed in any of the Project homes.
4. EV Chargers and Promotion.
 - a. The Project applicant shall demonstrate on Project plans submitted to the County for review and approval the proposed installation of residential electrical vehicle (EV) chargers in at least 100 of the 144 homes. This mitigation involves measures beyond the required installation of charging capability (i.e., wiring) required by CALGreen Building Code.
 - b. The Project applicant shall submit to the County promotional materials that specifically promote EV use through messaging (e.g., flyers, fact sheets), vehicle subsidies, and/or test-drive events specific for residents of Project homes. The Project applicant shall also submit to the County documents that quantify the number or rate of EV ownership and for all Project homes for the prior year.

The target for this measure is that at least 50 percent of residents with EV chargers (corresponding to 35 percent of project households) own an EV and use the EV for 80 percent of household driving by 2035, however, this target may vary depending on the level of implementation and resulting emissions reduction achieved by other measures in this mitigation measure.

5. Additional Energy Measures.
 - a. *High-Efficiency Appliances*. Throughout occupancy of the Project, and if appliances are offered by homebuilders, the Project applicant shall offer homebuyers Energy Star-rated high-efficiency appliances (or other equivalent technology) that have efficiency levels at or above measures required by CALGreen, for installation in Project homes.

B. Implementation, Monitoring and Enforcement.

1. Implementation.

The Project applicant shall implement the approved GHG Reduction Plan (Plan) throughout operation of the Project.

On-site Measures: For physical GHG reduction measures to be incorporated into the design of the Project (Mitigation Measures GHG-1, A.2, A.3, A.4a, and A5), the measures shall be included on the drawings and submitted to the County Planning Director or his/her designee for review and confirmation prior to issuance of the first grading and/or building permit for horizontal construction of each of the up to three development phases proposed.

The County Planning Director or his/her designee shall confirm completion of the implementation of these measures as part of the final inspection and prior to issuance of the final certificate of occupancy (CO) for each development phase of the Project. For operational GHG reduction measures (Mitigation Measures GHG-1, A.1 and A.4b), the measures shall be implemented on an indefinite and ongoing basis, as described in Section C.2, *Reporting and Monitoring*, of this mitigation measure.

2. Reporting and Monitoring.

Reporting: The Project applicant shall submit a GHG Reduction Report (Report) to the County Planning Director or his/her designee within one year after the County issues the final CO for each development phase of the Project. The Report shall summarize the Project's implementation of GHG reduction measures, over past, current, and anticipated Project phases, if applicable; describe compliance with the conditions of the Plan; show calculations of the emissions reduction achieved toward the minimum reduction required (182 MT CO₂e /year); and include a brief summary of any revisions to the Plan since any previous Report was submitted.

Monitoring: The County or its designee shall review the Report to verify that the Plan is being implemented in full and monitored in accordance with the terms of this mitigation measure. The Plan shall be considered fully attained when the County or its designee makes the determination, based on substantial evidence, that the proposed Project has achieved the required emissions reduction of at least approximately 182 MT CO₂e /year and is unlikely to exceed the applicable significance threshold at any time in the future, after implementation of this mitigation. *Enforcement:* Notwithstanding the foregoing, the County retains its discretion to enforce all mechanisms under the Municipal Code and other laws to enforce non-compliance with the requirements of this mitigation measure.

The County retains the right to request a Corrective Action Plan if the Report is not submitted, or if the GHG Reduction Measures in the Plan are not being fully implemented and/or maintained, and also retains the right to enforce provisions of that Corrective Action Plan if specified actions are not taken or are not successful at addressing the violation within the specified period of time.

The County shall have the discretion to reasonably modify the timing of reporting, with reasonable notice and opportunity to comment by the Applicant, to coincide with other related monitoring and reporting required for the Project.

Reduction of impacts to a level of insignificance would require reducing greenhouse gas emissions by 182 MT CO₂e /year. Implementation of a combination of the above-identified measures could accomplish this reduction; were all measures implemented to the extent possible, a reduction of 656 MT CO₂e /year would be possible, and thus would be capable of mitigating GHG emissions that exceed 2,000 MT CO₂e /year. Accordingly, a GHG emissions reduction plan implementing a combination of some of the foregoing measures could feasibly reduce expected Project-related impacts of 1,556 MT CO₂e /year.

Significance after Mitigation: Less than Significant.

Impact GHG-2: The Project would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing GHG emissions. (Criterion b) (Potentially Significant prior to Mitigation)

Consistency with the Contra Costa County Climate Action Plan

Development of the Project would also be subject to applicable policies in the County's Climate Action Plan, which was adopted by Board of Supervisors on December 15, 2015. The County's CAP also contains a development checklist that was created to aid project applicants and County

staff in determining where a proposed new development project is consistent with the CAP. Table E.1 of the CAP provides descriptions and performance criteria that explain how individual projects can comply with requirements. The proposed Project’s consistency with the CAP criterion and development checklist is shown in **Table 4.6-7**, below.

**TABLE 4.6-7
 STANDARDS FOR CAP CONSISTENCY – NEW DEVELOPMENT**

Reduction Measure and Applicable Standard	Does the Project Comply?	Notes & Comments
EE 1 & EE 6. New residential development will install high-efficiency appliances and insulation to prepare for the statewide transition to zero net energy.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Mitigation Measure GHG-1 will ensure that the proposed Project will install Energy Star-rated high-efficiency appliances (or other equivalent technology) for clothes washers, dish washers, refrigerators, and fans in the residences, where appliances are offered by homebuilders.
EE 1. New nonresidential development will install high-efficiency appliances and insulation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Not applicable. The proposed Project does not include new nonresidential development.
RE 1. New residential and nonresidential development will meet the standards to be solar ready as defined by the California Building Standards Code.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	The proposed Project will comply with the solar-ready buildings requirements as defined by the CBC.
LUT 2. New single-family houses and multi-family units with private attached garages or carports will provide prewiring for EV charging stations inside the garage or carport.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	The proposed Project will comply with the CALGreen Code, which requires EV charging capability in attached private garages within new construction for single-family dwellings.
LUT 2. New multi-family (greater than five units) and nonresidential (greater than 10,000 square feet) developments will provide EV charging stations in designated parking spots.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	The proposed Project does not include multi-family or nonresidential development. However, the proposed Project will also install residential electrical vehicle (EV) chargers in at least 100 of the 144 single family homes.
LUT 4. New residential and nonresidential development will be located within one half-mile of a BART or Amtrak station, or within one quarter-mile of bus station.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	The proposed Project is approximately within 3.5 miles of the Martinez Amtrak station, and the North Concord/Martinez BART Station..

SOURCE: CAP Appendix E, Table E.1

As presented in Table 4.6-9, the proposed Project would comply with the new development standards for CAP consistency. Therefore, the Project would have a less-than-significant impact with regard to consistency with the County’s CAP and thereby AB 32.

Consistency with SB 32 and Executive Orders EO S-3-05

As discussed above, SB 32 established a statewide GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. As discussed under Impact GHG-1 above, the proposed Project would achieve an emissions efficiency target consistent with SB 32, with implementation of Mitigation Measure GHG-1.

As stated above, in order to meet the long-term GHG reduction targets established by SB 32 and EO S-3-05, systemic changes would be required in the way that the State and the County produce and consume energy. Significant changes in electricity production, transportation fuels, and industrial processes would be necessary and are beyond the scope of an individual land use project. Nevertheless, the proposed Project will implement Mitigation Measure GHG-1 to ensure the Project contributes its fair share of emission reductions toward the statewide GHG target for 2030. With the implementation of feasible mitigation measures, the proposed Project would be consistent with the goals of SB 32 and EO S-3-05.

Mitigation Measures: Implement Mitigation Measure GHG-1.

Significance after Mitigation: Less than Significant.

Impact ENE-1: The Project would not result in wasteful, inefficient and unnecessary use of energy and the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (Criteria a and b) (*Less than Significant*)

Construction

Project construction would require the use of construction equipment for grading, building construction activities, and paving as well as construction workers and vendors traveling to and from the Project site. Because the California Emissions Estimator Model (CalEEMod) program used in the GHG analysis presented above does not display the amount and fuel type for construction-related sources, additional calculations were conducted. Detailed calculations can be found in Appendix B to this Draft EIR.

Fuel consumption from on-site heavy-duty construction equipment was calculated based on the equipment mix and usage factors provided in the CalEEMod construction output files. The total horsepower was then multiplied by fuel usage estimates per horsepower-hour included in Table A9-3-E of the SCAQMD's CEQA Air Quality Handbook. Estimated fuel consumption from construction worker and vendor trucks was calculated using trip rates and distances provided in Appendix B to this Draft EIR. The California Air Resources Board's (CARB's) EMFAC 2014 model provides total annual vehicle miles traveled (VMT) and fuel consumed for each vehicle type. Thus, total VMT was calculated for each type of construction-related trip and divided by the corresponding county-specific mpg factor. Construction worker trips were assumed to comprise 50 percent light duty gasoline auto 25 percent class 1 light duty gasoline trucks (0-6,000 pounds) and 25 percent class 2 light duty gasoline trucks (6,001-10,000 pounds), consistent with

CalEEMod. Construction vendor trucks were assumed to be medium duty and heavy duty diesel trucks. As shown in **Table 4.6-8**, Project construction is expected to consume a total of 43,931 gallons of diesel fuel and 408 gallons of gasoline.

**TABLE 4.6-8
 CONSTRUCTION ENERGY USE**

Fuel	Fuel Consumption
Diesel	
On-Road Construction Trips ^a	316 Gallons
Off-Road Construction Equipment	43,615 Gallons
Diesel Total	43,931 Gallons
Gasoline	
On-Road Construction Trips ^a	408 Gallons
Off-Road Construction Trips ^c	-- Gallons
Gasoline Total	408 Gallons

NOTES:

- a On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod for all years of construction and fleet average fuel consumption in gallons per mile from EMFAC2014 for each of the construction years in the BAAQMD. See Appendix B Table 2, On Road Construction Trip Estimates for calculation details.
- b On-road mobile source fuel use based on a fuel usage rate of 0.05 gallons of diesel per horsepower (HP)-hour, based on SCAQMD CEQA Air Quality Handbook, Table A9-3E.
- c All emissions from off-road construction equipment were assumed to be diesel.

SOURCE: Appendix B, Table 1, Total Construction Related Fuel Consumption

Construction of the Project would result in fuel consumption from the use of heavy-duty construction equipment, and vehicle trips generated from construction workers traveling to and from the site. Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel and heavy-duty equipment would not be a typical condition of the proposed Project. In addition, there are no unusual Project characteristics that would cause the use of construction equipment that would be less energy efficient compared with other similar construction sites in other parts of the State. For comparison, the State of California consumed 15.4 billion gallons of gasoline and 3.1 billion gallons of diesel fuel in 2019 (CDTFA 2020a; 2020b), and 389 million gallons of gasoline and approximately 34 million gallons of diesel were sold in Contra Costa County (CEC, 2019b). Therefore, construction-related fuel consumption by the Project will not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region.

Operation

For operational activities, annual electricity and natural gas consumption were calculated using the demand factors provided in the CalEEMod output in Appendix B to this Draft EIR. The Project’s electrical consumption was estimated to be approximately 1,149,480 kWh of electricity per year and natural gas consumption was estimated to be approximately 6,094,620 kBtus or approximately 60,961 therms per year. Electricity associated with Project water consumption was also estimated to be 169,797 kWh per year. As shown in Table 4.6-3, PG&E produced

approximately 78 billion kWh in 2019. The Project’s total electricity demand (totaling approximately 1,319,277 kWh per year) would comprise approximately 0.0017 percent of the electricity demand in PG&E’s overall service area. Similarly, as shown in Table 4.6-4, PG&E produced approximately 4.9 billion therms of natural gas in 2019. The Project’s natural gas demand would be approximately 0.0012 percent of the existing natural gas use in the PG&E service area. In addition, the proposed Project would comply with existing energy regulations per the CPUC for the extension of electric and gas service. Therefore, the proposed Project would not result in a significant demand on regional energy supply or require substantial additional capacity.

As shown in **Table 4.6-9**, a total of 121,623 gallons of gasoline is estimated to be consumed each year.

**TABLE 4.6-9
 ANNUAL OPERATIONAL ENERGY CONSUMPTION**

Fuel Type	Energy Consumption	Units
Electricity		
Building ^a	1,149,480	Kwh/year
Water ^a	169,797	Kwh/year
Total Electricity	1,319,277	Kwh/year
Natural Gas		
Building ^a	6,094,620	kBTU/year
Gasoline^b		
Mobile ^{c,d}	121,623	Gallons/year

NOTES:

- a The building-related electricity and natural gas usage, and water-related electricity usage is based on CalEEMod estimates.
- b Gasoline powered vehicles assumed during operation. Per CARB, less than 1 percent of light duty auto trips in the Bay Area are diesel.
- c Mobile source fuel use based on annual vehicle miles traveled (VMT) from CalEEMod output for operational year 2021 and fleet-average fuel consumption in gallons per mile from EMFAC2014 web based data in the Bay Area Air Quality Management District.
- d Based on operational VMT for the Project as generated by CalEEMod, and on-road fleet fuel consumption data from EMFAC 2017.

SOURCE: ESA, 2021

Mobile Energy Efficiency

Statewide, Californians used approximately 15.4 billion gallons of gasoline in 2019 (CDTFA, 2020a). Approximately 389 million gallons of gasoline were sold in Contra Costa County (CEC, 2019b). Fuel usage during Project operation would account for approximately 0.001 percent of the existing gasoline-related energy consumption in the State of California in 2019 and 0.03 percent of the existing gasoline-related energy consumption in Contra Costa County in 2018. Therefore, the Project would neither result in substantial demand nor require substantial additional energy resource capacity relative to energy impacts from mobile sources.

The proposed Project also includes components that promote alternative transportation methods, such as walking and bicycling through the construction of a neighborhood park. The proposed

Project would also comply with the CALGreen Code, which requires EV charging capability in attached private garages within new construction for single-family dwellings (CBSC, 2016). Collectively, compliance with regulatory programs and implementation of project design features, would enhance the efficiency of energy use during Project operations, and prevent or reduce the unnecessary or wasteful consumption of energy.

Building Energy Efficiency

The proposed Project would include Building Energy Efficiency Standards as required by Title 24, Part 6. The Building Energy Efficiency Standards are intended to save energy, increase electricity supply reliability, and avoid the need to construct new power plants. Pursuant to the California Building Standards Code and the Energy Efficiency Standards, the County's Building Division would review the design components of the Project's energy conservation measures when the Project's building plans are submitted. These measures could include: insulation; use of energy-efficient heating, ventilation and air conditioning equipment (HVAC); solar-reflective roofing materials; energy-efficient indoor and outdoor lighting systems; reclamation of heat rejection from refrigeration equipment to generate hot water; incorporation of skylights, and other measures.

The proposed Project would also be subject to the CALGreen Code which requires water conserving plumbing fixtures, water conservation measures, and for 65 percent construction waste diversion. Collectively, compliance with regulatory programs would reduce unnecessary or wasteful consumption of energy.

Energy Conservation Plans

As discussed in Impact GHG-2 above, the proposed Project would comply with the new development standards for CAP consistency. Therefore, the Project would be consistent with the County's CAP which seeks to increase energy efficiency in residential building stock, and reduce community-wide electricity and natural gas use.

Summary

Although the Project would result in the consumption of energy, the consumption would be typical for a new project of this size. Construction activities and corresponding fuel energy consumption would be temporary, and therefore would not represent a substantial demand on energy resources.

No aspect of Project operations would involve higher than typical energy demands, and the Project plans include alternative transportation components as well as onsite performance efficiency measures that will conserve energy while also decreasing construction and operational GHG emissions, as discussed in the greenhouse gas analysis. Further, the Project would be subject to all regulations and County CAP policies, Title 24 and CALGreen standards, and potentially more stringent fuel efficiency regulations in the future that would continue to reduce the energy demand from the Project. Therefore, the energy demand from the construction and operation of the Project would not result in wasteful, inefficient and unnecessary use of energy, and would not require substantial additional capacity. This impact would be less than significant.

Mitigation: None required.

4.6.6 Cumulative Impacts

Impact C-GHG-1: The Project, in conjunction with cumulative development, would result in cumulative impacts regarding GHG emissions and climate change. (Criteria a and b) (Project Level: *Potentially Significant prior to Mitigation*)

Geographic Context

GHGs are global pollutants, and also pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Therefore, the effects of GHGs are also experienced globally.

Cumulative Analysis

The atmospheric concentration of GHGs determines the intensity of climate change, with current levels already leading to increases in global temperatures, sea level rise, severe weather, and other environmental impacts. The continued increase in atmospheric GHG concentrations will only worsen the severity and intensity of climate change, leading to irrevocable environmental changes. Therefore, from the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative. No single project could generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

As discussed above under Impact GHG-1 and GHG-2, emissions from the development of the Project would be less than significant with application of Mitigation Measure GHG-1, and the proposed Project would be consistent with the goals of SB 32 and EO S-3-05. Therefore, the Project's contribution to the global cumulative impact would not be cumulatively considerable with mitigation.

Mitigation Measures: Implement Mitigation Measure GHG-1.

Significance after Mitigation: Less than Significant

Impact C-ENE-1: The Project, in conjunction with cumulative development, would not conflict with a state or local plan for renewable energy or energy efficiency, or result in wasteful, inefficient and unnecessary use of energy, such that a cumulative impact would occur. (*Less Than Significant, no Mitigation Required*)

Geographic Context

The geographic context for potential cumulative impacts related to energy resources is County-wide and within PG&E's service area, and, in some cases, statewide, nationwide, and global: energy resources are inherently mobile, and, as discussed earlier in this section, PG&E and other energy providers bring energy into California from other parts of the country. Oil and other resources are also transported into California from Canada, Mexico, and other countries; therefore, the effects of energy usage are also experienced globally. Likewise, efforts to improve the efficient use of energy and avoid waste are regulated on the local, State, national, and international levels.

Cumulative Analysis

From the standpoint of CEQA, impacts related to energy resources are inherently cumulative. No single project is likely to have an impact to energy resources such that the project would contribute noticeably to a change in global resources. However, the cumulative effect of energy use from past, present, and future projects could contribute substantially to overall energy use and its associated environmental impacts.

As discussed above under **Impact ENE-1**, impacts from the development of the Project related to energy use would be less than significant. The Project's contribution would not be considered cumulatively considerable in part because the Project would, like other projects that are part of the cumulative scenario, be required to comply with an established regulatory framework aimed at reducing energy consumption. Additionally, although some future projects may be approved even though they would have significant, unavoidable impacts related to energy resources, in general, future projects would be required to demonstrate that they would not have significant effects on these resources through the CEQA review process.

Overall, in combination with past, present, and reasonably foreseeable future projects within the geographic context for this analysis, the Project would not result in a cumulatively considerable contribution to a cumulative impact on energy resources.

Mitigation: None required.

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4.7 Hazards and Hazardous Materials

4.7.1 Introduction

This section discusses hazardous materials and hazards conditions within the Project site, and evaluates the potential for the Project to result in significant impacts related to exposing people or the environment to adverse effects related to hazards and hazardous materials. A review of the applicable regulatory framework is also provided.

CEQA requires the analysis of potential adverse effects of a project on the environment, but, as discussed in Chapter 1.0, *Introduction*, of this EIR, potential effects of the environment on a project are not required to be analyzed or mitigated under CEQA standards (*CBIA v. BAAQMD*). However, if a proposed project impact exacerbates an existing environmental hazard or condition, an agency must analyze the potential impact of such hazards on the project (such as future residents or users), which is presented herein. In addition, solely to provide information to the public and decision-makers, this section also discusses certain existing conditions and potential effects of hazards and hazardous materials on the Project.

4.7.2 Definitions

Hazardous Material and Waste

Materials and waste are generally considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability); corrode other materials (corrosivity); or react violently, or explode or generate vapors when mixed with water (reactivity).

The term “hazardous material” is defined in the State Health and Safety Code (Chapter 6.95, Section 25501[n][1]) to include any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.

A hazardous waste, for the purpose of this EIR, is any hazardous material that is discarded, stored and treated, or recycled, as defined in the State Health and Safety Code (Chapter 6.95, Section 25124).

The transportation, use, and disposal of hazardous materials, as well as the potential releases of hazardous materials to the environment, are closely regulated through many state and federal laws.

Potential Receptors/Exposure

The sensitivity of potential receptors in the areas of known or potential hazardous materials contamination is dependent on several factors, the primary factor being the potential pathway for human exposure. Exposure pathways include external exposure, inhalation, and ingestion of contaminated soil, air, water, or food. The magnitude, frequency, and duration of human exposure

can cause a variety of health effects, from short-term acute symptoms to long-term chronic effects. Potential health effects from exposure can be evaluated in a health risk assessment. The main elements of exposure assessments typically include:

- Evaluation of the fate and transport processes for hazardous materials at a given site;
- Identification of potential exposure pathways;
- Identification of potential exposure scenarios;
- Calculation of representative chemical concentrations; and
- Estimation of potential chemical uptake.

Soil and Groundwater Contamination

In California, regulatory databases listing hazardous materials sites provided by numerous federal, state, and local agencies were consolidated in the “Cortese List” pursuant to Government Code Section 65962.5, originally enacted in 1985. The Cortese List is no longer consolidated as originally intended, but is now available as web-based information from the responsible organizations as linked on the California Environmental Protection Agency’s (CalEPA) website, and includes:

- List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database;
- List of Leaking Underground Storage Tank Sites by County and Fiscal Year from the State Water Resources Control Board (SWRCB) GeoTracker database;
- List of solid waste disposal sites identified by SWRCB with waste constituents above hazardous waste levels outside the waste management unit;
- List of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO) from the SWRCB; and
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC and listed in the EnviroStor database (DTSC, 2016a).

The SWRCB GeoTracker database includes leaking underground storage tanks (LUSTs); permitted underground storage tanks (USTs); and spills, leaks, investigations, and cleanup database (SLIC) sites. The DTSC EnviroStor database includes federal and state response sites, voluntary, school, and military cleanups and corrective actions, and permitted sites. The five databases cited above identify sites with suspected and confirmed releases of hazardous materials to the subsurface soil and/or groundwater. The statuses of these sites change as identification, monitoring and clean-up of hazardous materials progress. Typically, a site is considered “closed” (i.e., no further action is needed to address hazardous materials at the site) once it has been demonstrated that existing site uses combined with the levels of identified contamination present no significant risk to human health or the environment.

Underground Fuel Tanks

An underground fuel tank (UFT) system is a tank and any underground piping connected to the tank that has at least 10 percent of its combined volume underground. Until the mid-1980s, most UFTs were made of single-walled bare steel which could corrode over time, resulting in leakage. Faulty installation or maintenance procedures also resulted in UFT leakage, in addition to potential releases associated with spills. Revised UFT regulations in the late 1990s significantly reduced the incidents of leakage from new UFT systems and the resulting soil and groundwater contamination. However, some older UFT systems remain in service, and many sites contaminated by UFTs are still undergoing investigation and cleanup.

Underground storage tanks installed prior to the mid-1980s that have leaked, as well as improperly installed UFTs, have resulted in fuel spills that can present contamination issues. In addition, it is not uncommon for older UFTs to have been abandoned in place with no documentation of location or abandonment technique. Unknown and undocumented UFTs can be found during ground disturbances associated with redevelopment activities of commercial and industrial properties.

Case closure for leaking underground fuel tanks (LUFTs, also referred to as leaking underground storage tanks or LUSTs) is typically granted by the oversight agency when soil or groundwater affected by a release of petroleum hydrocarbons (PHCs) and the constituents of PHCs (such as benzene, toluene, ethylbenzene, xylenes and methyl tertiary butyl ether) have been substantially cleaned up, and the contamination no longer poses a substantial threat to human health or the environment. However, it should be noted that residual contaminants may remain in soil or groundwater at closed sites. PHCs tend to naturally degrade over time; excavation for project construction at closed LUFT sites, however, may encounter low levels of PHCs in soil, soil vapor, or groundwater.

4.7.3 Environmental Setting

A preliminary site assessment, commonly referred to as a “Phase I” investigation, seeks to identify the presence or likely presence of hazardous materials at a project site under conditions that indicate an existing release, a past release, or a material threat of release of hazardous materials into structures on the site or into the ground, groundwater, or surface water of the site. A Phase I investigation also seeks to assess whether such conditions warrant further investigation, such as subsurface soil and groundwater sampling, referred to as a “Phase II” investigation.

During Phase I investigations, environmental professionals, among other things, research site history, perform a regulatory database review and conduct a site reconnaissance for the site and surrounding area. Methods to obtain historical information pertaining to the site include the review of historical aerial photographs, topographical maps and Sanborn Fire Insurance Maps. A Phase I investigation generally includes a review of potential offsite sources of contamination that may be of potential environmental concern due to their proximity to the project site. A Phase II investigation generally involves subsurface sampling of soil or groundwater at a project site to evaluate the extent of known or suspected contaminant releases.

A Phase I investigation was conducted for the Project site and the information contained within the Ceres Associates August 22, 2003 report was used as a primary source of information for this analysis and with no material changes in the site uses since that time, remains a valid resource for the purposes of this analysis. In addition, a more recent review of available environmental databases was conducted to confirm some of the conclusions (discussed below). No Phase II investigation has been performed at the Project site, and as indicated in the *Introduction* in this section, no changes potentially affecting the conditions reported in the 2003 Phase I have occurred.

Regional Setting

The Project site is part of a series of unincorporated communities along the northern I-680 corridor east of Martinez. The area of and around the Project site is currently characterized by a mix of open space and developed lands that include roads, trails, and residential communities, as well as industrial uses including gas pipelines, a landfill, and wastewater treatment facilities.

Pipelines carrying crude oil and refined petroleum products (gasoline, diesel fuel and jet fuel) extend under Central Avenue and the Project site along a wetland area on the northwestern boundary. The Project site is bounded by the Burlington Northern Santa Fe Railroad (BNSF) Railway tracks to the south, and a combination of undeveloped lands and recreational vehicle storage occupy the area immediately south of the railroad tracks. The Acme landfill located northeast of the Project site is no longer actively accepting refuse as a final depository; however, a refuse transfer station operates within the landfill site, and is located approximately 0.3 miles north of the Project site.

Project Site Setting

According to the Phase I investigation report, the Project site appears to have been undeveloped land dating back to at least 1939 (Ceres, 2003). The Phase I report reviewed aerial photographs from the years 1939, 1950, 1959, 1970, 1980, 1988, 1996 and 1999 (Ceres, 2003). None of the aerial photographs showed signs of any development on the Project site. However, according to the geotechnical investigation prepared for the site, there was evidence of previous quarrying activity on the east facing slope of the hill (Engeo, 2003). In addition, a review of historic Google Earth imagery shows a small structure in the late 1980s and early 1990s that has been removed by the early 2000s (Google Earth, 2017). The surrounding area was also undeveloped until the 1970s when some of the neighboring residential developments began to appear.

Hazardous Materials Use

Based on the history of the site use, the Phase I report and the site visit by ESA, there does not appear to be any evidence of hazardous materials use on the Project site including underground storage tanks, above ground storage tanks, hazardous building materials (asbestos, lead based paint, mercury, etc.), or polychlorinated biphenyls (“PCBs”). According to interviews and regulatory agencies contacted for the Phase I investigation, no existing files or database entries exist for the Project site (Ceres, 2003). In addition, a review of environmental databases

maintained by the Department of Toxic Substances Control and State Water Resources Control Board did not include the Project site among sites known to be Federal Superfund, State Response, Voluntary Cleanup, School Cleanup, Hazardous Waste Permit, Hazardous Waste Permit and Corrective Action, Leaking Underground Fuel Tank, or Spills, Leaks, Incidents and Cleanup sites (DTSC, 2020).

However, the Project site includes a wedge shaped parcel on the north-eastern boundary of the Project site which is crossed by five gas pipelines, which are buried beneath or in close proximity to Central Avenue. The pipelines include easements from Chevron, Santa Fe Pacific Partners L.P. (“SFPP”), Kinder Morgan Energy Partners, L.P (“KMP”), and Crimson-Chevron KLM (“KLM”). As mentioned above, these pipelines carry a variety of petroleum products including crude oil and its refined products such as gasoline and diesel. The KMP pipeline is a 6-inch diameter underground pipeline made of welded steel that are coated and have cathodic protection (Milstone, 2020). SFPP has two 8-inch diameter underground pipelines made of welded steel that are coated and have cathodic protection (Milstone, 2020). The Chevron pipeline is 20 inches in diameter, and the KLM pipeline is 12 inches in diameter. (Milstone, 2020).

Surrounding Sites

The Project site is surrounded by a wide range of land uses that includes sites with a history of hazardous materials or waste uses. The Phase I report identified two state sites within 1 mile of the Project site, four leaking underground storage tank sites and two solid waste landfill sites within 0.5 miles, one registered fuel tank within 0.25 miles of the Project site and only one site within 0.125 miles of the Project site which was listed as a solid waste landfill site (Ceres, 2003). However, the report concluded that there was no evidence to suggest that any of these sites have impacted the environmental quality of the Project site (Ceres, 2003). A current review of available environmental databases confirms this conclusion (DTSC, 2020). Groundwater flow typically mimics topography which would indicate that flow on the Project site generally radiates outward from the top of the hill and for most of the Project site generally flows toward the northeast. Therefore, all of the identified sites are located either cross or down gradient of the Project site and unlikely to have migrated onto the Project site.

Wildland Fire

Factors that contribute to the risk of fire include dense and fire-prone vegetation, poor access to fire-fighting equipment because of slopes or inadequate roads, lack of adequate water pressure and service in fire-prone locations, and seasonal atmospheric conditions that result in warm, dry fire seasons with strong afternoon winds. Some areas within the Project site include vegetated open space that can become very dry during summer months. Wildfire hazard maps compiled by the Association of Bay Area Governments (ABAG) does not show the Project site as being within an area subject to moderate, high, or very high fire threat based on Cal Fire’s assessment of wildfire risk (ABAG, 2020). Also, the Project site is not recommended to be designated as “Very High Fire Hazard Severity Zone” (VHFHSZ) by CAL FIRE, for the State or the Local Responsibility Area) (CAL FIRE, 2009).

Airports and Air Hazards

Airport Influence Areas are used in land use planning to identify areas commonly overflowed by aircraft as they approach and depart an airport, or as they fly within established airport traffic patterns. The Buchanan Field Airport is located approximately 1.3 miles southeast of the Project site. The Project would be located within the Buchanan Field Airport Influence Area; however, the Project site is not located within a safety zone nor is it located within a composite noise contour as depicted in the Contra Costa County Airport Land Use Compatibility Plan. Nevertheless, since the Project is located within the Buchanan Field Airport Influence Area and proposes a General Plan Amendment, therefore the Project would be subject to review by the Contra Costa County Airport Land Use Commission (ALUC) for determination of consistency with the *Contra Costa County Airport Land Use Compatibility Plan* (ALUC, 2000).

Other Hazards

The Contra Costa County Office of Emergency Services (OES) is responsible for disaster management and emergency preparedness within the County. The Contra Costa County Operational Area (OA) Emergency Operations Plan directs the response to emergency incidents affecting the county as a whole.

Fire and Explosion Risks

For informational purposes, the following information describes existing conditions that may pose potential effects on the Project. Some existing uses in the Project vicinity include facilities that are governed by federal, State, and local regulations and permits addressing fire and explosion risks. The Shell Martinez Refinery is located approximately one-mile northwest of the Project site. The Marathon Refinery (previously Tesoro Golden Eagle) is located less than one-mile northeast of the Project site. Air Products also has hydrogen facilities within the Shell and Marathon refineries. Per a review of the last 25 years of accident investigations completed by the U.S. Chemical Safety Board and reported by the Contra Costa Health Services Department (CCHS), there have been multiple industrial chemical accidents at the Shell and Marathon facilities (CCHS, 2020). Process safety deficiencies contributed to a pattern of sulfuric acid exposure incidents that occurred at the previous Tesoro Martinez (now Marathon) refinery's alkylation unit between 2010 and 2014, including two incidents that occurred in February and March 2014 that injured four workers in total and in one instance led to a significant release of sulfuric acid (CSB, 2016). The latest incident reported occurred in 2018 at the Shell refinery that resulted in a small lube oil fire and unit shutdown (CCHS, 2020).

The presence of underground gas lines that transport pressurized hazardous materials such as natural gas or liquid petroleum products can also present a hazard. A review of the National Pipeline Mapping System's map viewer indicated that a gas transmission pipeline bisects the Project site and a hazardous liquid pipeline runs adjacent to the east of the Project site (NPMS, 2020).

Risks Related to Train Activities

An active BNSF Railway tracks run adjacent to the south border of the Project site. Additionally, a rail line owned by Union Pacific and used by Amtrak and BNSF is located approximately 1.5 miles north of the Project site (FRA, 2017). The rail line is used by the Amtrak Capitol Corridor that provides frequent daily service between the Sacramento region and the Bay Area. Both rail lines transport munitions for the Army's Military Traffic Management Command. Moreover, truck transportation of explosives through populated areas constitutes a potential significant public safety hazard. Permitted routes designated by the California Highway Patrol include the major freeways and other highways in the County (Contra Costa County, 2010).

4.7.4 Regulatory Setting

Federal

The primary federal agencies with responsibility for hazardous materials management include the USEPA, U.S. Department of Labor Occupational Safety and Health Administration (Fed/OSHA), and the U.S. Department of Transportation (DOT). Federal laws, regulations, and responsible agencies are summarized in **Table 4.7-1**.

State and local agencies often have either parallel or more stringent regulations than federal agencies. In most cases, state law mirrors or overlaps federal law and enforcement of these laws is the responsibility of the state or of a local agency to which enforcement powers are delegated. For these reasons, the requirements of the law and its enforcement are discussed under either the state or local agency section.

State

California Environmental Protection Agency (CalEPA)

Agencies within CalEPA include the State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), and Department of Toxic Substances Control (DTSC), as described below.

In January 1996, the California Environmental Protection Agency (CalEPA) adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The plan is implemented at the local level, by the certified uniform program agencies (CUPAs). The Secretary of CalEPA is directly responsible for coordinating the administration of the Unified Program. The Secretary certifies Unified Program Agencies, and has certified 83 CUPAs to date. These 83 CUPAs carry out certain responsibilities previously handled by approximately 1,300 State and local agencies. The responsibilities of the CUPAs are described below.

**TABLE 4.7-1
 FEDERAL LAWS AND REGULATIONS RELATED TO HAZARDOUS MATERIALS MANAGEMENT**

Classification	Law or Responsible Federal Agency	Description
		Imposes requirements to ensure that hazardous materials are properly handled, used, stored, and disposed of and to prevent or mitigate injury to human health or the environment in the event that such materials are accidentally released.
Hazardous Site Cleanup	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also known as Superfund)	CERCLA establishes a program to address and clean up abandoned sites contaminated with hazardous substances and pollutants.
Hazardous Waste Handling	Resource Conservation and Recovery Act of 1976 (RCRA)	Under RCRA, the USEPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste from “cradle to grave.”
	Hazardous and Solid Waste Act	Amended RCRA in 1984, affirming and extending the “cradle to grave” system of regulating hazardous wastes. The amendments specifically prohibit the use of certain techniques for the disposal of some hazardous wastes.
Hazardous Materials Transportation	U.S. Department of Transportation (DOT)	Has the regulatory responsibility for the safe transportation of hazardous materials. The DOT regulations govern all means of transportation except packages shipped by mail (49 Code of Federal Regulations [CFR]).
	U.S. Postal Service (USPS)	USPS regulations govern the transportation of hazardous materials shipped by mail.
Occupational Safety	Occupational Safety and Health Act of 1970	Fed/OSHA sets standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries (29 CFR).
Structural and Building Components; PCB Release (Lead-based paint, PCBs, and asbestos)	Toxic Substances Control Act (TSCA)	Regulates the use and management of PCBs in electrical equipment, and sets forth detailed safeguards to be followed during the disposal of such items as well as soil containing PCBs. Also, addresses releases of PCBs, e.g., associated with transformer releases.
	USEPA	The USEPA monitors and regulates hazardous materials used as structural and building components and their effects on human health.
Rail Safety	Federal Railroad Administration (FRA)	The FRA adopts and enforces railroad safety regulations, including regulations relating to rack safety, grade crossings, rail equipment, operating practices, and the transport of hazardous materials by rail.
	Pipeline and Hazardous Materials Safety Administration (PHMSA)	PHMSA is another department within the DOT. Pursuant to the Hazardous Materials Transportation Act, PHMSA adopts regulations governing the transport of hazardous materials by rail, highway, air, and water. The PHMSA regulations are set forth in Chapter I of Subtitle B of Title 49 of the Code of Federal Regulations (CFR). The FRA enforces the requirements set forth in PHMSA regulations.
	National Transportation Safety Board (NTSB)	The National Transportation Safety Board (NTSB) is an independent federal agency. The NTSB reviews transportation accidents, including rail accidents, and makes recommendations to FRA and PHMSA for regulatory changes.
	The American Association of Railroads (AAR)	The American Association of Railroads (AAR) is an industry trade association that represents railroads, including the major freight railroads in the United States, Canada, and Mexico. AAR adopts standards for the design and construction of tank cars carried by its members. In some cases, these standards are more stringent than the requirements set forth in FRA or PHMSA regulations. In addition, USDOT’s predecessor delegated to AAR regulatory authority to approve the construction, alteration, repair, and conversion of tank cars and to certify facilities engaged in these activities.

State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs)

The SWRCB protects water quality in California by setting statewide policy. The SWRCB supports the nine RWQCBs, which, within their areas of jurisdiction, protect surface water and groundwater from pollutants discharged or threatened to be discharged to the waters of the state. For the majority of the San Francisco Bay Area, the San Francisco Bay RWQCB maintains jurisdiction within the subject basin. This protection is carried out by the RWQCB through the issuance and enforcement of National Pollutant Discharge Elimination System (NPDES) permits under the federal Clean Water Act, called Waste Discharge Requirements (WDRs), regulation of leaking underground storage tanks and contaminated properties through the Leaking Underground Storage Tank (LUST) and Site Cleanup programs respectively. USTs are regulated under Chapter 6.7 of the California Health and Safety Code and 23 CCR Chapter 16.

Department of Toxic Substances Control (DTSC)

DTSC is authorized by the USEPA to enforce and implement federal hazardous waste laws and regulations. In addition, DTSC generally acts as the lead agency for soil and groundwater cleanup projects that primarily affect public health (especially residential projects requiring environmental site mitigation), and establishes cleanup levels for subsurface contamination that are equal to, or more restrictive than, federal levels. The DTSC's principal cleanup authority is established under the Carpenter-Presley Tanner Hazardous Substance Account Act (HSAA; Cal. Health and Safety Code sections 25300–25395.45). Most State hazardous materials regulations are contained in Title 22 of the California Code of Regulations (CCR).

DTSC has established that “[it is the Department’s] goal that sites requiring response actions, where sensitive land uses are anticipated, be remediated to the degree that allows unrestricted use (DTSC, 2002).” The HSAA also expressly relies on the current and reasonably foreseeable future use of the site to establish cleanup standards, stating that risk assessments “shall include the development of reasonable maximum estimates of exposure for both current land use conditions and reasonably foreseeable future land use conditions at the site (DTSC, 2002; California Health and Safety Code Section 25356.1.5[d]).

DTSC has an established process for determining what land uses are foreseeable. This process, in general, refers to the municipality in which the site is located for guidance. The DTSC has stated:

“...local government will normally be the source of information about anticipated land uses. In cases where the future land use is relatively certain, the remedial action objective must reflect such land use. Conversely, where the future land use is less certain, a range of uses should be considered. Selection of cleanup levels must be based on consideration of public health and environmental risk, technical and cost limitations, and the performance and risk uncertainties inherent in all waste remediation efforts (DTSC, 2000).”

Certified Unified Program Agencies (CUPAs)

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and

emergency response programs (see below). The State agency partners involved in the Unified Program have the responsibility of setting program element standards, working with CalEPA on ensuring program consistency, and providing technical assistance to the CUPAs. The Unified Program Administration and Advisory Group (UPAAG) was created to foster effective working partnerships between local, State and federal agencies. The UPAAG's goals and objectives are listed in the UPAAG Strategic Plan. The six programs are:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention (CalARP) Program
- Underground Storage Tank Program
- Aboveground Petroleum Storage Act (APSA) Program
- Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs
- California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements

Along with the CalEPA agencies described above (SWRCB, DTSC, and RWQCBs), the following State agencies are involved with the Unified Program:

Governor's Office of Emergency Services (OES)

The Governor's Office of Emergency Services is responsible for providing technical assistance and evaluation of the Business Plan Program and the CalARP Program. Propane stored in quantities over 10,000 pounds is a regulated flammable substance under the CalARP program rules.

Office of the State Fire Marshal (OSFM) and California Fire Code

The Office of the State Fire Marshal is responsible for ensuring the implementation of the Hazardous Material Management Plans and the Hazardous Material Inventory Statement Programs. These programs tie in closely with the Business Plan Program. The State Fire Marshal is also responsible for approving the State Fire Code which is included in the California Building Standards Code, Title 24 California Code of Regulations. Chapter 61 of the California Fire Code covers regulations on the storage, handling and transportation of LPG. In addition, the 2019 California Fire Code adopts by reference the 2019 Edition of the National Fire Protection Association's NFPA 2 (Hydrogen Technologies Code), which provides fundamental safeguards for the generation, installation, storage, piping, use and handling of hydrogen in compressed gas or liquid form.

Hazardous Materials Transportation

The State has adopted federal DOT regulations for the intrastate movement of hazardous materials. State regulations are contained in Title 26 of the California Code of Regulations (CCR). In addition, the State of California regulates the transportation of hazardous waste originating in the state and passing through the state (26 CCR). Both regulatory programs apply in California. The two state agencies that have primary responsibility for enforcing federal and

state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans).

Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations in California. Because California has a federally-approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in Title 29 of the Code of Federal Regulations (CFR). Cal/OSHA standards are generally more stringent than federal regulations.

Cal/OSHA regulations (8 CCR) concerning the use of hazardous materials in the workplace require employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces hazard communication program regulations, which contain training and information requirements, including procedures for identifying and labeling hazardous substances, and communicating hazard information relating to hazardous substances and their handling. State laws, like federal laws, include special provisions for hazard communication to employees in research laboratories, including training in chemical work practices. Specific, more detailed training and monitoring is required for the use of carcinogens, ethylene oxide, lead, asbestos, and certain other chemicals listed in 29 CFR.

Cal/OSHA also regulates asbestos removal to ensure the health and safety of workers removing asbestos containing materials and also must be notified of asbestos abatement activities. Cal/OSHA also administers California's hazardous waste operations and emergency response (HAZWOPER) rules for general industry workplaces, which mirror federal rules, with additional requirements for training, safety and health plans, and personal protective equipment that are stricter than the federal rules (Title 8 CCR Section 5192).

Regional and Local

Bay Area Air Quality Management District (BAAQMD)

In the San Francisco Bay Area, the BAAQMD regulates airborne pollutants, including asbestos, particulate matter, toxic air contaminants, and volatile organic compounds through both regulations, permitting, inspection and law enforcement. The BAAQMD must be notified ten days in advance of any proposed demolition or abatement work.

Contra Costa Health Services (CCHS) Hazardous Materials Business Plan Program

The Hazardous Materials Business Plan Program is the means by which the CCHS oversees the regulatory programs for Hazardous Materials Business Plans. The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires that any business that handles hazardous materials prepare a business plan, which must include the following:

- Details, including floor plans, of the facility and business conducted at the site;
- An inventory of hazardous materials that are handled or stored on site;
- An emergency response plan; and
- A safety and emergency response training program for new employees with annual refresher courses.

Local Plans and Policies

Contra Costa County Airport Land Use Commission

The purpose of an Airport Land Use Commission (ALUC) is to conduct airport land use compatibility planning. ALUCs protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses. The statutes governing ALUCs are set forth in Division 9, Part 1, Chapter 4, Article 3.5, Sections 21670 – 21679.5 of the California Public Utilities Code (PUC).

Contra Costa County General Plan

Contra Costa County has established goals, policies, and programs in regards to hazardous materials, which are outlined in the Safety Element of the *Contra Costa County General Plan* ("General Plan") as follows:

- *Goal 10-I:* To provide public protection from hazards associated with the use, transport, treatment and disposal of hazardous substances.
- *Policy 10-62:* Storage of hazardous materials and wastes shall be strictly regulated.
- *Policy 10-63:* Secondary containment and periodic examination shall be required for all storage of toxic materials.

Contra Costa County Code

The ordinance code for Contra Costa County is current through Ordinance 2005-34 and the October, 2005 code update, and includes ordinances relating to Hazardous Materials Release Plans and Responses.

450-2.002 Purpose: Health and Safety Code Chapter 6.95 requires, among other things, that any business which handles a specified quantity of a hazardous material establish a business plan for emergency response to a release or threatened release of a hazardous material, which includes an inventory of hazardous materials handled by the business and report to the administering agency and the State Office of Emergency Services, occurrences of specified releases or threatened releases of hazardous materials.

The purpose of this division is to impose regulations in addition to Health and Safety Code Chapter 6.95, for the protection of the public and emergency rescue personnel in the

county and to facilitate implementation of said chapter, as authorized by Health and Safety Code Section 25500. (Ordinances. 88-74 § 2, 87-5 § 2)

4.7.4 Significance Criteria

According to Appendix G of the CEQA *Guidelines*, the Project would result in a significant effect on hazardous materials if it would:

- a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous material into the environment;
- c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school;
- d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to government code section 65962.5 and as a result, would create a significant hazard to the public or the environment;
- e) For a project within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport, or public use airport, the project would result in a safety hazard or excessive noise for people residing or working in the project area; or
- f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- g) Expose people or structures, either directly or indirectly, to a significant risk of loss or injury involving wildland fires.

Analysis Methodology

The following section identifies specific impacts pertaining to hazards or hazardous materials and assesses the change from the existing conditions. The impact analysis of the Project impacts is based on the significance criteria listed above.

Topics with No Impact or Otherwise Not Addressed in this EIR

Certain significance criteria do not apply to the Project and are not discussed further; the Project site is not located within 0.25 miles of a school (Criterion c); the Project site is not included on a list of hazardous materials sites (Criterion d); and the Project would not obstruct any existing access roads and therefore would not interfere with any emergency response or evacuation plans (Criterion f).

4.7.5 Impact Analysis

Routine Transport and Storage

Impact HAZ-1: The Project would use hazardous materials (i.e., solvents) onsite during construction that could be released to the environment through improper handling or storage. (Criterion a, in part) (*Potentially Significant prior to Mitigation*)

Construction activities would require the use of certain hazardous materials such as fuels, oils, solvents and glues. Inadvertent release of large quantities of these materials into the environment could adversely impact soil, surface waters, or groundwater quality. However, the onsite storage and/or use of large quantities of materials capable of impacting soil and groundwater are not typically required for a project of this proposed size and type. Regardless, as discussed in the Section 4.8, *Hydrology and Water Quality*, in this chapter, the Project would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) which would include best management practices (BMPs) that cover the methods to handle hazardous materials during construction. Implementation of these BMPs as described in the mitigation measure below, as well as compliance with federal, state, and local regulations, would reduce the potential impact to less than significant.

Mitigation Measure HAZ-1: The use of construction best management practices shall be implemented as part of construction to minimize the potential negative effects of accidental release of hazardous materials to groundwater and soils. These shall include the following:

- 1) Follow manufacturer's recommendations on use, storage and disposal of chemical products used in construction;
- 2) Avoid overtopping construction equipment fuel gas tanks;
- 3) During routine maintenance of construction equipment, properly contain and remove grease and oils; and
- 4) Properly dispose of discarded containers of fuels and other chemicals.

Significance after Mitigation: Less than Significant.

Accidental Upset - General

Impact HAZ-2: Project operations would generate general household and maintenance hazardous waste. (Criterion a, in part) (*Less than Significant, No Mitigation Required*)

The Project proposes to develop currently undeveloped land to accommodate 144 single-family residential units, dedicated open space and a neighborhood park. Residential land uses include the use, storage and disposal of a variety of household chemicals and hazardous materials. These materials would include familiar items such as limited quantities of fuels, solvents, toners, paints, lubricants, kitchen and restroom cleaners and other maintenance materials. Hazardous wastes

used in the residential or maintenance areas may include small quantities of lubricants or fuels used in maintaining personal resident's vehicles, pesticides or herbicides, solvents, paints and lubricants. These common consumer products would be used for the same purposes as in any residential setting. The types of hazardous materials generally handled in the residences typically constitute small quantities and the health effects associated with them are generally not as serious as industrial uses. Implementation of the Project would not cause an adverse effect on the environment with respect to the use, storage, or disposal of general household hazardous substances generated from proposed building uses and therefore the impact would be considered less than significant.

Mitigation: None required.

Accidental Upset - Pipelines

Impact HAZ-3: The Project would be developed where existing crude oil pipelines transect the Project site, which could present a hazard to the public or environment in the event of accidental upset. (Criterion b, in part) (Potentially Significant prior to Mitigation)

The Project site includes a wedge shaped parcel on the eastern boundary of the Project site which is crossed by five gas pipelines that carry a variety of petroleum products, including crude oil and its refined products, such as gasoline and diesel. The five pipelines are operated by Chevron, Santa Fe Pacific Partners L.P. ("SFPP") (two pipelines), Kinder Morgan Energy Partners, L.P. ("KMP"), and Crimson-Chevron KLM ("KLM"). In the event of failure of the pipeline within the vicinity of the Project site, there could be a hazard to the public or environment from an inadvertent release of crude oil. While the transfer of bulk hazardous materials through underground pipelines is generally considered to be the safest means possible (CCCCDD, 2005), According to a risk assessment conducted for the Chevron crude oil pipeline, the frequency of unintentional releases for all spills, regardless of volume, is estimated to be 2.88 per 1,000 mile-years. For the 1.6-mile segment between KLM and the Valero refinery, the frequency of release is every 217 years, a majority of which would be very small (CCCCDD, 2005). Historical data indicates that the likelihood of a release from a crude oil pipeline resulting in fire is low. Between 2002 and 2004, out of a total of 483 releases meeting U.S. DOT reporting criteria, two releases from crude oil pipelines resulted in explosions, and six resulted in fires (CCCCDD, 2005). Over the past 20 years (2000-2019), serious incidents from pipelines across the country have been on a declining trend (USDOT, 2020).

The analysis and modeling conducted for the entire pipeline determined that the ratio of site casualties to societal risk was 0.09, which is substantially less than the significant threshold of 1.0 (Quest, 2008). Therefore, the risk of an unintentional release occurring on or near the Project site, which represents a much smaller segment of the total pipeline than the length analyzed for the Chevron pipeline, would be even less. In addition, a risk assessment was conducted for the Seal Island Estates development located just north of the Project site, along Seal Island Drive, which is also immediately adjacent to the existing petroleum pipelines. The findings of the assessment

concluded that, with conservative assumptions, the level of risk was substantially less than one in one million and therefore determined to be acceptable (Quest, 2008). Therefore, the potential for the Project to create a significant hazard in the event of accidental upset due to its proximity to existing pipelines is less than significant.

In addition, the preliminary proposed grading plan calls for placement of fill and excavation over the existing pipelines, beneath or in close proximity to Central Avenue, which generally defines the northeast edge of the proposed development area (Milestone, 2020). Proposed elevating and widening of Central Avenue is currently anticipated to involve up to 17 feet of additional fill and up to 3.5 feet of excavation. If not engineered appropriately, these construction activities could cause excessive stresses on these pipelines which were not originally designed for this grading scenario. However, a recent geotechnical evaluation of the fill placement provided a preliminary conclusion that the proposed grading would not damage the pipelines (Milestone, 2020; Chen, 2020). This conclusion, however, is predicated on preliminary subsurface data and the report determined that a final design level design-level engineering analysis based on supplemental subsurface investigations would be necessary to verify the geotechnical conditions relative to pipeline locations to verify pipeline safety (Milestone, 2020; Chen, 2020). The conclusions and recommendations of the Milestone report are reflected in **Mitigation Measure HAZ-2**. Abiding by the analyses and conclusions of the Milestone 2020 report, which were developed using a conservative methodology, will reduce the risk of damage to the pipelines. Furthermore, incorporating geotechnical measures (e.g. use of lightweight fill, protection barriers, etc.) could be implemented to further reduce risk of damage to the pipelines. A design-level geotechnical report that would include the engineering analysis for pipeline safety would be required for the proposed project by **Mitigation Measure GEO-2**.

With implementation of this mitigation measures, the potential impact related to pipeline safety from grading changes would be less than significant.

Mitigation Measure HAZ-2: The Project shall ensure the following fill and excavation parameters are met to reduce the risk of damage to pipelines:

- 1) Before the commencement of any grading activities, the tops of the five pipelines shall be accurately located on site, and confirmed to be a minimum of 6 feet below the existing ground surface. If it is determined that the any pipeline top is less than six feet below the surface, and will be at risk of impact during proposed grading excavation, one of the following additional safety measures shall be undertaken: deepening the pipeline, providing mechanical protection such as steel or concrete barriers, or elevating the proposed final road elevation.
- 2) Maximum fill heights over the Santa Fe Pacific Partners L.P. (“SFPP”); Kinder Morgan Energy Partners, L.P (“KMP”); and Crimson-Chevron KLM (“KLM”) and Chevron pipelines shall exert a calculated stress of more than what the pipelines can safely tolerate, as determined by a professional engineer in accord with applicable industry standards and safety regulations based on observed pipe material and other factors
- 3) Prior to final design and construction, a refined analysis of field determined bay mud thickness and bay mud consolidation properties shall be conducted. Though not

anticipated, if bay mud is found to exert a calculated stress of more than what the pipeline can safely tolerate, as determined by a professional engineer in accord with applicable industry standards and safety regulations based on observed pipe material and other factors, then one or both of the following additional safety measures shall be undertaken: reduce proposed fill thickness or use lightweight fill such as cellular concrete or Geofam encasement (or its equivalent).

- 4) The as-built burial depths of the pipelines and the final proposed subgrade elevations shall result in all pipelines having a minimum burial depth in accord with prevailing regulatory code or pipe owner requirement, whichever is more stringent. If any pipeline does not have a cover in accordance with regulatory minimums, one of the following additional safety measures shall be undertaken: deepening the pipeline, providing mechanical protection such as steel or concrete barriers, or elevating the proposed final road elevation.

Significance after Mitigation: Less than Significant.

Airport Hazard

Impact HAZ-4: The Project site is within the Contra Costa County Airport Land Use Plan and the Buchanan Field Airport Influence Area, and could result in a safety hazard or excessive noise for people residing in the area. (Criterion e) (*Less than Significant, No Mitigation Required*)

The Project site is located approximately 1.3 miles northwest of the Buchanan Field Airport. Also, the Project site is located within the Buchanan Field Airport Influence Area, but is not located within a safety zone or within a composite noise contour as depicted in the Contra Costa County Airport Land Use Compatibility Plans. Prior to Project approval by the County, the proposed Project would be required to submit proposed Project plans to the ALUC to assess whether the development is compatible with the *Contra Costa County Airport Land Use Compatibility Plan*, as discussed in Section 4.9, *Land Use and Planning*, in this chapter. The proposed Project would not result in a safety hazard for people residing in the area and impacts would be less than significant.

Mitigation: None required.

Wildland Fires

Impact HAZ-5: The Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. (Criterion g.) (*Less than Significant, No Mitigation Required*)

The proposed Project is located in an area determined by ABAG to be a wildland urban interface fire threatened area. The Project site is currently undeveloped land and includes a prominent hill towards the western boundary of the site with the majority of the Project site sloping off to the east. Vegetation includes some trees, but is mostly covered by grasses and weeds. Pondered areas and wetlands cover the easterly portions of the Project site. However, the Project is located in an urbanized area and is surrounded by residential and industrial development.

Parts of the Project site currently show signs of illegal motocross activity that poses a fire threat from vehicles traveling over dry vegetation, where hot undercarriages could ignite grass, and improperly discarded smoking materials. The Project proposes development of single-family homes with a 3.8-acre neighborhood park, two open space parcels, and retention of the hilltop, which would remove the areas where illegal use has occurred. Additionally, the proposed Project would comply with regulations in the Fire Code to provide adequate emergency access. Further, the Project site mapped in a non “Very High Fire Hazard Severity Zone” (VHFHSZ) by CAL FIRE (Local Responsibility Area); the nearest VHFWSZ is located more than 2.5 miles west of the Project site. Therefore, any impact regarding exposure or structures to a significant risk of loss, injury or death involving wildland fires would be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact C-HAZ-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts related to hazards and hazardous materials to which the Project would have a cumulatively considerable contribution. (All Criteria) (*Less than Significant, No Mitigation Required*)

Geographic Context

The cumulative geographic context for hazardous materials for the Project consists of the Project site and its immediately adjacent area. This is because impacts relative to hazards and hazardous materials are typically local or site-specific and depend on the nature and extent of the hazardous materials release and existing and future soil and groundwater conditions. For example, hazardous materials incidents tend to be limited to a smaller more localized area surrounding the immediate spill location and extent of the release, and could only be cumulative if two or more hazardous materials releases spatially overlapped.

Cumulative Analysis

Implementation of the Project, combined with cumulative past, present and other reasonably foreseeable development in the vicinity, as specified in Section 4.0, *Introduction to the Environmental Analysis* (4.0.6, Cumulative Analysis), could result in potentially significant project-level hazardous material impacts related to construction activities. The Project development, with implementation of the identified Mitigation Measures HAZ-1 and HAZ-2, in addition to Mitigation Measure GEO-2, however, would ensure the Project would make no considerable contribution to a cumulative impact to the public or the environment within the vicinity of the Project site.

Other foreseeable development within the area would increase the number of people in proximity to these uses, thereby increasing their risk of exposure. However, the potential for accidental upset during construction and the handling of limited quantities of hazardous materials associated with residential use, and the potential release of hazardous materials associated with heavy industry and other land uses requiring the use, transport, and storage of those materials (including railways and pipelines) would be required to comply with its applicable regulatory framework. This includes federal and State regulatory requirements for transporting hazardous materials or cargo (including fuel and other materials used in all motor vehicles) on public roads (Cal EPA and Caltrans) or disposing of hazardous materials (Cal EPA, DTSC, Contra Costa County). Overall, the contribution from the proposed Project to any cumulative hazardous materials impact would not be considerable. Therefore, the proposed Project's potential to contribute to a significant cumulative hazardous materials effect in the County would not be cumulatively considerable. The impact would be less than significant.

Mitigation: None required.

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4.8 Hydrology and Water Quality

4.8.1 Introduction

This section describes the existing hydrology and water quality conditions in the Project area and applicable federal, State and local regulations. This section also discusses potential Project-related impacts to surface water and groundwater resources, including water quality, flooding and stormwater runoff. The analysis is based on a review of existing conditions, current regulatory requirements, and the *Stormwater Control Plan* and dated May 29, 2020 (Balance, 2020).

4.8.2 Environmental Setting

Regional Setting

The Project site lies in Suisun Basin in the San Francisco Bay hydrologic region. The San Francisco Bay estuarine system conveys the waters of the Sacramento and San Joaquin rivers into the Pacific Ocean. The two rivers enter the San Francisco Bay estuary through the Sacramento-San Joaquin Delta (“Delta”) at the eastern end of Suisun Bay. The San Francisco Bay marks a natural topographic separation between the northern and southern coastal mountain ranges. The Suisun Basin is bounded by San Pablo Basin to the northwest, South Bay basin to the west and Central Basin to the south. Flows in the region are highly seasonal with greater than 90 percent of annual runoff occurring during rainy season between November and April (RWQCB, 2017). The topography of the area consists of gentle sloping lowlands ranging in elevation from sea level to 300 feet. The floor of the valley slopes gently to the northwest. Average annual precipitation in the basin ranges from 17 to 21 inches increasing from east to west (DWR, 2004).

Project Site Setting

Hydrology

The approximately 78.3-acre-Project site lies in the Walnut Creek watershed near the City of Martinez (Oakland Museum of California, 2009). The site is located south of Central Avenue, north of the Burlington Northern Santa Fe Railroad (BNSF) Railway tracks and west of Pacheco Creek in the Vinehill/Pacheco Boulevard area of unincorporated Contra Costa County. The Acme landfill property is located east and downhill of the Project site separated by an unpaved portion of Central Avenue. Interstate 680 (I-680) and the Contra Costa Canal (“Canal”) are located southwest of the site. The 48-mile Canal delivers water from the Delta to the Contra Costa Water District’s (CCWD) treatment facilities and raw-water customers. The Canal starts at Rock Slough in East Contra Costa County, ends at the Terminal Reservoir in Martinez, and traverses along Pacheco Boulevard abutting the western boundary of the Project site at the lower end of the hill.

The Project site has a hilly topography with elevations ranging from approximately 283 feet in the western portion to approximately 4 feet above mean sea level in the southern and eastern portions. The site drains into Pacheco Creek on the eastern side, which receives flows from Walnut and Grayson Creeks and flows north into Suisun Bay. The Project site is undeveloped and

covered with seasonal grasses. The site is characterized by poorly draining soils and steep slopes, with marshy areas on the southern and eastern areas adjacent to the Pacheco Creek. The low permeability of clay soils at the site allows for lesser infiltration. Runoff from adjacent sites, mainly from between Palms Drive and Central Avenue, drains into the Project site, which flows into Pacheco Creek (Balance, 2020).

Groundwater

The Project area is underlain by the Ygnacio Valley Groundwater Basin which is bounded by Suisun Bay on the north, I-680 on the west, Clayton Valley Groundwater Basin on the east, and city of Walnut Creek on the south. The water bearing units of the basin are Quaternary Alluvium and Alluvial valley fill deposits. The combined thickness of these deposits exceeds 700 feet. Hydrographs created from California Department of Water Resources (DWR) well data in the Ygnacio Valley Groundwater Basin indicate that groundwater levels have declined gradually over the period of record. The depth to groundwater is generally greatest in summer months and shallowest in winter months. No published data on groundwater storage capacity is found (DWR, 2004). Based on the groundwater level data in the Ygnacio Valley basin, subsurface water levels occur at up to 10 feet below ground surface (DWR, 2008). The highest groundwater level encountered in the Project area was at 3 feet below ground surface (Balance 2020).

Flooding

The Federal Emergency Management Agency (FEMA) oversees the National Flood Insurance Program and establishes development standards. The County's Public Works Department is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year (also termed the 100-year floodplain). The majority of the Project site lies outside the 100-year floodplain and within an area designated as Zone X, which is an area of minimal flooding (FEMA, 2017). (See Figure 4.8-2 provided in Impact HYD-4 in section 4.8.5, *Impact Analysis*, in this section.) However, the south and southeastern portion of the site (mostly the lower marsh area which will not be developed) is located within Zone A which is the 100-year flood zone associated with Pacheco Creek (Balance, 2020). The Contra Costa County Flood Control District (CCCFCD) owns, in fee title, the section of Pacheco Creek by Central Avenue. To maintain CCCFCD legal and physical access to Pacheco Creek, the Project sponsor will be required to construct an adequate maintenance road and offer, by separate instrument, an access easement to the CCCFCD. The Project sponsor will also be required to obtain an approval or a permit from the CCCFCD for constructing sections of maintenance roads and bioretention outfall structure within CCCFCD fee title right of way.

Sea Level Rise

Greenhouse effect is a phenomenon that is projected to cause a rise in sea level over the next century, creating flooding issues. The anticipated rise is believed to be caused by warming of the global climate due to increase in concentrations of gases such as carbon dioxide and methane in the atmosphere, which results from activities such as burning of fossil fuel and deforestation.

4.8.3 Regulatory Setting

Federal

Clean Water Act

The federal Clean Water Act (CWA) and amendments, under the enforcement authority of the U.S. EPA, was enacted to restore and maintain the chemical, physical and biological integrity of the Nation's waters. The CWA granted the U.S. EPA with the authority to implement pollution control programs. The National Pollution Discharge Elimination System (NPDES) permit program under Section 402(p) of the CWA regulates sources that discharge pollutants into the waters of the United States. In general, implementation of the NPDES permit program has been delegated to individual states. California has an approved state NPDES program, which is administered by the State Water Resources Control Board (SWRCB). The SWRCB has 9 regional water quality control boards (RWQCBs). The San Francisco Bay RWQCB regulates water quality in the Project area.

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are impaired. Impaired water bodies refer to water bodies that do not meet one or more water quality standards established by the state. Once a water body or segment is listed, the state is required to establish a Total Maximum Daily Load (TMDL) for the identified pollutant. The TMDL is the quantity of a pollutant that can be assimilated by a water body without violating water quality standards. Carquinez Strait, Suisun Bay and Sacramento-San Joaquin River Delta in the region are included on the 303(d) list. Carquinez Strait and the Delta are listed for chlordane, DDT¹, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, PCBs¹ and selenium. Suisun Bay is listed for all the aforementioned constituents and nickel (RWQCB, 2006).

National Pollutant Discharge Elimination System

The NPDES program under the CWA prohibits discharges into navigable waters except for discharges that are in compliance with specified requirements and authorizations. In California, the U.S. EPA has delegated the implementation of this program to the SWRCB and to the RWQCBs (San Francisco Bay RWQCB in the Project area).

The NPDES permits include municipal stormwater permits that regulate stormwater runoff from short-term construction activities and in the long term during the life of a project. Stormwater from construction activities is regulated under the statewide General Construction Permit and long term stormwater runoff from projects (e.g., developments) is regulated on the local level (both permits are discussed below in the state and local sections, respectively).

¹ DDT = Dichloro-diphenyl-trichloroethane, PCBs = Polychlorinated biphenyls

State of California

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act, Division 7 of the California Water Code, provides the basis for water quality regulation within California. The Act allows the SWRCB to adopt statewide water control plans or basin plans. The plans establish water quality objectives for water bodies within the state. The San Francisco Bay RWQCB developed the *San Francisco Bay Basin Plan* in 1995, last amended in 2017, which established water quality objectives, implementation programs to meet the stated objectives and to protect the beneficial uses of the San Francisco Bay waters (see *Basin Plan* below). The Act also authorizes the NPDES program under the CWA.

General Construction Permit

Construction activities on one acre or more are subject to the requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). The SWRCB established the General Construction Permit for the purpose of reducing impacts to surface waters that may occur due to construction activities. The Project would involve construction over more than one acre of land, therefore would be subject to the General Construction Permit.

The Project sponsor would be required to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP is prepared before Project construction begins and it includes specifications for best management practices (BMPs) that would be implemented during construction. BMPs are measures undertaken to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. Additionally, the SWPPP describes measures to prevent or control runoff after construction is complete and identifies procedures for inspecting and maintaining facilities or other Project elements. Required elements of a SWPPP include:

1. Site description addressing the elements and characteristics specific to the site,
2. Descriptions of BMPs for erosion and sediment control,
3. BMPs for construction waste handling and disposal,
4. Implementation of approved local plans,
5. Proposed post-construction controls and
6. Non-stormwater management.

The *California Storm Water Best Management Practice Handbook* (Storm Water Quality Task Force, 2003) provides a detailed list of BMPs that can be included in the SWPPP to effectively reduce degradation of surface waters to an acceptable level. Examples of typical construction BMPs include scheduling or limiting activities to certain times of the year, installing sediment barriers such as silt fence and fiber rolls, maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site and

developing and implementing a spill prevention and cleanup plan. Non-stormwater management includes installing specific discharge controls during activities such as paving operations and vehicle and equipment washing and fueling.

Dewatering Permit

Construction activities such as excavation and trenching in areas with shallow groundwater would require dewatering, which would be subject to the SWRCB construction dewatering permit requirements. Dewatering operations are regulated under State requirements for stormwater pollution prevention and control. Discharge of non-stormwater from a trench or excavation that contains sediments or other pollutants to sanitary sewer, storm drain systems, creek bed (even if dry), or receiving waters is prohibited. Discharge of uncontaminated groundwater from dewatering is a conditionally exempted discharge by the RWQCB. However, the removed water could potentially be contaminated with chemicals released from construction equipment or sediments from excavation. Therefore, disposal of dewatering discharge would require permits either from the RWQCB for discharge to surface creeks and groundwater or from local agencies for discharge to storm or sanitary sewers.

The SWRCB lists non-stormwater discharge controls specifically for dewatering operations (SWRCB, 2003). The control measures would be implemented by the Project sponsor during construction activities at the Project site. Discharge of water resulting from dewatering operations would require an NPDES Permit, or a waiver (exemption) from the RWQCB, which would establish discharge limitations for specific chemicals (if they occur in the dewatering flows).

Local Plans and Regulations

Basin Plan

The San Francisco Bay RWQCB prepared the *San Francisco Bay Water Quality Control Plan* (Basin Plan) (2017) that contains descriptions of the legal, technical and programmatic bases of water quality regulation in the region. The Basin Plan describes beneficial uses of major surface waters and their tributaries. The RWQCB is responsible for protecting the beneficial uses listed for the water bodies. **Table 4.8-1** lists the beneficial uses for Suisun Bay, Carquinez Strait and the Delta provided in the Basin Plan.

Contra Costa Clean Water Program

The Contra Costa County Clean Water Program (CCCWP) is a cooperative entity formed of Contra Costa County, the Contra Costa Flood Control & Water Conservation District and 16 incorporated cities. The San Francisco Bay RWQCB issued the Municipal Regional NPDES Permit CAS612008, Order No. R2-2015-049 in November 2015 and amended by Order No R2-2019-0004. The RWQCB mandated that the municipalities (or co-permittees; Contra Costa County in this case) impose new, more stringent requirements to control runoff from development projects within their jurisdiction.

**TABLE 4.8-1
 BENEFICIAL USES OF WATER BODIES IN PROJECT AREA**

Beneficial Uses	Water Bodies		
	Suisun Bay	Carquinez Strait	Sacramento-San Joaquin Delta
Agricultural Supply			✓
Municipal and Domestic Supply			✓
Freshwater Replenishment			✓
Groundwater Recharge			✓
Industrial Service Supply	✓	✓	✓
Industrial Process Supply		✓	✓
Ocean, Commercial and Sport Fishing	✓	✓	✓
Estuarine Habitat	✓	✓	✓
Fish Migration	✓	✓	✓
Preservation of Rare and Endangered Species	✓	✓	✓
Fish Spawning	✓	✓	✓
Wildlife Habitat	✓	✓	✓
Water Contact and Noncontact Water Recreation	✓	✓	✓
Navigation	✓	✓	✓

SOURCE: RWQCB, 2017.

The RWQCB added Provision C.3 in the permit that requires the Cities and the County to implement BMPs to reduce pollutants in stormwater discharges to the maximum extent practicable standard and establishes specific thresholds and criteria. The C.3 requirements are not only intended to reduce short-term construction-related stormwater runoff and resultant pollution but they are also intended to reduce the long-term adverse effects by requiring permanent runoff control measures as a part of development projects in part to mitigate potential cumulative impacts from increased flow from new developments.

The Project sponsor would be required to implement treatment and source control measures, runoff flow control and site design/landscape characteristics as feasible, which maximize infiltration (where appropriate), provide retention or detention, slow runoff and minimize impervious land coverage, so that post-development pollutant loads from the site have been reduced to the maximum extent possible. Because it would discharge directly to one or more water bodies listed as impaired (under section 303[d] of CWA), the Project must ensure that post-Project runoff does not exceed pre-Project levels for such pollutants through implementation of the control measures addressed in the C.3 provision, to the maximum extent practicable. In addition, the Project sponsor must prepare operation and maintenance plans and execute agreements, in this case with the home owners, to ensure that the stormwater treatment devices are maintained in perpetuity.

In compliance with C.3 requirements the Project sponsor must submit a Stormwater Control Plan in accordance with the CCCWP Stormwater C.3 Guidebook most recently updated on June 21, 2017. This requirement is in addition to the erosion and sediment control and pollution prevention measures required during construction. The Stormwater Control Plan must identify potential sources of stormwater pollutants in the development and corresponding BMPs for each potential source. The Project would be required to ensure that stormwater runoff does not exceed pre-Project peaks and durations. A Stormwater Control Plan has been prepared for the Project, dated May 29, 2020.

Contra Costa County General Plan

The *Contra Costa County General Plan* (“General Plan”), Safety Element, lists the following goals and policies concerning hydrology and water quality that would be applicable to the Project.

- *Goal 8-T:* To conserve, enhance and manage water resources, protect their quality and assure an adequate long-term supply of water for domestic, fishing, industrial and agricultural use.
- *Policy 8-74:* Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.

Public Facilities / Services Element

- *Policy 7-23:* The County shall cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.
- *Policy 7-26:* The need for water system improvements shall be reduced by encouraging new development to incorporate water conservation measures to decrease peak water use.
- *Policy 7-45:* On-site water control shall be required of major new developments so that no significant increase in peak flows occurs compared to the site’s predevelopment condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts expected from the development or the project in implementing an adopted drainage plan.
- *Policy 7-55:* As appropriate and to the extent allowed by law, assess all new development projects at least \$0.35 per square foot of impervious surface created. This drainage fee is to be collected through existing County Flood Control drainage area fee ordinances, newly adopted drainage area fee ordinances, existing and new assessment districts, or other financial entities. The fee may be applied to the cost of any developer-sponsored regional flood control improvements on- or off-site which mitigate the project’s flooding impacts. Regional facilities are defined as systems sized to handle at least 15 cubic feet per second and suitable for public agency maintenance, i.e., 24-inch diameter and larger storm drains.

General Water Resources Policies

- *Policy 8-75:* Preserve and enhance the quality of surface and groundwater resources.

Policies for New Development Along Natural Watercourses

- *Policy 8-23:* Runoff of pollutants and siltation into marsh and wetland areas from outfalls serving nearby urban development shall be discouraged. Where permitted, development plans

shall be designed in such a manner that no such pollutants and siltation will significantly adversely affect the value or function of wetlands.

- *Policy 8-87:* Onsite water control shall be required of major new developments so that no increase in peak flows occurs relative to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.
- *Policy 8-91:* Grading, filling and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.
- *Policy 8-94.* Applications to expand marine uses shall be carefully evaluated to ensure that a gain, not a loss, of any associated riparian vegetation will result. Runoff of pollutants into marsh and wetland areas from nearby urban development, should be prevented by prohibiting any storm sewer outflow pipe in such areas and by requiring berm or gutter structures at the outer boundary of the buffer zones which would divert runoff to sewer systems for transport out of the area.

Contra Costa County Stormwater Drainage and Flood Control

The CCCFCD has developed regional drainage plans to guide developers in the implementation of new drainage systems serving development and to provide the basis for local and federal flood control projects. Local drainage infrastructure is provided by the developers as part of the land development process, as in the case of the Project (Contra Costa County, 2005). Any adverse increase in stormwater runoff from the proposed development would be required to be mitigated. A portion of the Project site lies within a formed drainage area, and therefore would be required to meet the collect and convey requirements of the County subdivision ordinance and comply with drainage requirements as Project approval conditions.

In compliance with the National Flood Insurance Program (NFIP), Contra Costa County adopted a Floodplain Management Ordinance. This Ordinance requires that the lowest floor, including basement, for all new structures or substantial improvements to existing structures within a SFHA shall be elevated one to two feet above the 100-year Base Flood Elevation (BFE) for that area.

Contra Costa County Code and Ordinances

Division 914 under Title 9, Subdivisions of the Contra Costa Code, lists requirements for onsite and offsite stormwater collection and conveyance of stormwater from the subdivision and minimum capacities to which the drainage facilities should be designed. For example, the Project would involve construction of “minor drainage facilities” (i.e., those serving a watershed area less than 1 square mile) therefore the facilities should have the capacity with sufficient freeboard to contain a 10-year frequency of average recurrence interval runoff. The Code restricts stormwater disposal into the County water conveyance facilities and requires protection of natural watercourses.

The Code states that before a protected watercourse (Pacheco Creek in this case) may be utilized for discharge of drainage flowing through or from a subdivision, the watercourse’s capacity and

stability shall be substantiated through hydraulic calculations performed by a licensed engineer. Design flow volumes in excess of the watercourse's reasonable capacity shall be conveyed around the protected watercourse or shall be detained in adequate detention basins meeting the requirements of Chapter 914-12. Flow velocities in excess of those permitted by Section 914-6.202 shall be attenuated using environmentally-sensitive techniques approved by the public works department.

Division 1014 under Title 10 discusses stormwater management and discharge control in compliance with the C.3 requirements in the NPDES permit (discussed above) that would apply to the Project. The ordinance requires preparation, review and approval of a Stormwater Control Plan in compliance with the *Stormwater C.3 Guidebook*.

Chapter 74 under Title 7, Building Regulations, describes the requirement of a drainage plan that would apply to the Project. A drainage plan must include the following site information:

- a) Flow lines of surface and subsurface waters onto and off of the site;
- b) Existing and finished contours, at two-foot intervals;
- c) The location of any existing buildings, structures or improvements on the property where the work is to be performed and on adjacent lots;
- d) Sufficient information to demonstrate compliance with Chapters 816-4 (slope and hillside development) and 816-6 (protection of trees);
- e) The location of all existing natural and man-made drainage facilities for the storage or conveyance of runoff, including drainage swales, ditches, culverts and berms, sumps, sediment basins, channels, ponds, storm drains and drop inlets serving the site.

The drainage information must include the following:

- a) The location of all proposed natural and man-made drainage facilities for the storage or conveyance of runoff, including drainage swales, ditches, culverts and berms, sumps, sediment basins, channels, ponds, storm drains and drop inlets;
- b) All surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be built with or as a part of the proposed construction;
- c) Hydraulic calculations that show the flow-carrying capacities of proposed conveyance devices and justify the estimated runoff of the area served by any proposed conveyance device; and
- d) Discharges and velocities of proposed conveyance devices and storage volumes of any sumps, ponds or sediment basins.

The Project is located within Drainage Area 57, for which a drainage fee is due in accordance with Flood Control Ordinance Number 88-86. By ordinance, all building permits or subdivision maps filed in this area are subject to the provisions of the drainage fee ordinance. Effective January 1, 2017, the current fee in this drainage area is \$0.35 per square foot of newly created impervious surface. The drainage area fee for this lot should be collected prior to filing the final map.

4.8.4 Significance Criteria

Based on the Appendix G of the CEQA *Guidelines*, implementation of the Project would have a significant impact if it would:

- 1) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;
- 2) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
- 3) 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 that would:
 - a) result in substantial erosion or siltation on- or off-site;
 - b) substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
 - c) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide additional sources of polluted runoff; or
 - d) Impede or redirect flood flows.
- 4) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation;
- 5) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan;

Analysis Methodology

The following section identifies specific impacts pertaining to hydrology and water quality and assesses the change from the existing conditions. The approach to the analysis is based on site-specific conditions and the Project-specific Stormwater Control Plan (Balance, 2020) relevant to the changes to hydrologic conditions addressed by the significance criteria under CEQA. The analysis also considers general conditions established for the Project site and vicinity, as documented in several sources discussed in the *Environmental Setting* and *Regulatory Setting* in this section (e.g., RWQCP, DWR, CCWD Contra Costa County Public Works Department and CCCFCD).

Topics with No Impact or Otherwise Not Addressed in this EIR

Impacts in this section are analyzed based upon the significance criteria listed above and by assessing the change in the existing conditions resulting from the Project. The following impacts were considered in this section but were found to be absent from or not applicable to the Project and therefore no further discussion of these impacts is provided:

Other than the change in drainage patterns as a result of development of the Project site (discussed in Impact HYD-4 under *Impact Analysis* below, the Project would not include any other sources of discharge that could degrade water quality (part of **Criterion 1**).

Regarding the potential for release of pollutants due to inundation by floods, tsunamis, seiche, or mud flow (**Criterion 4**), the Project site is located outside of any identified flood zone hazard area and more than 25 miles inland of the Pacific Ocean. The influence of an ocean-borne tsunami wave would dissipate prior to reaching the Project site, because of the distance of the site from the Golden Gate in San Francisco Bay. Seiches form in enclosed bodies of water. The risk from seiche is considered minimal because there are no enclosed water bodies in the immediate vicinity. The risk from mud flow is negligible because it was not identified as a potential risk based soils investigations. The Project would not be subject to any release of pollutants due to inundation by floods, tsunamis, seiche, or mud flow and it is not discussed further.

As discussed in Section 4.0, *Introduction to the Environmental Analysis*, of this chapter, CEQA requires only the analysis of potential adverse effects of the project on the environment, however, this analysis of hydrology addresses includes considerations of potential effects of the environment on the project. Also, the County's approach to the analysis conservatively identifies certain mitigation measures that are also existing local or State regulatory requirements to which the Project is required to comply, regardless of environmental effects.

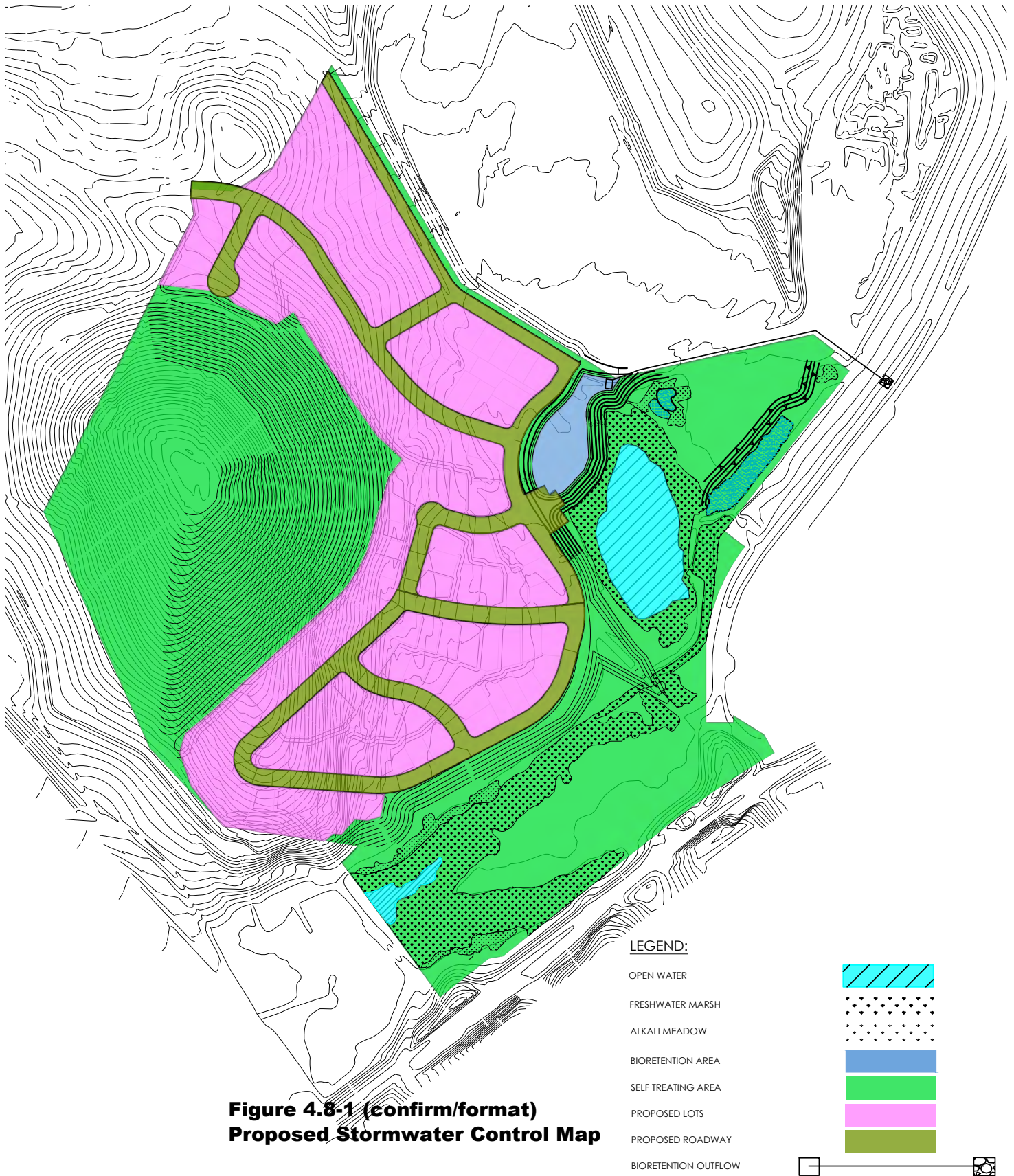
4.8.5 Impact Analysis

Stormwater Quality

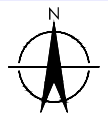
Impact HYD-1: The Project could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces, but would not violate any water quality standards or waste discharge requirements. (Criterion 1)
(Potentially Significant prior to Mitigation)

Project construction would develop approximately 31.8 acres of the 78.3-acre Project site for building 144 single-family homes and access roads. Approximately 20.1 acres would be utilized for open undeveloped area on the hilltop, and 19.9 acres would be preserved as marsh and overflow open space area, and a new park on the southern portion of the Project site as well as construction of a new 2 acre stormwater treatment basin. Construction activities would involve extensive grading to reconfigure the existing slopes through excavation of materials in the upper regions and infill to the lower regions of the site, as shown in **Figure 4.8-1, Proposed Stormwater Control Plan**. These activities would generate loose, erodible soils that, if not properly managed, could be washed into surface water by rain or by water used during grading operations. Soil erosion could cause excess sediment loads and affect the water quality of the receiving waters (i.e., Pacheco Creek). Construction activities would involve use of fuel and other chemicals that if not managed properly could be washed off into the stormwater resulting in an adverse water quality impact.

Due to the sloping terrain and proximity to the Pacheco Creek and the marshy areas on the east and south, erosion and chemical use would threaten the water quality of the creek. However, the Project would be subject to the NPDES General Construction Permit requirements. Therefore, the Project sponsor would prepare a SWPPP along with a Notice of Intent prior to construction. Implementation of the SWPPP would begin with the commencement of construction and continue through the completion of the Project.



**Figure 4.8-1 (confirm/format)
Proposed Stormwater Control Map**



At a minimum, the SWPPP would include a description of construction materials, practices and equipment storage and maintenance, a list of pollutants likely to contact stormwater, site specific erosion and sedimentation control practices, list of provisions to eliminate or reduce discharge of materials to stormwater and BMPs for fuel and equipment storage. The Project sponsor would develop and implement a monitoring program as required under the General Construction Permit. The Project sponsor would require the contractor to conduct inspections of the construction site prior to anticipated storm events and after the actual storm events. During extended storm events, inspections would be conducted after every 24-hour period. In addition, Project construction would be required to implement Mitigation Measure BIO-6a which requires implementation of wetland avoidance measures to protect water quality of existing wetlands.

The goals of these inspections are:

- 1) to identify areas contributing to stormwater discharge,
- 2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate and properly installed and functioning in accordance with the General Construction Permit and
- 3) to evaluate whether additional control practices or corrective maintenance activities are needed.

Equipment, materials and workers would be available for rapid response to spills and/or emergencies. All corrective maintenance or BMPs would be performed as soon as possible, depending upon worker safety. Upon Project completion, the Project sponsor would submit a Notice of Termination to the RWQCB.

In addition, the Project sponsor would prepare, submit and implement an approved drainage plan for the Project. The drainage plan would include all the elements required under the Contra Costa County Code in compliance with the NPDES stormwater permit including the Provision C.3 drainage control requirements. In compliance with the Building Regulations of the County Code, all grading and cut/fill work would be performed under the inspection of a civil engineer or a soils engineer. The Project sponsor would comply with the regular development requirements such as notifying the County building official for site inspection during the following three stages:

- 1) *Initial*: When the site has been cleared of vegetation and unapproved fill and has been scarified, benched or otherwise prepared and before any fill is placed;
- 2) *Rough*: When rough grading has been completed and approximate final elevations have been established; drainage terraces, swales and other drainage devices graded ready for paving; and
- 3) *Final*: When work has been completed, all drainage devices, systems and facilities installed and slope planting has been established.

The Project sponsor would comply with the applicable building regulations (Title 7 of the County Code) associated with excavations, fills, drainage and erosion control and would be responsible

for assuring compliance with the approved development plans and with the requirements of the building division that include the following:

- *Compliance with plans and Building Division:* Carry out the proposed work only in accordance with the approved plans and specifications and in compliance with all the requirements of this division.
- *Inspections:* In performing regular development work, notify the County building official at least one working day in advance so that the inspections can be made.
- *Protection of Utilities:* Prevent damage to any public utilities or services during grading operations and
- *Temporary Erosion Control:* Install and maintain precautionary measures necessary to protect adjacent watercourses and public or private property from damage by erosion, flooding and deposition of mud or debris originating from the side.

The Project sponsor would submit the following maps and reports for review and approval to the County building official:

- (a) A final report by the civil engineer certifying that all grading, lot drainage and drainage facilities have been completed and the slope planting installed in conformance with the approved plans and the requirements of this code with a final contour map if the work is not in substantial conformity with the approved plans;
- (b) A report by the soil engineer including the recommended soil bearing capacity, a statement as to the expansive qualities of the soil and summaries of field and laboratory tests. The location of such tests and the limits of the compacted fill would be shown on a final plan, which would also provide, by plan and cross-section, the location of any subdrains, rock disposal areas and/or buttress fills involved in the work;
- (c) An engineering geologist's report based on the final contour map including specific approval of the grading as affected by geological factors. The report would include a revised geologic map and cross-sections, with recommendations regarding the location of buildings or sewage disposal systems.

Regulatory compliance through implementation of BMPs to control soil erosion and release of hazardous materials into watercourses and complying with the applicable NPDES Municipal Regional Permit and general plan policies for development in the proximity of watercourses, as well as implementation of Mitigation Measure BIO-6a (discussed above) would minimize any adverse water quality impact, and ensure that Project-related impacts would be less than significant.

Mitigation: Implement Mitigation Measure BIO-6a.

Groundwater

Impact HYD-2: The Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that it would impede sustainable groundwater management of the basin. (Criterion 2) (*Less than Significant, No Mitigation Required*)

Groundwater levels vary with seasons over the year. The shallow water table at the Project site occurs at up to 10 feet below ground surface depending upon the time of the year (see *Groundwater* discussion in the *Environmental Setting* of this section). Project construction activities, particularly trenching, excavation and cutting the slope, could intercept shallow or perched groundwater, requiring temporary localized dewatering to facilitate construction. Groundwater would be pumped and discharged to the local drainage system. Water from dewatering operations could contain materials used during typical construction activities such as silt, fuel, grease or other chemicals. The Project sponsor would be required to comply with the required SWRCB permit requirements related to dewatering. The RWQCB could require compliance with certain provisions in the permit such as treatment of the flows prior to discharge. The Project sponsor would discharge the groundwater generated during dewatering with authorization of and required permits from the applicable regulatory agencies, in this case the San Francisco Bay RWQCB. The Project sponsor would comply with applicable permit conditions associated with the treatment of groundwater prior to discharge and if necessary a dewatering collection and disposal method would be identified closer to the Pacheco Creek and marshy areas on the site. Any dewatering required would be considered temporary and the Project would not otherwise require the use of groundwater supplies that would adversely affect groundwater supplies. Applicable regulations would ensure that any Project-related impacts would be less than significant.

Mitigation: None required.

Erosion and Siltation

Impact HYD-3: The Project would not substantially alter the drainage pattern of the site such that it would result in substantial erosion or siltation onsite or offsite. (Criterion 3.a) (*Less than Significant, No Mitigation Required*)

The proposed Project would develop one parcel for a total of 144 single-family detached homes and internal roadways on 31.8 acres, with remaining areas being open space, including preserved marshes, a bioretention pond, and a new park. The Project also would include a hilltop of approximately 20.1 acres which would remain undeveloped. The Project would involve extensive grading to reconfigure the existing slopes through excavation of materials in the upper regions and infill to the lower regions of the site. The Project would limit cut and fill elevations to approximately 105 feet and approximately 50 feet, respectively.

The existing Project site is characterized by poorly draining soils, steep relief, and freely drains to the adjacent Pacheco Creek. The proposed Project would introduce approximately 1,027,504

square feet (23.59 acres) of new impervious surface area to the Project site (Balance, 2020). The new topography would therefore differ from the existing conditions and would alter the drainage pattern of the Project site. The engineered slope resulting from the cut slope activity could accelerate peak flows and cause increased erosion and sedimentation downstream, which could cause flooding in Pacheco Creek if not managed appropriately. However, these adverse effects from the change in drainage pattern would be controlled through implementation of the Stormwater Control Plan as required under the C.3 requirements in the NPDES Permit.

The proposed Stormwater Control Plan shown in Figure 4.8-1 proposes installing and maintaining a series of BMPs and source control and treatment measures. Deep infiltration as a means of disposal of runoff is not feasible on-site due to the low permeability of the clay soils. As such, permeable pavements are impractical for the Project site because pavements overlie expansive clay soils on steep slopes. The plan therefore includes self-treating areas (clean landscape areas that run offsite) and bioretention areas (integrated management practices (IMPs)) that treat runoff that is directed towards them. Due to the Project size (more than one acre of impervious surface created and/or replaced), treatment is incorporated into the design of all facilities.

Hillside runoff from the uphill self-treating area to the west will be collected and carried in a separate clean water storm drain system until it reaches the eastern toe of slope of C Drive, where it would discharge into the self-treating wetlands area and eventually make its way to Pacheco Creek. Likewise, clean water from the graded slopes along the north side of Central Avenue as well as other flows originating within the Acme Fill site to the north would be directed through the park site and join with runoff from graded slopes around the lower bioretention pond as it then flows to Pacheco Creek to the southeast.

The proposed bioretention facility would be located downstream of the subdivision development (east of the intersection of Palms Drive and C Drive). The facility would have an area of approximately 43,200 square feet and a storage volume of approximately 4.7 acre-feet. The sub-development's storm drain system would collect site runoff and discharge it into the facility for treatment. After treatment, the water would be conveyed through a dedicated outflow structure and downstream pipe into the improved section of Pacheco Creek. The system would be designed and constructed according to the criteria outlined in the *Contra Costa Clean Water Program Stormwater C.3 Guidebook, Seventh Edition*.

The proposed Project would implement the following site design/landscape and treatment measures:

Measures to Limit Impervious Areas

Measures to Limit the Development Envelope and Protect Natural Resources

- The Project site has been designed to have separate lots, which would vary from approximately 6,000 to over 13,000 square feet in size. Where two-story homes are to be constructed, a smaller building footprint area would be required.

- The approximately 44.5 acres of open space would include mostly unpaved open space for marsh preservation and recreation as well as the 4.5-acre park.
- The Project design includes some street widths configured to reduce the amount of pavement by narrowing the street and eliminating parking on one side where feasible.
- The Project site's residential roads and structures would be developed with setbacks ranging from approximately 60 to more than 300 feet from existing marsh areas and Pacheco Creek to minimize any impact to existing natural watercourses and preserve natural drainage features (which are addressed in Section 4.3, *Biological Resources*, in this chapter).

Measures to Minimize Impervious Area

- The single-family homes would be built on individual lots rather than on a continuous impervious surfaces.
- Because the pervious areas in the developed area may not be self-retaining, a bioretention pond with a 4.7-acre-foot capacity is proposed (see Figure 4.8-1) that would receive runoff from the lots.
- Impervious paving would be decreased as follows:
 - New streets would be reduced from 36 feet curb-to-curb to 32 feet curb-to-curb on in-tract streets, where feasible and allowed;
 - Sidewalks would be reduced to 5-feet;
 - The proposed Project would provide a minimum of pavement for open space recreation; and

Bioretention Area

As depicted on Figure 4.8-1, a bioretention pond would be utilized for the Project site. The bioretention pond would be located downstream and to the east of the subdivision development. The Project storm drain system would collect the site runoff and discharge it into the bioretention area for treatment. Treated water would then be conveyed through a dedicated outflow structure and downstream pipe with energy dissipators into the improved section of Pacheco Creek.

Self-Treating Areas

Hillside runoff from the uphill self-treating area to the west would be collected and conveyed in a clean water storm drain, routed through the proposed development and outfall in the self-treating areas adjacent to Pacheco Creek. In a similar fashion, clean water from the graded slopes along the north side of Central Avenue – including runoff generated within the Acme Fill site to the north – would be directed through the park site where it would drain into the wetlands area. Following natural drainage paths on undisturbed land, the self-treating graded area to the southeast of C Drive would run directly into the wetlands area, then ultimately to Pacheco Creek. Any future park site development would also be self-treating.

Selection and Preliminary Design of Stormwater Treatment BMPs

Runoff from roofs and paved areas on each of the 144 lots and the proposed streets would be collected and conveyed directly, or collected and discharged via the storm drain systems, into the bioretention treatment facility. The orifice within the BR1 outflow structure (located within the most downstream pond) would slowly meter outflows. After treatment, outflow from the bioretention area would be directed towards Pacheco Creek. Overflow would exit the bioretention area through an overflow outlet structure and, again, be directed towards Pacheco Creek. There is adequate hydraulic head to allow drainage into, and overflow away from the bioretention area without need for pumps.

The bioretention area as a whole would be sized, designed and constructed according to the criteria set in the most current CCCWP *Stormwater C.3 Guidebook*.

Source Control BMPs

Source control BMPs would be implemented to control specific sources or activities that affect water quality adversely such as minimizing runoff of excess irrigation water into the stormwater conveyance system and designating areas for washing of equipment and/or vehicles that would be drained toward to the bioretention area. Landscaping would be maintained using pest-resistant plants, and Integrated Pest Management (IPM) information would be provided to new homeowners. BMPs would also be installed to control sources such as potential dumping of wash water or other liquids into storm drain inlets.

BMP Operation and Maintenance

The Project sponsor would provide any necessary easements or rights of entry to Contra Costa County staff for access and inspection of stormwater BMPs and to make provision of easements or right of entry a condition of sale. The Project sponsor would operate and maintain the bioretention areas constructed in connection with the Project until a homeowners' association/private entity is legally incorporated that would be responsible for maintenance, execution of codes, regulations and agreement. The Project sponsor would submit a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance schedule.

The bioretention pond would remove pollutants primarily by filtering runoff slowly through an active layer of soil. Routine maintenance is needed to ensure that flow is unobstructed, that erosion is prevented, and that soils are held together by plant roots and are biologically active. Some of the maintenance activities would include the following:

- Inspect inlets for channels, exposure of soils, or other evidence of erosion;
- Clear obstructions and remove any accumulation of sediment;
- Examine rock or other material used as a dissipater splash pad and replenish if necessary;
- Inspect outlets for erosion or plugging;
- Inspect side slopes for evidence of instability or erosion and rectify, as necessary;

- Observe soil at the bottom of the filter for uniform percolation throughout;
- Confirm that channelization within the filter is effectively prevented;
- Examine the vegetation to ensure that it is healthy and dense enough to provide filtering and to protect soils from erosion; and
- Abate any potential vectors by filling holes in the ground and by insuring that there are no areas where water stands longer than 48 hours following a storm.

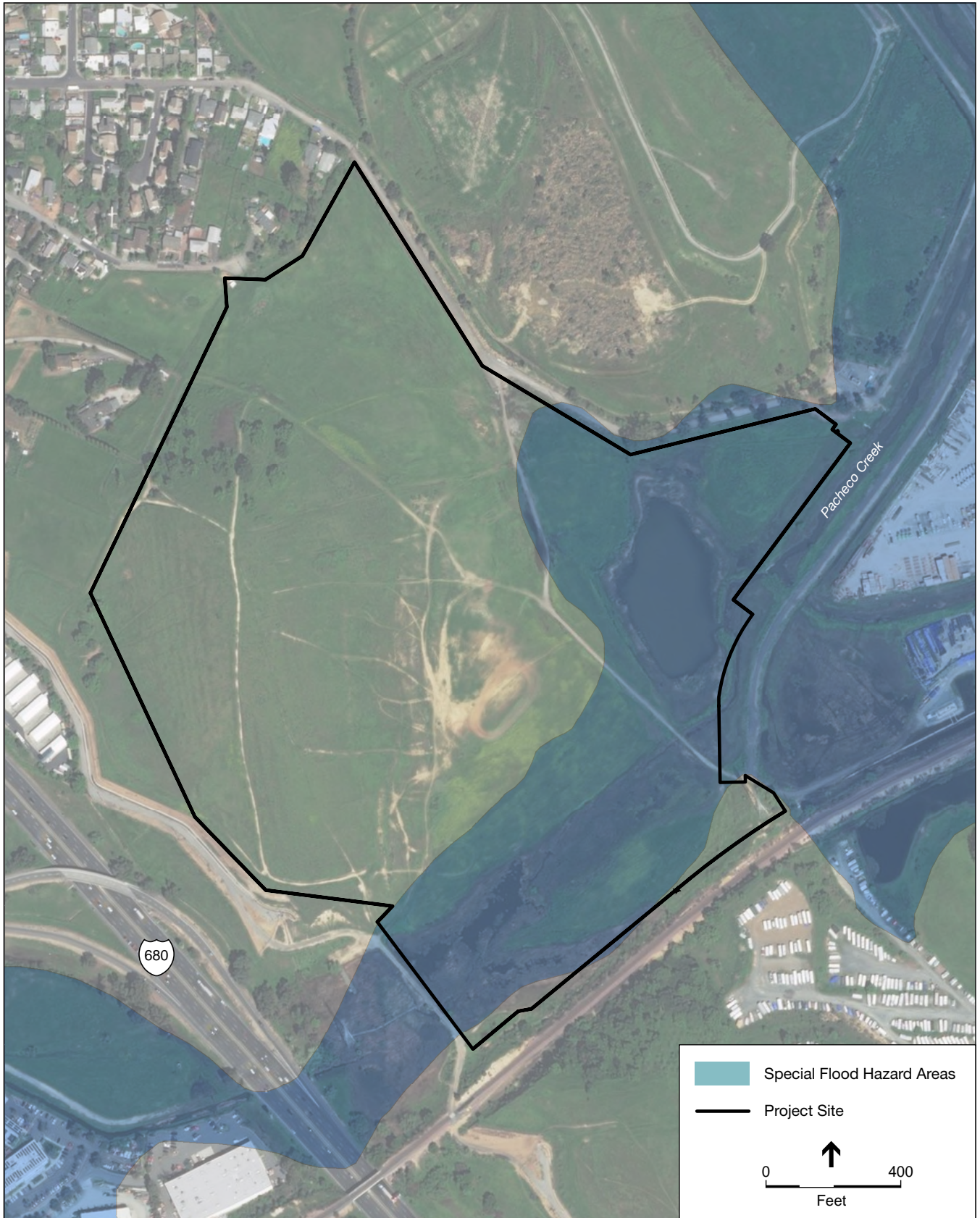
In summary, although the Project would alter the topography and drainage pattern at the Project site, regulatory compliance and completion and implementation of the required plans and measures would ensure that the change would not result in increased erosion, siltation and flooding on- or offsite or exceed the capacities of existing or planned storm drainage systems. Further, as discussed previously, the low permeability of the existing clayey soil at the Project site already allow for lesser infiltration of runoff onsite. Given the Project's proposed implementation of the BMPs and runoff and sediment control measures discussed above, consistent with NPDES C.3 requirements, the Project would not cause a significant increase in runoff than under current conditions. The impact would be less than significant.

Mitigation: None required.

Flooding

Impact HYD-4: The Project would not substantially alter the drainage pattern of the site or surrounding areas such that it would result in flooding on- or off-site. (Criterion 3.b) (*Less than Significant, No Mitigation Required*)

As discussed in the *Regulatory Setting* in this section, the March 21, 2017 Flood Insurance Rate Map (FIRM) No. 06013C00089H indicates that the majority of the Project site lies within Zone X, described as "Areas of Minimal Flood Hazard," as shown in **Figure 4.8-2, Flood Zone Map**. However, the south southeastern lower portion of the site does intersect Zone A, the 100-year flood zone (FEMA, 2017). None of the proposed residences are located within a 100-year flood hazard area. While the proposed Project would alter the drainage pattern of the site by adding impervious surfaces, and as discussed under Impact HYD-1, the Project includes appropriate features to direct and treat the anticipated stormwater flow that would occur after construction of the Project. Further, the proposed Project and site plan would be reviewed by the County for compliance with applicable regulatory requirements and standards that apply to stormwater flow control. The Project site is located in a catchment that drains to a storm drain pipe which constitutes a hardened engineered channel that extends continuously to the San Francisco Bay. As a result, there is no requirement for the Project to provide flow control such that post-construction runoff does not exceed estimated pre-construction flow rates and durations, per guidance presented in the Stormwater C.3 Guidebook.



SOURCE: FEMA

Bayview Residential Project . 208078

Figure 4.8-2
Flood Zone Map

The proposed Project would not substantially increase surface water runoff during rain events in this watershed and would not increase the potential for flooding, onsite or offsite. Therefore, the Project would not alter the drainage pattern of the site such that it would result in flooding, and impacts would be less than significant.

Mitigation: None required.

Stormwater Drainage Capacity

Impact HYD-5: The Project would not create or contribute runoff water which would exceed the capacity of existing or planned drainage systems, or provide substantial additional sources of polluted runoff. (Criterion 3.c) (*Less than Significant, No Mitigation Required*)

As discussed under Impact HYD-1, the Project includes a bioretention pond to collect and treat the anticipated stormwater flow that would occur after construction of the Project, and the Project design plans would be reviewed by the County for compliance with applicable regulatory requirements and standards including NPDES MS4 Provision C.3 requirements. These requirements include both treatment and flow control measures to ensure that the planned drainage system can accommodate anticipated peak flow volumes. The Project therefore would not cause flows to exceed the capacity of existing drainage systems.

During construction of the proposed Project, pollutants that could be released into stormwater runoff and discharged into the San Francisco Bay including oil, gasoline and diesel motor fuel, industrial solvents, and other chemicals necessary for Project construction would be avoided, minimized, treated, and controlled through SWPPP implementation including BMPs. With the applicant's compliance with existing regulations, including the site construction SWPPP (including BMPs), and the required erosion and sediment control plan, as discussed above, as well as the NPDES MS4 requirements, the impact would be less than significant.

Mitigation: None required.

Impede or Redirect Flood Flows

Impact HYD-6: The Project could develop structures which would impede or redirect flood flows. (Criteria 3.d.) (*Less than Significant, No Mitigation Required*)

Under the current 2017 FEMA FIRM maps, the lower portion, mostly the marsh area, of the proposed Project is located within Zone A, defined as an area that will be inundated by a flood event having a 1-percent chance of being equaled or exceeded in any given year (see Figure 4.8-2, above). However, because detailed hydraulic analyses have not been performed for the map area, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance

purchase requirements and floodplain management standards could apply to this lower portion of the Project but there are no proposed structures within Zone A.

As described on the FIRM for the Project area, levees downstream of the proposed Project associated with Pacheco Creek have not been accredited, and are therefore are not shown as providing protection from the 100-year flood. However, no homes are planned for the area located in Zone A which is entirely within the proposed open space and no structures would be constructed within the floodzone that could impede or redirect flood flows. As a result, the potential impact related to flood hazard areas would be less than significant.

Mitigation: None required.

Conflict with Water Quality Control Plan/Groundwater Management Plan

Impact HYD-7: The Project could conflict with a water quality control plan or sustainable groundwater management plan. (Criterion 5) (*Less than Significant, No Mitigation Required*)

The proposed Project is located within the jurisdiction of the San Francisco Regional Water Quality Control Board (Water Board). As discussed above, the Water Board has adopted the San Francisco Regional Water Quality Control Plan (Basin Plan) which includes guidelines and policies for protection of water quality. As also discussed above, the Project would be required to adhere to both the NPDES General Construction Permit and the NPDES MS4 C.3 requirements for drainage control. Adherence to these existing regulatory requirements for stormwater drainage control are consistent with Basin Plan policies and would not present any conflicts.

The Project site is not located within a managed groundwater basin and as a result there is no applicable groundwater management plan. Therefore, the proposed Project would not conflict with either a water quality control plan or a sustainable groundwater management plan and impacts would be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact C-HYD-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts with respect to hydrology and water quality to which the Project would have a cumulatively considerable contribution. (All Criteria) (*Less than Significant, No Mitigation Required*)

Geographic Context

The geographic context used for the cumulative assessment of hydrology and water quality impacts is the Walnut Creek watershed in the vicinity of Pacheco Creek. This includes the Project site and areas in the immediate vicinity and that drain directly or eventually into Pacheco Creek. County staff identified approved, but not yet completed projects within the vicinity of the project site area.

Cumulative Analysis

The discharge of stormwater runoff from new development in California is highly regulated by local, State, and Federal laws specifically to ensure that they do not result in the gradual degradation of water quality. The General Plan includes policies that specifically reinforce these regulations by establishing the County's active role in water quality programs. Point sources of pollution are required to be identified and controlled in order to protect adopted beneficial uses of water. Implementation of these policies occur as part of the development review and construction permitting process.

Implementation of the Project, combined with cumulative past, present and other reasonably foreseeable development in the vicinity, as specified in Section 4.0, *Introduction to the Environmental Analysis* (4.0.6, Cumulative Analysis), could include increases in stormwater runoff and pollutant loading to the Pacheco Creek and Suisun Bay if not designed appropriately. The General Plan EIR identified an impact with respect to changes in drainage patterns and increased impervious surface area, thereby increasing flood hazards, erosion or sedimentation. The cumulative impact may be significant, however as noted in the General Plan EIR, site-specific drainage control requirements would generally would have applied to previous projects, and will apply to all other current and future development projects that would change drainage patterns and/or flow rates through the introduction of new impervious surfaces and resulting increased flood hazards, erosion or sedimentation. Cumulative development also would have and would be required to comply with the local drainage and grading ordinances, as well as CCCWP NPDES permitting requirements, intended to control stormwater runoff volumes and regulate water quality at each development site. Further, cumulative projects would be required to demonstrate that stormwater volumes would be managed by downstream conveyance facilities.

The proposed Project is one of the larger subdivision development projects in the area and would substantially change the drainage pattern at the currently undeveloped Project site. However, the other cumulative projects have been and likely would continue to be developed mostly on existing undeveloped land as well. Based on the Stormwater Control Plan's hydrologic analysis for the Project, the change associated with the proposed Project would not be substantial enough to cause downstream siltation, erosion, and flooding (see Impacts HYD-1 and HYD-3). Also, the Project will adhere to existing regulations and incorporating the numerous treatment and source control measures, runoff flow control and site design/landscape characteristics discussed in the Project analysis above, particularly including compliance with the regional NPDES permit's criteria developed to mitigate potential cumulative impacts from increased flow from new

development. Accordingly, the proposed Project will not make any considerable contribution to a significant cumulative impact.

Mitigation: None required.

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4.9 Land Use, Plans and Policies

4.9.1 Introduction

This section addresses the physical aspects of land use and the regulatory planning framework that guides future development of the Project, and includes a summary of existing land uses in and around the Project site, a list of applicable *Contra Costa County General Plan* (General Plan) land use policies, and an assessment of whether the Project would conflict with the adopted General Plan and other applicable plans and policies pertaining to physical land use and planning factors.

4.9.2 Environmental Setting

The Project site is situated in a low-lying area close to marshes associated with the shoreline of Suisun Bay, in north-central Contra Costa County. The Project site is located approximately two miles south of the Carquinez Strait where it opens to Suisun Bay, about 4.5 miles east of Franklin Ridge, and 5.0 miles north of the Briones Hills. It is located adjacent to Interstate 680 (I-680), which is a major north-south regional travel corridor linking Santa Clara County to the south with Solano County to the north and providing travel connections between numerous Alameda and Contra Costa County cities. State Highway 4, the major east-west corridor in Contra Costa County, is located about 1.0 mile to the south.

The Project site is situated near the northern end of a continuous belt of urban and suburban development that extends southward for nearly 30 miles, to the City of Pleasanton in central Alameda County. The site, which is east of the City of Martinez and northwest of the City of Concord, is in one of the County's unincorporated communities, referred to as the Vine Hill/Pacheco Boulevard Area. This community is currently developed with roads, trails, the installation of gas pipelines and land uses including a landfill, wastewater treatment facilities and residential areas. The Project site is bounded by I-680 and the Contra Costa Canal to the southwest, a residential development on Palms Drive to the northwest, an unpaved portion of Central Avenue separating it from Acme Landfill property to the northeast and east and the Burlington Northern Santa Fe Railroad tracks to the south. The main channel of Pacheco Creek is located 0.5 miles east of the Project site, while a tributary to the creek extends into the site, connecting with a wetland pond on the east side of the site (see Figure 3-2, Chapter 3, *Project Description*)

The immediate vicinity of the Project site is characterized by a variety of land uses. The I-680 freeway runs in a northwest-southeast direction along the southwest boundary of the Project site. The area directly west of the freeway supports a mixture of residential, commercial and light industrial uses. Further west, the land is dominated by residential development including the County's unincorporated Mountain View neighborhood and suburban areas of the City of Martinez. Parcels immediately northwest of the site and east of the freeway are characterized by a cluster of single family homes on lots ranging in size from approximately 7,000 square feet to one acre. Lands to the northeast, east and south are mostly undeveloped properties zoned and partly used for heavy industrial purposes. The southern boundary of the Project site abuts the Burlington

Northern Santa Fe Railroad tracks. A combination of undeveloped lands and recreational vehicle storage occupy the area immediately south of the railroad tracks. Along the northern shoreline, further northwest, is the Waterbird Regional Preserve, an approximately 198-acre wetland and associated upland area managed jointly by the East Bay Regional Park District, the Mt. View Sanitary District, the Contra Costa County Mosquito and Vector Control District and the California Department of Fish and Game.

The Project site is near a number of major industrial uses located in the region, particularly along or in proximity to the northern shoreline. The majority of the land to the north and northeast of the Project site is property of the Acme Landfill. While the landfill is currently mostly inactive, the fully operational Contra Costa Transfer and Recovery Station is located approximately 0.3 miles north of the Project site. A former firewood and wood chipping facility abuts the Project site to the east.

Pipelines carrying crude oil and refined petroleum products (gasoline, diesel fuel and jet fuel) run under Central Avenue and intersect the Project site along a wetland area on the northeastern boundary. Mallard Reservoir and Martinez Reservoir, operated as water management facilities by the Contra Costa Water District, are located about 2.0 miles east and 1.2 miles west of the site, respectively.

The Ralph D. Bollman Water Treatment Plant is situated at the southern edge of Mallard Reservoir. The Central Contra Costa Sanitary District's wastewater treatment plant and household hazardous waste collection facilities are located 1.0 mile southeast of the Project site. Mt. View Sanitary District's wastewater treatment plant is located about 1 mile to the northwest. In addition, the heavily industrialized land areas supporting Shell Martinez Refinery and the Tesoro Golden Eagle Refinery are located approximately 1 mile northwest and east respectively. The aerial photo shown on **Figure 4.9-1** provides a visual overview of the land uses described in this section.

On-Site Land Uses

For purposes of Project review, the Project site is more generally described as being bounded on the southwest by I-680, on the northwest by residential development, on the east and northeast by Acme Landfill property and on the south by the Burlington Northern Santa Fe Railroad tracks. The approximately 78.3-acre Project site consists of gently sloping land on the east, rising sharply to the summit of the hill on the west. Elevations range from 4 to 283 feet above mean sea level ("msl").

The property supports permanent and seasonal wetlands and an extensive band of freshwater marsh across its southern portion. A valley oak woodland covers a small area mid-slope on the north-facing side of Vine Hill. The site is currently undeveloped although scarred from illegal motocross activity. As a part of the Vine Hill/Pacheco Boulevard Area community, the Project site falls within the area permitted to be developed in accordance with the voter approved Urban Limit Line as established through adoption of Measure C-1990.



SOURCE: Google Earth

Bayview Estates Residential Project . 208078

Figure 4.9-1
Aerial Photo of Project Site and Vicinity

The site is currently zoned Heavy Industrial (“H-I”) and is designated as Heavy Industry (“HI”) in the General Plan Land Use Element.

4.9.3 Regulatory Setting

Contra Costa County General Plan

The Project site is located in an unincorporated area of Contra Costa County, and as such, the Project is subject to the land use regulations and planning policies promulgated in the General Plan, adopted by the Board of Supervisors on January 18, 2005. The General Plan covers a planning area of 805 square miles, 732 of which are land (the remainder being water areas), that supports a population of over 1,143,447 (Contra Costa County, 2018). Located in the center of the nine-county San Francisco Bay area, much of Contra Costa County’s boundaries are defined by water, including San Francisco and San Pablo bays on the west and the Carquinez Strait, Suisun Bay, Honker Bay, and the Sacramento/San Joaquin River Delta on the north.

Due to its large geographical area and diverse planning needs, the County is divided into six planning subareas, with policy intentions pertaining to the subareas or other geographically specific areas identified in the General Plan. The Project site is within the North Central County subarea, which encompasses all of the cities and unincorporated communities along the northern I-680 corridor, including the cities of Martinez, Concord, Pleasant Hill, Walnut Creek, and Clayton, and the unincorporated areas of Vine Hill, Pacheco, Clyde, and Saranap. The North Central County area is one of three subareas comprising the larger Central County Area. The predominant land uses in the suburban Central County Area are residential (primarily low density), commercial, recreation, grazing, and open space. There is also a concentration of industrial uses (e.g., oil refineries) in the northern part of Central County.

The purpose of the General Plan is to establish a roadmap for the future growth of the County that defines and preserves a “quality of life” for the County residents. The goals, policies, and implementation measures established by the General Plan are intended to guide decisions on future growth, development, and the conservation of resources through the year 2020. The General Plan is designed to provide guidance on the development of private and public lands, including infrastructure improvements such as sewers and roadways, and is intended for use by County decision makers as well as other public agencies.

The General Plan sets forth hundreds of comprehensive goals, policies, and implementation measures to address issues within the Planning Area related to social, economic, and environmental concerns. The policies are organized into the following nine elements: Land Use, Growth Management, Transportation and Circulation, Housing, Public Facilities/Services, Conservation, Open Space, Safety, and Noise. Each element and each policy was reviewed during preparation of this EIR.

Key General Plan policies relevant to the proposed Project are listed below. To the extent that environmental controls or other features can be imposed on the Project to maintain consistency with these County policies, those controls are either part of the Project, compulsory as conditions

of permits required for the Project, or identified as mitigation measures in this EIR. Additional comments on consistency with individual policies are provided below.

Land Use Element

Land Use Designations

The General Plan land use map designates the Project site as Heavy Industry (“HI”). The Heavy Industry designation allows industrial uses that require large areas of land with convenient truck and rail access. Industrial operations within this land use category may generate substantial noise, pollutants, dust, odors or other hazards or nuisances, rendering them incompatible with residential uses in close proximity. The Heavy Industry category allows a wide variety of industrial uses, including metal working, chemical and petroleum product processing and refining, and heavy equipment operation, among others, as well as all uses permitted within the Light Industry category, such as processing, packaging, fabrication, warehousing, distribution, and similar uses. The Heavy Industry land use category has a floor area ratio (FAR) limit of 0.67, a maximum site coverage of 50 percent, and a height limit of 50 feet.¹

The proposed Project includes a request for an amendment to the General Plan to change the land use designation of the site from Heavy Industry to Single-Family Residential—High Density (SH). The SH designation is one of eleven residential land use categories established in the General Plan, including four single-family residential categories of varying densities. The Single-Family Residential—High Density category allows from 5.0 to 7.2 dwelling units per net acre, and individual lots up to 8,729 square feet in size. The principal permitted use in this designation is detached single-family homes and accessory structures. Permitted secondary uses compatible with high-density residential development include home occupations, small residential care and childcare facilities, churches and other similar places of worship, secondary dwelling units, and other uses and structures incidental to the primary uses. Development regulations for residential uses are established in the Zoning Code, addressed below. Residential land use policies and other General Plan policies applicable to the Project also are discussed below.

65/35 Land Preservation Plan

The 65/35 Land Preservation Plan was incorporated into the General Plan when Contra Costa County voters approved Ordinance 82-1 (Measure C – 1990) in 1990. Measure C-1990 requires that not less than 65 percent of the land in the County be preserved for parks, open space, agriculture, wetlands, and other non-urban uses. This standard ensures that both within and outside of the Urban Limit Line (“ULL”), a maximum of not more than 35 percent urban development could occur in the County, irrespective of potential general plan amendments in the future. The policies within the plan are intended to, among other objectives, protect open hillsides and significant ridgelines throughout the County from development and prohibit any changes to the *65/35 Land Preservation Plan* standard except by a vote of the people. The Ordinance directed the County Board of Supervisors to reflect the 65/35 Land Preservation Plan policies within the General Plan.

¹ The floor to area ratio (FAR) is the ratio of building floor area to the total site area.

Urban Limit Line

The purpose of the ULL is to ensure preservation of identified non-urban agricultural, open space, and other areas by establishing a line beyond which no urban land uses can be designated during the term of the General Plan and to facilitate the enforcement of the *65/35 Land Preservation Plan* standards. During the term of the General Plan (2005-2020), properties that are located outside of the ULL may not obtain general plan amendments that would redesignate them for an urban land use.

General Plan Land Use Element Goals and Policies

The Land Use Element of the General Plan includes the following goals and policies that are applicable to the Project:

- *Goal 3-A:* To coordinate land use with circulation, development of other infrastructure facilities, and protection of agriculture and open space, and to allow growth and the maintenance of the County's quality of life. In such an environment all residential, commercial, industrial, recreational and agricultural activities may take place in safety, harmony, and to mutual advantage.
- *Goal 3-F:* To permit urban development only in locations of the County within identified outer boundaries of urban development where public service delivery systems that meet applicable performance standards are provided or committed.
- *Policy 3-5:* New development within unincorporated areas of the County may be approved, providing growth management standards and criteria are met or can be assured of being met prior to the issuance of building permits in accordance with the Growth Management Program.
- *Policy 3-6:* Development of all urban uses shall be coordinated with provision of essential Community services or facilities including, but not limited to, roads, law enforcement and fire protection services, schools, parks, sanitary facilities, water, and flood control.
- *Policy 3-7:* The location, timing and extent of growth shall be guided through capital improvements programming and financing (i.e., a capital improvement program, assessment districts, impact fees, and developer contributions) to prevent infrastructure, facility and service deficiencies.
- *Policy 3-8:* Infilling of already developed areas shall be encouraged. Proposals that would prematurely extend development into areas lacking requisite services, facilities, and infrastructure shall be opposed. In accommodating new development, preference shall generally be given to vacant or under-used sites within urbanized areas, which have necessary utilities installed with available remaining capacity, before undeveloped suburban lands are utilized.
- *Policy 3-11:* Urban uses shall be expanded only within a ULL where conflicts with the agricultural economy will be minimal.
- *Policy 3-21:* The predominantly single family character of substantially developed portions of the County shall be retained. Multiple-family housing shall be dispersed throughout the County and not concentrated in single locations. Multiple-family housing shall generally be located in proximity to facilities such as arterial roads, transit corridors, and shopping areas.

- *Policy 3-27:* Existing residential neighborhoods shall be protected from incompatible land uses and traffic levels exceeding adopted service standards.
- *Policy 3-28:* New residential development shall be accommodated only in areas where it will avoid creating severe unmitigated adverse impacts upon the environmental and upon the existing community.
- *Policy 3-29:* New housing projects shall be located on stable and secure lands or shall be designed to mitigate adverse or potentially adverse conditions. Residential densities of conventional construction shall generally decrease as the natural slope increases.

General Plan Land Use Element Policies Specific to Vine Hill/Pacheco Boulevard Area

The Land Use Element of the *General Plan* also includes the following policies applicable to the Project:

- *Policy 3-105:* The scenic assets and unstable slopes of the Vine Hill Ridge are to be protected for open space/agricultural use.
- *Policy 3-106:* The residential neighborhood east of I-680 shall be buffered from the industrial/land fill-related uses.

General Plan Growth Management Element Standards

The Growth Management Element of the *General Plan* sets forth the following performance standards that are applicable to the Project:

- *Traffic:* All new development shall meet the traffic level of service performance standards prior to county approval (see Section 4.13, *Transportation*, for a detailed description of these standards) [NOTE: Per Senate Bill 743, CEQA analysis after July 1, 2020 no longer should include level of service analyses; to the extent level of service analyses are included in the EIR or supporting portions of the administrative record, it is for information-only purposes]
- *Water Service:* The County ... shall require new development to demonstrate that adequate water quantity and quality can be provided.
- *Sanitary Sewer:* The County ... shall require new development to demonstrate that adequate sanitary sewer quantity and quality can be provided.
- *Fire Protection:* Fire stations shall be located within one and one-half miles of developments in urban, suburban and central business district areas. Automatic fire sprinkler systems may be used to satisfy this standard.
- *Public Protection:* A Sheriff facility standard of 155 square feet of station area and support facilities per 1,000 population shall be maintained within the unincorporated area of the County.
- *Parks and Recreation:* Neighborhood parks: 3 acres required per 1,000 population.
- *Flood Control and Drainage:* Major new development shall finance the full costs of drainage improvements necessary to accommodate peak flows due to the project. For mainland areas along rivers and bays, it must be demonstrated that adequate protection exists through levee protection or change of elevation prior to development.

General Plan Conservation Element Goals and Policies

The Conservation Element of the *General Plan* includes the following goals and policies that are applicable to the Project:

- *Goal 8-D:* To protect ecologically significant lands, wetlands, plant and wildlife habitats.
- *Goal 8-T:* To conserve, enhance, and manage water resources, protect their quality, and assure an adequate long-term supply of water for domestic, fishing, industrial, and agricultural use.
- *Policy 8-4:* Areas designated for open space/agricultural uses shall not be considered as a reserve for urban uses and the 65 percent standard² for non-urban uses must not be violated.
- *Policy 8-6:* Significant trees, natural vegetation, and wildlife populations generally shall be preserved.
- *Policy 8-12:* Natural woodlands shall be preserved to the maximum extent possible in the course of land development.
- *Policy 8-14:* Development on hillsides shall be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion. Development on open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.
- *Policy 8-21:* The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.
- *Policy 8-27:* Seasonal wetlands in grassland areas of the County shall be identified and protected.
- *Policy 8-67:* Lands having a prevailing slope above 26 percent shall require adequate special erosion control and construction techniques.
- *Policy 8-74:* Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.
- *Policy 8-75:* Preserve and enhance the quality of surface and groundwater resources.
- *Policy 8-87:* Onsite water control shall be required of major new developments so that no increase in peak flows occurs relative to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.

² In 1990, Contra Costa residents approved Measure C-1990, which applies to the unincorporated part of the County and restricts urban development to 35 percent of the land in the County. The remaining 65 percent of the land is preserved for agriculture and open space.

- *Policy 8-89.* Setback areas shall be provided along natural creeks and streams in areas planned for urbanization. The setback areas shall be of a width adequate to allow maintenance and to prevent damage to adjacent structures, the natural channel and associated riparian vegetation. The setback area shall be a minimum of 100 feet; 50 feet on each side of the centerline of the creek.
- *Policy 8-91:* Grading, filling, and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.

General Plan Open Space Element Policies

The Open Space Element of the *General Plan* includes the following policies that are applicable to the Project:

- *Policy 9-11:* High quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damages and damages to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26 percent or more should generally be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted.
- *Policy 9-12:* In order to conserve the scenic beauty of the County, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damages to significant trees and other visual landmarks.
- *Policy 9-14:* Extreme topographic modification, such as filling in canyons or removing hilltops, shall be avoided. Clustering and planned unit development approaches to development shall be encouraged. All future development plans, whether large or small scale, shall be based on identifying safe and suitable sites for buildings, roads and driveways. Exemptions to this policy are appropriate for mining, landfill, and public projects in open space areas.
- *Policy 9-19:* When development is permitted to occur on hillsides, structures shall be located in a manner which is sensitive to available natural resources and constraints.
- *Policy 9-21:* Any new development shall be encouraged to generally conform with natural contours to avoid excessive grading.
- *Policy 9-K:* To achieve a level of park facilities of 4 acres per 1,000 population.

In addition to the above, applicable goal and policies included in the Transportation and Circulation, Housing, Public Facilities/Services, Safety and Noise elements of the General Plan and listed in the appropriate sections of this EIR.

Envision Contra Costa 2040

The County is in the process of updating the General Plan, particularly to address current topics of sustainability, environmental justice, and affordable housing, as well as continued County

values of balancing growth and conservation. The process is anticipated to be completed in late 2020 (Contra Costa County, 2019).

Contra Costa County Zoning Ordinance

The *Contra Costa Zoning Code* (Zoning Code) regulates land use and development of land within the County. The Zoning Code includes identification of allowed land uses, development standards (e.g., lot size, building height, setbacks, etc.), parking requirements, and the placement of signs. The Project site is located in a Heavy Industrial (“H-I”) zoning district which allows for a range of industrial and manufacturing uses including, the manufacturing or processing of petroleum, lumber, steel, chemicals, explosives, fertilizers, gas, rubber, paper, cement, sugar, and all other industrial or manufacturing products. Land uses permitted in the Light Industrial zoning district are also permitted in the H-I district with a land use permit. There are no lot area, height, or side yard regulations or limitations in the H-I district.

The Project includes a request for a zoning reclassification to Planned Unit District (“P-1”). Permitted uses within the P-1 district include detached single-family dwellings on legally established lots and associated auxiliary structures and uses. The lot standards of this P-1 district would generally be consistent with the R-6 district. In the R-6 district, structures are limited to two and one half stories or 35 feet in height, though here, Project residential structures would not exceed 32 feet. Lots are required an aggregate side yard width of 15 feet with no side yard less than 5 feet wide. Front yard setbacks have a required minimum of 20 feet. Any principal structure must have rear yards of at least 15 feet, and any accessory structure must have a rear yard of at least 3 feet. Each unit is required to provide two off-street automobile storage spaces on the same lot. The P-1 zoning designation is generally consistent with the R-6 zoning district, which is compatible with a SH General Plan designation.

In addition to land use zoning, the Zoning Code includes a tree protection and preservation ordinance, which provides for the preservation of certain protected trees on public and private properties in the unincorporated area of this county by controlling tree removal. Protected trees include native oak trees with a trunk diameter of 6.5 inches or larger.

4.9.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, the Project would have significant adverse impacts to land use and planning if it would:

- 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;

Consistent with Appendix G of the State CEQA *Guidelines*, the Project would have significant adverse impacts to agriculture and forestry resources if it would:

- c) 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;
- d) Conflict with existing zoning for agricultural use, or a Williamson Act Contract;
- e) 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));
- f) Result in the loss of forest land or conversion of forest land to non-forest use; or
- g) 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.

Analysis Methodology

Overall Approach

The analysis of land use impacts for the Project addresses the issues of land use compatibility and consistency with adopted land use plans and policies. The analysis of Project impacts related to land use compatibility is based on an assessment of the land use patterns and characteristics in the surrounding area. Factors such as incompatible land uses, relationships to existing land uses, and the projects proposed grading plan, were considered in the analysis. Aerial photographs and land use maps, along with a site visit, were used to conduct this analysis. The analysis with regard to consistency with land use plans is based upon a review of the aforementioned policies and plans that are applicable to the Project and the Project site.

General Plan Consistency

This analysis evaluates the general consistency of the proposed Project with applicable land use plans and policies. Consistent with Section 15125(d) of the CEQA *Guidelines*, inconsistency with an adopted plan, including the General Plan, does not necessarily indicate a significant impact by the Project. A general plan contains many policies which may in some cases address different goals, policies and objectives. In fact, some policies may compete with each other. The information presented in this EIR is intended to allow decision-makers to decide whether, on balance, the Project is consistent (i.e., in general harmony) with the General Plan. In the recent *Spring Valley Lake Association v. City of Victorville* decision, the court explained that in determining whether a project conflicts with a General Plan, “the nature of the policy and the nature of the inconsistency are critical factors to consider.” The court went on to clarify that a project is inconsistent with a General Plan if it conflicts with a General Plan policy that is “specific, mandatory, and fundamental.”

Further, this analysis focuses on the effects of physical change. As stated in Section 15358(b) of the CEQA *Guidelines*, “[e]ffects analyzed under CEQA must be related to a physical change.” Appendix G of the CEQA Guidelines (Environmental Checklist Form) makes explicit the focus on *environmental* policies and plans, asking if the project would “conflict with any applicable

land use plan, policy, or regulation . . . *adopted for the purpose of avoiding or mitigating an environmental effect*” (emphasis added). Even a response in the affirmative, however, does not necessarily indicate the Project would have a significant effect, unless an adverse physical change would occur. To the extent that physical impacts may result from such conflicts, such physical impacts are analyzed elsewhere in this EIR, in the applicable topic section of Chapter 4. The compatibility of the Project with General Plan policies that do not relate to physical environmental issues will be considered by decision-makers as part of their decision whether to approve or disapprove the Project.

General Plan Amendment

A conflict with a policy that exists today, but that is amended to accommodate a proposed project, does not normally constitute a significant effect on the environment under CEQA. That is, should the County decision-makers determine that the County policy framework (i.e., the General Plan) and the County Zoning Ordinance should be amended to accommodate the Project, the Project would not conflict with applicable City land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect, and in such instance, the Project would have a less-than-significant effect under Criterion b, above, with respect to County policy.

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and the Project with each of the eight significance criteria stated above clearly show that no impacts associated with land use and planning would result for several of the significance criteria listed above; therefore, these topics will not be further evaluated in this EIR. The following discusses the reasoning supporting this conclusion.

With regard to **Criterion c**, the Habitat Conservation Plan nearest to the Project site is the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP; ECCCHC, 2017), whose closest boundary is located approximately 4.7 miles east of the Project site across several urbanized areas. The Project site is not located within an area identified in a habitat conservation plan or natural community conservation plan. In addition, there are no habitat conservation plans or natural community conservation plans proposed for adoption that would include the Project site. Thus, the Project would have no impact on a habitat conservation plan or a natural community conservation plan. A discussion of special-status species that the Project could potentially impact can be found in Section 4.3, *Biological Resources*.

With regard to **Criterion d**, the Project site is located entirely within a developed area, surrounded by industrial, residential, and open space uses. The site is not identified as Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance by the FMMP, but is designated as Grazing Land and Urban and Built-Up Land, and is surrounded by lands designated as Grazing Land and Urban and Built-Up Land (FMMP, 2017). Thus, the Project would have no impact on important farmland.

With regard to **Criterion e**, the Project site is zoned for heavy industrial uses, and may have been formerly used as a quarry. Furthermore, the site is not covered by a Williamson Act contract. Thus, implementation of the Project would not interact with or conflict with existing agricultural zoning or a Williamson Act contract, and would have no impact.

With regard to **Criterion f**, the Project site is not zoned as forest land or timberland, and there are no forests on the Project site. No impact on forest land or timberland would occur with implementation of the Project.

With regard to **Criterion g**, as stated above, the Project site is not zoned as forest land and there are no forests on the Project site. The Project would not result in the loss of forest land or conversion of forest land to non-forest uses, and would have no impact.

With regard to **Criterion h**, the Project would be constructed and operated on a site that is designated as Grazing Land and Urban and Built-Up Land by the FMMP. The Project site does not contain farmland and there are no aspects of the Project that would affect any agricultural land off-site. Moreover, the Project site does not contain forest land and there are no aspects of the Project that would affect any forest land off-site. Thus, implementation of the Project would not result in conversion of farmland, on-site or off-site, to a non-agricultural use, nor would it result in conversion of forest land to non-forest use. The Project would have no impact.

4.9.5 Discussion of Impacts and Mitigation Measures

Division of an Existing Community

Impact LUP-1: The Project would not divide an established community. (Criterion a) (*Less than Significant, no Mitigation Required*)

Existing land uses surrounding the Project site consist of predominantly residential uses, industrial uses, and recreation/open space. The Project site is currently vacant of active uses; no existing commercial, recreational, or residential community would be disrupted by the Project. The Project would establish a new residential community, and include utility and road improvements. The proposed single-family homes are similar to existing uses in the surrounding area, and more consistent with surrounding uses than the heavy industrial uses contemplated under present land use policies. Therefore, the Project would facilitate connections between communities, and would not physically divide an established community.

Mitigation: None required.

Impact LUP-2: The Project, including the proposed amendments to the *General Plan* and zoning designation, would not conflict with adopted applicable land use plans and policies such that the Project is inconsistent with the *General Plan*. (Criterion b) (*Less than Significant, no Mitigation Required*)

The proposed Project would develop a total of 144 single-family detached homes and internal roadways on 31.8 acres, and approximately 46.5 acres of open space and park areas, which includes approximately 20.1 acres of open space hilltop. Basic infrastructure (i.e., roads and utilities) would be extended on to the Project site to provide adequate residential services, which would support the proposed changes in land use.

The Project, including the zoning reclassification, new land use designation and text changes to Land Use Element Policy 3-105 through an amendment to the *General Plan*, would be consistent with most of the land use plans and policies that are applicable to the site. Policies with which the Project could conflict, and therefore, as discussed specifically in this section, include those that encourage preservation of the natural topography of existing hillsides and ridgelines and associated visual assets, and policies that discourage extensive grading. A detailed discussion of Project consistency with applicable plans and policies is provided below.

Consistency with General Plan Land Use Designations and Zoning

Since existing *General Plan* land use designation and zoning for the site would not allow the residential use proposed by the Project, the Project seeks a *General Plan* amendment and rezoning for the Project site. As noted above, the Project would include changes in the zoning to replace existing zoning classification of Heavy Industrial with Planned Unit District (“P-1”). The proposed *General Plan* amendment would change land use designation on the site from Heavy Industry to Single Family Residential-High Density (“SH”). The Project would comply with the requirements of the proposed zoning, including permitted land use, density and lot size. The Project also would comply with the land use requirements of the proposed *General Plan* land use designation.

The change in the land use designation and the rezoning that would occur as part of the Project would result in a loss of land zoned for heavy industrial use on the Project site. The new zoning, like the proposed *General Plan* amendment, would result in land uses that are internally consistent (within the Project site) and that would also be compatible with the surrounding residential land uses. While rezoning of the Project site from industrial to residential use would preclude future industrial uses from being developed on the site, such policy decisions would be weighed by decision-makers in the overall decision to approve or deny the proposed Project. To the extent that adverse physical land use changes would occur as part of the proposed *General Plan* amendment and rezoning, such impacts are discussed in their respective sections of this EIR.

The Project would include a request for an amendment to the *General Plan* to change the language of Policy 3-105 to the following:

- *Policy 3-105: The scenic assets ~~and unstable slopes~~ of the Vine Hill Ridge will, in some measure, be preserved while still allowing safe, feasible development of the*

property. Grading of these scenic assets shall be permitted to allow for development granted that the remainder parcels are to be protected for open space/agricultural use.

Although the Project would introduce residential uses in close proximity to industrial and landfill-related uses, it would not expand existing industrial uses and therefore would not disrupt any existing buffer protecting the existing residential neighborhood from these uses. As such, the Project is not considered to be in conflict with Policy 3-106 (restated below for convenience).

- *Policy 3-106:* The residential neighborhood east of I-680 shall be buffered from the industrial/land fill-related uses.

The Project would involve removal of a valley oak woodland, including up to approximately 30 native oak trees that fit the criteria for a “Protected Tree” as defined in the Zoning Code. Because the Zoning Code, which implements the General Plan, expressly provides for removing protected trees with the permit approval process specified in Division 816 of the Code, and because a collective tree permit for the site would be considered as a part of the Vesting Tentative Map approval process, the Project is not considered to be in conflict with Policies 8-6 and 8-12 (restated below for convenience). A factor in this consistency analysis includes on-site landscaping and small trees would line both sides of all proposed internal streets. In addition, an array of shrubs and trees would be planted within Parcel A, in the hillside open space, including native drought tolerant trees, such as blue oak, coastal live oak, and valley oak.

- *Policy 8-6:* Significant trees, natural vegetation, and wildlife populations generally shall be preserved.
- *Policy 8-12:* Natural woodlands shall be preserved to the maximum extent possible in the course of land development.
- *Policy 9-12:* In order to conserve the scenic beauty of the county, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damage to significant trees and other visual landmarks.

The removal of trees associated with the Project has been minimized and replacement trees shall be planted in accordance with the County Code or ordinances.

Consistency with the Contra Costa County General Plan

65/35 Land Preservation Plan (Measure C - 1990)

The Project site is within the County’s ULL and would not violate the 65/35 Land Preservation standard. However, the Hillside Protection Policy included within the plan states that “Development on open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater, shall be protected through implementing zoning measures and other appropriate actions.”

The proposed grading below the upper portion of the hill and above the proposed residential development area would be substantially graded and involve inclines as steep as 50 percent.

Within the area of residential development at the lower portion of the hill, there would be padded with sloping rear and side yards, and grading within Parcel B (marsh areas) would involve slopes as steep as approximately 50 percent. As demonstrated in Section 4.1, *Aesthetics*, the Project would not develop an open hillside of the hill or a ridgeline, although it would affect portions with 26 percent grade, as described above. Therefore, the Project incorporates several measures (“appropriate actions”) and restrictions, specified in Project- and Project-site-specific recommendations from professional soils engineers (DMA and Engeo, the County’s consulting engineer) that will ensure stability of the currently proposed engineered slopes. Specifically, the Project’s potentially significant impact associated with hazards related to development and grading of steep slopes are addressed by Mitigation Measures GEO-1 through GEO-5, which include measures specific to mitigating slope stability and erosion. As such, the Project would not fundamentally conflict the *65/35 Land Preservation Plan*.

Land Use Element

The Project would not be fundamentally inconsistent with the following Land Use policies:

Land Use Element

- *Policy 3-28*: The Project, as proposed, would not result in unmitigated environmental impacts related to land use policies and aesthetics and therefore would fundamentally conflict with Policy 3-28. See Section 4.1, *Aesthetics* and below for further discussion of these less than significant impacts.

Transportation and Circulation Element

- *Policy 5-55*: The grading plan does not propose to substantially alter the natural topography on the site and lower the peak elevation of the hill. Grading within the upper hill area would be minimized in order to retain the hill feature that is approximately 283 feet above mean sea level (msl). As such, the Project would not adversely affect the natural topographic features, aesthetic views, vistas, hills and prominent ridgelines along the I-680. For these reasons, the Project would not be considered in fundamental conflict with the provisions of Policy 5-55. See Section 4.1, *Aesthetics* for a detail discussion of views and vistas.

Conservation Element

- *Policy 8-14*: The Project would result in extensive grading over the majority of the Project site, including portions with 26 percent grade. In addition, the hillside development would remove some of the existing natural vegetation including the oak woodland forest, but not to an extent that is visible or a significant affect to biological resources. Overall, the Project would not develop the open hillside and prominent ridgeline of the peak elevation of the hill with urban uses, and grading and other activities in this area are designed to enhance slope stability, and would retain the open space character of the hillside. For these reasons, the Project would not be considered in fundamental conflict with the provisions of Policy 8-14.

Open Space Element

- *Policy 9-14:* The Project would include extensive grading that would substantially alter the existing topography of the areas on the Project site, however, the grading would not result in “extreme topographic modifications.” The proposed grading plan as described above would not fundamentally conflict with Policy 9-14.

Safety Element

- *Policies 10-28 and 10-29:* The Project would include extensive grading on a very steep hillside with a grade of 26 percent and greater. The Project also would include 144 single-family houses in a relatively uniform density on 31.8 acres of the 78.3-acre Project site. The Project would not visibly alter the hillside, and the lot density is arranged to conform to slope increases and decreases. Therefore, the Project would not fundamentally conflict with Policies 10-28 and 10-29. See Section 4.5, *Geology, Soils and Paleontological Resources*, for a detail discussion of grading.

As discussed in the *Analysis Methodology* above, it is possible for a Project to conflict with specific policies while maintaining consistency with the intent and overarching goals of the General Plan in an overall planning context. As also discussed above in this impact analysis, the Project as proposed would not fundamentally conflict with the intent of General Plan policies relating to preservation of the natural topography and visual assets of existing hillsides and ridgelines as well as policies that discourage extensive grading. As such, the Project would not directly conflict with General Plan Policy 3-28 by resulting in unmitigated environmental impacts related to land use policies and aesthetics.

The Project would, however, potentially conflict with Policy 3-105 and therefore includes a request for an amendment to the General Plan to change the language of Policy 3-105, as specified previously. Should the County decide that that Policy 3-105 should be amended to accommodate the Project, which is assumed herein as it is part of the Project proposed, the Project would not conflict with applicable County land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect, and the Project would have a less-than-significant effect.

Mitigation: None required.

Cumulative Impacts

Impact C-LUP-1: Development of the Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Project site, would not result in significant cumulative impacts to land use and planning. (All Criteria) (*Less Than Significant, no Mitigation Required*)

Geographic Context

The cumulative geographic context for land use, plans and policy considerations for development of the Project consists of the Project site, in addition to surrounding uses abutting the Project site. County staff identified several planned or approved but not constructed residential development projects, in addition to roadway infrastructure and natural habitat improvement project in the vicinity of the Project site. The projects are listed in Table 4.0-1, Cumulative Projects Near the Project Site, in Section 4.0, *Introduction to the Environmental Analysis*, of this chapter.

Cumulative Analysis

The Project would not result in significant impacts resulting from incompatible land uses and fundamental conflicts with plans and policies. The Project proposes residential uses located between residential uses to the north of the Project site and residential uses situated to the south. Nearby cumulative development is similar in nature (e.g., the Palms 10 Subdivision), and such cumulative development is consistent with nearby uses. Current and future development within the area would be subject to development guidance contained within the General Plan, as is the proposed Project. Therefore, it is not anticipated that the proposed Project, when considered with other foreseeable development in the area, would result in a cumulative impact with respect to land use and planning.

Mitigation: None required.

4.9.6 References – Land Use, Plans and Policies

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- Traverso Tree Service, 2019/ *Arborist Report for Bayview Subdivision No. 8809 Memo Report*. October 23, 2019.
- Traverso Tree Service, 2019/ *Addendum to 10/23/19 Arborist Report for Bayview Subdivision No. 8809 Memo Report*. August 12, 2020.

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4.10 Noise

4.10.1 Introduction

This section identifies the existing setting and evaluates potential impacts related to noise and vibration that could result from development under the Project. This section analyzes potential impacts on the ambient noise environment caused by construction and operation of development of the Project. This analysis focuses on noise and vibration impacts on humans and structures; noise and related effects on wildlife are addressed in Section 4.3, *Biological Resources*.

4.10.2 Environmental Setting

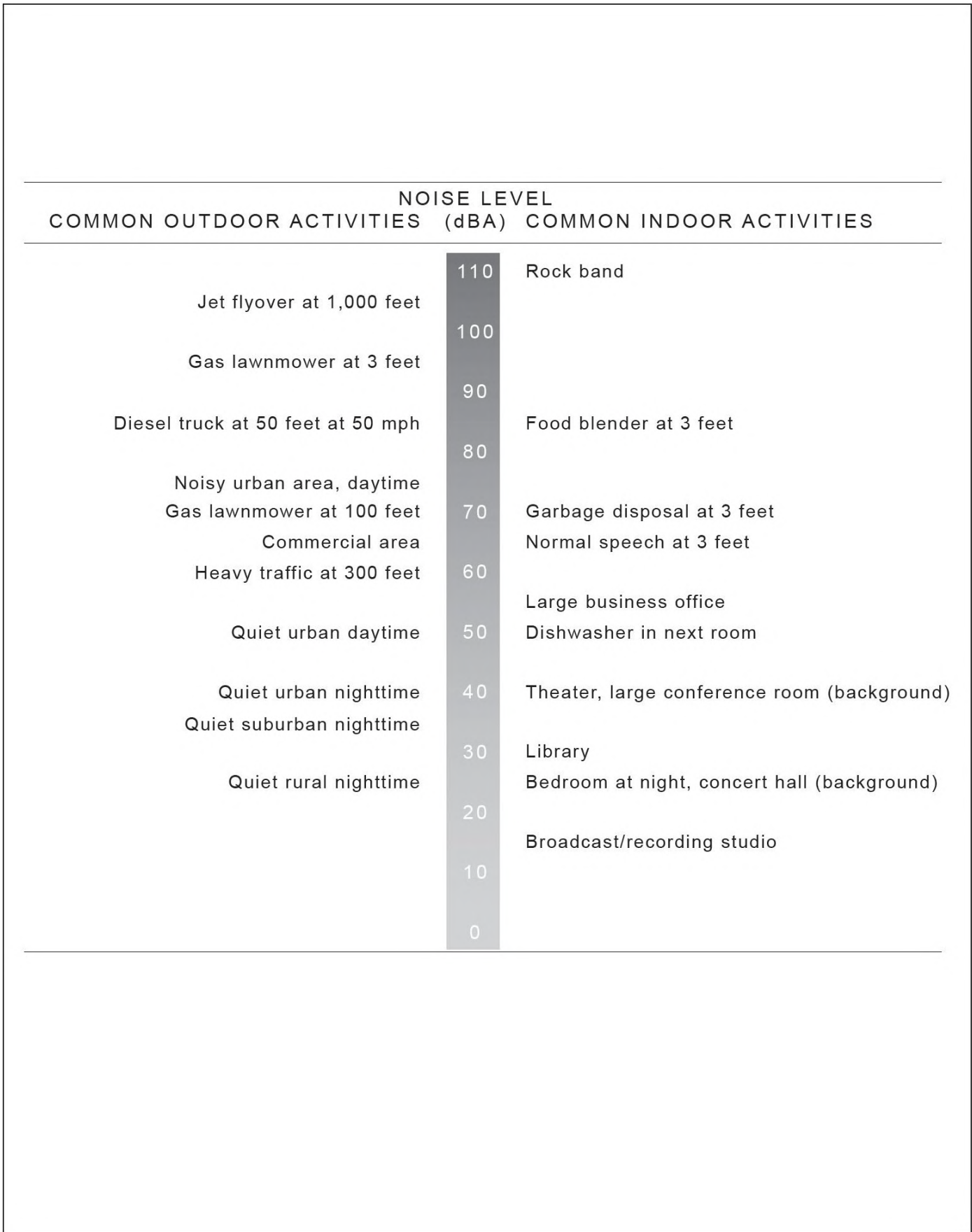
Noise Background

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 4.10-1**.

Noise exposure is a measure of noise over a period of time. Noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. Community noise varies constantly throughout the day due not only to slowly changing background noise but



also to the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts.

This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq} : the energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{max} : the instantaneous maximum noise level for a specified period of time.

L_{min} : the instantaneous minimum noise level for a specified period of time.

L_{dn} : also abbreviated DNL, it is a 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.

CNEL: similar to L_{dn} , the Community Noise Equivalent Level (CNEL) adds a 5-dB “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dB penalty between the hours of 10:00 p.m. and 7:00 a.m.

As a general rule, in areas where the noise environment is dominated by traffic, the L_{eq} during the peak-hour is generally within one to two decibels of the L_{dn} at that location (Caltrans, 2013).

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants generally experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual’s past experiences with noise.

Therefore, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called “ambient noise” level. In general, the more a new noise exceeds the previously existing ambient noise

level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans, 2013):

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived;
- Outside of the laboratory, a 3 dB change is considered a just-perceivable difference;
- A change in level of at least 5 dB is required before any noticeable change in human response would be expected; and
- A 10 dB change is subjectively heard as approximately a doubling in loudness and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but instead combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. When combining sound levels, the relationships presented in **Table 4.10-1** may be used as an approximation.

**TABLE 4.10-1
DECIBEL ADDITION RELATIONSHIPS**

When Two Decibel Values Differ by:	Add This Amount to the Higher Value:	Example:
0 or 1 dB	3 dB	70 + 69 = 73 dBA
2 or 3 dB	2 dB	74 + 71 = 76 dBA
4 to 9 dB	1 dB	66 + 60 = 67 dBA
10 dB or more	0 dB	65 + 55 = 65 dBA

SOURCE: Caltrans, 2013

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate, or lessen, at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on the topography of the area and environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Widely distributed noise, such as a large industrial facility spread over many acres or a street with moving vehicles, would typically attenuate at a lower rate, approximately 3 to 4.5 dB per doubling of distance from a linear source, such as a roadway.

Health Effects of Environmental Noise

The World Health Organization (WHO) is a source of current knowledge regarding the health effects of noise impacts. According to the WHO, sleep disturbance can occur when continuous indoor noise levels exceed 30 dBA or when intermittent interior noise levels reach 45 dBA,

particularly if background noise is low. With a bedroom window slightly open (a reduction from outside to inside of 15 dB), the WHO criteria suggest that exterior continuous (ambient) nighttime noise levels should be 45 dBA or below, and short-term events should not generate noise in excess of 60 dBA. The WHO also notes that maintaining noise levels within the recommended levels during the first part of the night is believed to be effective for the ability of people to initially fall asleep (WHO, 1999).

Other potential health effects of noise identified by the WHO include decreased performance for complex cognitive tasks, such as reading, attention span, problem solving, and memorization; physiological effects such as hypertension and heart disease (after many years of constant exposure, often by workers, to high noise levels); and hearing impairment (again, generally after long-term occupational exposure, although shorter-term exposure to very high noise levels, for example, exposure several times a year to concert noise at 100 dBA, can also damage hearing). Finally, noise can cause annoyance and can trigger emotional reactions like anger, depression, and anxiety. The WHO reports that, during daytime hours, few people are seriously annoyed by activities with noise levels below 55 dBA or moderately annoyed with noise levels below 50 dBA.

Vehicle traffic and continuous sources of machinery and mechanical noise contribute to ambient noise levels. Short-term noise sources, such as truck backup beepers, the crashing of material being loaded or unloaded, and car doors slamming contribute very little to 24-hour noise levels but are capable of causing sleep disturbance and severe annoyance. The importance of noise to receptors depends on both time and context. For example, long-term high noise levels from large traffic volumes can make conversation at a normal voice level difficult or impossible, while short-term peak noise levels, if they occur at night, can disturb sleep.

Vibration

As described in the FTA's *Transit Noise and Vibration Impact Assessment*, ground-borne vibration can be a concern for nearby neighbors, causing buildings to shake and rumbling sounds to be heard (FTA, 2006). In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses and heavy trucks on rough roads, construction activities such as blasting, sheet pile-driving and operation of heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to express RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration assessment include structures (especially older masonry structures), people

who spend a lot of time indoors (especially residents, students, the elderly and sick), and vibration sensitive equipment such as hospital analytical equipment and equipment used in computer chip manufacturing.

The effects of ground-borne vibration include movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls and rumbling sounds. In extreme cases, vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance can be well below the damage threshold for normal buildings.

Existing Ambient Noise Environment at the Project Site

The major noise sources in the vicinity of the Project site are traffic on I-680, train activity along the Burlington Northern Santa Fe Railroad (BNSF) tracks abutting the southern border of the site, aircraft overflights from Buchanan Field Airport which is located approximately 1 mile south of the site, and truck activity associated with the waste transfer station at Acme landfill located north/northeast of the site.

An environmental noise assessment of the Project site was conducted in November, 2017. Since that time the state-wide shelter-in-place order has resulted in a reduction in traffic and rail sources compared to “normal” conditions. Consequently, although monitoring occurred three years prior, the data points are considered to be more reflective of that occurring under non-pandemic conditions. As part of the assessment, two long-term measurements were collected at two locations nearest adjacent off-site sensitive land uses. The measurement locations are shown in **Figure 4.10-2**. The monitored data consistently showed that daytime noise levels typically range from 45 to 60 dBA. The DNL at the measurement locations were 56 dBA near Central Avenue to 63 dBA at the southern portion of the project site. A summary of the measured noise levels and the noise sources affecting the measurements at different locations is shown in **Table 4.10-2**.

**TABLE 4.10-2
AMBIENT NOISE LEVELS IN THE STUDY AREA**

Measurement Location	Duration	DNL, dBA	Hourly Leq Range, dBA	Hourly Lmax Range, dBA	Sources
LT-1	24 hours	56	41.6 – 54.3	50.7 – 78.6	Distant railroad activity, intermittent service vehicles, wind, birds and other natural sources
LT-2	24 hours	63	47.2 - 64.3	61.6 - 91.1	Railroad activity, distant traffic on I-680, wind, birds and other natural sources

SOURCE: ESA, 2017



SOURCE: Google Earth; ESA

Bayview Estates Residential Project . 208078

Figure 4.10-2
Noise Monitoring Locations

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved for those uses. Residences, schools, rest homes, hospitals, and churches are generally more sensitive to noise than commercial and industrial land uses. The Project site is located in an open space area surrounded by residential, and industrial land uses. The area to the northwest of the site and east of the freeway is characterized by a cluster of single-family homes. The closest existing sensitive receptors are residences located approximately 50 feet from the Project site's northernmost boundary.

4.10.3 Regulatory Setting

Noise issues are addressed in Title 24 of the *California Code of Regulations* (for new multifamily residential developments), local general plan policies, and local noise ordinance standards and codes. Federal, State, and local agencies regulate different aspects of environmental noise.

Federal

Truck Operations

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations, Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters (approximately 50 feet) from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

Vibration Impacts (Federal Transit Administration)

The FTA has adopted vibration standards that are used to evaluate potential building damage impacts related to construction activities. The vibration damage criteria adopted by the FTA are shown in **Table 4.10-3**.

**TABLE 4.10-3
CONSTRUCTION VIBRATION DAMAGE CRITERIA**

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

SOURCE: FTA, 2006

In addition, the FTA has also adopted standards associated with human annoyance for ground-borne vibration impacts for the following three land-use categories: Vibration Category 1 – High

Sensitivity, Vibration Category 2 – Residential, and Vibration Category 3 – Institutional. The FTA defines Category 1 as buildings where vibration would interfere with operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment but still have the potential for activity interference. The vibration thresholds associated with human annoyance for these three land-use categories are shown in **Table 4.10-4**. No thresholds have been adopted or recommended for commercial and office uses. Because the Project-induced vibration would be from construction activities, the impact thresholds for this Project would be based on Infrequent Events as defined in Table 4.10-4.

TABLE 4.10-4
GROUND-BORNE VIBRATION IMPACT CRITERIA FOR GENERAL ASSESSMENT

Land Use Category	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c
Category 1: Buildings where vibration would interfere with interior operations	65 VdB ^d	65 VdB ^d	65 VdB ^d
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB

NOTES:

- a "Frequent Events" is defined as more than 70 vibration events of the same source per day.
- b "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
- c "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day.
- d This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes.

SOURCE: FTA, 2006

State of California

State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings (other than detached single-family dwellings) that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are collectively known as the California Noise Insulation Standards and are found in *California Code of Regulations*, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A. There are no comparable noise standards for office or other commercial structures.

Vehicle Operations

The State of California establishes noise limits for vehicles licensed to operate on public roads. The pass-by standard for heavy trucks is consistent with the federal limit of 80 dBA. The pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80

dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanctions on vehicle operators by State and local law enforcement officials.

Noise Insulation Standard

The California Noise Insulation Standards found in CCR, Title 24 establish requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation noise. In this case, the noise insulation criterion is 45 dBA L_{dn} /CNEL inside noise-sensitive spaces. For developments with exterior transportation noise exposure exceeding 60 dBA L_{dn} /CNEL, an acoustical analysis and mitigation (if required) must be provided showing compliance with the 45 dBA L_{dn} /CNEL interior noise exposure limit.

Local Plans and Regulations

Contra Costa County General Plan

The Noise Element of the *General Plan* (Contra Costa County, 2010) sets various goals and policies that apply to all development projects in the County. Most of these policies address land use compatibility standards for evaluating new projects. Applicable policies and, where particularly relevant to the proposed Project, implementation measures, of the Noise Element include:

- *Goal 11-E:* To recognize citizen concerns regarding excessive noise levels, and to utilize measures through which the concerns can be identified and mitigated.
- *Policy 11-1:* New projects shall be required to meet acceptable exterior noise level standards as established in the Noise and Land Use Compatibility Guidelines contained in Figure 11-6 [reproduced here as Table 4.10-5]. These guidelines, along with the future noise levels shown in the future noise contour maps, should be used by the County as a guide for evaluating the compatibility of “noise-sensitive” projects in potentially noisy areas.
- *Policy 11-2:* The standard for outdoor noise levels in residential areas is a DNL of 60 dB. However, a DNL of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints. One example is small balconies associated with multi-family housing. In this case, second and third story balconies may be difficult to control to the goal. A common outdoor use area that meets the goal can be provided as an alternative.

**TABLE 4.10-5
CONTRA COSTA COUNTY LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS**

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE - L _{dn} or CNEL (db)							
	50	55	60	65	70	75	80	
Residential - Low Density Single Family, Duplex, Mobile Homes								
Residential – Multiple Family								
Transient Lodging – Motels, Hotels								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditoriums, Concert Halls, Amphitheaters								
Sports Arena, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business, Commercial, Professional								
Industrial, Manufacturing, Utilities, Agriculture								
Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.							
Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.							
Normally Unacceptable	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.							
Clearly Unacceptable	New construction or development generally should not be undertaken.							

NOTE: For lands within 3 miles of Buchanan Field and the East Contra Costa County Airports noise compatibility shall be adjusted to those of the ALUC which are roughly 5 CNEL lower than shown on this table.

SOURCE: Contra Costa County General Plan, Noise Element – Figure 11-6, 2010.

- *Policy 11-3:* If the primary noise source is train passbys, then the standard for outdoor noise levels in residential areas is a DNL of 70 dB. A higher DNL is allowable since the DNL is controlled by a relatively few number of train passbys that are disruptive outdoors only for short periods. Even though the DNL may be high, during the majority of the time the noise level will be acceptable.
- *Policy 11-5:* In developing residential areas exposed to a DNL in excess of 65 dB due to single events such as train operation, indoor noise levels due to these single events shall not exceed a maximum A-weighted noise level of 50 dB in bedrooms and 55 dB in other habitable rooms. Single event indoor residential noise levels from airport related causes will be 45 dB CNEL.
- *Policy 11-6:* If an area is currently below the maximum “normally acceptable” noise level, an increase in noise up the maximum should not be allowed necessarily.
- *Policy 11-8:* Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours to provide relative quiet during the more sensitive evening and early morning periods.
- *Policy 11-9:* Sensitive land use shall be encouraged to be located away from noise areas, or the impacts of noise on these uses shall be mitigated. If residential areas are planned adjacent to industrial noise sources, then a noise study shall be performed to determine the extent of any noise impacts and recommend appropriate noise mitigation measures.
- *Policy 11-11:* Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.
- *Implementation Measure 11-b:* Evaluate the noise impacts of a project upon existing land uses in terms of applicable Federal, State, and local codes, and the potential for adverse community response, based on a significant increase in existing noise levels.
- *Implementation Measure 11-c:* Encourage use of the following mitigation measures to minimize noise impacts of proposed development projects:
 - 1) Site planning. Proper site planning is the first mitigation measure that should be investigated to reduce noise impacts. By taking advantage of the natural shape and terrain of a site, it often is possible to arrange the buildings and other uses in a manner that will reduce and possibly eliminate noise impact. Specific site planning techniques include:
 - a) Increasing the distance between the noise source and the receiver;
 - b) Placing non-noise-sensitive land uses such as parking lots, maintenance facilities, and utility areas between the source and the receiver;
 - c) Using non-noise-sensitive structures such as garages to shield noise-sensitive areas; and
 - d) Orienting buildings to shield outdoor spaces from a noise source.
 - 2) Architectural layout of buildings. In many cases, noise reduction can be attained by careful layout of noise-sensitive spaces. Bedrooms, for example, should be placed away from freeways. Quiet outdoor spaces can be provided next to a noisy highway by creating a U-shaped development which faces away from the highway.

- 3) **Noise Barriers:** Noise barriers or walls are commonly used to reduce noise levels from ground transportation noise sources and industrial sources. While serving a dual purpose in that they can reduce noise level both outdoors and indoors, to be effective, a barrier must interrupt the line of sight between the noise source and the receiver. A barrier should provide at least 5 dB of noise reduction to achieve a noticeable change in noise levels.
 - 4) **Construction modifications:** If site planning, architectural layout, noise barriers, or a combination of these measures does not achieve the required noise reduction, then construction modification to walls, roofs, ceilings, doors, windows, and other penetrations may be necessary.
- **Implementation Measure 11-e:** Noise mitigation features shall be incorporated into the design and construction of new projects or be required as conditions of project approval.

Table 4.10-5 indicates ranges for acceptable, conditionally acceptable, and unacceptable noise exposure levels for different land uses in Contra Costa County pursuant to Policy 11-1 (Contra Costa County, 2010).

The Noise Element also discusses how noise increases are perceived by people (Contra Costa County, 2010):

An important factor in assessing a person's subjective reaction is to compare the new noise environment to the existing noise environment. In general, the more a new noise level exceeds the prior existing level, the less acceptable it is. Therefore, a new noise source will be judged more annoying in a quiet area than it would be in a noisier location.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived.

- Except under special conditions, a change in sound level of 1 dB cannot be perceived;
- Outside of the laboratory, a 3 dB change is considered a just-noticeable difference;
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected; and
- A 10 dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

Contra Costa County Code

The County's Code does not contain quantitative standards for regulating noise from mechanical equipment. However, Section 716-8.1004 of the County Code addresses hours of operation for excavation and grading activities. If operations under the permit are within five hundred feet of residential or commercial occupancies, except as otherwise provided by conditions of approval for the Project, grading operations shall be limited to weekdays and to the hours, between 7:30 a.m. and 5:30 p.m., except that maintenance and service work on equipment may be performed at any time.

State Model Community Noise Control Ordinance

Contra Costa County does not have a quantitative noise ordinance for regulating noise from mechanical equipment or construction. However, a Model Community Noise Control Ordinance was created by the State of California (California Department of Health, 1977) to provide guidance for communities to develop their own noise ordinances. The Model Noise Ordinance has not been adopted by Contra Costa County and is not enforced by the State of California, but is discussed in this analysis to help provide context for the potential noise impacts of the Project.

The exterior noise level limits recommended by the Model Community Noise Control Ordinance are shown in **Table 4.10-6** below and correspond to the median noise level (L_{50})¹. These limits are not to be exceeded at the receiving land use for more than 30 minutes in an hour. The limits are to be adjusted based on the duration of the source, the level of the ambient noise, the character of the sound, and the location of the measurement.

**TABLE 4.10-6
MODEL COMMUNITY NOISE CONTROL ORDINANCE EXTERIOR NOISE LIMITS
(LEVELS NOT TO BE EXCEEDED MORE THAN 30 MINUTES IN ANY HOUR)**

Receiving Land Use Category	Time Period	Noise Level (dBA)		
		Noise Zone Classification ^a		
		Rural Suburban	Suburban	Urban
One and Two Family Dwellings	10 p.m. – 7 a.m.	40	45	50
	7 a.m. – 10 p.m.	50	55	60
Multiple Dwelling Residential Public Space	10 p.m. – 7 a.m.	45	50	55
	7 a.m. – 10 p.m.	50	55	60
Limited Commercial Some Multiple Dwellings	10 p.m. – 7 a.m.	55		
	7 a.m. – 10 p.m.	60		
Commercial	10 p.m. – 7 a.m.	60		
	7 a.m. – 10 p.m.	65		
Light Industrial	Any time	70		
Heavy Industrial	Any time	75		

NOTES:

a = The classification of different areas of the community in terms of environmental noise zones shall be determined by the Noise Control Office(r), based upon assessment of community noise survey data. Additional area classifications should be used as appropriate to reflect both lower and higher existing ambient levels than those shown. Industrial noise limits are intended primarily for use at the boundary of industrial ones rather than for noise reduction within the zone.

SOURCE: California Department of Health, 1977.

In addition, the Model Community Noise Control Ordinance includes a noise limit of DNL 80 dB for short-term or intermittent construction activities (mobile equipment) adjacent to multi-family residential properties, and DNL 75 dB at single-family residential properties. Though the Model Community Noise Control Ordinance has not been adopted into the County Code, this reference

¹ L_{50} is the sound level in dBA that is met or exceeded fifty percent of the time.

is provided as a context for assessing noise that could be generated during construction of the Project. Some activity or equipment noise cannot meet this standard (such as back-up alarms, which are required by State safety regulations).

Contra Costa County Airport Land Use Compatibility Plan (ALUP)

The Project site would be located within the airport influence area of Buchanan Field Airport. New single-family, duplex and mobile homes are considered normally acceptable at aircraft noise exposures up to 55 dBA, CNEL and marginally acceptable at exposures between 55 and 65 dBA, CNEL. The ALUP also considers a maximum, aircraft-related interior noise level of 45 dBA, CNEL to be acceptable for living and sleeping areas of single and multi-family residences with the airport influence area. This interior noise standard would be achieved if residential uses are located outside an airport's 60 dB contour. The Project site is located outside the 60 dB noise contour area for Buchanan Field Airport (Contra Costa County Airport Land Use Commission, 2000).

4.10.4 Significance Criteria

Consistent with Appendix G of the State CEQA *Guidelines*, the Project would cause significant adverse impacts with respect to noise and/or ground-borne vibration if it would result in:

- a) Generation of a substantial permanent increase in ambient noise levels in the Project vicinity in excess of standards established in the general plan or noise ordinance, or applicable standards of other agencies above levels existing without the Project;
- b) For a project 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 area to excessive noise levels; or
- c) Generation of excessive ground-borne vibration or ground-borne noise levels.

Analysis Methodology

A significant noise impact would result if, as a result of Project, noise levels increase substantially at existing noise-sensitive land uses (e.g., residences) or construction-related vibrations would cause building damage to adjacent structures or cause annoyance to a substantial number of receptors over an extended time period.

Construction Noise

Construction noise is treated differently than long-term traffic noise because it is temporary and intermittent. Significant noise impacts would result from construction if noise levels were sufficiently high to interfere with speech, sleep, or normal residential activities. The Project would result in a significant construction impact if construction activity would occur outside of the daytime hours permitted by the noise policies established in the *General Plan* and/or result in noise levels substantially greater than existing noise levels at nearby sensitive receptors. Construction-

related noise that exceeds a maximum level of 75 dBA L_{max} at single-family residences would constitute a substantial temporary or periodic increase in ambient noise levels.

Traffic Noise

A change in noise levels of less than 3 dBA is not discernible to the general population; an increase in average noise levels of 3 dBA is considered barely perceptible, while an increase of 5 dBA is considered readily perceptible to most people (Caltrans, 2013). Therefore, traffic noise would be considered significant if the Project would increase ambient noise levels along roadways in the vicinity of the Project site above existing ambient noise levels by greater than 5 dBA and if the resultant noise level would be inconsistent with the standards in the General Plan land use/noise compatibility matrix (shown in Table 4.10-5).

Stationary Noise Sources

Contra Costa County does not have a quantitative noise ordinance for regulating noise from mechanical equipment. Therefore, this analysis applies the standards presented in Table 4.10-6 for suburban single-family dwellings of 45 dBA during nighttime hours and 55 dBA during daytime hours which is adapted from the Model Community Noise Control Ordinance was created by the State of California.

Vibration

Caltrans uses a vibration limit of 0.5 inches per second, PPV for structurally sound buildings designed to modern engineering standards (Caltrans, 2013). A conservative vibration limit of 0.25 inches/sec PPV has been used for buildings that are found to be structurally sound but for which structural damage is a major concern. The County has not adopted significance thresholds specific to groundborne vibration.

Cumulative

Cumulative traffic noise level significance is determined by a two-step process. First, a comparison is made of the increase in noise levels for cumulative conditions with the Project site and existing conditions. If roadside noise levels would increase by 5 dB between the existing and Project conditions, a cumulative noise impact would occur. However, buildout of the Project would only be considered to result in a significant cumulative roadside noise impact if its contribution to an increase of 5 dB or more were to be cumulatively considerable. Consequently, the second step of the cumulative noise analysis (if a cumulative noise impact is predicted) is to evaluate if the contribution of the Project to roadside noise levels is cumulatively considerable. This second procedure (if necessary) involves assessing whether the Project contribution to roadside noise levels (i.e., the difference between cumulative conditions and cumulative plus Project conditions) would result in an increase of 3 dB or more, which Caltrans recognizes as a barely perceptible increase (Caltrans, 2013).

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the setting circumstances and proposed Project with each of the six significance criteria stated above clearly show that no impacts associated with noise would result for one significance criterion. The Project site would not result in an impact related to exposure of people residing or working in the area to excessive noise levels due to location within the vicinity of a private airstrip (**Criterion e**). The Project site is not located within the vicinity of a private airstrip. Therefore, the potential for this impact is not discussed further.

4.10.5 Impact Analysis

Impact NOI-1: Construction of the Project would result in a temporary increase in ambient noise levels. (Criterion a) (Potentially Significant prior to Mitigation)

The Project includes the development of 144 single-family homes and associated internal roadways and a park area, and preservation of open space areas. The Project would retain a hilltop as undeveloped land. Project construction is expected to occur over a one to three years depending on weather conditions and Project phasing. Construction staging would occur primarily on the site and the Project applicant also owns adjacent parcels along Palms Drive and Central Avenue, and will use these parcels for staging during the final stages of construction.

Construction, although typically short-term, can be a significant source of noise. Construction is most significant when it takes place near sensitive land uses, occurs at night, or in early morning hours. Local governments typically regulate noise associated with construction equipment and activities through enforcement of noise ordinance standards, implementation of general plan policies and imposition of conditions of approval for building or grading permits.

Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. It is anticipated that temporary construction vehicle access to the Project site during construction would occur along Pacheco Boulevard, Arthur Road, Central Avenue and Palms Drive, subject to the County's approval of a *Construction Management and Traffic Control Plan* to be prepared by the Project applicant. **Table 4.10-7** shows typical noise levels produced by various types of construction equipment.

Pile driving is not anticipated to be used as part of Project construction. Therefore, as shown in Table 4.10-3, excavation and grading form the noisiest phases of construction for the Project. To support the development of 144 housing lots and associated internal roadway system, the Project's grading plan proposes to substantially alter the existing topography of the Project site. The Project is estimated to require approximately 900,000 cubic yards (CY) of grading with soil removed from the hillside to be used as fill on-site. The main noise sources associated with excavation and grading are the operations of excavators removing material and trucks hauling excavated materials to other locations on the site that would need to be filled.

**TABLE 4.10-7
TYPICAL NOISE LEVELS FROM DEMOLITION/
CONSTRUCTION EQUIPMENT OPERATIONS**

Construction Equipment	Noise Exposure Level, dBA @ 50 Feet
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer (Truck)	85
Concrete Pump (Truck)	82
Concrete Vibrator	76
Crane-Derrick	88
Crane-Mobile	83
Dozer	85
Generator	81
Grader	85
Loader	85
Paver	89
Pump	76
Roller	74
Saw	76
Scraper	89
Heavy Diesel Truck	88

SOURCES: Federal Transit Administration, 2006.

The main noise sources associated with exterior finishing would be operation of concrete mixers and pumps for application of stucco material to the building exterior. The nearest existing residential receptors located 50 feet to the north on Central Avenue would experience exterior noise levels of up to 88 dBA when grading activities are nearest to these existing residences, which could be expected to last up to two months. These noise levels would be substantially greater than the existing ambient noise environment at the receptors for this geographic area and time period. With respect to the broader scope of construction activities, these activities will take place on the opposite side of Vine Hill, and more than 750 feet from sensitive receptors. On the premise that noise dissipates at a rate of 6 to 7.5 dB per doubling of distance from the source, construction noise impacts would generally range from 73 dBA to 56 dBA, which is below applicable standards. Please note that even this estimate is conservative, and does not account for intervening topography.

The project would result in a violation of the City's noise standards if construction activity would occur outside of the allowable daytime hours specified by the City noise ordinance. Specifically, construction noise is exempted from the noise standards provided grading activities within 500 feet of residences are limited to between the hours of 7:30 am and 5:30 pm Monday through Friday.

Although construction activities associated with the Project would be temporary in nature, and the maximum noise levels discussed above would be short-term, noise generated during Project construction would temporarily elevate ambient noise levels in discrete locations at the edge of the Project area above the threshold of 75 dBA L_{max} , namely various residences located near the Project site along Central Avenue. Consequently, **Mitigation Measure NOI-1** is identified to address this significant construction-related noise impact.

With implementation of Mitigation Measure NOI-1 this impact would be reduced to less than significant.

Mitigation Measure NOI-1: The applicant shall create and implement a development-specific noise reduction plan to reduce noise at sensitive receptors along Central Avenue to below 75 dBA L_{max} , which shall be enforced via contract specifications. Contractors may elect any combination of legal, non-polluting methods to maintain or reduce construction-related noise to threshold levels or lower, as long as those methods do not result in other significant environmental impacts or create a substantial public nuisance. Examples of measures that can effectively reduce noise impacts include locating equipment in shielded and/or less noise-sensitive areas, selection of equipment that emits low noise levels, and/or installation of noise barriers such as enclosures to block the line of sight between the noise source and the nearest receptors. Other feasible controls could include, but shall not be limited to, fan silencers, enclosures, and mechanical equipment screen walls. In addition, the applicant shall require contractors to limit construction activities in the northernmost 500 feet of the project site to daytime hours between 7:30 am and 5:30 pm Monday through Friday. The plan for attenuating construction-related noises shall be implemented prior to the initiation of any work that triggers the need for such a plan.

Significance after Mitigation: Less than Significant.

Impact NOI-2: Project operations could cause a long-term increase in ambient noise levels in the Project site vicinity. (Criterion a) (*Less Than Significant, No Mitigation Required*)

Most of the noise generated once the Project is constructed and occupied would primarily be traffic-generated noise. The Project would contribute to an increase in local traffic volumes, resulting in higher noise levels along local roadways. Peak hour traffic noise projections were made using the California Vehicle Noise Reference Energy Mean Emission Levels (Calveno) and traffic data for the project for those road segments that would experience the greatest increase in traffic volume and that would pass through residential areas. According to Caltrans' *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (Caltrans, 2013), peak hour traffic noise levels are approximately equal to the CNEL/Ldn. The segments analyzed and results of the modeling are shown in **Table 4.10-8** for Existing Conditions, Existing plus Project, Cumulative, and Cumulative plus Project development conditions.

As shown in Table 4.10-8, when project traffic is added to existing traffic levels, the greatest effect on ambient traffic noise levels would occur along the project's entrance road, Central

Avenue, where traffic noise would increase by 1.9 dBA. This and all other roadways analyzed are predicted to experience a traffic noise increase of less than 3 dBA.² Therefore, the project-level increase in traffic would be a less than significant impact.

Mitigation: None required.

**TABLE 4.10-8
TRAFFIC ROADSIDE NOISE LEVELS IN THE PROJECT SITE VICINITY**

Roadway Segment	(A)	(B)	(B-A)	(C)	Cumulative Plus Project (2040)	Difference between Cumulative Plus Project and 2018 Baseline	Difference between Cumulative Plus Project and Cumulative No Project
	(A)	(B)	(B-A)	(C)	(D)	(D-A)	(D-C)
Central Avenue							
between Arthur Road and Project Site	55.4	57.3	1.9	55.4	57.3	1.9	1.9
Arthur Road							
Between Central Avenue and I-680	58.2	59.4	1.2	58.7	59.7	1.5	1.0
between I-680 and Pacheco Boulevard	63.0	63.6	0.6	65.7	66.1	3.1	0.4

NOTES:

Road center to receptor distance is 15 meters (approximately 50 feet) for all roadway segments. Noise levels were determined using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model.

**Impact NOI-3: Project construction could generate ground-borne vibration. (Criterion c)
(Less Than Significant, No Mitigation Required)**

Construction activities would include excavation, site preparation work, foundation work, and new building, framing, and finishing. Construction activities may generate perceptible vibration when heavy equipment or impact tools such as jackhammers or hoe rams are used. Pile driving can cause excessive vibration. However, pile driving would not be required during the construction of the Project which would either use mat foundations or drilled pier foundation (Engeo, 2003).

The Caltrans-based threshold for architectural damage for conventional sensitive structures is 0.5 in/sec PPV for new residential structures and modern commercial buildings and 0.25 in/sec PPV for historic and older buildings. As stated in Section 4.4, *Cultural and Tribal Cultural Resources*, of this EIR, there are no historic-era architectural or built environment resources are

² As discussed in the *Environmental Setting* (Existing Ambient Noise Environment at the Project Site), the current state-wide shelter-in-place order has resulted in a reduction in traffic and rail sources compared to “normal” conditions. Therefore, previous data points are considered to be more reflective of that occurring under non-pandemic conditions and used in this analysis.

located within the Project site. The closest structures to the Project site are non-historic single family homes located 50 feet to the north on Central Avenue.

The use of a vibratory roller for preparing roadway surfaces would be expected to generate the highest vibration levels during Project construction. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Vibratory rollers typically generate vibration levels of 0.210 in/sec PPV at a distance of 25 feet (FTA, 2006). The closest existing off-site structures (residences) are located 50 feet from where roadway construction activities would occur. At this distance, the closest structure would be exposed to a vibration level of approximately 0.07 in/sec PPV, which is substantially less than the Caltrans' vibration impact threshold. Consequently, the Project would have a less-than-significant impact with regard to ground-borne vibration.

Mitigation: None required.

Cumulative Impacts

Impact C-NOI-1: Project construction activities, in conjunction with construction noise from cumulative development noise in the vicinity of the Project site, could cause a substantial temporary or periodic increase in ambient noise levels in the Project site vicinity during construction. (Criterion a) (Potentially Significant prior to Mitigation)

Geographic Context

The geographic scope of analysis for cumulative noise and vibration impacts encompasses sensitive receptors within approximately 500 feet of the proposed Project site. Beyond 500 feet, the contributions of noise from other projects would be greatly attenuated through both distance and intervening structures, and their contribution would be expected to be minimal.

Impact Analysis

Construction

A cumulative impact arises when two or more individual projects, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current and reasonably foreseeable projects. Notably, any project that would individually have a significant noise impact would also be considered to have a significant cumulative noise impact.

Section 4.0, *Introduction to the Environmental Analysis* (4.0.6, Cumulative Analysis) in this chapter summarizes reasonably foreseeable future projects in the vicinity of the Project site. Cumulative projects shown Table in 4.0-1, Cumulative Projects Near the Project Site, located near the Project site could contribute to cumulative construction noise. Most cumulative projects

presented in Table 4.0-1 are beyond 500 feet from the Project site and would not contribute to cumulative construction noise effects.

The exact phasing of construction activities for nearby cumulative projects is not known, but the only significant Project impacts that have the potential to cumulate are those Project construction activities affecting neighbors along Central Avenue. However, there are no foreseeable development projects that have the potential to cumulate. The Palms 10 Subdivision is a development proposed by the applicant, which has confirmed that construction for the two projects will not overlap, but instead would occur in sequence. Therefore, some homes in the Vine Hill neighborhood west of the Project site could be exposed to higher levels of construction noise. Because the exact timing of construction activities is unknown, this impact is conservatively determined to be potentially significant.

Implementation of **Mitigation Measure NOI-1**, identified above, would reduce the proposed Project's contribution to this potential cumulative construction noise impact to a less-than-significant level.

Mitigation: Implement Mitigation Measure NOI-1 (see under Impact NOI-1).

Operations

Impact C-NOI-2: Operation of the proposed Project, in conjunction with cumulative development, would not cause a substantial permanent increase in ambient noise levels in the Project vicinity. (Criterion a) (*Less Than Significant, No Mitigation Required*)

Operational noise impacts of the proposed Project would primarily result from increased traffic on the local roadway network. Cumulative plus Project traffic data was used to estimate the cumulative operational noise increases shown in Table 4.10-8, above.

Cumulative traffic noise level significance is determined by a two-step process. First, a comparison is made of the increase in noise levels between cumulative conditions with the Project and existing conditions to increments recognized by Caltrans as representing a readily perceptible increase in noise levels. If the roadside noise levels would increase by 5 dB, a cumulative noise impact would be considered to occur. However, the proposed Project would only result in a significant cumulative roadside noise impact if its contribution to an increase of 5 dB or more were to be cumulatively considerable. Consequently, the second step of the cumulative roadside noise analysis (if a cumulative noise impact is predicted) is to evaluate if the contribution of the Project to roadside noise levels is cumulatively considerable. This second procedure (if necessary) involves assessing whether the Project contribution to roadside noise levels (i.e., the difference between cumulative conditions and cumulative plus Project conditions) would result in an increase of 3 dB or more which Caltrans recognizes as a barely perceptible increase (Caltrans, 2013).

Noise from cumulative development in the area would primarily occur from increase in motor vehicle traffic. Table 4.10-8 shows that modeled 2040 noise levels (from cumulative and project traffic) would increase by less than 5 dBA over existing noise levels for all analyzed roadway

segments. Therefore, the contribution of project and cumulative traffic to noise levels along these segments would be less than significant. A change in noise level of 5 dBA is required before any noticeable change in human response would be expected. Therefore, the cumulative impact would be considered less than significant.

Mitigation: None required.

References – Noise

California Department of Health, 1977. *Model Community Noise Control Ordinance*. Office of Noise Control. April.

Contra Costa County Airport Land Use Commission, 2000. *Contra Costa County Airport Land Use Compatibility Plan*. Adopted by Contra Costa County Airport Land Use Commission. December 13.

Contra Costa County, 2010. *Contra Costa County General Plan 2005-2020. Noise Element*. Published January 18, 2005; reprinted July 2010.

Contra Costa County, 2017. *Contra Costa County Code Article 716-8.1004 Work Hours*. Available at https://library.municode.com/ca/contra_costa_county/codes/ordinance_code?nodeId=TIT7BURE_DIV716GR_CH716-8RE_716-8.1004WOHO. Accessed November 10, 2017.

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4.11 Population and Housing

4.11.1 Introduction

This section identifies and evaluates the potential impacts related to population and housing that could result from Project implementation. This section includes a description of existing and projected conditions, criteria used to determine impact significance, and a discussion of impacts associated with implementation of the Project. The demographic information presented in this section provides the statistical basis for determining population-related inputs and/or impacts in other sections of this Draft EIR. The analysis in this EIR primarily considers Association of Bay Area Governments (ABAG) projections (i.e., ABAG's *Projections 2013*) as well as the *Contra Costa County General Plan* ("General Plan"), where appropriate. The area of Martinez and its Sphere of Influence (SOI)¹ is considered in this analysis to be the local population to represent the Vine Hill/Pacheco Boulevard Area community and the Project.

4.11.2 Environmental Setting: Population

Region

The population of the Bay Area, which consists of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties, was approximately 7.8 million in 2018. Population in the area is growing rapidly, with approximately 33 percent growth expected to occur from 2010 to 2040 (ABAG/MTC, 2017).

Contra Costa County

Contra Costa County has experienced a population growth rate that has generally exceeded the Bay Area average since 1940. The County has been the third most populated in the Bay Area since 1990, following Santa Clara and Alameda Counties. The population of Contra Costa County was approximately 1,096,068 in 2016 (U.S. Census, 2017a). According to *Projections 2013*, housing, jobs and income for the nine-County San Francisco Bay Region, Contra Costa County's population is expected to continue to increase over the next 30 years (ABAG, 2013a). ABAG estimates that Contra Costa County will have a population of approximately 1,123,500 by 2020 and 1,338,400 by 2040, and will maintain its position as the third-most populated Bay Area County.

Population estimates and percent increases on a Countywide level between 1990 and 2040 for the Bay Area region are presented in **Table 4.11-1**. Contra Costa County's population growth was considerable between 2000 and 2015 (an increase of approximately 136,884 people, or 14 percent), and surpassed all other Bay Area counties in terms of percent increase for this period. Between 2020 and 2040, Contra Costa County's population is expected to increase at a higher rate, approximately 19 percent.

¹ A Sphere of Influence is a planning area usually larger than, although sometimes contiguous with, a city's municipal boundary. Spheres of Influence are assigned by the Local Agency Formation Commission and typically indicate the probable physical boundary and service area of the city (including areas which may eventually be annexed).

**TABLE 4.11-1
 BAY AREA POPULATION BY COUNTY AND PERCENT CHANGE, 1990-2040**

County	1990	2000	2015	% Change 2000-2015	2020	% Change 2015-2020	2040	% Change 2020-2040
Alameda	1,276,702	1,443,939	1,580,800	9.5%	1,654,200	4.6%	1,987,900	20.1%
Contra Costa	803,732	948,816	1,085,700	14.4%	1,123,500	3.5%	1,338,400	19.1%
Marin	230,096	247,289	256,700	3.8%	261,100	1.7%	285,400	9.3%
Napa	110,765	124,279	140,300	12.9%	144,200	2.8%	163,700	13.5%
San Francisco	723,959	776,733	847,000	9.1%	890,400	5.1%	1,085,700	21.9%
San Mateo	649,623	707,163	745,400	5.4%	775,100	4.0%	904,400	16.7%
Santa Clara	1,497,577	1,682,585	1,877,700	11.6%	1,977,900	5.4%	2,423,500	22.5%
Solano	339,471	394,930	427,300	8.2%	442,700	3.6%	511,600	15.6%
Sonoma	388,222	458,614	500,500	9.1%	517,700	3.4%	598,500	15.6%

SOURCES: 1990 and 2000 population data provided by the State of California Department of Finance (2007a); remaining data provided by ABAG *Projections 2013*.

Central Contra Costa County and Martinez

Contra Costa County is commonly considered as comprising three distinct geographic areas: West County, East County and Central County. West County is characterized by urbanized shorelines, a concentration of oil refineries, other industrial land uses and I-80. East County contains the largest land area where communities that began as agricultural centers have recently developed into suburban residential areas. Much of the recent population growth in the County has taken place in the East County subarea. Central County includes 10 of the 19 cities in the County and comprises mostly low-density bedroom communities. The 10 cities in the Central County subarea comprise approximately 42 percent of the County’s total population, while unincorporated areas contribute 15 percent (ABAG, 2013a).

The City of Martinez and its SOI², which includes the Vine Hill/Pacheco Boulevard Area and the Project site, are located within Central Contra Costa County (Contra Costa County, 2009; ABAG, 2013a). **Table 4.11-2** presents population projections in the City of Martinez, nearby cities and unincorporated Contra Costa County between 2010 and 2040. Table 4.11-2 also includes population projections for the Martinez SOI.

² A Sphere of Influence is a planning area usually larger than, although sometimes contiguous with, a city’s municipal boundary. Spheres of Influence are assigned by the Local Agency Formation Commission and typically indicate the probable physical boundary and service area of the city (including areas which may eventually be annexed).

**TABLE 4.11-2
 CHANGES IN POPULATION
 MARTINEZ AND VICINITY, 2010-2040**

City	2010	2020	% Change 2010-2020	2040	% Change 2020-2040
Martinez	35,824	37,100	3.6%	40,800	10.0%
Martinez and SOI	42,891	44,400	3.5%	48,600	9.5%
Concord	122,067	128,500	5.3%	181,500	41.3%
Pleasant Hill	33,152	34,400	3.8%	37,700	9.6%
Walnut Creek	64,173	69,900	8.9%	83,100	18.9%
Unincorporated	159,785	166,100	4.0%	182,500	9.9%
County Total	1,049,025	1,123,500	7.1%	1,338,400	19.1%

SOURCE: ABAG, 2013a.

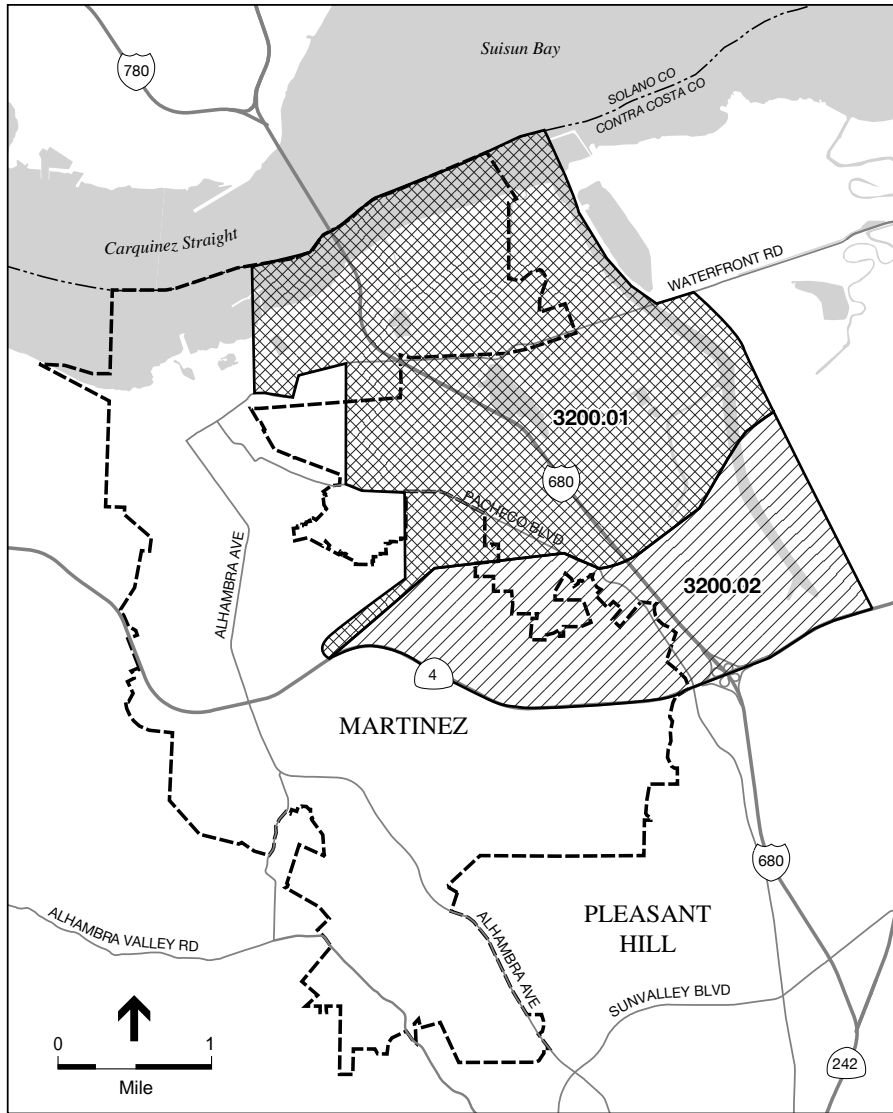
ABAG projects that the population of the City of Martinez and its SOI will grow from 42,891 in 2010 to 44,400 in 2020, an increase of approximately 3.5 percent. ABAG projects a higher growth rate of about 7.1 percent for Contra Costa County during the same period: from 1,049,025 in 2010 to 1,123,500 in 2020. From 2010 to 2040 the population of the City of Martinez and its SOI is projected to increase by approximately 13 percent (to an estimated 48,600 people). This is slightly lower than the population growth rate for the City alone (an estimated 14 percent increase from 2010) and lower than the population growth rate for the County as a whole (an estimated 28 percent increase from 2010) (ABAG, 2013a).




Project Site

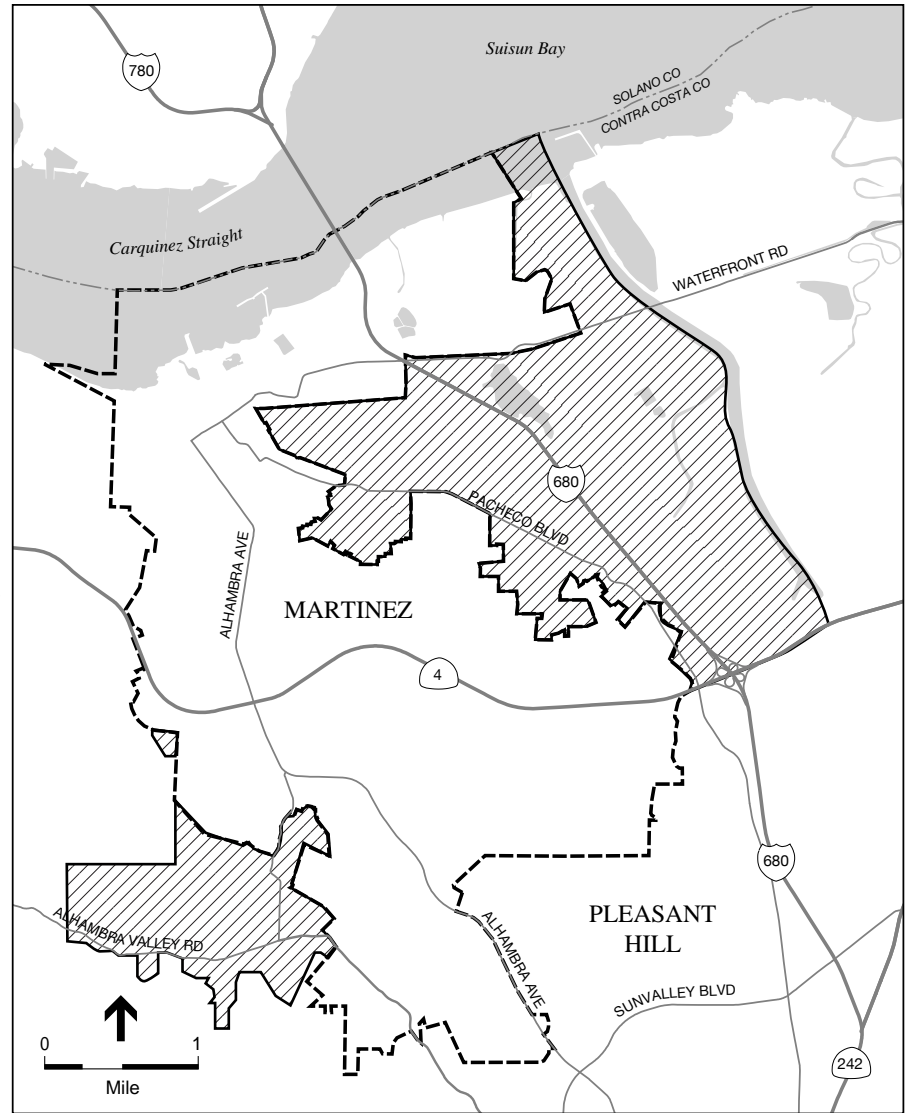
The Project site is located in the Vine Hill/Pacheco Boulevard neighborhood of the County. The U.S. Census identifies the Vine Hill area as a Census Designated Place (CDP).³ As of 2016, the U.S. Census determined there were 4,144 people living within the CDP in 1,275 households, with an average persons per household rate of 3.3 (U.S. Census Bureau, 2017a). As shown in **Figure 4.11-1**, the Project site is located within U.S. Census Tract 3200.01. The Vine Hill CDP also includes Census Tract 3200.02.



The Project site is located within the City of Martinez SOI and is under the jurisdiction of Contra Costa County. The population and housing analysis uses the larger area of Martinez and its SOI as the local population to represent the Vine Hill/Pacheco Boulevard Area community and the vicinity of the Project site.

³ Census Designated Places are communities that lack separate municipal government, but which otherwise resemble incorporated places, such as cities or villages. CDPs are delineated to provide data for settled concentrations of population that are identifiable by name but are not legally incorporated under the laws of the state in which they are located. The Census provides information only for the year 2015 for Vine Hill CDP. ABAG includes Vine Hill as part of the City of Martinez Sphere of Influence. Thus, this analysis relies largely on ABAG data, with Census data cited where necessary.



-  Census Tract 3200.01
-  Census Tract 3200.02
-  City Boundary



-  City Sphere of Influence
-  City Boundary

SOURCE: SB ABAG; US Census

Bayview Estates Residential Project . 208078

Figure 4.11-1
Census Tracts and Martinez Sphere of Influence

This is considered both a suitably conservative and inclusive approach to the analysis that implicitly recognizes the commonality of the local community within the Martinez SOI boundary.

The Project site does not currently include housing or residents. The closest existing residences are located approximately 50 feet northwest of the site’s northernmost boundary.

4.11.3 Environmental Setting: Employment

Employment

The total number of jobs in Contra Costa County, held by both County residents and non-residents was about 344,920 in 2010. By 2040, the County is projected to include approximately 467,390 jobs, representing an increase of about 36 percent between 2010 and 2040. There were approximately 21,330 jobs in Martinez and its SOI in 2010. According to *ABAG Projections 2013*, the number of jobs in Martinez and its SOI are forecast to increase by approximately 24 percent between 2010 and 2040 to a total of 26,360 jobs (ABAG, 2013a). **Table 4.11-3** summarizes employment trends within Martinez, its SOI and vicinity.

**TABLE 4.11-3
 MARTINEZ AND VICINITY EMPLOYMENT CHANGE, 2010–2040**

City	Number of Jobs					
	2010	2015	% Change 2010-2015	2020	2040	% Change 2020-2040
Martinez	18,320	19,260	5.1%	20,260	22,490	11.0%
Martinez and SOI	21,330	22,490	5.4%	23,740	26,360	11.0%
Concord	47,640	52,900	11.0%	58,880	69,450	18.0%
Pleasant Hill	17,370	18,680	7.5%	20,120	22,940	14.0%
Walnut Creek	41,720	45,550	9.2%	49,860	57,380	15.1%
Unincorporated	40,220	43,760	8.8%	47,670	54,040	13.4%
County Total	344,920	374,610	8.6%	407,810	467,390	14.6%

SOURCE: ABAG, 2013a (“Total Jobs”).

In January 2017, the County’s total labor force was approximately 555,900 workers (EDD, 2017). This total represents an increase of approximately 32,000 workers from January 2010 to January 2017 (EDD, 2016b). The unemployment rate for California peaked at 12.2 percent in 2010, then declined to 5.5 percent in January 2017 (EDD, 2016a, 2017). Contra Costa County’s unemployment rate was 4.3 percent in January 2017 (EDD, 2017) and had previously reached 11.3 percent in January 2010 (EDD, 2016b). There were approximately 24,100 unemployed persons in Contra Costa County in January 2017 (EDD, 2017).

4.11.4 Environmental Setting: Housing

Region: Housing Units

The Bay Area's economy has produced more jobs than housing units, particularly in job-rich communities. Consequently, the cost of buying or renting a place to live in the region has escalated. Given the amount, location, and type of housing being planned, the region's housing costs are expected to remain among the highest in the nation.

Contra Costa County: Housing Units

Between 1990 and 2018, the number of housing units increased throughout the Bay Area by approximately 22.2 percent. During this period, Contra Costa County experienced an approximate 30.9 percent growth in the housing stock, adding about 97,753 units. In terms of the percentage increase, Contra Costa was exceeded only by Solano County, which experienced an increase of about 33.3 percent in the housing stock (an increase of about 36,650 housing units). **Table 4.11-4** compares the number of housing units from 1990 to 2018 in each of the nine Bay Area Counties.

Most of Contra Costa County's housing consists of single-family detached homes. In the unincorporated areas, as of 2018, single-family and multi-family units comprised approximately 80 and 16 percent of the housing stock, respectively, with the remaining 4 percent comprised of mobile homes. Countywide, the housing stock is comprised of approximately 67 percent single-family homes and 33 percent multi-family units (DOF, 2016).

The homeowner vacancy rate for Contra Costa County in 2010 was 2.1 percent and the rental vacancy rate was 6.8 percent; the homeowner vacancy rate for Contra Costa County in 2015 was estimated at 0.9 percent and the rental vacancy rate was estimated at 3.5 percent (U.S. Census, 2017a, 2017b). The total number of housing units in Contra Costa County in 2015 was estimated at 405,001 (U.S. Census, 2017a). The estimated combined vacancy rate for the County on January 1, 2016, was 4.1 percent (DOF, 2016).

City of Martinez and SOI: Households

There were 16,852 households within the City of Martinez and its SOI in 2010. By 2020, ABAG forecasts that approximately 528 households will be added to the City and its SOI, for a total of 17,380 households in 2020 (ABAG, 2013a). By 2040, the total is anticipated to grow to 18,430 households. This growth constitutes an increase in households of about 3 percent by 2020 and 9 percent by 2040 (ABAG, 2013a).

Household Income

The City of Martinez had an estimated median household income of approximately \$87,959 in 2015. The median income of the Vine Hill CDP in 2015 was approximately \$62,208. By comparison, the median household income in Contra Costa County in 2015 was estimated at \$80,185 (U.S. Census, 2017b).

**TABLE 4.11-4
 NUMBER OF HOUSING UNITS BY COUNTY FOR THE BAY AREA 2000-2018**

County	1990 Housing Units	2000 Housing Units	2010 Housing Units	2018 Housing Units	% Change in Housing Units 1990–2018
Alameda	504,109	540,183	581,372	602,047	19.4%
Contra Costa	316,170	354,577	400,263	413,923	30.9%
Marin	99,757	104,990	111,214	112,293	12.5%
Napa	44,199	48,554	54,759	55,157	24.8%
San Francisco	328,471	346,527	376,162	397,083	20.9%
San Mateo	251,782	260,578	271,031	278,044	10.4%
Santa Clara	540,240	579,329	631,920	667,970	24.6%
Solano	119,136	134,513	152,698	158,786	33.3%
Sonoma	161,062	183,153	204,572	203,579	26.4%
Bay Area Total	2,364,926	2,552,404	2,783,991	2,888,882	22.2%

SOURCE: DOF, 2007b; DOF, 2018.

Household Size

According to ABAG, the average household size in the City of Martinez and its SOI in 2015 was 2.47 persons per household, which was lower than the Contra Costa County’s average of 2.77. ABAG projects that, within the City and its SOI, the average household size will remain the same in 2020, and slightly increase to approximately 2.52 by 2040. Similarly, the average household size within the County is expected to remain the same in 2020, and slightly increase to 2.85 persons per household in 2040 (ABAG, 2013a).

4.11.5 Environmental Setting: Jobs/Housing Balance

While not explicitly addressed under CEQA through its significance criteria to determine a project’s effect on the environment, the concept of a jobs/housing balance is used to examine whether a region has a balance between its housing supply and its employment base. This discussion is provided in the Environmental Setting as it is part of the context against which the Project’s effects regarding population, housing and jobs is considered. The primary function of the assessment involves a generalized measure of employment or housing need in areas where the relationship between these two factors may be imbalanced, and to indicate the severity of such a condition on traffic congestion, its related effects to air quality, and housing affordability.

A region with significantly more jobs than housing is likely to experience escalation in housing prices (with a concurrent decline in affordability for the lower-income segments of the community) and therefore an intensified need for housing. Conversely, a region that has relatively few jobs in comparison to employed residents may have many workers commuting to jobs

elsewhere which can lead to increased traffic congestion and adverse effects on both local and regional air quality.

Between 2015 and 2040, the number of jobs in Contra Costa County is projected to increase by 92,780, or 25 percent, a substantial increase. Several Central County cities, such as Walnut Creek and San Ramon, have transformed into regional job centers based largely on office and commercial businesses (ABAG, 2013a). The jobs/employed residents ratio in Contra Costa County is weighted slightly towards employed residents. In 2015, according to ABAG, the jobs/employed residents ratio was about 0.76 (374,610 jobs and 489,750 employed residents). This ratio is expected to increase only slightly to 0.77 in 2020 (407,810 jobs and 526,530 employed residents) and to 0.79 in 2040 (467,390 jobs and 592,060 employed residents).

According to ABAG, the City of Martinez and its SOI has slightly more jobs than employed residents, indicating that residents from other areas commute into the area to work. This reflects employment by the County government as well as jobs provided by other major employers in Martinez, such as the Shell and Marathon refineries. The jobs/employed residents ratio within Martinez and its SOI in 2015 was 1.05 (22,490 jobs for 21,450 employed residents). ABAG projects that the jobs/employed residents ratio will remain the same, based on 23,740 jobs and 22,640 employed residents by 2020 and increase somewhat to 1.14, based on 26,360 jobs and 23,180 employed residents by 2040. Therefore, the trend of residents commuting from outside of the area for employment in Martinez and its SOI is anticipated to continue.

Table 4.11-5 compares existing and projected jobs to employed residents ratios in Martinez and its SOI, as well as Contra Costa County and the Bay Area as a whole.

**TABLE 4.11-5
 BAY AREA, CONTRA COSTA COUNTY, AND MARTINEZ AND ITS SOI JOBS TO
 EMPLOYED RESIDENTS RATIOS (2015, 2020, 2040)**

	2015	2020	2040
Bay Area			
Jobs	3,669,990	3,987,150	4,505,230
Employed Residents	3,547,310	3,849,790	4,350,070
Ratio	1.04	1.04	1.04
Contra Costa County			
Jobs	374,610	407,810	467,390
Employed Residents	489,750	526,530	592,060
Ratio	0.77	0.78	0.79
Martinez and SOI			
Jobs	22,490	23,740	26,360
Employed Residents	21,450	22,640	23,180
Ratio	1.05	1.05	1.14

SOURCE: ABAG, 2013a

4.11.6 Regulatory Setting

State of California

Assembly Bill 2853

Assembly Bill 2853 (AB 2853), enacted in 1980, requires all governments to discuss their regional “fair share allocation” of regional housing need by income group in their Housing Elements. In the nine-County San Francisco Bay Area, ABAG is the council of governments authorized under California law to identify existing and future housing needs for the region. The most recent Regional Housing Needs Allocation (RHNA), covering the period from 2015 to 2023, identifies housing needs in each ABAG jurisdiction and allocates a fair share of that need to every community. ABAG’s determination of the local share of regional housing takes into consideration factors including market demand for housing, employment opportunities, availability of suitable sites and public facilities based on local plans, commuting patterns as they relate to the differences between job creation and labor supply, type and tenure of housing and housing needs of farmworkers.

According to the RHNA, the City of Martinez has a total housing construction need of 469 units (ABAG, 2013b). Unincorporated Contra Costa County needs to supply a total of 1,367 new housing units for the planning period between 2015 and 2023 (an annual need of approximately 195 units). This number includes accommodating anticipated population growth, achieving a reasonable vacancy rate and replacing substandard dwellings. **Table 4.11-6** shows the 2015-2023 planning period allocation for Martinez and Contra Costa County (ABAG, 2013b). The RHNA distributes Contra Costa County’s fair share housing need between its cities and unincorporated areas as a whole. In Contra Costa County, the County maintains jurisdiction over land use and development within unincorporated SOIs. Therefore, the allocation of housing need generated by the City of Martinez SOI, outside the City limits, is assigned to the County.

**TABLE 4.11-6
 PROJECTED NUMBER OF NEEDED UNITS 2015-2023**

	Affordability Level				Total
	Very Low	Low	Moderate	Above Moderate	
Martinez	124	72	78	195	469
Unincorporated County	374	218	243	532	1,367
County Total	5,264	3,086	3,496	8,784	20,630

SOURCE: ABAG, 2013b

Local Plans and Policies

Contra Costa County General Plan

The Land Use Element of the *General Plan* contains goals and policies related to employment and housing. Relevant policies regarding housing and specific to the Vine Hill / Pacheco Boulevard area are listed below:

Residential Land Use Uses – Countywide

- *Policy 3-21:* The predominantly single family character of substantially developed portions of the County shall be retained. Multiple-family housing shall be dispersed throughout the County and not concentrated in single locations. Multiple-family housing shall generally be located in proximity to facilities such as arterial roads, transit corridors, and shopping areas.
- *Policy 3-22:* Housing opportunities for all income levels shall be created. Fair affordable housing opportunities should exist for all economic segments of the County.
- *Policy 3-25:* Innovation in site planning and design of housing developments shall be encouraged in order to upgrade quality and efficiency of residential living arrangements and to protect the surrounding environment.
- *Policy 3-27:* Existing residential neighborhoods shall be protected from incompatible land uses and traffic levels exceeding adopted service standards.
- *Policy 3-28:* New residential development shall be accommodated only in areas where it will avoid creating severe unmitigated adverse impacts upon the environment and upon the existing community.
- *Policy 3-29:* New housing projects shall be located on stable and secure lands or shall be designed to mitigate adverse or potentially adverse conditions. Residential densities of conventional construction shall generally decrease as the natural slope increases.

Housing Element

The *General Plan* Housing Element establishes comprehensive, long-term goals and implementing policies focused largely on the provision of affordable housing within the County, including the following that relate to the proposed Project:

- *Goal 3:* Increase the supply of housing with a priority on the development of affordable housing, including housing affordable to extremely-low income households.
- *Goal 6:* Provide adequate sites through appropriate land use and zoning designations to accommodate the County's share of regional housing needs.

4.11.7 Significance Criteria

Consistent with Appendix G of the CEQA *Guidelines*, the Project would have a significant effect on population and housing if it would:

- a) Inducing substantial growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); or
- b) Displacing substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Analysis Methodology

This section assesses the potential for the Project to adversely affect existing housing or people, or result in substantial growth not previously planned for or otherwise anticipated. Considered for this assessment are the existing uses on the Project site and anticipated growth as represented in ABAG's *Projections 2013* and the *General Plan*. In some cases, projections of population, housing and employment presented in the General Plan may differ from regional projections for Contra Costa County, Martinez, and other areas made by ABAG. The analysis primarily considers *Projections 2013* because ABAG's projections are more recent estimates of demographic trends and forecasts. Use of *Projections 2013* also allows the analysis to rely on a consistent data source for the City of Martinez and its SOI, which includes the Vine Hill/Pacheco Boulevard Area where the Project site is located, in addition to the adjacent City of Martinez. This analysis uses the area of Martinez and its SOI as the local population to represent the Vine Hill/Pacheco Boulevard Area community and the Project.

In general, demographic data presented in this section is rounded according to significant digits, or rounded to the nearest tenth, unless otherwise indicated.

Topics with No Impact or Otherwise Not Addressed in this EIR

Review and comparison of the existing land use setting and the proposed Project support that no impacts associated with the displacement of existing housing (**Criterion b**) or people (**Criterion c**) since, as discussed in the *Environmental Setting* above, no housing or people currently exist on the Project site; the property is undeveloped.

4.11.8 Impact Analysis

Impact POP-1: The Project would not directly or indirectly induce substantial population growth. (Criterion a.) (Less than Significant, No Mitigation Required)

Population Growth

The Project would result in the construction of 144 new single-family units and approximately 356 residents, based on the 2.7 persons per household ratio for Martinez and its SOI. The population increase resulting from the Project would increase the 2040 population estimated for the City of Martinez and its SOI by 0.7 percent (to 48,956 persons). Also, the 356 new residents generated by the Project represent approximately 7.8 percent of the 2020-2040 growth anticipated in Martinez and its SOI (356 of 4,556 persons). (ABAG, 2013a)

Relative to the Countywide projections, with the Project's 356 residents, the 2040 population estimated for the County would increase by 0.03 percent (to 1,338,756 persons), and the Project would represent approximately 0.2 percent of the 2020-2040 growth anticipated (356 of 215,256 persons). This would be about the same when factoring the 2040 Countywide growth projected in the General Plan, 219,050 persons. (ABAG, 2013a)

Both locally and Countywide, the population growth resulting from the Project will not represent a substantial increase in population projected and planned locally and Countywide; in both instances the increase is less than 1.0 percent. Moreover, the Project would situate more homes closer to an employment center (e.g., County government and other employers in Martinez), alleviating pressure to construct homes further afield. Ultimately, the Project's inducement of population growth would be a less than significant impact.

While not the basis for considering the CEQA impact regarding substantive growth, estimating how much of the anticipated 2040 growth in Martinez and its SOI would be caused by the proposed Project is influenced by the proposed change in the General Plan land use designation with the Project. As discussed in Section 4.0, *Introduction to the Environmental Analysis*, of this chapter, *Projections 2013* factors in planned and anticipated land use development and assumptions that local jurisdictions submit to ABAG for incorporation of ABAG's regional growth projections. Because the Project site is not designated within a General Plan land use classification or Zoning designation that permits residential development, no population growth specifically from the Project site would have been assumed in the *Projections 2013*.

The Project does not involve or require the extension of roads or other infrastructure that would induce substantial growth in the area, as the Project site is essentially an infill location. The Project would extend utility lines throughout the Project site, as well as connect to existing backbone utilities. Some existing utility lines would require repair and/or upgrade specifically to serve the proposed development.

Household Growth

Population growth is largely generated by new housing. Martinez and its SOI is estimated to have 17,380 households in 2020 (ABAG, 2013a). By 2040, the total is anticipated to grow to 18,430 households, which constitutes about 6.0 percent (ABAG, 2013a). ABAG also estimates that by 2040, Contra Costa County would experience an increase of approximately 87,700 households (from 375,360 to 463,070) without the Project, representing a 23.3 percent increase (ABAG/MTC, 2012). Assuming the approximately 4.1 percent combined Countywide owner-renter vacancy rate as of 2016, the proposed Project would add approximately 350 households (DOF, 2016), similarly resulting in 8.0 percent and 23.4 percent increases in the 2020-2040 household for Martinez and its SOI, and the entire County, respectively.

These increases with the proposed Project are not considered substantial growth; moreover, the Project's contribution would result in new single-family housing in an urban environment that is experiencing a housing shortage, as identified in the County's Housing Element.

Housing and Jobs

There are no uses on the Project site. Temporary construction-related employment would increase on the site during the construction of the Project, and once completed, the Project site would be occupied exclusively by residential uses, open space and a neighborhood park and would not involve permanent employment. Further, as noted above, ABAG projects that the jobs/employed residents ratio in Martinez and its SOI will continue to increase slightly to 1.05 jobs to residents by 2020 and 1.14 jobs to residents by 2040. The Project would not impact long-term employment or substantially change the jobs/housing balance within Martinez and its SOI or Countywide. It is also reasonable to consider that new residents of the proposed Project may be existing residents (or workers) who currently reside (or work) locally or within the County.

Summary

The population generated by the proposed Project would be within the population projections established in ABAG Projections 2013 as well as the General Plan. Specifically, the Project would increase the projected 2040 population of the City of Martinez and its SOI by 0.7 percent and represent approximately 7.8 percent of the 2020-2040 growth anticipated of that areas' growth. Similarly, the Project would increase the projected 2040 Countywide population by 0.03 percent and represent approximately 0.2 percent of the 2020-2040 growth anticipated for the County. The population would not represent substantial growth beyond that previously anticipated and planned for in the area.

Mitigation: None required.

Cumulative Impacts

Impact C-POP-1: The Project, in conjunction with cumulative development, would not result a significant cumulative impact by directly or indirectly causing substantial growth, and to which the Project would have a cumulatively considerable contribution. (All Criteria) (*Less Than Significant, No Mitigation Required*)

Geographic Context

The geographic context for the cumulative consideration of population and housing effects addresses area wide and regional growth, and includes the Project site and its surroundings, the City of Martinez and its SOI, and Contra Costa County.

Cumulative Analysis

Significance Criterion a (whether the Project would induce substantial growth, directly or indirectly, such that additional infrastructure is required) is inherently a cumulative consideration, as it considers the Project's growth relative to, and as part of, past, present and future data trends and plans. Most of the cumulative context is embedded in the development forecasts in *Projections 2013* in the cumulative projects list (projects that are past, approved, pending, under

construction) included in Table 4.0-1 in Section 4.0, *Introduction to the Environmental Analysis*, of this chapter. The analysis above is based on these projections, which take into account cumulative growth through 2040 for the geographic context described above.

The General Plan EIR noted that the County would grow in population over the planning period, concentrated in the incorporated cities. The General Plan EIR noted that the anticipated population growth could have an adverse impact on housing affordability and encouraged development of a variety of housing types to meet the growing demand. (Contra Costa County, 2010) As listed in Table 4.0-1, each of the relatively large cumulative projects within the Project vicinity involve residential development, like the proposed Project. Also as discussed under Impact POP-1, the Project, considered in combination with cumulative development, including the known nearby residential developments, will result in a less than significant impact. Moreover, the Project's population would not contribute considerably to any cumulatively significant impact with respect to population and housing

Mitigation: None required.

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4.12 Public Services and Recreation

4.12.1 Introduction

This section describes the existing provision of public services to the Project area, including fire prevention and suppression, emergency medical services, police protection, public schools and parks. Potential effects to recreational facilities are also addressed in this section. Potential impacts related to the provision of public services and recreation are identified, as are mitigation measures to reduce or eliminate potentially significant impacts.

As introduced in Section 4.1 (Introduction to the Environmental Analysis) of this document, the way that the COVID-19 pandemic has directly affected human behavior - requiring people to shelter in place, implement social distancing, and make other changes to the manner in which they live - have affected the demand and/or use of certain public services, in the short-term and possibly permanently in some ways. However, this analysis is based on an environmental baseline without COVID-19, and it would be speculative to identify long-term consequences of the pandemic at this time.

4.12.2 Environmental Setting

Fire Prevention and Suppression/ Emergency Medical Services

The project site is located within the service area of the Contra Costa County Fire Protection District (CCCFPD), one of seven fire protection districts serving the unincorporated County area. The CCCFPD provides fire and emergency medical services to a population of nearly one million people in a 304 square-mile District area, and through mutual aid, in and around the 19 cities and unincorporated communities of Contra Costa County, including nine cities and unincorporated areas with 24 fire stations, as well as full service to business and industry, including several petroleum refineries and chemical manufacturing plants. The CCCFPD's service area covers the majority of the central part of the County and extends from Oakley on the east, Moraga on the south and the cities of Richmond, Pinole and Hercules on the west. The northern limits of the service area are defined by the shorelines of Suisun Bay and the Sacramento and San Joaquin rivers (Contra Costa County, 2020b). The Division maintains 24 fully staffed stations and more than 400 employees, and 2 more stations staffed with paid-on-call Reserve Firefighters. Minimum daily staffing is 77 personnel. The 24 on-duty companies are trained and regularly cross-staff numerous specialty response units including 18 wildland fire apparatus, 3 rescue units, a trench rescue unit, a fire rescue boat, and a mobile breathing air support unit (CCCFPD, 2020).

The CCCFPD maintains one station that provides fire protection and emergency medical aid to the Project site. The Fire District first-response station, Station #9, is located approximately 3 miles south of the Project site at 209 Center Avenue in Martinez.

Police Protection

The Project site is served by the Contra Costa County Sheriff's Office ("Sheriff's Office") and the California Highway Patrol. The Sheriff's Office is the largest law enforcement agency in Contra Costa with over 1,100 sworn and professional employees. The Office offers a full range of services to over one million residents in the 715-square mile County (including incorporated cities). In addition to providing police protection services, the County Sheriff investigates crimes and functions as the County Coroner (Contra Costa County Sheriff's Office, 2020a.) In 2018, the Office of the Sheriff had a ratio of 1.02 sworn staff personnel per 1,000 residents in the County, including residents in incorporated cities with police departments.

The Project site is generally served by the Muir Station, located at 1980 Muir Road in Martinez, approximately 2.5 miles south of the Project site, although calls for Sheriff response may be responded to by personnel in other Stations within the County. The jurisdiction covered by Muir Station covers the unincorporated area from Bay Point west to Highway 4/Cummings Skyway; the northern I-680 corridor of unincorporated areas of Lafayette, Concord, Pleasant Hill and Martinez, and the communities of Clyde and Pacheco. The Muir Station responds to calls for service, including 911 calls. Muir Station currently has one Lieutenant, five Sergeants, 23 Deputies, one Community Service Officer, one Crime Prevention Specialist, and three volunteers (Contra Costa County Sheriff's Office, 2020b).

Schools

The Project site is located within the boundaries of the Martinez Unified School District (MUSD), which operates four elementary schools, one middle school, one high school and two alternative schools, all located in the City of Martinez. The 2019-2020 District-wide enrollment was 4,156 students (California Department of Education, 2020).

School-age children living in the proposed Bayview subdivision would attend Las Juntas Elementary School located at 4105 Pacheco Boulevard, Martinez Junior High School at 1600 Court Street, and Alhambra Senior High School at 150 E Street (MUSD, 2017). For the 2019-2020 school year, total enrollment was 384 at Las Juntas Elementary School, 934 at Martinez Junior High and 1,217 at Alhambra Senior High School. Although Martinez Junior High has experienced decreases in enrollment in recent years (-8.5 percent), enrollment of Las Juntas Elementary and Martinez Junior High have experienced 2.6 and 3.1 percent increases over the past four academic years, respectively. Districtwide enrollment has remained steady in that timeframe, with 0.3 percent growth since the 2016-2017 academic year. (California Department of Education, 2020).

Other Public Services and Facilities

Other public facilities in the community include medical facilities and libraries. The closest hospital to the Project site is the Contra Costa Regional Medical Center at 2500 Alhambra Avenue in Martinez, located approximately 2.6 miles west of the proposed Project site, and John Muir Medical Center at 540 East Street in Concord, approximately one-half mile southwest of the Project site. The

John Muir Medical Center at 1601 Ygnacio Valley Road in Walnut Creek, 2.8 miles from the Project site, provides the only trauma center for the County. The closest library is the Martinez Library, approximately 2.7 miles northwest of the Project site, at 740 Court Street in Martinez.

Parks

Regional Parks and Major Open Space Areas

Within Contra Costa County, regional parks and open spaces areas are owned and managed by federal and state governments, the East Bay Regional Park District and municipalities. Regional parks and open space areas within 10 miles of the Project site include the Radke Martinez Regional Shoreline, the Carquinez Strait Regional Shoreline Park, Briones Regional Park, John Muir National Historic Park, Acalanes Ridge Open Space, Lime Ridge Open Space, and the Waterbird Regional Preserve (Contra Costa County, 20b; City of Walnut Creek, 2017; EBRPD, 2020).

The East Bay Regional Park District (EBRPD) manages a network of 73 regional parks covering more than 125,000 acres throughout Contra Costa and Alameda counties. The District maintains a network of more than 1,330 miles of hiking and multi-use trails. The EBRPD maintains these facilities to conserve open space and cultural resources and provide outdoor recreational opportunities. The District's *Master Plan 2013* identifies the existing and planned parks and trails within its service area and establishes policies and guidelines for maintaining District standards of service in resource conservation, management, interpretation, public access and recreation (EBRPD, 2013; EBRPD, 2020).

The closest EBRPD park to the Project site is the Waterbird Regional Preserve, located less than 0.5 miles northwest of the Project site. Much of the 198-acre park consists of marshland, with a loop multi-purpose trail located on the higher eastern half of the park. The focal point of the Preserve is the Al McNabney Marsh, of which EBRPD owns 46 acres in the southern end, and Mt. View Sanitary District (MVSD) owns 69 acres in the northern and deeper end (EBRPD, 2020).

Also nearby is Radke Martinez Regional Shoreline, located about 2.6 miles northwest of the Project site. The western half of the park provides cultivated lawns, small family picnic areas and several miles of hiking trails near the pond and creek within the park and along the shoreline of Carquinez Strait. The eastern half of the park is operated by the City of Martinez and includes group picnic areas, softball fields, soccer fields, bocce ball courts and a horse arena. Immediately adjacent to the west of the Radke Martinez Regional Shoreline is the Carquinez Strait Regional Shoreline. This 1,145-acre park and the adjoining 1,939-acre Crockett Hills Regional Park consist mostly of open grass-covered hillsides overlooking Martinez and the Carquinez Strait and wooded ravines crossed by multi-purpose trails (EBRPD, 2020).

Briones Regional Park, located about 3.5 miles southwest of the Project site, is substantially larger than the shoreline parks described above. Encompassing 6,255 acres, Briones is a protected wilderness in central Contra Costa County with open rolling hillsides, deep, wooded canyons and a large network of multi-purpose trails open to hikers, bikers and horseback riders. An archery range, campgrounds and picnic areas are also located in the park.

Just north of the Briones Regional Park, the National Park Service manages the John Muir National Historic Site's 326-acre oak woodland called Mt. Wanda (National Park Service, 2017). The 202-acre Acalanes Ridge Open Space and the Lime Ridge Open Space, roughly 1,226 acres, are a part of the City of Walnut Creek Open Space and Trails Division. They are located approximately 9 miles south and approximately 6 miles southeast of the Project site respectively (City of Walnut Creek, 2017).

Three large regional trails pass through the Project area. The California State Riding and Hiking Trail starts at the Carquinez Strait Regional Shoreline in Martinez and currently ends in Concord; extensions of the trail to Mt. Diablo State Park are under construction. The Contra Costa Canal Regional Trail is a 13.5-mile paved multi-use trail that traces a horseshoe-shaped alignment from Martinez to Concord. It connects with other regional trails, including the California State Riding and Hiking Trail. The Iron Horse Trail currently runs approximately 32 miles between the cities of Concord and Pleasanton, following the former Southern Pacific Railroad right-of-way, and passes in proximity to the Project site, along Pacheco Creek, terminating at the shoreline (EBRPD, 2020).

Local Parks

Local parks are areas set aside for active and passive recreational uses in the immediate vicinity of their users. These parks might include play apparatus for children, play areas, sports fields and courts, swimming pools, community centers, picnic areas and open grass areas. Local parks are found in developed areas and often serve as focal points for neighborhoods and communities.

A number of small local parks are located in the Project area, most of them operated by the City of Martinez. The closest park is Morello Park, located 1 mile southwest of the Project site, at the intersection of Morello Avenue and Morello Park Drive. This 5-acre park has a baseball field, basketball court, tennis court, volleyball court, picnic areas and daycare center. Holiday Highlands Park is slightly further, at Fig Tree Lane and Eastwoodbury Lane, about 1.1 miles southwest of the Project. Encompassing 2 acres, the park provides a neighborhood picnic area, playground and multi-use field. Mountain View Park on Parkway Drive north of Howe Road is about 1.9 miles west of the Project site. A baseball field, multi-use field, basketball court and picnic area are located in this 4.5-acre park (City of Martinez, 2017).

One park operated by the City of Concord—Hillcrest Community Park—would also be readily accessible by Project residents. Located about 2 miles to the east at the intersection of Olivera Road and Peralta Road, this 26-acre community park has picnic areas, a model airplane flying area, a children's play area and athletic fields for softball, baseball and soccer (City of Concord, 2017).

4.12.4 Regulatory Setting

State Plans and Policies

Senate Bill 50

The Leroy F. Greene School Facilities Act of 1998, or Senate Bill 50 (SB 50), restricts the ability of local agencies to deny land use approvals on the basis that public school facilities (classrooms, auditoriums, etc.) are inadequate. SB 50 establishes the base amount of allowable developer fees per square foot of residential construction and per square foot of commercial construction. Public school districts can, however, impose higher fees provided they meet the conditions outlined in the act. Private schools are not eligible for fees collected pursuant to SB 50. School impact fees are payments to offset capital cost impacts associated with new developments, which result primarily from costs of additional school facilities, related furnishings and equipment, and projected capital maintenance requirements. Payment of school fees required by SB 50 is considered full and complete mitigation of any school impacts. Accordingly, agencies cannot require additional mitigation for any school impacts.

Base fees adopted by State Allocation Board (SAB), which is the policy-level body for the programs administered by the Office of Public School Construction within the State Department of General Services. The SAB is authorized by Government Code Section 65995(b)(3) to increase the base fee every two years. In order to levy the fees, school districts must prepare a nexus analysis demonstrating why the fees are required and how they will be used.

Emergency Services Plan

Contra Costa County approved their most recent Emergency Operations Plan (EOP) on June 16, 2015. The EOP establishes the emergency organization, assigns tasks, specifies policies and general procedures, and provides for the coordination of planning efforts of the various emergency staff and service elements to ensure the most effective response to emergencies. The EOP applies to all emergencies in unincorporated areas of Contra Costa County and which generates situations requiring planned, coordinated responses. The EOP also applies to emergencies that occur within incorporated areas, to the extent that those emergencies require multi-agency coordination at the operational area level. (Contra Costa County, 2015)

Local Plans and Policies

Contra Costa County General Plan

The *Contra Costa County General Plan* (General Plan) contains goals, policies and implementation measures pertaining to water service, sewer service and solid waste within its Public Facilities/Services Element and Growth Management Element. The Public Facilities/Services Element addresses the vital infrastructure and public services that must be provided. The Growth Management Element establishes performance standards for the provision of essential public utilities/services. The Conservation Element addresses resource protection,

including energy and water. The Open Space Element addresses parks and recreation and the preservation and efficient management of open space.

General Plan policies, and where especially relevant to the proposed Project, General Plan goals, implementation measures and/or performance standards are listed below:

Public Facilities/Services Element

- *Policy 7-1:* New development shall be required to pay its fair share of the cost of all existing public facilities it utilizes, based upon the demand for these facilities which can be attributed to new development.
- *Policy 7-2:* New development, not existing residents, should be required to pay all costs of upgrading existing public facilities or constructing new facilities which are exclusively needed to serve new development.
- *Policy 7-4:* The financial impacts of new development or public facilities should generally be determined during the project review process and may be based on the analysis contemplated under the Growth Management Element or otherwise. As part of the project approval, specific findings shall be adopted which relate to the demand for new public facilities and how the demand affects the service standards included in the growth management program.

Public Protection

- *Policy 7-57:* A sheriff facility standard of 155 square feet of station per 1,000 population shall be maintained within the unincorporated area of the County.
- *Policy 7-58:* Sheriff patrol beats shall be configured to assure minimum response times and efficient use of resources.
- *Policy 7-59:* A maximum response time goal for priority 1 or 2 calls of five minutes for 90 percent of all emergency responses in central business district, urban and suburban areas, shall be strived for by the sheriff when making staffing and beat configuration decisions.
- *Policy 7-60:* Levels of service above the county-wide standard requested by unincorporated communities shall be provided through the creation of a County Service Area or other special government unit.

Fire Protection

- *Policy 7-59:* A maximum response time goal for priority 1 or 2 calls of five minutes for 90 percent of all emergency responses in central business district, urban and suburban areas, shall be strived for by the sheriff when making staffing and beat configuration decisions.
- *Policy 7-62:* The County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station, and a minimum of 3 firefighters to be maintained in all central business district (CBD), urban and suburban areas.
- *Policy 7-63:* The County shall strive to achieve a total response time (dispatch plus running and set-up time) of five minutes in CBD, urban and suburban areas for 90 percent of all emergency responses.
- *Policy 7-64:* New development shall pay its fair share of costs for new fire protection facilities and services.

- *Policy 7-70:* The effectiveness of existing and proposed fire protection facilities shall be maximized by incorporating analysis of optimum fire and emergency service access into circulation system design.
- *Policy 7-75:* Fire stations and facilities shall be considered consistent with all land use designations used in the General Plan and all zoning districts.
- *Policy (unnumbered):* Fire stations shall be located within one and one-half mile of developments in urban, suburban, and central business district areas. Automatic fire sprinkler systems may be used to satisfy this standard. (Growth Management Element)

Schools / Childcare

- *Policy 7-137:* To the extent possible, new residential development General Plan Amendments or Rezonings shall, in the absence of the Planning Agency's satisfaction that there are overriding considerations (e.g. provision of low or moderate cost housing), be required to adequately mitigate impacts on primary and secondary school facilities.
- *Policy 7-150:* Proposed commercial and residential projects which do not directly provide child care or preschool facilities shall be required to comply with the provisions of the adopted child care ordinance.

Open Space, Parks and Recreation

- *Goal 9-A:* To preserve and protect the ecological, scenic and cultural/historic, and recreational resource lands of the County.
- *Policy 9-1:* Permanent open space shall be provided within the County for a variety of open space uses.
- *Policy 9-36:* To develop a sufficient amount of conveniently located, properly designed park and recreational facilities to serve the needs of all residents.
- *Policy 9-38:* To promote active and passive recreational enjoyment of the County's physical amenities for the continued health, safety, and welfare of the citizens of the County.
- *Policy 9-39:* To achieve a level of park facilities of four acres per 1,000 population.
- *Policy 9-40:* Major park lands shall be reserved to ensure that the present and future needs of the County's residents will be met and to preserve areas of natural beauty or historical interest for future generations.
- *Performance Standard:* Three acres of neighborhood parks per 1,000 population (*Growth Management Element*).
- *Policy 9-41:* A well-balanced distribution of local parks, based on character and intensity of present and planned residential development and future recreation needs, shall be preserved.
- *Policy 9-47:* Recreational development shall be allowed only in a manner which complements the natural features of the area, including the topography, waterways, vegetation and soil characteristics.

4.12.5 Significance Criteria

Based on Appendix G of the CEQA *Guidelines*, the Project would have a significant effect on public services and recreation if it would:

Public Services

- a) Result in substantial adverse physical impacts associated with the provision of 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 following public services:
 1. Fire protection;
 2. Police protection;
 3. Schools;
 4. Parks; or
 5. Other public facilities

Recreation

- b) 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; or
- c) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Analysis Methodology

The approach to this analysis involved corresponding where feasible with the applicable public services agencies that have existing or potential jurisdiction over the Project site to request current information about service capabilities (e.g., service ratios, response times, performance objectives, number of apparatus devoted to the Project vicinity) and reviewing other operational information about these agencies from publicly available sources, including existing conditions information obtained for the current General Plan update process. The County's approach to this analysis conservatively identifies certain mitigation measures that are also existing local or State regulatory requirements to which the Project is required to comply, regardless of environmental effects.

4.12.6 Impact Analysis

Fire Protection and Emergency Medical Services

Impact PUB-1: The Project would increase the demand for fire protection and emergency medical services, but would not result in the need for new or physically altered facilities, the construction of which would cause significant environmental impacts. (Criterion a.1) (Potentially Significant prior to Mitigation)

The Project would increase the on-site population and the number of on-site buildings which would increase the demand for fire protection services and emergency response services within the Vine Hill/Pacheco Boulevard Area of Contra Costa County. The Project site would be served by Station #9, located approximately 3 miles south of the Project site at 209 Center Avenue in Martinez. Response time to the Project site from Station #9 is approximately 6 minutes. The

General Plan Fire Protection Policy 7-62 states that the County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station. As stated above in the *Regulatory Framework*, installation of automatic fire sprinkler systems may be used to satisfy this standard. In accordance with Contra Costa County Ordinance 87-98, the Project sponsor would also pay a Fire Facilities Impact Fee. Therefore, with implementation of **Mitigation Measure PUB-1**, the District would have adequate fire protection and emergency medical services to sufficiently serve the Project and no new or physically altered facilities would be required.

Mitigation Measure PUB-1: The Project applicant shall equip all dwelling units with residential automatic fire sprinkler systems, complying with the 2016 edition of the National Fire Protection Association Standard 13D, or otherwise most current edition, subject to the review and approval of the Contra Costa County Fire Protection District.

Significance after Mitigation: Less Than Significant.

Policy Protection Services

Impact PUB-2: The Project would increase the demand for police protection services, but would not result in the need for the provision of new or physically altered facilities, the construction of which would cause significant environmental impacts. (Criterion a.2) (*Less than Significant, No Mitigation Required*)

The Project site would be generally served by Muir Station, located at 1980 Muir Road in Martinez, approximately 2.5 miles south of the Project site, although calls for Sheriff response may be responded to by personnel in other Stations within the County. The addition of 144 new residential dwelling units would result in approximately 356 new residents (per Section 4.11, *Population and Housing*, in this chapter of the Draft EIR), or approximately 0.04 percent of the Sheriff's Office countywide service population. Given existing resources available to service the new development and population on the Project site, it is not anticipated that the Projects would result in the need for new physical facilities. While that may result in additional fiscal impacts associated with increased needs for staffing, this would not constitute a physical environmental effect under CEQA. Therefore, the potential impact to police protection services would be less than significant.

Mitigation: None required.

Public Schools

Impact PUB-3: The Project would increase the demand for public school services, but would not result in the need for the provision of new or physically altered facilities. (Criterion a.3) (*Less than Significant, No Mitigation Required*)

The addition of 144 new residential dwelling units would result in new students residing on the site. Using the student generation rate developed by the California State Department of Education, the proposed 144 dwelling units could result in approximately 72 elementary or middle school students and 29 high school students, for a total of about 101 new students on the Project site.¹ Students could attend nearby schools, including Las Juntas Elementary School, Martinez Junior High School and Alhambra Senior High School. This analysis is conservative in that it assumes all the new students would enroll at the aforementioned public schools, although it is reasonable that some of the students could attend other private schools. The approximately 101 new students that could be generated by the Project would result in an approximate 0.5 percent increase to elementary and middle schools serving the Project site, and an approximate 2.5 percent increase to Alhambra High School.

As noted in the *Environmental Setting* in this section, Martinez Junior High enrollment decreased over recent years, enrollment of Las Juntas Elementary and Martinez Junior High increased slightly, and Districtwide enrollment has remained steady. Based on the foregoing conditions, the increase in student enrollment as a result of the Project would be considered negligible. Pursuant to the Leroy F. Greene School Facilities Act of 1998, the Project sponsor would be required to contribute its fair-share in student impact fees in accordance with Martinez Unified School District requirements. Therefore, the potential impact to schools would be less than significant.

Mitigation: None required.

Public Child Care Services

Impact PUB-4: The Project would increase the demand for child care services, but would not result in the need for the provision of new or physically altered facilities. (Criterion a.4) (*Less than Significant, No Mitigation Required*)

The addition of 144 new residential dwelling units would result in new children residing on the site. The proposed Project would be subject to Chapter 82-22 (Child Care Facilities) of the County Zoning Ordinance which would require a survey or assessment of the estimated child care

¹ The California State Department of Education estimates that one dwelling unit could generate an average of 0.7 students, consisting of 0.5 elementary or middle school students and 0.2 high school students. The State's student generation rates are a result of statewide sampling that incorporates widely varying dwelling unit types, households and other demographic characteristics across the state and, therefore, may not reflect the actual characteristics of the local area. However, when considering US Census Bureau 2006 data for Contra Costa County and the City of Martinez, as well as the Martinez Unified School District Student Generation Rates for New Housing, the state generation rate is higher and therefore represents a more conservative estimate.

needs caused by the proposed Project, together with a response program showing how the child care needs resulting from the Project are to be mitigated within Contra Costa County. Prior to obtaining building permits, the proposed program would be submitted for review and approval of the Zoning Administrator. Therefore, the potential impact to child care services would be less than significant.

Mitigation: None required.

Parks and Recreational Facilities

Impact PUB-5: The Project would increase the use of existing parks or other recreational facilities, but not such that substantial physical deterioration would occur or new or expanded facilities would be required. (Criteria b and c) (*Less than Significant, No Mitigation Required*)

The Project would result in approximately 356 new residents (per Section 4.11, *Population and Housing*, in this chapter of the Draft EIR), which could increase the demand for existing parks and recreational facilities. The Growth Management Element of the *General Plan* establishes standards for the provision of neighborhood parks, which generally have service areas equivalent to elementary schools, at the rate of 3 acres per 1,000 residents. The *General Plan* does not include a standard for Major Parks or Open Space areas, but endorses the expansion of such areas in the County to protect the County's unique natural resources.

The Project includes development of an approximately 4.5-acre private neighborhood park on the Project site, adjacent to the existing freshwater pond and marsh areas on the site (see Parcel E in Figures 3-2 and 3-3 in Chapter 3 (Project Description)). The park would offer passive activities; no sport courts, sports fields, or programmed event features would be provided. Bicycle racks would be provided; however, no vehicular parking is proposed.

Moreover, numerous existing neighborhood and regional parks or other recreational facilities exist near the Project site. Closest to the Project site are the multi-purpose trail loop in the Waterbird Regional Preserve (0.5 miles away), 5-acre Morello Park (one mile southwest) and 2-acre Holiday Highlands Park (1.1 miles southwest), and 4.5-acre Mountain View Park 1.9 acres west – all of which have a wide range of recreation facilities. Because the new neighborhood park would be included as part of the Project, and given the existing available facilities, the Project would not warrant the construction of additional new facilities off-site. Further, the Project applicant may be subject to an additional park dedication fee required by Title 9 of the Contra Costa County Subdivisions Ordinance. Therefore, the Project would have a less-than-significant impact with respect to recreational resources and facilities.

Mitigation: None required.

Cumulative Impacts

Impact C-PUB-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts on public services and recreation to which the Project would have a cumulatively considerable contribution. (All Criteria) (*Less than Significant; No Mitigation Required*)

Geographic Context

Public Services and Recreation

The geographic context considered for the cumulative effects of fire protection and emergency medical services, police protection services includes the entire unincorporated County and some incorporated cities within the County. The school attendance area considered is the MUSD. The geographic context considered for the cumulative effects of parks and recreational facilities includes the entire regional parks facilities Countywide, and specifically nearby neighborhood and community park facilities in the unincorporated County and the cities of Martinez and Concord (approximately total 38 acres), and the residential population of the City of Martinez and its Sphere of Influence (SOI) area.

Cumulative Analysis

The Project, in conjunction with cumulative development in the area (as specified in Section 4.0, *Introduction to the Environmental Analysis*, 4.0.6, Cumulative Analysis), would result in new residential development and population that would increase the demand for fire protection and emergency medical services, police protection services, public schools, public childcare services, and parks and recreational facilities.

The General Plan EIR indicated the build-out under the General Plan would lead to increased demand for fire protection, police protection, and schools in the County, and additional staff and equipment could be required to maintain acceptable levels of service. As discussed in Impacts PUB-1 through PUB-4 above, the Project would not have a significant impact regarding fire, police, schools or childcare services. Like the proposed Project, cumulative development would result in school impact fees to satisfy the needs for school facilities, and would also result in additional tax revenues and fees to offset new services, including police, fire and parks. The proposed Project would not contribute considerably to any cumulative needs requiring the construction of new fire or police facilities.

As discussed in Impact PUB-5, the Project would not have a significant impact related to public parks or recreational facilities; the Project will develop a new approximately 4.5-acre private neighborhood park, which would serve new residents of the Project, in addition to their use of the numerous existing neighborhood and regional parks and other recreational facilities nearby in the City of Martinez and the City of Concord. Although the General Plan EIR indicated that build-out under the General Plan would result in the need for designation of additional parkland, the Project

population (356 residents) represents less than 0.01 percent of the total population of Contra Costa County (approximately one million persons), and approximately 0.8 percent of the geographic area used for this analysis (City of Martinez and SOI area); approximately 44,000 persons). The Project would not contribute considerably to any cumulative needs for parks and recreational facilities, particularly with the creation of a new private park for Project residents.

Overall, the proposed Project, combined with cumulative projects in the area, would not result in a significant impact regarding public services and recreation; the impact would be less than significant.

Mitigation: None required.

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4.13 Transportation

4.13.1 Introduction

This section provides a discussion of the methodologies and findings of the traffic analysis, which is based on the Bayview Estates Transportation Impact Analysis (TIA) Report prepared by Fehr & Peers and provided in **Appendix E** to this Draft EIR. The policies and objectives of the County of Contra Costa General Plan Transportation and Circulation Element and the 2017 Update to the Contra Costa Countywide Comprehensive Transportation Plan of the Contra Costa Transportation Authority (CCTA) were reviewed. This section describes: (1) the existing and planned transportation system in the vicinity of the Project site, including roadway, bicycle, pedestrian, and transit facilities; (2) the anticipated impacts of the Project on vehicle-miles of travel (VMT) and these facilities; and (3) associated mitigation measures.

This analysis addresses topics required pursuant to CEQA Guidelines. For informational purposes, the non-CEQA assessment and recommendations for intersection operations and parking recommendations for the proposed Project are included in the TIA Report in Appendix E.

4.13.2 Environmental Setting

Figure 4.13-1 shows the location of the Project site in relation to the nearby roadway system and the associated key roadways.

Baseline VMT

The CCTA travel demand model covers the entire nine-county Metropolitan Transportation Commission (MTC) region and provides information regarding the characteristics of home-based trips made by residents throughout the Bay Area. Per guidance from the Contra Costa County Transportation Analysis Guidelines, the CCTA travel demand model was chosen to assess baseline home-based trip lengths and average home-based trip VMT per resident in Contra Costa County.

All home-based trips were analyzed for this VMT analysis. Data from the CCTA travel demand model indicates that the average Contra Costa County home-based VMT per resident is 19.4. This average takes into account all residents, including those who travel by automobile, as well as residents who travel (either in full or in part) by modes that do not generate automobile VMT, such as transit, walking, bicycling, or working from home.

Regional Roadways

Interstate 680 (I-680) is a major north-south freeway that connects Fairfield to San Jose via Concord, Walnut Creek, and Pleasanton. I-680 is located west of the Project site. Project traffic



would access I-680 to and from the north using the unsignalized ramp terminal intersections at Arthur Road. Project traffic would access I-680 to and from the south using the signalized intersection at Pacheco Boulevard/Arthur Road. Within the study area, I-680 has three general purpose travel lanes and one High-Occupancy Vehicle (HOV) lane in each direction for vehicles with two or more people during the morning and evening commute hours.¹ The speed limit of the facility is 65 miles-per-hour. **Pacheco Boulevard** is a northwest-southeast oriented arterial with one travel lane in each direction in the study area. Pacheco Boulevard connects downtown Martinez to Pacheco, and the roadway provides access to residential and commercial uses west of the Project site. The posted speed limit in the study area is 35 miles-per-hour.

Local Roadways

Arthur Road is a southwest-northeast oriented collector and extends from Pacheco Boulevard to a residential area north of the Project site. West of the Project site, the roadway has one travel lane in each direction. The I-680/Arthur Road interchanges provides access to/from points north along I-680. The posted speed limit is 25 miles-per-hour.

Central Avenue is a local road with one travel lane in each direction north of the Project site. This roadway is maintained by the County between Arthur Road and Darcie Way, and becomes an unpaved private road as it extends to the Project site and CCCSD Maltby pump station. This road would be widened and paved as part of the Project, serving as the main access roadway to the Project site. The posted speed limit between Arthur Road and Darcie Way is 25 miles-per-hour and has a suggested speed limit of 5 miles-per-hour on the privately owned segment. Central Avenue currently is not a through street and would serve as a main access roadway to the Project site.

Palms Drive is a local road with one travel lane in each direction north of the Project site. The surface pavement conditions are poor with uneven and missing pavement. The road is not a through street and would be extended to the Project site as a secondary access. The speed limit is not posted.

Pedestrian Facilities

Pedestrian facilities include sidewalks, shared-use pathways, crosswalks, and pedestrian signals. A continuous sidewalk of about six feet wide is provided on the north side of Pacheco Boulevard west of Arthur Road. Narrow sidewalks of about five feet in width are present along either side of Arthur Road from Pacheco Boulevard to Central Avenue and along Central Avenue between Arthur Road and Darcie Way. Sidewalks are not provided on the privately owned portion of Central Avenue, and on Palms Drive. At the signalized intersection of Pacheco Boulevard/Arthur Road, crosswalks, pedestrian push buttons, and pedestrian signals are provided. Crosswalks at unsignalized intersections in the study area are limited. There are four unsignalized intersections

¹ A project currently under construction will convert the southbound I-680 HOV lanes to an HOV2+/Express Lane, whereby single-occupant vehicles can use the lane by paying a toll that varies by time of day. HOVs with two or more occupants may use the lane without paying a toll.

with marked crosswalks along Arthur Road: Karen Lane, I-680 southbound off-ramp, I-680 northbound on-ramp, and Central Avenue. All other unsignalized intersections do not provide marked crosswalks within the study area.

Bicycle Facilities

The CCTA Countywide Bicycle and Pedestrian Plan identifies the following four bikeway classifications from Chapter 1000 of the Caltrans Highway Design Manual:

- Class I Bikeway (Bicycle Path) provides a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized.
- Class II Bikeway (Bicycle Lane) provides a restricted right-of-way and is designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally four to six feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.
- Class III Bikeway (Bicycle Route) provides for a right-of-way designated by signs or pavement markings (sharrows) for shared use with pedestrians or motor vehicles. Sharrows are a type of pavement marking (bike and arrow stencil) placed to guide bicyclists to the best place to ride on the road, avoid car doors, and remind drivers to share the road with cyclists.
- Class IV Bikeway, also known as “cycle tracks” or “protected bike lanes,” provide a right-of-way designated exclusively for bicycle travel within a roadway and which are protected from other vehicle traffic with devices, including, but not limited to, grade separation, flexible posts, inflexible physical barriers, or parked cars.

Pacheco Boulevard provides a Class III bike facility south of Arthur Road and a Class II bike facility west of Arthur Road. The 2018 Contra Costa Countywide Bicycle and Pedestrian Plan (CBPP) identified a proposed Class III bicycle facility along Arthur Road north of Pacheco Boulevard. The CBPP also identified Pacheco Boulevard as a “Proposed Low Stress Bikeway”, which means future roadway improvements are planned to create a more comfortable and safe bicycling environment. Central Avenue and Palms Drive directly connected to the Project site do not provide any bicycle facilities and do not have planned bikeways.

Public Transit

The Vine Hill area is primarily served by County Connection, operated by the Central Contra Costa Transit Authority (CCCTA), and its connections to Bay Area Rapid Transit (BART) and Amtrak.

County Connection provides fixed-route and paratransit bus service for communities in Central Contra Costa County. The Project site is closest in proximity to Route 19, which extends from the Martinez Amtrak station to Concord BART. The closest bus stop for this route is at the Pacheco Boulevard and Arthur Road intersection, approximately 0.6 miles west of the Project site.

BART operates commuter passenger rail service throughout the Contra Costa, Alameda, San Francisco, San Mateo, and Santa Clara counties. The Project site is located approximately 5.5

miles from the North Concord/Martinez BART station and 6.2 miles from the Concord BART station. The Vine Hill area is connected to the Concord BART station via County Connection Route 19 and to the North Concord BART station via personal vehicle.

Amtrak is rail passenger service that serves various locations throughout the United States. The Martinez Amtrak station is served by the San Joaquins and Capitol Corridor routes.

4.13.3 Regulatory Setting

Agencies with Jurisdiction Over Transportation in the Project Area

Contra Costa County has jurisdiction over all County streets and County-operated traffic signals. In addition, several regional agencies, including TRANSPAC Regional Transportation Planning Committee and the Metropolitan Transportation Commission (MTC), oversee and coordinate funding for regional transportation improvement programs affecting the County.

Contra Costa Transportation Authority (CCTA). In 2004, Contra Costa voters approved Measure J, a law to extend a sales tax under Measure C for an additional 25 years beyond Measure C's 2009 expiration. Measure C was a 0.5-percent transportation sales tax in Contra Costa County passed in 1988, and Measure J continues the half-cent transportation sales tax to fund voter-approved transportation programs and projects and is managed by CCTA. The measure is expected to provide \$2.5 billion for countywide and local transportation projects.

Caltrans has authority over the state highway system, including mainline facilities and interchanges. Caltrans must be involved in and approve the planning and design of all improvements involving state highway facilities. State highway facilities in the Project area include I-680 and its interchanges at Pacheco Boulevard and Arthur Road. The California Department of Transportation (Caltrans) has jurisdiction of all freeways, freeway ramps, and other state routes, such as I-680 and SR 4.

Local and Regional Plans and Policies

Contra Costa County Transportation Analysis Guidelines

Senate Bill 743 (Steinberg, 2013), which enacted Public Resources Code section 21099, required changes to the CEQA Guidelines establishing criteria for determining the significance of transportation impacts. CEQA impacts are now identified based on a project's effect on VMT and its effects on the pedestrian, bicycle, and transit modes of travel. In June 2020, Contra Costa County adopted the Contra Costa County Transportation Analysis Guidelines, which provide guidance on the performance of CEQA transportation impact analysis and informational congestion-based analyses. Specifically, the guidelines provide technical guidance regarding assessment of VMT, thresholds of significance, and mitigation measures for land development and transportation projects in the unincorporated area.

Contra Costa County General Plan

The current Transportation and Circulation Element of the *Contra Costa County General Plan* includes the following policies pertinent to consideration of proposed development projects in the County (Contra Costa County, 2005).

Circulation and Access

- *Policy 5-2:* Appropriately planned circulation system components shall be provided to accommodate development compatible with policies identified in the Land Use Element.
- *Policy 5-9:* Existing circulation facilities shall be improved and maintained by eliminating structural and geometric design deficiencies.
- *Policy 5-15:* Curbs and sidewalks shall be provided in appropriate areas.
- *Policy 5-16:* Emergency response vehicles shall be accommodated in development project design.
- *Policy 5-43:* Provide special protection for natural topographic features, aesthetic views, vistas, hills and prominent ridgelines at "gateway" sections of scenic routes. Such "gateways" are located at unique transition points in topography or land use, and serve as entrances to regions of the County.

4.15.4 Significance Criteria

Consistent with Appendix G of the CEQA *Guidelines*, the Project would have a significant effect on transportation and traffic if it would:

- 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 design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- d) Result in inadequate emergency access?

Analysis Methodology

Project Trip Generation

Trip generation for the Project was based on data published by the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition), land use code 210 (single-family detached housing). As shown in **Table 4.13-1**, the Project is estimated to generate 1,360 daily vehicle trip ends (680 inbound and outbound daily vehicle trips), with about 107 trips during the a.m. peak hour and 143 trips during the p.m. peak hour.

**TABLE 4.13-1
 PROJECT VEHICLE TRIP GENERATION**

	Unit/Size	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
ITE Trip Rates	Per House	9.44	25%	75%	0.74	63%	37%	0.99
Single-Family Housing (ITE Code 210)	144	1,360	27	80	107	90	53	143

SOURCE: Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition.

Project Trip Distribution and Assignment

Project-generated peak-hour trips were distributed to the roadway network and assigned to intersection turning movements based on Project site access, and existing traffic count data and travel patterns. All Project traffic would use Arthur Road for access to and from the site.

Figures 4.13-4A and **4.13-4B** illustrate the distribution percentages of the Project peak-hour inbound and outbound traffic volumes respectively.

Vehicle Miles Traveled (VMT)

CEQA impacts are identified based on a project’s effect on VMT and its effects on the pedestrian, bicycle, and transit modes of travel. CEQA Guidelines §15064.3(a) notes that, for the purposes of §15064.3 and CEQA Transportation analysis, VMT “refers to the amount and distance of automobile travel attributable to a project.” This statement has been interpreted by the State Office of Planning and Research (OPR) to mean automobile and light-duty truck travel (e.g., pickup trucks). The Contra Costa County Transportation Analysis Guidelines prescribe the following analysis parameters for the VMT analysis of residential projects in the unincorporated areas of Contra Costa County:

- Metric: Total weekday home-based VMT per resident
- Method: Contra Costa Transportation Authority (CCTA) countywide travel demand model
- Threshold: 15 percent below baseline County-wide average home-based VMT per resident
- Analysis Scenario: Impacts evaluated against the near-term and far-term baseline

As previously described under *Baseline VMT*, the Existing Conditions average home-based trip VMT per resident in Contra Costa County is 19.4. Therefore, the threshold for home-based trip VMT per resident is 16.5 for the Existing plus Project Conditions.

In addition to the Existing plus Project Conditions analysis, a Cumulative (Year 2040) analysis has been prepared to evaluate the Project’s consistency with the General Plan and associated VMT estimates. The threshold for a Cumulative plus Project Conditions VMT impact is if the Project increases total VMT compared to the County General Plan (Envision 2040) assumptions.

Vehicle System

The Project would create a significant impact related to the vehicle system if any of the following criteria are met:

- The project design would not provide or would eliminate vehicle facilities to connect to the area circulation system, or
- The project design would create hazardous conditions for vehicle drivers, or
- The project conflicts with existing or planned vehicle facilities.

Pedestrian System

The Project would create a significant impact related to the pedestrian system if any of the following criteria are met:

- The project design would not provide or would eliminate pedestrian facilities to connect to the area circulation system, or
- The project design would create hazardous conditions for pedestrians, or
- The project conflicts with existing or planned pedestrian facilities.

Bicycle System

The Project would create a significant impact related to the bicycle system if any of the following criteria are met:

- The project design would not provide or would eliminate bicycle facilities that connect to the area circulation system; or
- The project design would create hazardous conditions for bicyclists; or
- The project conflicts with existing or planned bicycle facilities.

Transit System

The Project would create a significant impact related to transit service if either of the following criteria are met:

- The project generates a substantial increase in transit riders that cannot be adequately served by existing transit services; or,
- The project conflicts with existing or planned transit facilities.

Emergency Access

The Project would create a significant impact related to emergency vehicle access if the following criterion is met:

- The project incorporates design features that limit or result in inadequate emergency vehicle access.

Topics with No Impact or Otherwise Not Addressed in this EIR

Each of the topics and significance thresholds for transportation and traffic are addressed in this section.

4.15.5 Impacts Analysis

Project Construction

Impact TRF-1: Project construction would result in temporary increases in truck traffic and construction worker traffic. (Criterion a) (Potentially Significant prior to Mitigation)

Construction activities for the Project would generate off-site traffic that would include the initial delivery of construction vehicles and equipment to the Project site, the daily arrival and departure of construction workers, the delivery of materials throughout the construction period and removal of construction debris. During site grading, there would be a balance of cut and fill (i.e., excavation and fill materials would be equal to one another in volume, and no off-site hauling of excavated or fill materials would be required. Deliveries would include shipments of concrete, lumber, and other building materials for on-site structures, utilities (e.g., plumbing equipment and electrical supplies) and paving and landscaping materials.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on roadways in the Project area. The impact of construction-related traffic would be a temporary and intermittent lessening of the capacities of affected streets because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. However, given the proximity of the Project site to regional roadways (i.e., I-680), construction trucks would have relatively direct routes. Most construction traffic would be dispersed throughout the day. Thus, the temporary increase would not significantly disrupt daily traffic flow on roadways in the vicinity of the Project site.

However, truck movements potentially would have an adverse effect on traffic flow in the vicinity of the Project site, and in order to reduce/avoid those adverse effects, the impact is considered to be significant, requiring mitigation measures. Mitigation Measure TRF-1 would reduce this impact to a less-than-significant level.

Mitigation Measure TRF-1: The Project applicant and construction contractor(s) shall develop and submit a Construction Management and Traffic Control Plan for the review and approval of the County's Public Works Department. The Construction Management and Traffic Control Plan shall be submitted to the Public Works Department a minimum of 60 days prior to the initiation of construction activities:

- A set of comprehensive traffic control measures, including scheduling of major truck trips to avoid peak traffic hours, types of vehicles and maximum speed limits for each type of vehicle, expected daily truck trips, staging areas, emergency routes and access, detour signs if required, lane closure procedures, flag person requirements, signs, cones for drivers, a street sweeping plan and designated construction access routes.

- Identification of roadways to be used for the movement of construction vehicles to minimize impacts on motor vehicle, bicycle and pedestrian traffic, circulation and safety, and specifically to minimize impacts to the greatest extent possible on streets in the Project area.
- Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures would occur.

Significance after Mitigation: Less than Significant.

Impact TRF-2: Project-generated increases in heavy truck traffic on area roadways during Project construction could result in substantial damage to or wear of public roadways. (Criterion a) (*Potentially Significant prior to Mitigation*)

The use of large trucks to transport equipment and material to and from the Project site could affect road conditions on the designated construction route by increasing the rate of road wear. The degree to which this impact would occur depends on the roadway design (pavement type and thickness) and the existing condition of the road. Freeways, such as I-680, and Arterials, such as Pacheco Boulevard, are designed to handle a mix of vehicle types, including heavy trucks. The Project's impacts are expected to be negligible on those roads. Residential neighborhood roads (Arthur Road, Central Avenue and Palms Drive) are more susceptible to increased wear and damage due to heavy truck operations. Mitigation Measure TRF-2 would mitigate the potential for excessive road wear due to Project construction trucks to a less- than-significant level.

Mitigation Measure TRF-2: Prior to commencement of Project construction activities, which would include any construction-related deliveries to the site, the Project applicant shall document to the satisfaction of the Contra Costa County Public Works Department, the road conditions of the construction route that would be used by Project construction-related vehicles. The Project applicant shall also document the construction route road conditions after Project construction has been completed. The Project applicant shall repair roads that are damaged by construction related activities to County standards and to a structural condition equal to that which existed prior to construction activity. As a security to ensure that damaged roads are adequately repaired, the Project applicant shall make an initial monetary deposit, in an amount to be determined by the Department of Public Works, to an account to be used for roadway rehabilitation or reconstruction. If the County must ultimately undertake the road repairs, and repair costs exceed the initial payment, then the Project applicant shall pay the additional amount necessary to fully repair the roads to pre-construction conditions.

Significance after Mitigation: Less than Significant.

Project Operations

Impact TRF-3: Total Home-Based VMT per resident generated by the Project would be greater than 15 percent below the regional VMT for similar uses in Contra Costa County, resulting in a significant impact for the Project. (Criterion b) (*Significant and Unavoidable*)

Consistent with County requirements, the CCTA travel demand model was used in the analysis of the Project’s effect on VMT. As the Project site is located on an undeveloped parcel of land, and the Project will generate new trips, it is anticipated that the Project’s near-term effect on VMT would be nearly identical to the VMT generated by the Project. Based on the CCTA model runs, the Project is expected to generate 8,164 VMT per weekday. As noted in the Setting section above, the CEQA VMT analysis metric is total home-based VMT per resident. **Table 4.13-2** presents the total home-based VMT per resident for Existing with Project Conditions.

As noted in the *Setting* section above, the Project would result in a significant CEQA transportation impact if the Project’s home-based trip VMT per resident is greater than 16.5 VMT per resident (15 percent below the Contra Costa County average for residential uses). The Project’s total home-based VMT per resident is 20.6, which is 4.1 VMT per resident greater than 15 percent below the Contra Costa County average for residential uses. Therefore, the Project’s effect on VMT would result in a significant impact.

**TABLE 4.13-2
 EXISTING WITH PROJECT CONDITIONS GENERATED VEHICLE-MILES TRAVELED**

Scenario	Project TAZ ¹ Total Home- Based VMT per Resident	VMT Threshold Value ²	Impact?
Existing with Project	20.6	16.5	Yes

NOTES:

- The Project is located in transportation analysis zone (TAZ) 20030. The model output showed about 18 total home-based VMT per resident in TAZ 20030 with the Project. As an act of due diligence to check the quality of model outputs, the Project TAZ VMT value was compared to the adjacent TAZ 20029 with the same single family residential land use (neighborhood north of the Project site). Access to both the Project TAZ 20030 and the adjacent TAZ 20029 are provided by Central Avenue, and the distance from Central Avenue to the Project TAZ is greater than the distance to the adjacent residential TAZ. Conceptually, the Project TAZ would have the same or higher lower home-based VMT per resident compared to the adjacent residential TAZ. However, the model calculated a lower VMT per resident value in the Project TAZ than the adjacent residential TAZ. Therefore, the adjacent residential TAZ total home-based VMT per resident value of 20.6 was used as the Existing with Project VMT value in this study.
- The VMT threshold represents 15 percent below the Countywide average VMT per resident of 19.4.

SOURCE: Fehr & Peers, 2020 (Appendix E)

VMT forecasts presented in this assessment do not consider some foreseeable travel changes, including increased use of transportation network companies, such as Uber and Lyft, nor the potential for autonomous vehicles. Although the technology for autonomous vehicles is expected to be available over the planning horizon, the federal and State legal and policy frameworks are uncertain. Initial modeling of an autonomous future indicates that with automated and connected vehicles, the capacity of the existing transportation system would increase as vehicles can travel

closer together; however, these efficiencies are only realized when a high percentage of vehicles on the roadway are automated and connected. There is also the potential for vehicle travel to increase with zero-occupancy vehicles on the roadway. Additionally, the VMT forecasts are based on a model that was developed using data reflecting travel conditions before COVID-19; the effects of COVID-19 may be a near-term suppression in travel activity on the basis of reduced economic output and permanently modified travel habits.

The following Mitigation Measure TRF-3 is recommended to address the potential impact to the greatest extent feasible:

Mitigation Measure TRF-3: Transportation and Parking Demand Management (TDM) Plan. Prior to issuance of building permits, the Project applicant shall develop a TDM program for the proposed Project, including any anticipated phasing, and shall submit the TDM Program to the County Department of Conservation and Development for review and approval. The TDM Program shall identify trip reduction strategies as well as mechanisms for funding and overseeing the delivery of trip reduction programs and strategies. The TDM Program shall be designed to achieve the trip reduction, as required to reduce the VMT per resident from 20.6 to 16.5 consistent with a 20 percent reduction in the near-term.

Trip reduction strategies may include, but are not limited to, the following:

- 1) Pedestrian improvements, on-site or off-site, to connect to existing and planned pedestrian facilities, nearby transit stops, services, schools, shops, etc.
- 2) Bicycle network improvements, on-site or off-site, to connect to existing and planned bicycle facilities, nearby transit stops, services, schools, shops, etc.
- 3) Enhancements to bus service during peak commute times
- 4) Compliance with a future County VMT/TDM ordinance
- 5) Participation in a future County VMT fee program

Significance after Mitigation: Significant and Unavoidable.

Transportation Demand Management (TDM) strategies work best when they are applied at a city or regional scale and when the travel characteristics of the users or tenants of a site are known. The effectiveness of TDM measures for land use projects in unincorporated areas of Contra Costa County is difficult to quantify as the literature documenting the effectiveness of land use project-level TDM strategies are generally related to suburban and urban areas, not unincorporated areas. If the Project site is ultimately considered to be part of a suburban setting, studies show the maximum VMT reduction associated with the implementation of TDM strategies that can be expected for this Project is 10 percent.² Even this reduction is likely difficult to achieve given the greenfield nature of the Project and its proximate location to available transit services. The requirement to reduce daily VMT by 20 percent in the near-term exceeds the expected level of

² Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association, August, 2010, page 55.

VMT reduction supported by the research. However, while the level of VMT reduction associated with TDM measures are unlikely to mitigate the Project's impact to a less-than-significant level, CEQA requires that feasible mitigation measures be implemented to reduce a project level of impact.

Impact TRF-4a: The Project would increase traffic volumes on residential roadway segments near the Project site resulting in obstacles (or hazards) for Project vehicle traffic. (Criterion c) (Potentially Significant prior to Mitigation)

Vehicular access to the Project site is proposed on Central Avenue and Palms Drive. Palms Drive has poor pavement conditions and narrow travel-way widths on Palms Drive and the private ownership and unpaved condition on Central Avenue represent obstacles (or hazards) for Project vehicle traffic using Palms Drive and Central Avenue.

Palms Drive is a right-of-way and would provide access to the site. The paved travel-way on Palms Drive is less than 20 feet in some locations, restricting concurrent two-way vehicle movements, and does not meet County requirements and design standards. Palms Drive could carry an additional 1,360 daily vehicles generated by the Project if Central Avenue between Darcie Way and the Project site were to remain privately owned. The County design standards with this level of traffic, combined with the existing traffic loads, would require a 34-foot paved cross-section (two 12-foot lanes, two 5-foot shoulders) to meet rural road standards according to County Standard Plans, Two Lane Rural Road Guidelines (Plan Number CA53). The poor pavement conditions and narrow travel-way width represent obstacles for Project vehicle traffic using Palms Drive. Therefore, the Project's effect on vehicle drivers using Palms Drive would result in a significant impact.

Central Avenue between Darcie Way and the Project site is privately-owned. The Project site cannot be publicly accessed using Central Avenue until the County acquires the right-of-way and improves the portion of Central Avenue to meet County design standards. If Central Avenue remains private, a single public access point on Palms Drive would still operate well for general traffic use if it were improved to accommodate two-way traffic movements. The unpaved and privately-owned road presents obstacles for Project traffic using Central Avenue. Therefore, the Project's effect on vehicles using Central Avenue would result in a significant impact.

Mitigation Measure TRF 4: In accordance with County requirements and design standards provide even surface pavement, appropriate signage, delineation, and other features on Palms Drive (and Central Avenue if it becomes a public street) to improve vehicle transportation conditions and eliminate obstacles (or hazards).

Significant after Mitigation: Less than Significant.

Impact TRF-4b: The Project would not have adverse impacts to the Project site's vehicle system. (Criterion c) (*Less than Significant, No Mitigation Required*)

Proposed internal vehicular circulation provides through streets, except for the 'A' Court cul-de-sac which includes a turnaround at the cul-de-sac end. The proposed on-site streets generally meet the private road standards required in the County Ordinance Code. If the on-site streets are planned to be public, then right-of-way and construction to meet public road standards would be required. Whether the streets are private or public, the proposed right-of-way — 50 feet for housing fronting both sides and 44 feet for housing fronting one side of the street — would be sufficient to provide two 10-foot travel lanes which accommodates concurrent two-way vehicle movements. The Project's internal road system is expected to be consistent with County requirements and design standards. Therefore, impacts to vehicles using the internal road system are less than significant.

Mitigation: None required.

Impact TRF-5: The Project could increase ridership on public transit serving the Project area. (Criterion a) (*Less than Significant, No Mitigation Required*)

Fixed-route bus service operates west of the Project site with stops located beyond the typical transit access trip walking distance (about one-half mile) from the proposed development. It is unlikely that the Project would generate large amounts of new demand for the transit services and facilities that serve the area. Most residents would drive to the BART or Amtrak stations, so local commute transit vehicle capacities are not expected to be exceeded. The Project is not expected to conflict with existing or planned transit facilities. Therefore, impacts to transit are less than significant.

Mitigation: None required.

Impact TRF-6: The Project would increase the pedestrian and bicycle activity that would be incompatible with the existing infrastructure by exposing users to hazards and safety conflicts. (Criterion a) (*Potentially Significant prior to Mitigation*)

Direct pedestrian and bicycle access to the Project site would be provided on Palms Drive and potentially Central Avenue (if it becomes a public street) from Arthur Road. The nearest elementary school is located about 0.75 miles from the Project site and could attract students walking or biking between the Project site and the school. These students would probably use Palms Drive since it provides the most direct walking and biking route to Arthur Road. The Project would include a park which would attract people walking and biking from the surrounding neighborhoods. As a result, the Project would increase pedestrian and bike activity along Arthur Road, Palms Drive, and Central Avenue as well as within the Project site.

Arthur Road currently provides sidewalks and has a planned Class III bike facility. However, Palms Drive and the privately owned portion of Central Avenue currently do not provide pedestrian or bicycle facilities. Central Avenue generally provides sidewalks on one side of the street but there are sidewalk gaps between Arthur Road and the Project site, and these gaps pose hazards to pedestrians. The current maintenance state of Palms Drive and Central Avenue is poor: Palms Drive has poor pavement conditions as well as a narrow travel-way that may restrict concurrent two-way vehicle movements, and Central Avenue at the Project frontage is not paved and these conditions pose hazards to bicycle riders. Off-site improvements at Palms Drive and Central Avenue are needed to create a better-connected circulation system without hazards for pedestrian and bicycle riders.

The right-of-way within the Project site is 50 feet when housing fronts both sides and 44 feet when housing fronts one side of the right-of-way. This width accommodates County requirements for private street standards; 52 feet would be required to meet public street standards. It is unclear whether the Project's streets would provide sidewalks on both sides of the street. If sidewalks are not provided on both sides of the street, pedestrians would be required to share the street with vehicle traffic.

The Project design would not eliminate pedestrian facilities that connect to the area circulation system and would not conflict with existing or planned pedestrian and bicycle facilities, but would increase pedestrian and bicycle activity and the increased activity would be incompatible with the existing transportation infrastructure by exposing users to hazards. Therefore, the Project's effect on pedestrians and bicyclists would result in a significant impact.

Mitigation Measure TRF-6: In accordance with County requirements and design standards, the Project applicant shall provide:

- Continuous sidewalks on at least one side of Palms Drive and Central Avenue to connect the Project site to the existing pedestrian facilities on Arthur Road to improve pedestrian transportation conditions.
- Even surface pavement, appropriate signage, delineation, and other features on Palms Drive and Central Avenue to improve bicycle transportation conditions.
- Sidewalks for all streets within the Project site including facilities on both sides of each street and curb ramps at each street intersection.

Implementing the County requirements and design standards would ensure that the street(s) used by the Project's pedestrians and bicyclists are in good condition, provide space to accommodate walking and biking, and provide appropriate signing, marking, and other features to facilitate the safe movement of pedestrians and bicyclists. This would be less than significant related to hazards.

Significance after Mitigation: Less than Significant.

Impact TRF-7a: Emergency access to the Project site would be through existing streets that would be incompatible with the existing transportation infrastructure by exposing emergency vehicles to hazards. (Criterion d) (Potentially Significant prior to Mitigation)

Emergency vehicles would access the site on Palms Drive and Central Avenue. However, the current maintenance condition of Palms Drive would present obstacles (roadway width and uneven surface) to access and maneuverability of emergency vehicles. Under current conditions, the privately owned portion of Central Avenue at the Project frontage would present similar obstacles to emergency vehicle access to the site. Emergency services would be required to access the Project site via Palms Drive and Central Avenue and the increased activity would be incompatible with the existing transportation infrastructure by exposing emergency service vehicles to hazards. Therefore, the Project's effect on emergency access would result in a significant impact.

Mitigation Measure TRF-7a: In accordance with County requirements and design standards, the Project applicant shall provide even surface pavement, appropriate signage, delineation, and other features on Palms Drive and Central Avenue to accommodate emergency vehicles.

Implementing the County requirements and design standards would ensure that the street(s) used by emergency vehicles to access the Project site are in good condition and include other features to facilitate the safe movement of emergency vehicles. This would be less than significant related to hazards.

Significant after Mitigation: Less than Significant.

Impact TRF-7b: The Project would not have adverse impacts to the Project site's emergency vehicle system. (Criterion d) (Less than Significant, No Mitigation Required)

The proposed on-site roadway design would provide adequate emergency vehicle circulation, and planned right-of-way lane widths would accommodate truck turning movements. Central Avenue and Palms Drive would be connected via two intersecting streets ("B" Street and "C" Drive). "C" Drive would be built within a 44-foot-wide right-of-way (two 12-foot-wide travel lanes, 8-foot-wide parking lane on one side only, and 5-foot-wide sidewalks on both sides), running along the proposed on-site park area. "B" Street, as well as the other internal streets ("A" Court, "D" Drive, and "E", "F", and "G" streets), would be built within a 50-foot-wide right-of-way (two 18-foot wide travel lanes, 5-foot-wide sidewalks on both sides, and on-street parking could be accommodated within each 18-foot travel lane). The "A" Court would serve 8 homes and incorporate a turnaround for emergency vehicles. The Project is not expected to result in impacts to emergency access within the Project site and is therefore less-than-significant.

Mitigation: None required.

Cumulative Impacts

Impact C-TRF-8: The Project with a General Plan amendment would increase the Countywide VMT, resulting in a significant impact for the Project. (*Significant and Unavoidable*)

The Project is anticipated to require a General Plan amendment to update the current zoning from Heavy Industrial to Single Family Residential (High Density), thus indicating that the Project is not consistent with the current General Plan. Therefore, a Cumulative scenario VMT analysis was required, whereby the CCTA model is used to assess whether the Project would increase Countywide VMT versus the General Plan land use designation for the site. **Table 4.13-3** presents the comparative VMT analysis.

**TABLE 4.13-3
 CUMULATIVE COUNTYWIDE VEHICLE-MILES TRAVELED**

Scenario	Cumulative with General Plan Designation (Heavy Industrial) ¹ Total VMT	Cumulative with Project (Single Family Residential) Total VMT	Change in Total VMT	Impact?
Cumulative Conditions	29,432,734	29,435,465	+2,731	Yes

NOTES:

1 The General Plan allows a floor-to-area ratio (FAR) range of 0.1 to 0.4 for Heavy Industrial uses. For a conservative approach, this cumulative VMT analysis assumes the minimum allowable Heavy Industrial FAR of 0.1.

SOURCE: Fehr & Peers, 2020 (Appendix E)

As shown in Table 4.13-3, the Project would result in a net increase of 2,731 VMT Countywide versus current General Plan zoning conditions. Thus, the Project would result in a significant impact.

Mitigation Measure TRF-3: Transportation and Parking Demand Management (TDM) Plan. (*See Impact TRF-3*)

Significance after Mitigation: Significant and Unavoidable.

References – Transportation

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County Connection Transit, www.cccta.org, accessed November 20, 2020.

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4.14 Utilities and Service Systems

4.14.1 Introduction

This section describes the existing provision of utilities and service systems to the Project area, including water supply, wastewater treatment and disposal, solid waste disposal, electricity and natural gas. Potential impacts related to the provision of utilities and service systems are identified, and measures to reduce or eliminate potentially significant impacts are identified.

4.14.2 Environmental Setting

Water Supply

Supply Entitlements

The Project site is within the Contra Costa Water District (CCWD) service area. CCWD's more than 140,000-acre service area encompasses the northern, central and eastern portions of the County. The cities served include Concord, Clayton, as well as portions of Martinez, Walnut Creek and Pleasant Hill. In addition to providing treated potable water directly to approximately 200,000 customers, the CCWD delivers water wholesale to seven local water agencies—including the cities of Antioch, Pittsburg and Martinez—that distribute the water to their customers. In total, the District supplies water to a population of about 523,000 people.

The majority of CCWD's water supply comes from the Sacramento-San Joaquin Delta via the Central Valley Project (CVP), under a contract with the U.S. Bureau of Reclamation (USBR). CCWD determined that in the near-term, the projected water supply is 213,700 acre-feet¹ per year ("AFY"). By 2025, CCWD would have a water supply of 237,700 acre-feet. (CCWD, 2016)

CCWD holds a water right that allows diversion of up to 95,980 AFY of excess Delta Flows to Los Vaqueros Reservoir for storage between November 1 of each year and June 30 of the succeeding year, with the total combined limit on CCWD CVP contract and Los Vaqueros water right diversions equal to 242,000 AFY. On average, CCWD has historically been able to divert 12,000 AFY of water to storage under the Los Vaqueros water right. The original Los Vaqueros (LV) Reservoir Project (100,000 AF total storage capacity) was built to improve CCWD's ability to deliver good water quality year-round. The recently expanded Los Vaqueros Reservoir (new total storage capacity of 160,000 AF) provides water supply reliability in years with low CVP contract allocation, in addition to providing the same water quality benefits of the original LV Project. During a single dry year, CCWD could use up to 20,000 AFY from the expanded reservoir to meet demand. In an extended three-year drought, the supplies from the expanded reservoir would provide an average of 13,000 AFY to meet demands. If the drought extended beyond three years, the average annual amount available would be reduced accordingly.

¹ An acre-foot of water is the amount of water needed to flood an acre of land to a depth of 1 foot. It is equivalent to 43,560 cubic feet, or approximately 325,851 gallons.

The CCWD also receives San Joaquin River water from Mallard Slough, with rights to 26,700 AFY. However, due to poor water quality, the average yield from this source has been about 6,500 AFY. A number of industries in the CCWD service area have rights to divert San Joaquin River water directly to their facilities, including Inland Container (28,000 AFY) and Tesoro (16,650 AFY). These supplies are also variable due to the poor water quality that often occurs in the river. Although groundwater resources are available in the Clayton area, this source does not provide a significant supplement to the County's surface water supplies. Private wells are also owned throughout the CCWD service area, providing an estimated 6,500 AFY to the individuals, businesses and municipal water utilities that own them.

Limited additional supplies are available to the District during shortages in the CVP. The CCWD has agreements to purchase surplus irrigation water from the East Contra Costa Irrigation District (ECCID), a portion of whose service area overlaps with the CCWD's service area. The CCWD can purchase up to 8,200 AFY of surface water and up to 4,000 AFY of groundwater (by exchanges) when the CVP is in a shortage situation, but this purchased water must be used only for municipal and industrial purposes within the ECCID's service area (CCWD, 2016).

Storage and Conveyance

CCWD's raw (untreated) water is stored locally in four reservoirs: Martinez Reservoir (230 AF of capacity), Contra Loma Reservoir (1,200AF), Mallard Reservoir (2,100 AF) and Los Vaqueros Reservoir (160,000 AF).

Treatment

CCWD operates three water treatment plants, as well as treated water storage reservoirs, pump stations, and pipelines that form the distribution system for the District's treated water service area. The CCWD's primary treatment facility is the Bollman WTP, located in Concord, and has a permitted capacity of 75 million gallons per day (mgd). Water is pumped from the plant to eight pressure zone distribution system through approximately 800 miles of pipeline ranging in diameter from 2 to 66 inches. The District's second treatment plant, the Randall-Bold Water Treatment Plant (RBWTP), is located in Oakley and is operated jointly with the Diablo Water District, which delivers treated water to the City of Oakley. The plant has a permitted capacity of 50 mgd.

The City of Brentwood WTP, constructed in 2008, is located adjacent to RBWTP has a capacity of approximately 40 mgd and provides treated water to the portion of Brentwood that is outside of the District's service area (CCWD, 2016).

Urban Water Management Plan

The 1983 California Urban Water Management Planning Act requires all public and private water agencies supplying water to more than 3,000 customers or supplying more than 3,000 AFY to prepare an Urban Water Management Plan (UWMP), to be updated every five years.² The

³ California Water Code, Division 6, Part 2.6, Sections 10610–10656.

UWMP must evaluate existing and future sources of water supply, quantify existing and projected demand and identify demand management and other conservation measures for residential, commercial, governmental and industrial water users, among other requirements. Water planning must be performed in five-year increments for at least a 20-year period, or as far into the future as available demographic and other data permit.

The CCWD adopted its 2015 UWMP in 2016 that presents information on the District's supply and demand forecasts, conservation programs, water shortage contingency planning, and recycled water opportunities to the year 2040. The 2015 UWMP summarizes the near-term and 2040 water demands during "normal," "single day," and "multi-dry year 3) scenarios. The CCWD service area and a normalized near-term water demand of 150,000 acre-feet during near-term maximum dry year demands, and will have a 2040 normalized water demand of 190,000 acre-feet. The CCWD has maintained an effective water conservation program that has resulted in the district currently serving less water compared to 1990 levels and despite a 40 percent increase in population (CCWD, 2016).

The 2015 UWMP includes an updated water shortage contingency plan which provides options for managing the water supply and demand balance during water supply shortage conditions. These options have been developed based on the District's previous experience with short-term demand management, most recently with the 2015 Drought Management Program, and in consideration of long-term conservation goals. The water shortage contingency plan sets four stages of demand reduction goals linked to the availability of supplies to the District. The total demand reduction goal for each stage ranges from less than 10 percent at Stage I to up to 50 percent at Stage IV.

The 2015 UWMP incorporates recycled water usage. Water recycling is a component of CCWD's long-term sustainable water supply strategy and CCWD collaborates with local wastewater agencies proposing to provide recycled water for appropriate designated uses. Currently, approximately 10,000 AFY of recycled water is being put to beneficial use within the District's service area, including wildlife habitat enhancement and wetlands. Future use is anticipated to grow to nearly 18,000 AFY through additional projects implemented under the current agreements, potential future industrial use, and development of the Concord Naval Weapons Station (CNWS).

According to the 2015 UWMP, CCWD projects sufficient overall water supply to meet demand through its planning horizon of 2040 (with the implementation of demand management measures during multi-dry years).

Water Supply Assessment

Senate Bill 610 amended State law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties.³ The purpose and legislative intent of Senate Bill 610 was to further integrate land use

³ California Water Code, Division 6, Part 2.10, Sections 10910–10915.

and water supply planning and to ensure that long-term water supplies are available to support new land uses. SB 610 requires detailed information regarding water availability in the form of a water supply assessment (WSA) to be provided to the city and county decision-makers and included in the administrative record, prior to approval of specified large development projects. Under SB 610, water assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects (including residential developments with more than 500 dwelling units) subject to the California Environmental Quality Act (CEQA). The CEQA Lead Agency for the Project is responsible for preparing the assessment, or initiating the request for preparation to the relevant water supplier. The WSA must evaluate whether the public water system's total projected water supplies during normal, single dry and multiple dry years during a 20-year projection will meet the anticipated water demand of the Project and all other existing and planned future users.

Because the Project entails the development of fewer than 500 dwelling units, a formal water supply assessment was not performed for the Project.

Wastewater Treatment and Disposal

The Project site does not currently fall within the jurisdiction of the proposed wastewater treatment provider, MVSD. Although the entirety of the Project site falls within the sphere of influence (SOI) of the MVSD, the Project sponsor and MVSD propose annexation of the entire Project site into the MVSD (MVSD, 2017).⁴

In 1963, the California Legislature established a commission in each county responsible for overseeing most forms of local government boundary change including incorporation, annexations and special district formations. The resulting Local Agency Formation Commission (LAFCO) is a regulatory agency charged by the State legislature with, among other things, approval or denial of proposals to annex land to special districts. The Contra Costa County LAFCO would therefore be required to approve or deny any proposed annexation of the Project site into a sanitary district. A discussion of this process is included below in Impact UTIL-9.

Discussions of the MVSD and CCCSD systems and capacities follow. The information regarding the CCCSD system is for information only.

Mt. View Sanitary District

The Mt. View Sanitary District (MVSD) provides wastewater collection, treatment, and disposal services for the northeasterly portion of the City of Martinez and adjacent unincorporated lands to the northeast. MVSD serves approximately 19,000 residents, treating an average daily flow of 1.25 million gallons of wastewater per day. The MVSD service area comprises approximately 4.7 square miles and is contiguous on all sides with the Central Contra Costa Sanitary District (CCCSD), with which it collaborates to provide services to the central portion of the County.

⁴ A sphere of influence is a plan for the probable physical boundaries and service area of a local agency.

MVSD operates a 2.1 mgd designed flow WWTP that averages 1.007 mgd, as measured in 2012, as part of the District's System Reliability Evaluation study. MVSD's collection system consists of 72.5 miles of main sewer lines and 4 pump stations. Effluent disposal is accomplished by disposal in the Peyton Slough and Moorhen Marsh area adjacent to MVSD's WWTP facilities (MVSD, 2020; Contra Costa LAFCO, 2014).

Central Contra Costa Sanitary District

The CCCSD provides wastewater collection, treatment and disposal services in central Contra Costa County – a service area of approximately 147 square miles. Cities and communities served by CCCSD include Danville, Lafayette, Moraga, Orinda, Pleasant Hill and Walnut Creek, portions of Martinez and San Ramon, and other unincorporated areas within the central portion of the County. CCCSD also receives and treats wastewater from the collection systems of the City of Concord and the City of Clayton.

CCCSD collects sewage and conveys it through approximately 1,500 miles of sewer main line and 19 pump stations for treatment at its WWTP, which is located approximately 0.75 mile southeast of the Project site. The plant has 33.8 mgd and up to 230 mgd during extreme storm events. CCCSD has implemented an aggressive sewer main maintenance and replacement program since 2007 and replaced many of its problem sewer main pipelines. CCCSD disposes of its secondary treated effluent into Suisun Bay and tertiary treated effluent is sold for irrigation use, including expanded programs in the Cities of Pleasant Hill, Concord and unincorporated Martinez. CCCSD also treats and sells recycled water (approximately 0.57 mgd) to retail customers (Contra Costa LACFO, 2014).

Stormwater

Increases in impervious surfaces increase the volume and runoff rates of stormwater, which can lead to increases in the amount of pollutants (i.e., metals, petroleum) in stormwater. See Section 4.8, *Hydrology and Water Quality*, in this chapter of the Draft EIR for additional information regarding water quality and quantity impacts related to stormwater.

Solid Waste

Contra Costa County's Solid Waste/Recycling Division oversees most solid waste and recycling franchise agreements for the County's unincorporated areas. However, MVSD holds an independent franchise agreement for services in the unincorporated areas within its jurisdiction. Both the County and the MVSD contract with Republic Services (formerly Allied Waste Industries, Inc.) to provide solid waste and recycling collection and disposal. Residential and commercial solid waste collected by Republic Services is taken to the Contra Costa Transfer and Recovery Station (in the vicinity of the Project site) and then disposed of at the Keller Canyon Landfill located in the unincorporated Pittsburg area within Contra Costa County.

The Keller Canyon Landfill, a wholly owned subsidiary of Republic Services, Inc., is a Class II facility that has been operating since 1992. A Class II landfill can accept a wider variety of non-

hazardous materials than an ordinary Class III landfill, and is built to more stringent siting and design standards. The existing Landfill property covers a total area of approximately 2,600 acres, of which 244 acres are permitted for waste disposal. Design capacity for the existing facility is approximately 75 million cubic yards (air space). The remaining available disposal capacity of the existing landfill is over 55 million cubic yards as of 2015, which is sufficient for several decades of continued operation.

The Keller Canyon Landfill is in the process of amending its land use permit (LUP) to increase maximum daily tonnage from the currently permitted maximum of 3,500 tons per day, to a proposed maximum of 4,900 tons per day (CalRecycle, 2017).

Contra Costa County's Construction and Demolition Debris Recovery Ordinance (Ordinance 2004-16) is intended to reduce the quantity of construction and demolition debris disposed in landfills as required by state law. The Ordinance requires owners of all construction or demolition projects that are 5,000 square feet in size or greater to demonstrate that at least 50 percent of the construction and demolition debris generated on the jobsite are reused, recycled, or otherwise diverted.

The County generates 807,550 tons of solid waste annually (CalRecycle, 2020a and 2020b).

Electricity and Natural Gas

Electrical power and natural gas are provided to the Vine Hill/Pacheco Boulevard Area by Pacific Gas and Electric Company (PG&E). PG&E obtains its energy supplies from power plants and natural gas fields in northern California and from energy purchased outside its service area from a variety of sources, including other utility companies. PG&E is the primary provider of gas and electrical power to Contra Costa County. Throughout most of the County, electrical power is delivered via overhead distribution and high voltage transmission lines and natural gas is distributed through underground piping. PG&E expands its services on an as-needed basis and requires the user to fund the extension of service.

The State of California regulates energy consumption under Title 24 of the California Code of Regulations. Title 24 Building Energy Efficiency Standards apply to energy consumed for heating, cooling, ventilation, water heating and lighting in new residential and nonresidential buildings. The standards are updated periodically to incorporate new energy efficiency technologies and methods.

4.14.4 Regulatory Setting

State Plans and Policies

Emergency Services Plan

Contra Costa County approved their most recent Emergency Operations Plan (EOP) on June 16, 2015. The EOP establishes the emergency organization, assigns tasks, specifies policies and general procedures, and provides for the coordination of planning efforts of the various

emergency staff and service elements to ensure the most effective response to emergencies. The EOP applies to all emergencies in unincorporated areas of Contra Costa County and which generates situations requiring planned, coordinated responses. The EOP also applies to emergencies that occur within incorporated areas, to the extent that those emergencies require multi-agency coordination at the operational area level.

Senate Bill 610 and Senate Bill 221

The purpose and legislative intent of Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) is to preclude certain large projects from being approved without specific evaluations being performed and documented by the local water provider that indicate that water is available to serve the Project. SB 610 primarily affects the Water Code, and SB 221 principally applies to the Subdivision Map Act. SB 610 requires the preparation of a WSA for large-scale development projects.⁵ The WSA evaluates the water supply available for new development based on anticipated demand. For the broad range of projects that are subject to this law, the statutory WSA must be requested by the lead agency from the local water provider at the time the lead agency determines that an Environmental Impact Report (EIR) is required for the Project under CEQA. The water agency must then provide the assessment within 90 days (but may request a time extension under certain circumstances). The WSA must include specific information including an identification of existing water supply entitlements and contracts. The governing board of the water agency must approve the assessment at a public hearing.

SB 221 requires the local water provider to provide “written verification” of “sufficient water supplies” to serve the Project. Sufficiency under SB 221 differs from SB 610 in that it is determined by considering the availability of water over the past 20 years; the applicability of any urban water shortage contingency analysis prepared per Water Code Section 10632; the reduction in water supply allocated to a specific use by an adopted ordinance; and the amount of water that can be reasonably relied upon from other water supply projects, such as conjunctive use, reclaimed water, water conservation, and water transfer. In most cases, the WSA prepared under SB 610 would meet the requirement for proof of water supply under SB 221.

State Bill 365 (SB 365; Chapter 980, Statutes of 1993)

Existing provisions of the California Water Code declare that the use of potable water for certain non-potable uses “is a waste or an unreasonable use of water.” SB 365 amends and expands the Water Code to strengthen the provision that the use of potable water for the irrigation of residential landscaping, floor-trap priming, cooling towers, or air-conditioning devices, is wasteful and unsound if reclaimed water suitable for these purposes is available. SB 365 also

⁵ All projects that are subject to approval by a county or a city that meet any of the following criteria require a WSA: 1) a proposed residential development of more than 500 dwelling units; 2) a proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 ft² of floor space; 3) a proposed commercial office building employing more than 1,000 persons or having more than 250,000 ft² of floor space; 4) a proposed hotel or motel, or both, having more than 500 rooms; 5) a proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 SF of floor area; 6) a mixed-use project that includes one or more of the projects specified in this subdivision; or 7) a project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

gives the power to any public agency, including a State agency, city, county, district, or any other political subdivision of the State, to require the use of reclaimed water for these purposes if certain conditions are met. The conditions that must be met are:

- Reclaimed water meeting the requirements of existing law (Section 13550 of the Water Code) is available to the user;
- The use of reclaimed water does not cause any loss or diminution of any existing water right;
- Public health concerns regarding exposure to mist or spray must be addressed, if appropriate; and
- The water user must prepare an engineering report pursuant to Title 22 regulations governing the use of reclaimed water.

The requirements of the law are applicable to all new industrial facilities and subdivisions for which the Department of Health Services has approved the use of reclaimed water, and for which a building permit is issued on or after March 15, 1994; or, if a building permit is not required, new structures for which construction begins on or after this date.

California Model Water Efficient Landscape Ordinance

This regulation is designed to promote water efficiency standards for new developments and existing landscapes to ensure that California continues to have sufficient water to meet demand. Water savings can be achieved through efficient irrigation systems, greywater usage, onsite stormwater capture, and limiting the amount of landscape covered in turf.

Assembly Bill 939

Assembly Bill 939 (AB939), enacted in 1989 and known as the Integrated Waste Management Act, requires each city and/or county to prepare a Source Reduction and Recycling Element to demonstrate reduction in the amount of waste being disposed to landfills, with diversion goals of 50 percent by the year 2000. Diversion includes waste prevention, reuse, and recycling. Senate Bill 1016 (SB1016) revised the reporting requirements of AB 939 by implementing a per capita disposal rate based on a jurisdiction's population (or employment) and its disposal.

In 2018, unincorporated Contra Costa County had a per resident disposal rate target of 3.9 pounds per day and a per employee disposal rate target of 20.1 pounds per day. The County had an annual per capita residential disposal rate of 2.5 pounds per day and 11.2 annual per capital employee disposal rate in 2018, thereby meeting waste diversion goals for 2016 as the amount of disposal per person/employee is lower than the target (CalRecycle, 2017).

In 2011, AB 341 amended AB 939 to include a provision declaring that it is the policy goal of the State that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020, and annually thereafter.

California Green Building Standards Code

The 2016 State building standards code (CalGreen) requires that at least 65 percent of weight of non-hazardous job site debris generated by new construction be recycled, reused, or otherwise diverted from landfill disposal. CalGreen requires submission of plans and verifiable post-Project documentation to demonstrate compliance.

Local Plans and Policies

Contra Costa County General Plan

The *Contra Costa County General Plan* (General Plan) contains goals, policies and implementation measures pertaining to fire protection, public protection, schools, parks, water service, sewer service and solid waste within its Public Facilities/Services Element and Growth Management Element. The Public Facilities/Services Element addresses the vital infrastructure and public services that must be provided. The Growth Management Element establishes performance standards for the provision of essential public utilities/services.

General Plan policies, and where especially relevant to the proposed Project, General Plan goals, implementation measures and/or performance standards are listed below:

Water Use, Conservation and Demand

- *Policy 7-21:* At the project approval stage, the County shall require new development to demonstrate that adequate water quantity and quality can be provided. The County shall determine whether (1) capacity exists within the water system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. This finding will be based on information furnished or made available to the County from consultations with the appropriate water agency, the applicant, or other sources.
- *Policy 7-26:* The need for water system improvements shall be reduced by encouraging new development to incorporate water conservation measures to decrease peak water use.

Public Facilities/Services Element

- *Policy 7-1:* New development shall be required to pay its fair share of the cost of all existing public facilities it utilizes, based on the demand for these facilities which can be attributed to new development.
- *Policy 7-2:* New development, not existing residents, should be required to pay all costs of upgrading existing public facilities or constructing new facilities which are exclusively needed to serve new development.
- *Policy 7-4:* The financial impacts of new development or public facilities should generally be determined during the project review process and may be based on the analysis contemplated under the Growth Management Element or otherwise. As part of the project approval, specific findings shall be adopted which relate to the demand for new public facilities and how the demand affects the service standards included in the growth management program.
- *Policy 7-19:* Urban development shall be encouraged within the existing water Spheres of Influence adopted by the Local Agency Formation Commission; expansion into new areas

within the Urban Limit Line beyond the Spheres should be restricted to those areas where urban development can meet all growth management standards included in this General Plan.

Wastewater

- *Policy 7-29:* Sewer treatment facilities shall be required to operate in compliance with waste discharge requirements established by the Regional Water Quality Control Board. Development that would result in the violation of waste discharge requirements shall not be approved.
- *Policy 7-31:* Urban development shall be encouraged within the sewer Spheres of Influence adopted by the Local Agency Formation Commission. Expansion into new areas within the Urban Limit Line but beyond the Spheres of Influence should be restricted to those areas where urban development can meet growth management standards included in this General Plan.
- *Policy 7-33:* At the project approval stage, the County shall require new development to demonstrate that wastewater treatment capacity can be provided. The County shall determine whether (1) capacity exists within the wastewater treatment system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. This finding will be based on information furnished or made available to the County from consultations with the appropriate water agency, the applicant, or other sources.
- *Policy 7-37:* The need for sewer system improvements shall be reduced by requiring new development to incorporate water conservation measures which reduce flows into the sanitary sewer system.
- *Implementation Measure 7-t:* Conditionally approve all tentative subdivision maps and other preliminary development plans on verification of adequate wastewater treatment capacity for the project. Such condition shall be satisfied by verification based upon substantial information in the record that capacity within the system to serve the specific development project exists or comparable demonstration of adequate wastewater treatment capacity. Where no tentative map or preliminary plan is required prior to development, approve no map or development permit without this standard being satisfied.

Solid Waste

- *Policy 7-88:* Solid waste disposal capacity shall be considered in County and city land use planning and permitting activities, along with other utility requirements, such as water and sewer service.
- *Policy 7-91:* Solid waste resource recovery (including recycling, composting, and waste to energy) shall be encouraged so as to extend the life of sanitary landfills, reduce the environmental impact of solid waste disposal, and to make use of valuable resources, provided that specific resource recovery programs are economically and environmentally desirable.
- *Policy 7-92:* Waste diversion from landfills due to resource recovery activities shall be subject to goals included in the County Integrated Waste Management Plan. Public agencies and the private sector should strive to meet these aggressive goals.

4.14.5 Significance Criteria

Based on Appendix G of the CEQA *Guidelines*, the Project would have a significant effect on utilities and service systems if it would:

- a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- c) Require or result in the construction of new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects;
- d) Not have sufficient water supplies available to serve the Project from existing entitlements and resources, or if new or expanded entitlements are needed;
- e) Result in a determination by the wastewater treatment provider that would 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;
- f) Be served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs; or
- g) Conflict with federal, state and local statutes and regulations related to solid waste.

Analysis Methodology

The approach to this analysis involved corresponding where feasible with the applicable utility agencies that have existing or potential jurisdiction over the Project site to request current information about service capabilities and reviewing other operational information about these agencies. Generation rates used to calculate the Project's anticipated demand for public utilities were acquired from CCWD, MVSD, the California Department of Education, and CalRecycle. The County's approach to this analysis conservatively identifies certain mitigation measures that are also existing local or State regulatory requirements to which the Project is required to comply, regardless of environmental effects.

4.14.6 Impact Analysis

Water Demand

Impact UTIL-1: The Project would increase domestic and emergency water demand, but would not exceed water supplies available from existing entitlements and resources. (Criterion d) (*Less than Significant, No Mitigation Required*)

With 144 new residential units, the Project would increase demand for potable water. The Project would be served by the CCWD. Since the site is undeveloped, the current water demand is zero. For purposes of sizing water distribution infrastructure and estimating potential effects to the CCWD's water supplies, the estimated water demand rate is 148 gallons per capita per day

(GPCD), which is the 2020 target in CCWD's 2015 UWMP. This estimated demand rate is conservative compared to CCWD's 2015 actual demand rate of 114 GPCD. The Project's 356 new residents would result in a total water demand of 59 AFY. While this water demand would be an increase over no existing water usage, it would be offset by the anticipated water demand if the site were to be developed based on its current land use designation of Heavy Industrial..

As noted in the *Environmental Setting* of this section, the CCWD holds entitlements to approximately 213,700 AFY of water. As of 2015, CCWD's demand was 119,420 AFY. The Project, at approximately 59 AFY, would represent a 0.05 percent increase over 2015 demand levels. While water demand would increase as a result of the Project, based on the CCWD's available water rights and the current level of water demand, it is expected that existing water supplies would be sufficient to serve the Project, and no new or expanded entitlements would be needed. Also as noted above, the CCWD's water supply reliability goal is to meet 100 percent of demand in normal years and a minimum of 85 percent of demand during a drought. Any potential supply shortfalls experienced during dry year conditions will be met through a combination of a short-term conservation program or short-term water purchases. Consistent with the CCWD's Future Water Supply Study, a planned purchase of up to 1,700 AF of additional water supply by 2040 is necessary to meet the water supply reliability goal. Although the Project would add to demand in drought years, the increase of the Project's demand on CCWD's water supply is negligible, and would not be considerable. Therefore, impacts would be less than significant.

Mitigation: None required.

Water Facilities

Impact UTIL-2: The Project would require or result in construction of new or expanded water facilities, the construction of which would cause significant environmental effects. (Criteria b) (Potentially Significant prior to Mitigation)

The Project site is currently undeveloped, therefore, the Project would require new and upgraded water conveyance infrastructure on and offsite. The Project would be required to fund water main extensions to provide adequate domestic water supply, fire flows and system redundancy to the Project prior to obtaining water service. Depending on CCWD metering requirements and fire flow requirements set by the CCFPD, the Project applicant would be required to fund pipeline and fire hydrant installation and offsite pipeline improvements.

This Project has been determined by CCWD to be in an area that is deficient in fire flow (i.e., not having sufficient water flow to meet fire-fighting demands). Therefore, as shown in Figure 3-5 in Chapter 3 (Project Description) of this document, the Project would require the extension of CCWD's existing 12-inch water transmission main that currently terminates within the Conco property, just northwest of the BNSF railroad. CCWD has an existing 20-wide access easement rights that would be expanded to accommodate the waterline extension. The proposed waterline alignment and its construction would not encroach into jurisdictional waters. Convention

waterline installation method would be used including trench excavation, pipeline installation, pouring of concrete thrust blocks, backfilling and compacting, and pipeline testing prior to placement in service. CCWD would then accept the waterline as its facility to operate and maintain.

All potential construction-related environmental effects addressed for the proposed Project would encompass the effects specifically associated with installation of the new water pipeline to serve the proposed Project. The potential effects pertain to construction-related effects (short-term and ongoing) discussed in the following sections of this chapter of the Draft EIR: Section 4.2, *Air Quality*; Section 4.4, *Cultural and Tribal Resources*; Section 4.5, *Geology and Soils*; Section 4.6, *Greenhouse Gas Emissions and Energy*; Section 4.7, *Hazards and Hazardous Materials*; Section 4.8, *Hydrology and Water Quality*; Section 4.10, *Noise*; and Section 4.13, *Transportation*.

As discussed in each of the aforementioned topical sections, the potential impacts of constructing or expanding the new water infrastructure for the Project would be less than significant (with adherence to stormwater quality BMPs under the provisions of the Construction General Permit, discussed in Impact UTIL-3 below and in Section 4.8, *Hydrology and Water Quality*, in this chapter of the Draft EIR) or reduced to less than significant with the following mitigation measures, addressed collectively:

Mitigation Measure UTIL-2: The Project sponsor shall implement the following mitigation measures for construction-related effects from installation and expansion of the proposed new waterline:

- a) **Mitigation Measure AIR-1 (Best Management Practices for Controlling Particulate Emissions)**
- b) **Mitigation Measure BIO-2a (Worker Environmental Awareness Program Training)**
- c) **Mitigation Measure BIO-2b (General Conservation Measures during Construction)**
- d) **Mitigation Measure BIO-6a (Protection of Jurisdictional Wetlands and Other Waters)**
- e) **Mitigation Measure CUL-1a (Prehistoric or Historic-period Archaeological Resources)**
- f) **Mitigation Measure CUL-1b (Human Remains)**
- g) **Mitigation Measure GEO-2 (Design-level Geotechnical Compliance)**
- h) **Mitigation Measure GEO-3 (Fill Placement)**
- i) **Mitigation Measure GEO-4 (Terraced Slopes/Drainage)**
- j) **Mitigation Measure GEO-5 (Paleontological Resources Treatment)**
- k) **Mitigation Measure HAZ-1 (Release of Hazardous Materials)**
- l) **Mitigation Measure HAZ-2 (Pipeline Damage Risk)**
- m) **Mitigation Measure NOI-1a (Construction Noise Activities)**
- n) **Mitigation Measure NOI-1b (Noise Control Measures)**
- o) **Mitigation Measure TRF-1 (Construction Traffic)**
- p) **Mitigation Measure TRF-2 (Public Roadway Damage or Wear)**

Significance after Mitigation: Less than Significant.

Stormwater Facilities

Impact UTIL-3: The Project would require or result in construction of new or expanded stormwater drainage facilities, the construction of which could cause significant environmental effects. (Criterion c) (Potentially Significant prior to Mitigation)

The proposed Project would create new impervious surfaces at the currently undeveloped site, and stormwater treatment would be provided with the implementation of treatment measures, namely three new bio retention ponds. As discussed in Section 4.9, *Hydrology and Water Quality*, of this chapter of the Draft EIR, the Project would alter the topography and drainage pattern at the Project site, which would increase the amount of stormwater runoff at the Project site. As also discussed in Section 4.9, which is incorporated herein by reference, regulatory compliance, and completion and implementation of the required plans and measures, would ensure that the change would not result in exceeding the capacities of existing or planned storm drainage systems.

Construction activities within the Project site would be required to comply with NPDES General Construction Activities Permit requirements. The Project applicant would be required to prepare a SWPPP for General Construction Activities to reduce potential impacts to surface water quality during construction. The erosion control and stormwater quality BMPs that would be employed to minimize pollutants in stormwater runoff would be effective in preventing the discharge of pollutants to downstream waters. Project compliance with NPDES General Construction Activities Permit requirements are required by law and have proven effective in protecting water quality at construction sites. Routine inspection of all BMPs is required under the provisions of the Construction General Permit.

As discussed in Impact UTIL-2, all potential construction-related environmental effects would encompass the specific effects associated with installation of the new stormwater infrastructure or improvements to serve the proposed Project. The potential effects pertain to construction-related effects (short-term and ongoing) discussed in the following sections of this chapter of the Draft EIR: Section 4.2, *Air Quality*; Section 4.4, *Cultural and Tribal Resources*; Section 4.5, *Geology and Soils*; Section 4.6, *Greenhouse Gas Emissions and Energy*; Section 4.7, *Hazards and Hazardous Materials*; Section 4.8, *Hydrology and Water Quality*; Section 4.10, *Noise*; and Section 4.13, *Transportation*. In particular, while the new stormwater bioretention ponds have been designed to avoid direct placement of fill within wetlands and other waters, temporary and/or permanent fill of these features could occur or be necessary during construction, which would be a potentially significant temporary impact reduced to less than significant with mitigation.

As discussed in each of the aforementioned topical sections, the potential impacts of constructing or expanding the new stormwater infrastructure or improvements for the Project would be less than significant (with adherence to stormwater quality BMPs under the provisions of the Construction General Permit, discussed above and in Section 4.8, *Hydrology and Water Quality*,

in this chapter of the Draft EIR) or reduced to less than significant with several mitigation measures identified in this document.

Mitigation: Same as Mitigation Measure UTIL-2.

Significance after Mitigation: Less than Significant.

Wastewater

Impact UTIL-4: The Project would generate demand for wastewater utility service, and would result in the expansion of the existing wastewater collection system, the construction of which would not cause significant environmental effects. (Criteria a, b, and e) (*Potentially Significant prior to Mitigation*)

The Project site currently falls within two sanitary sewer districts: The CCCSD and the MVSD. MVSD has reviewed the preliminary subdivision and approved of the proposed subdivision as well as the request to annex the Project site to be wholly within the MVSD SOI, subject to the approval by the LAFCO. MVSD issued a “Will Serve” letter confirming its plan to provide wastewater utility service to the Project site (Leptein, 2010). Although the Project site currently sits within the CCCSD jurisdiction, CCCSD considered the proposed residential use to conflict with its current operations nearby and elected not to annex the property or provide wastewater utility service to the site (Batts, 2004; Kelly, 2008). Annexation to CCCSD is therefore not a component of the Project

As the Project site is undeveloped, the proposed development would increase wastewater flows. Wastewater generated by the Project would originate from the new development and would result in an increase in wastewater treatment demands. The project applicant prepared and submitted a preliminary Sewer Capacity Analysis that included a preliminary hydraulic analysis for the proposed Project, in addition to other existing and proposed developments served by the existing pipes that the proposed Project would replace, as described further below. The analysis calculated that wastewater treatment demands would increase by approximately 66,300 gallons per day (Aliquot, 2020). This output would represent an approximate 1.6 percent increase over the MVSD daily average flow of 1.25 mgd. MVSD has the capacity to treat 3.2 mgd (MVSD, 2020).

Therefore, given the District has sufficient existing capacity to serve the Project’s anticipated wastewater demands, the Project would not result in the construction of new or expanded wastewater treatment facilities. No changes to the wastewater treatment plan would be required to treat the increased flows from the Project. Consequently, no impacts related to the wastewater treatment requirements of the RWQCB would be expected.

In-tract wastewater will be conveyed via gravity sewer lines to the low point at northeast corner of the development. Sewer will be pumped via a private pump station and through a force main to the existing sewer in Palms Drive.

Regarding the assessment of sewer capacity on the Project site, portions of the existing sanitary sewer collection system may not be adequate to support the Project, and new connections to MVSD's existing infrastructure were determined to be required. Specifically, the Project would require a new connection to MVSD's existing sanitary sewer main in Palms Drive, and replace and/or upgrade this existing sewer main per MVSD standards in order to serve the Project.

The preliminary Sewer Capacity Analysis submitted for MVSD review included a preliminary hydraulic analysis and the proposed sewer system changes for review and approval by MVSD to confirm the capacity of the proposed replacement pipes in Palms Drive. MVSD has confirmed that the proposed sewer system changes are adequate. There are currently 6-inch vitrified clay sewer pipes (VCP) running down Palm Drive to the 15-inch trunk sewer in Arthur Road (see Figure 3-5 in Chapter 3, [Project Description]). All existing 6-inch VCP would be replaced with 8" PVC All pipes will be rebuilt to adequate slopes in compliance with MVSD design standards.

Therefore, the new infrastructure will adequately convey proposed developments of the proposed Project (as well as Palms 10 Subdivisions). The replaced system would be able to convey the proposed new flows. The applicant will submit a final hydraulic analysis to confirm the capacity calculations of the seven total up-sized replacement pipes and to address the nature of the proposed private pumping station and force main for the proposed development. Construction activity for the all sewer infrastructure would involve temporary construction activities, such as routine in-street trenching, the construction-period effects of which are addressed in several other analysis sections in this chapter, and as discussed in Impact UTIL-2, reduced to less than significant with several mitigation measures identified in this document, as enumerated in Mitigation Measure UTIL-2.

Mitigation: Same as Mitigation Measure UTIL-2.

Significance after Mitigation: Less than Significant.

Solid Waste

Impact UTIL-5: The Project would generate solid waste, but would not exceed the permitted capacity of the landfill serving the Project site, and would comply with federal, state and local statutes and regulations related to solid waste. (Criteria f and g) (*Less than Significant, No Mitigation Required*)

Construction Debris

Project construction would generate construction debris. In accordance with the 2016 CalGreen Code, as described above in the *Regulatory Setting*, a minimum of 65 percent of the construction and demolition debris generated by the Project would be reused, recycled, or otherwise diverted. Solid waste generated during construction would be transported off-site for sorting and recycling at the Contra Costa Transfer Station. Debris that could not be recycled would be sent to a CalRecycle-permitted sanitary landfill. Excess soil generated in grading for the Project would be

reused on-site as fill. Therefore, the Project would result in a less-than-significant impact related to generation of construction debris and no mitigation is required.

Operation Debris

As described in the Section 4.11, *Population and Housing*, in this chapter, it is estimated the Project would introduce approximately 356 new residents in the new 144 homes. The County's current rate of disposal for its unincorporated area is approximately 2.5 pounds per resident per day (CalRecycle, 2017). Based on this estimate, the Project could generate approximately 890 pounds per day (approximately 324,850 pounds or 146 tons per year) of solid waste that would need to be disposed of in a landfill.

Republic Services would provide solid waste collection and disposal services for the Project. Solid waste generated by the Project would be disposed of in the Keller Canyon Landfill located in Bay Point. With a total capacity remaining capacity of over 55 million cubic yards as of 2015 (73 percent remaining), which is sufficient for several decades of continued operation, the Keller Canyon Landfill would have the capacity to accommodate the additional solid waste that would be generated by the Project. In addition, the Keller Canyon Landfill is also in the process of amending its LUP, which would increase maximum daily tonnage and increase maximum daily truck trips at the landfill. Therefore, the proposed Project would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs, and the Project's impact would be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact C-UTIL-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts on utilities and service systems to which the Project would have a cumulatively considerable contribution. (All Criteria) (*Less than Significant; No Mitigation Required*)

Geographic Context

Utilities

The geographic context considered for the cumulative effects of utilities includes the service areas of the various local utility providers, as described in the *Environmental Setting* above. The CCWD, has a 140,000-acre service area that encompasses the northern, central and eastern portions of the County, the cities of Concord and Clayton, as well as portions of Martinez, Walnut Creek and Pleasant Hill. MVSD provides wastewater collection, treatment, and disposal services for the approximately 4.7 square miles containing the northeasterly portion of the City of Martinez and adjacent unincorporated lands to the northeast. Combined, the Contra Costa

County's Solid Waste/Recycling Division provides solid waste services for the entire County, with MVSD serving the unincorporated areas within its jurisdiction.

Cumulative Analysis

The Project, in conjunction with cumulative development in the area (as specified in Section 4.0, *Introduction to the Environmental Analysis*, 4.0.6, Cumulative Analysis), would result in new residential development and population that would increase the demands for water supply and wastewater service, and would increase the generation of stormwater and solid waste.

As previously discussed in the *Environmental Setting* and in Impacts UTIL-1 through UTIL-5, the CCWD's water supply reliability goal is to meet 100 percent of demand in normal years and a minimum of 85 percent of demand during a drought, and has a conservation program and future water purchases to address any potential supply shortfalls during dry year conditions intended to meet the water supply reliability goal in 2040. For wastewater, the MVSD Master Plan Update indicates that its existing infrastructure is sufficient to support the Project and other infill development through the year 2040. With a total remaining capacity of over 55 million cubic yards as of 2015 (73 percent remaining), Keller Canyon Landfill has sufficient for several decades of continued operation considering future development. Therefore, the proposed Project, combined with cumulative projects in the area, would not exceed future service capacities indicate by the various utility providers.

Regarding utility infrastructure, while the Project vicinity is served by local public service providers and local utility providers, new development on undeveloped land like the proposed Project may require new infrastructure to connect to existing utility service facilities. As discussed for Impact UTIL-5 regarding increased demands for wastewater utility service, the Project applicant's preliminary Sewer Capacity Analysis and preliminary hydraulic analysis accounted for other off-site existing (15 units) and new adjacent residential developments (10 units) that would be served by existing pipes that the proposed Project would be upgraded and replaced to serve the proposed Project and other immediate development. The proposed Project would have potentially significant construction and operation related impacts associated with the necessary installation, improvement, or expansion of utility infrastructure (water, wastewater, and stormwater) to serve the vacant Project site, and those impacts are mitigated to less than significant with implementation of **Mitigation Measures UTIL-2 through UTIL-5**. Other cumulative developments that require new or expanded utility infrastructure would also require similar project-specific measures, all of which also align with standard regulatory requirements. Finally, the proposed Project and other cumulative projects would be required to comply with all standards and contribute their fair-share in impact fees, where applicable.

Overall, the proposed Project, combined with cumulative projects in the area, would not result in a significant impact regarding utilities and service systems; the impact would be less than significant.

Mitigation: None required.

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CHAPTER 5

Alternatives

The California Environmental Quality Act (CEQA) requires that the EIR compare the effects of a “reasonable range of alternatives” to the effects of the project. The alternatives selected for comparison are normally those that would avoid or substantially lessen one or more significant effects of the project while still attaining most of the basic objectives of the project (CEQA *Guidelines* Section 15126.6). Specifically, Section 15126.6(b) of the CEQA *Guidelines*, states “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.” The “range of alternatives” is governed by the “rule of reason” which requires the EIR to set forth only those alternatives necessary to permit an informed and reasoned choice by the decision-making body and informed public participation [CEQA *Guidelines* Section 15126.6(f)]. CEQA generally defines “feasible” to mean an alternative that is capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, technological, and legal factors.

5.1 Factors in the Selection of Alternatives

The CEQA *Guidelines* recommend that an EIR should briefly describe the rationale for selecting the alternatives to be discussed, identify any alternatives that were considered by the lead agency but were rejected as infeasible, and briefly explain the reasons underlying the lead agency’s determination [CEQA *Guidelines*, Section 15126.6(c)]. The following factors were considered in identifying a reasonable range of alternatives to the project:

- The extent to which the alternative would avoid or lessen one or more of the identified significant environmental effects of the project;
- The potential feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure;
- Consistency with the *Contra Costa General Plan* (General Plan) and other regulatory considerations;
- The extent to which the alternative would accomplish most of the basic goals and objectives of the project;
- The requirement of the CEQA *Guidelines* to consider a “no-project” alternative and to identify an “environmentally superior” alternative in addition to the no-project alternative [CEQA *Guidelines*, Section 15126.6(e)].

The analysis foremost seeks to reduce or avoid the **significant and unavoidable impacts** identified with the proposed Project.

- Total home based vehicle miles traveled (VMT) compared to the regional VMT for similar use (project Impact TRF-3 and cumulative Impact TRF-8) (SU)

Secondarily, the alternatives are formulated to reduce or avoid other relevant **potentially significant impacts that are reduced to less than significant** with the implementation of mitigation measures identified for the Project:

- Emissions of criteria pollutants and toxic air contaminants (TACs) to existing and proposed residents (Impact AIR-2 and Impact AIR-3) (LTSM)
- Greenhouse Gas Emissions (Impact GHG-1) (LTSM)
- Degradation of the visual quality during construction (Impact AES-1) (LTSM)
- Slope stability and landslide hazards (Impact GEO-1) (LTSM)
- Public service demand for fire and emergency medical service (Impact PUB-1) (LTSM)
- Land use compatibility and protection of open hillsides and ridgelines (Impact LU-2) (LTS)

These environmental effects alternative are discussed for each alternative (in comparison to the Project) in Section 5.4 below. The relative effects of each alternative and the proposed Project for all of the environmental topics analyzed in this Draft EIR are summarized in **Table 5-2** at the end of this chapter.

5.2 Alternatives Selected for Consideration

With consideration given to the above factors for selection, the County identified the following reasonable range of project alternatives to be addressed in this EIR:

- **Alternative 1:** No Project / Existing Conditions (No Change)
- **Alternative 2:** Reduced Grading / 50 percent Development (72 units)
- **Alternative 3:** Reduced Grading / Light Industrial

5.3 Description and Analysis of Alternatives

Throughout this section, a description of each alternative is followed by a discussion of its impacts and how it differs from those of the project. As permitted by CEQA, the significant effects of the alternatives are discussed in less detail than are the effects of the project [CEQA *Guidelines* Section 15126.6(d)]. However, the analysis is conducted at a sufficient level of detail to provide County decision-makers adequate information to fully evaluate the alternatives and to approve any of the alternatives without further environmental review.

The impacts associated with the Project and each alternative are stated as levels of significance *after* implementation of mitigation measures identified in Chapter 4 (except where necessary for

clarity). **Appendix F** includes supporting detail for vehicle trip generation, GHG emissions and, where quantified, VMT.

Alternative 1: No Project / Existing Conditions

Under the No Project Alternative, the proposed Project would not be constructed, and the 78.3-acre property would remain in its existing condition: mostly open and undeveloped land. The No Project Alternative would keep the Project site under its current General Plan land use designation of “Heavy Industry” and zoning classification of “Heavy Industrial”. No subdivision of the property would occur and no additional infrastructure would be developed.

Comparative Impacts

Compared to the Project, the No Project Alternative would not create the impacts described in the Project analysis in Chapter 4 of this Draft EIR. Conditions would remain as described in the setting sections of the impact analysis. The No Project Alternative would eliminate all Project-related impacts.

The No Project Alternative would not meet the Project’s basic objective to development new residential use in the County.

The No Project Alternative would not preclude future development of the site with use(s) consistent with the General Plan designation and zoning. A potential scenario is evaluated in Alternative 3.

Alternative 2: Reduced Grading / 50 percent Development (72 units)

The Reduced Grading / 50 percent Development Alternative (“Alternative 2”) is a variation of the Project included in the EIR to allow consideration of a reduced impact scenario that would develop the land for less intense use. In this scenario, the proposed number of housing units would be reduced by approximately 50 percent to yield a total of 72 new single-family units on the project site. Consistent with the reduced area and extent of grading, the distribution of the 72 residential lots would be reconfigured within the project site. The developable area, proposed to be approximately 30.4 acres with the Project, would also be reduced by more than 50 percent. Lot sizes would be smaller and higher density clustering of the single-family homes would occur toward the lower elevations. No Oak Trees would be removed, under this alternative.

Like the proposed Project, Alternative 2 would maintain two points of entry to the project site, one on Palms Drive and one on Central Avenue, and would also provide parks and open space on portions of the project site, including the proposed private neighborhood park. Alternative 2 would meet most of the Project objectives, although the number of homes developed would be half that of the Project.

Comparative Impacts

Vehicle Miles Traveled

Alternative 2 would result in the same significant and unavoidable VMT impacts (project Impacts TRF-3 and cumulative Impact C-TRF-8) identified with the Project, since it would maintain the same home-based VMT ratio as the Project (20.6 per resident), which exceeds the applicable threshold (see Appendix F). Also, even though total VMT for Alternative 2 would be half of that identified for the Project, it would continue to exceed VMT under existing site conditions (heavy industrial General Plan land use designation). Overall, the impacts would remain the same as identified with the Project, although overall VMT would be reduced, since Alternative 2 entails less development.

Air Quality/Health Risk

Alternative 2 would generate nearly 50 percent of the peak hour and daily vehicle trips generated by the Project. As a result, the Alternative 2 would substantially reduce the severity of the less-than-significant criteria pollutant emissions from mobile sources in particular – the largest contributor of emissions - compared to those identified with the Project. Construction emissions would also be reduced since approximately half of the site would be developed under Alternative 2. However, the same construction impact and mitigation to ensure standard best management practices (BMPs) still would apply (Impact AIR-1 and Mitigation Measure AIR-1 [Best Management Practices for Controlling Particulate Emission]) to Alternative 2.

Further, the reduced construction period could reduce the exposure of TACs affecting health risk effects to nearby sensitive receptors (Impact AIR-3 and Mitigation Measure AIR-2 [Enhanced Exhaust Emissions Reduction Measures]), however this assessment does not assume that the distance of construction activities to those receptors would be substantially reduced compared to the proposed Project and to be below the significance threshold. Therefore, the impact identified with the Project would still occur with Alternative 2, and the mitigation measure would still reduce the impact to less than significant.

GHG Emissions

With substantially reduced vehicle trips, construction activity and duration, and total housing units, Alternative 2 would also generate substantially fewer GHG emissions from mobile and other sources compared to the proposed Project. As a result, the total annual GHG emissions from Alternative 2 would be 778 MT CO₂e/yr (compared to 1,556 MT CO₂e/yr of the Project), and therefore would not exceed the applicable significance threshold (see Appendix G). Therefore, the impact and mitigation measure identified for the Project (Impact GHG-1, Impact GHG-2 and Mitigation Measure GHG-1) would not apply to Alternative 2. The impact would be less than significant compared to potentially significant, before mitigation, identified for the Project.

Visual Quality During Construction

The Project requires mitigation measures to reduce the temporary aesthetics nuisances during construction to less than significant (Impact and Mitigation Measure AES-1

[Construction/Staging Screening]), and while the extent and duration of construction activities for the reduced development in Alternative 2 would be substantially less than required with the Project, this analysis maintains that the mitigation should also apply to Alternative 2, although the overall effect may be less severe.

Slope Stability and Landslide Hazards

Since development would be focused on the lower areas of the site, the resulting grading plan would reduce alterations to the natural slope and overall topography of the site. Specifically, Alternative 2 would avoid the need for drainage terraces on the high cut slopes. The less-than-significant effects regarding slope instability and landside hazards, including risks directly caused by land alteration (Impact GEO-1) would be less severe with Alternative 2 than the proposed Project, but would remain less than significant with the implementation of mitigation (Mitigation Measure GEO-1 [Geotechnical Report Compliance]).

Public Fire and Emergency Medical Service Demands

Alternative 2 would introduce less of the same land use to the Project site, which would result in less development and lower service demands than the Project. Reduced by one-half, Alternative two would generate fewer new residents and consequently less demand for public services and utilities. Alternative 2 would maintain the potentially significant impact resulting from the demand for fire protection and emergency medical services (Impact PUB-1) and would continue to implement measures to reduce this demand (Mitigation Measure PUB-1), reducing the impact to less than significant, same as for the proposed Project.

Land Use Compatibility and Policies

Alternative 2 would continue to locate new residential uses on the property and therefore would require the County to approve a zoning reclassification and amend the General Plan land use designation from Heavy Industrial (“H-I” and “HI”) to Single Family Residential-High Density (“SH”) to accommodate the proposed uses. However, like the proposed Project, assuming the County approves the General Plan amendment, a consistency finding for the proposal could be achieved and Alternative 2 would maintain the same less-than-significant impact as the Project, since the same new residential use is proposed (Impact LUP-2).

Also, Alternative 2 would be fundamentally consistent with the intent of the *General Plan* policies that encourage preservation of the natural topography of existing hillsides and ridgelines and associated visual assets and policies that discourage extensive grading. The effects of land use compatibility would be similar to those of the proposed Project; Alternative 2 would not expand existing industrial uses and therefore would not disrupt any existing buffer protecting the existing residential neighborhood from these uses. The relative consistency with General Plan Policy 3-105 (regarding the preservation of slopes of Vine Hill Ridge and protecting area for open space use), and the reduced grading of the Project site, would better align with General Plan Policy 3-106 (buffering residential neighborhood east of I-680 from industrial / landfill-related uses). The impact would still be less than significant with no mitigation required, like the proposed Project.

Summary

Overall, Alternative 2 would not result in any new impacts not identified with the Project and would **avoid the potentially significant GHG emissions impacts (Impacts GHG-1 and GHG-2) identified with the Project** and that would be reduced to less than significant with mitigation (Mitigation Measure GHG-1). The significant and unavoidable VMT impacts (Impacts TRF-3 and C-TRF-8) identified with the Project would still occur since the ratio per household would not change and continue to exceed the applicable threshold (project). Also, even though total VMT would be substantially less than with the Project, it would continue to exceed VMT from the Project site under existing site conditions (heavy industrial General Plan land use designation). All other impact determinations with Alternative 2 would remain the same as identified for the proposed Project, although the effects may be reduced.

Alternative 3: Reduced Grading / Light Industrial

The Reduced Grading / Light Industrial Alternative (“Alternative 3”) would develop light industrial uses, rather than residential and open space uses. For purposes of this comparison analysis, it is assumed that Alternative 3 would develop relatively low intensity uses consistent with those in the vicinity of the Project site, such as self storage, recreational vehicle storage, etc., and that Central Avenue would serve as the only access point to the site.

This alternative would be similar to Alternative 2 in that it would reduce the extent of topographic changes to the site and the developable area, proposed to be approximately 30.4 acres with the Project, would also be reduced by more than 50 percent. Also, no Oak Trees would be removed, under this alternative. Access and development of the light industrial use storage use would be clustered in the lower elevation of the property, such that the overall development would generally conform to the natural contours of the site as feasible.

Comparative Impacts

Vehicle Miles Traveled

Alternative 3 involves a wholly different land use than the Proposed Project (and Alternative 2). Approximately three employees would be on-site during business hours of the self storage use. Moreover, this assessment assumes that these employees would reside in the Project area, and therefore the total VMT per weekday to the jobsite (or by users who would also likely reside nearby) would be relatively low. Also, a VMT-based employment that would factor in similar low-industrial/storage type uses nearby could result in a project-level VMT *per employee* (Impact TRF-3) that is comparable to the home-based VMT per resident of the proposed Project. Conservatively, the impact is assumed to remain SU for Alternative 3.

However, in the cumulative condition (Impact C-TRF-8), it is reasonable to project that the light industrial self storage use with Alternative 3 would add much less VMT per day than a heavy industrial use (e.g., the existing General Plan land use designation) or the proposed Project (or Alternative 2). Therefore, this may be less impactful than that under the Project (and Alternative 2).

Therefore, overall, this assessment assumes that Alternative 3 would have the same significant and unavoidable project VMT impact (Impact TRF-3) identified with the Project, and may avoid the significant and unavoidable contribution to the cumulative VMT impact (Impact C-TRF-8).

Air Quality/Health Risk

Alternative 3 would generate fewer peak hour and daily vehicle trips compared to that generated with the proposed Project. When compared to the Project, Alternative 3 would generate approximately 55 percent of the daily trips, approximately 65 percent of the a.m. peak hour trips and approximately 59 percent of the p.m. peak hour trips (see Appendix F containing comparative trip generation detail). Like Alternative 2, because it would have substantially fewer vehicle trips (peak hour and daily) compared to those from the Project, Alternative 3 would substantially reduce criteria pollutant emissions, from mobile sources in particular, compared to those with the Project.

Construction emissions would also be reduced since substantially less of the site would be developed and construction activity would likely be shorter to construct the self-storage facility. However, the same construction impact and mitigation would be implemented to ensure standard best management practices (BMPs) still would apply (Impact AIR-1 and Mitigation Measure AIR-1 [Best Management Practices for Controlling Particulate Emission]) to Alternative 3. The reduced construction period could also thereby reduce the emissions of TACs affecting health risk effects to nearby sensitive receptors (Impact AIR-3 and Mitigation Measure AIR-2 [Enhanced Exhaust Emissions Reduction Measures]), however this assessment does not assume that the distance of construction activities to those receptors would be substantially less than with proposed Project, to an extent that the exposure would not exceed the significance threshold. Therefore, the impact identified with the Project would still occur under Alternative 3, and the mitigation measure would reduce the impact to less than significant.

GHG Emissions

With substantially reduced vehicle trips (see *Air Quality/Health Risk* above), construction activity and duration, and differing operational characteristics (low-density self storage compared to single family residential), Alternative 3 would also generate substantially fewer GHG emissions from all sources compared to the proposed Project. The annual GHG emissions from Alternative 3 would be less than the proposed Project (and presumably less than Alternative 2 discussed above). However, since the service population (new employees, which is assumed to be no more than approximately three workers on-site during business hours) would be substantially less than the Project (and Alternative 2), it is reasonable to project that Alternative 3 may have higher GHG emissions per service ratio. Therefore, this assessment assumes that Impact GHG-1 and Impact GHG-2 would continue to apply to Alternative 3. While there is a low potential that feasible mitigation could be identified to effectively reduce total emissions or emissions per service population. However, this assessment considers that Alternative 3 would result in the same potentially significant, but reduced to less-than-significant impact identified with the Project.

Visual Quality During Construction

The Project requires a mitigation measure to reduce the temporary aesthetics nuisances during construction to less than significant (Impact and Mitigation Measure AES-1 [Construction/Staging Screening]), and while the extent and duration of construction activities for a types of light industrial storage uses envisioned with Alternative 3 would be substantially less than required with the Project, this analysis maintains that the impact and mitigation would also apply, although the overall degree of the impact likely would be less severe.

Slope Stability and Landslide Hazards

As with Alternative 2, Since development would be focused on the lower areas of the site, the resulting grading plan would reduce alterations to the natural slope and overall topography of the site. Alternative 1 would avoid the need for drainage terraces on the high cut slopes. The less-than-significant effects regarding slope instability and landside hazards, including risks directly caused by land alteration (Impact GEO-1) would be less severe with the Project. This is both because of the limited alterations as well as the reduced risk to non-residential development. The impact would remain less than significant with the implementation of mitigation (Mitigation Measure GEO-1 [Geotechnical Report Compliance]).

Public Fire and Emergency Medical Service Demands

Alternative 3 would introduce a new light industrial storage use to the property. The activity onsite would have lower public service demands than the Project's proposed residential use, particularly for fire protection and emergency medical services (Impact PUB-1). Mitigation Measure PUB-1 [Fire Suppression] would not be required for Alternative 3, which would trigger existing code and regulatory requirements for fire suppression. Sprinklers. Therefore, due solely to the change in land use, the less-than-significant impact would not occur with Alternative 3. This alternative would not result in new or substantially more public service or recreation demands than the proposed Project.

Land Use Compatibility and Policies

Alternative 3 would not locate new residential uses near existing industrial uses and therefore would not introduce land uses to the property that potentially would be incompatible with the surrounding industrial uses. Alternative 3 would not require a zoning reclassification or a change to the current General Plan land use designation, since light industrial uses are permitted within the H-I and HI destinations (Heavy Industrial), respectively, on the site. Light industrial storage uses would buffer residential neighborhoods from existing industrial / landfill-related uses to the west of the property, as directed in General Plan Policy 3-106, and the reduced grading on the site would better align General Plan Policy 3-105. While neither Alternative 3 nor the Project would have a significant impact regarding land use compatibility and consistency with General Plan policies, Alternative 3 would be more consistent with certain policies and would not require changes to either zoning or the General Plan. The Alternative 3 effects regarding land use and planning policies would remain less than significant, like the Project.

Summary

Overall, Alternative 3 would not result in any new impacts that would not occur with the Project. However, this assessment suggests that it **may avoid the significant and unavoidable contribution to the cumulative VMT impact (Impact C-TRF-8)** given the contribution of Alternative 3 compared to that of a heavy industrial uses that is consistent with the existing General Plan designation on the Project site. All other impact determinations with Alternative 3 would remain the same as identified for the proposed Project, although relative effects are likely reduced. Given the different land use, some of the impacts and mitigation measures may not apply because of the different code and regulatory requirements for residential development compared to light industrial storage development. Also, the reduced intensity of development, in terms of site changes and proposed land use, means that Alternative 3 would have reduced less-than-significant effects overall.

5.4 Environmentally Superior Alternative

The No Project Alternative would be environmentally superior to the proposed Project on the basis of minimization or avoidance of physical environmental impacts. However, the No Project Alternative does not meet any of the Project objectives. CEQA requires that that a second alternative be identified when the “No Project” alternative emerges as the environmentally superior alternative (CEQA *Guidelines*, Section 15126.6(e)). **Table 5-1** shows in bold, shaded text, impact determinations that are wholly changed from those identified for the proposed Project. Table 5-1 is an excerpt of the complete impacts comparison in Table 5-2 further in this chapter and supports the environmentally superior alternative evaluation.

Comparison of Reduced and Avoided Impacts

VMT

Alternative 3 would avoid the significant and unavoidable cumulative VMT impact (Impact C-TRF-8) identified for the Project due to the relative fewer VMT that the light industrial/self storage use would contribute to the cumulative VMT compared to a heavy industrial use consistent with the General Plan. The only other significant and unavoidable impact of the Project (Impact TRF-3) is the project-level VMT, which this assessment considers would still occur with Alternative 3. Alternative 2 does not avoid or substantially reduce this significant unavoidable impact.

Noise, Population and Public Services

Considering other Project impacts that are avoided under Alternative 3, these are avoided because no sensitive receptors (residents) residential operations or residential buildings would be introduced to the site, and vehicular traffic would be substantially less, compared to the Project.

**TABLE 5-1
SUMMARY OF REDUCED OR AVOIDED IMPACTS COMPARED TO THE PROJECT**

NOTE: Significance levels shown in the table reflect levels of significance <i>after mitigation</i> and indicate maximum impact during buildout and operation, unless otherwise specified.				
<i>BOLD/SHADED designations indicate change from Project impact.</i>	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
Impact GHG-1: The Project would generate GHG emissions that could have a significant impact on the environment.	LSM	N	LS	LSM↓
Impact GHG-2: The Project would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing GHG emissions.	LSM	N	LS	LSM↓
Impact NOI-2: Occupants of the proposed Project buildings could be exposed to high noise levels.	LS	N	LS	N
Impact NOI-3: Project operations could cause a long-term increase in ambient noise levels in the Project site vicinity.	LSM	N	LSM↓	N
Impact POP-1: The Project would not directly or indirectly induce substantial population growth.	LS	N	LS↓	N
Impact PUB-1: The Project would increase the demand for fire protection and emergency medical services, but would not result in the need for new or physically altered facilities, the construction of which would cause significant environmental impacts.	LSM	N	LSM↓	LS
Impact PUB-3: The Project would increase the demand for public school services, but would not result in the need for the provision of new or physically altered facilities.	LS	N	LS↓	N
Impact PUB-4: The Project would increase the demand for child care services, but would not result in the need for the provision of new or physically altered facilities.	LS	N	LS↓	N
Impact C-TRF-8: The Project with a General Plan amendment would increase the Countywide VMT, resulting in a significant impact for the Project	SU	N	SU	LS
Legend				
LS	Less than significant or negligible impact; no mitigation required			
LSM	Less than significant adverse impact, after mitigation			
SU	Significant and unavoidable adverse impact, after mitigation			
N	No impact			
↓	Impact is more severe or less severe than project impact, after mitigation			

These include impacts regarding noise exposure (Impact NOI-2) and ambient noise increase (Impact NOI-3); substantial population growth (Impact POP-1); and increased demand for emergency services (Impacts PUB-1), public school facilities (Impact PUB-3) and childcare facilities (Impact PUB-4). Table 5-1 shows that, while Alternative 2 does not *avoid* any of these impacts, it would *reduce* the effect to each (except noise exposure to new residents, Impact NOI-2), compared to the Project.

GHG Emissions

Although not avoided, the Project's less-than-significant after mitigation GHG effects (Impacts GHG-1 and GHG-2) would be *reduced* with Alternative 3, given its reduced development and light industrial/self storage use (as shown in Table 5-1). However, Table 5-1 shows that Alternative 2 would avoid these two less-than-significant after mitigation impacts. Alternative 2 would generate half the annual GHG emissions of the Project and would not exceed the emissions target threshold (see Appendix E). Although Alternative 3 would also generate notably fewer annual GHG emissions than the proposed Project (or Alternative 2), this assessment considers the impact would not change, given the high service emissions per service (employee) ratio likely, and the limited feasible mitigation approaches for this type of use.

Environmental Superior Alternative

Alternative 3 is considered environmental superior because it avoids a significant and unavoidable impact of the proposed Project that no other analyzed alternative avoids (except the No Project) (Impact C-TRF-8). Moreover, Alternative 3 avoids other less-than-significant impacts that result with the Project, including impacts that warranted mitigation with the Project and Alternative 2.

Beyond the physical environmental effects considered for the CEQA analysis, Alternative 3 would not meet the fundamental Project objective of developing residential use at the Project site. Alternative 2 would meet this objective to an extent (as well as avoid less-than-significant after mitigation GHG emissions impacts that would still occur with Alternative 3), but Alternative 3 is still considered environmentally superior as it would avoid significant unavoidable impact identified with the Project.

5.5 Alternative Considered but Rejected for Detailed Analysis

A Heavy Industrial use alternative was considered but rejected for detailed analysis in this EIR. The scenario would have considered development of the site with heavy industrial uses, consistent with the existing Heavy Industrial (H-I) zoning and Heavy Industry (HI) General Plan land use designation that currently apply to the property. Development of the site with heavy industrial uses could require roadway access for heavy trucks, which could involve additional grading to achieve roadways with substantially less-steep slopes than those proposed in the Project. Although existing zoning regulations would avoid inform the proximity and operation of a heavy industrial use on the site near existing residential uses, a heavy industrial use alternative

could generate air quality effects (operational criteria pollutants, TACs/human health risk exposure, and odors), noise effects, public roadway damage and/or hazardous materials effects that could be potentially greater than identified with the proposed Project. Further, a heavy industrial use scenario would not meet the basic Project objective of developing residential uses at the Project site. For these reasons, this alternative was considered but rejected for detailed analysis in this EIR.

Table 5-2 showing the comparative impacts of the proposed Project and each of the alternatives starts on the following page.

**TABLE 5-2
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES**

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.

BOLD/SHADED designations indicate change from Project impact.

	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
4.1. Aesthetics				
Impact AES-1: Construction of the Project would create temporary aesthetic nuisances associated with Project construction and grading activities.	LSM	N	LSM↓	LSM↓
Impact AES-2: The Project would not have a substantial adverse effect on a scenic vista or adversely affect scenic resources along any designated scenic highway.	LS	N	LS	LS
Impact AES-3: The Project could alter the existing visual character of the Project site, but would not substantially degrade the existing visual quality of the site and its surroundings.	LS	N	LS	L↓
Impact AES-4: The Project would introduce new sources of light and glare onto the Project site and increase ambient light in the vicinity. (Criterion d)	LS	N	LS	LS
Impact C-AES-1: The Project, in conjunction with cumulative development, would not result in a cumulative aesthetics impact related to scenic vistas and resources, or visual character and visual quality.	LS	N	LS	LS
4.2. Air Quality				
Impact AIR-1: The Project could conflict with or obstruct implementation of the applicable air quality plan.	LS	N	LS	LS
Impact AIR-2: Emissions from construction and operation of the Project would result in increased emissions of criteria air pollutants and contribute to existing air quality violations.	LSM	N	LSM↓	LSM↓
Impact AIR-3: Construction of the Project could increase emissions of toxic air contaminants (TACs), and increase health risks for nearby residents, and Project operations could expose sensitive receptors to substantial pollutant concentrations including toxic air contaminants and increase health risks for existing and proposed residents.	LSM	N	LSM↓	LSM↓
Impact AIR-4: The Project would locate sensitive receptors near existing sources of objectionable odors.	LS	N	LS	LS
Impact C-AIR-1: The Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative regional air quality impacts.	LSM	N	LSM	LSM
Impact C-AIR-2: The Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative health risk impacts on sensitive receptors.	LS	N	LS	LS

Legend

LS	Less than significant or negligible impact; no mitigation required
LSM	Less than significant adverse impact, after mitigation
SU	Significant and unavoidable adverse impact, after mitigation
N	No impact
B	Beneficial
↑↓	Impact is more severe or less severe than project impact, after mitigation

TABLE 5-2 (CONTINUED)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.

BOLD/SHADED designations indicate change from Project impact.

	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
4.3. Biological Resources				
Impact BIO-1: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service. (Criterion a, in part) (<i>Potentially Significant prior to Mitigation</i>)	LSM	N	LSM	LSM
Impact BIO-2: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on amphibian or reptile species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.	LSM	N	LSM	LSM
Impact BIO-3: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on migratory birds and/or on bird species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.	LSM	N	LSM	LSM
Impact BIO-4: Construction of the Project could have a substantial adverse effect, either directly or through habitat modifications, on salt marsh harvest mouse and special-status bat species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.	LSM	N	LSM	LSM
Impact BIO-5: Construction of the Project could have a substantial adverse effect on sensitive natural communities.	LSM	N	LSM	LSM
Impact BIO-6: Construction of the Project could have a substantial adverse effect on wetlands or other Waters of the U.S. and the State.	LSM	N	LSM	LSM
Impact BIO-7: The Project would not interfere substantially with the movement of native resident or migratory bird species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	LSM	N	LSM	LSM
Impact BIO-8: The Project would not conflict with any local policies or ordinances protecting biological resources.	LSM	N	LSM	LSM
Impact C-BIO-1: The proposed Project, in conjunction with cumulative development in the region, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S., to which the Project would have a cumulatively considerable contribution.	LSM	N	LS	LS

Legend

LS	Less than significant or negligible impact; no mitigation required
LSM	Less than significant adverse impact, after mitigation
SU	Significant and unavoidable adverse impact, after mitigation
N	No impact
B	Beneficial
↑↓	Impact is more severe or less severe than project impact, after mitigation

TABLE 5-2 (CONTINUED)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.

BOLD/SHADED designations indicate change from Project impact.

	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
4.4. Cultural Resources and Tribal Cultural Resources				
Impact CUL-1: The Project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered archaeological resources, human remains, and tribal cultural resources.	LSM	N	LSM	LSM
Impact C-CUL-1: The Project, in conjunction with cumulative development, could contribute to cumulative impacts on cultural resources.	LS	N	LS	LS
4.5. Geology and Soils				
Impact GEO-1: The Project could directly or indirectly cause substantial adverse effects involving slope instability hazards, including landslides, debris flows, and rockfalls caused by seismic or nonseismic mechanisms.	LSM	N	LSM [↓]	LSM [↓]
Impact GEO-2: The Project could directly or indirectly expose people or structures to strong ground shaking from a seismic event on one of the regional active faults, causing substantial risk of loss, injury, or death.	LSM	N	LSM	LSM
Impact GEO-3: The Project site would be susceptible to settlement from static forces or earthquake induced forces, posing substantial risk of structural damage or personal injury.	LSM	N	LSM	LSM
Impact GEO-4: Project construction would loosen and expose substantial volumes of surface soils susceptible to loss of topsoil and erosion.	LSM	N	LSM	LSM
Impact GEO-5: The Project site would be susceptible to expansive soils, posing substantial risk of structural damage or personal injury.	LSM	N	LSM	LSM
Impact GEO-6: The Project would involve extensive subsurface disturbance that could potentially encounter and damage previously undiscovered buried paleontological resources or unique geological features.	LSM	N	LSM	LSM
Impact C-GEO-1: The Project, in conjunction with cumulative development, would not result in significant cumulative impacts with respect to geology, soils, or seismicity to which the Project would have a cumulatively considerable contribution.	LS	N	LS	LS
4.6. Greenhouse Gas Emissions and Energy				
Impact GHG-1: The Project would generate GHG emissions that could have a significant impact on the environment.	LSM	N	LS	LSM [↓]
Impact GHG-2: The Project would not conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for	LSM	N	LS	LSM [↓]

Legend

LS	Less than significant or negligible impact; no mitigation required
LSM	Less than significant adverse impact, after mitigation
SU	Significant and unavoidable adverse impact, after mitigation
N	No impact
B	Beneficial
↑↓	Impact is more severe or less severe than project impact, after mitigation

TABLE 5-2 (CONTINUED)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.

BOLD/SHADED designations indicate change from Project impact.

	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
the purpose of reducing GHG emissions.				
Impact ENE-1: The Project would not result in wasteful, inefficient and unnecessary use of energy and the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	LS	N	LS	LS [↓]
4.7. Hazards and Hazardous Materials				
Impact HAZ-1: The Project would use hazardous materials (i.e., solvents) onsite during construction that could be released to the environment through improper handling or storage.	LSM	N	LSM	LSM
Impact HAZ-2: Project operations would generate general household and maintenance hazardous waste.	LS	N	LS	LS
Impact HAZ-3: The Project would be developed where existing crude oil pipelines transect the Project site, which could present a hazard to the public or environment in the event of accidental upset.	LSM	N	LSM	LSM
Impact HAZ-4: The Project site is within the Contra Costa County Airport Land Use Plan and the Buchanan Field Airport Influence Area, and could result in a safety hazard or excessive noise for people residing in the area.	LS	N	LS	LS
Impact HAZ-5: The Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	LS	N	LS	LS
Impact C-HAZ-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts related to hazards and hazardous materials to which the Project would have a cumulatively considerable contribution.	LS	N	LS	LS
4.8. Hydrology and Water Quality				
Impact HYD-1: The Project could result in an increase of stormwater pollutants due to construction activities and/or the introduction of new impervious surfaces, but would not violate any water quality standards or waste discharge requirements.	LS	N	LS	LS
Impact HYD-2: The Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that it would impede sustainable groundwater management of the basin.	LS	N	LS	LS
Impact HYD-3: The Project would not substantially alter the drainage pattern of the site such that it would result in substantial erosion or siltation onsite or offsite.	LS	N	LS	LS

Legend

LS	Less than significant or negligible impact; no mitigation required
LSM	Less than significant adverse impact, after mitigation
SU	Significant and unavoidable adverse impact, after mitigation
N	No impact
B	Beneficial
↑↓	Impact is more severe or less severe than project impact, after mitigation

TABLE 5-2 (CONTINUED)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.

BOLD/SHADED designations indicate change from Project impact.

	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
Impact HYD-4: The Project would not substantially alter the drainage pattern of the site or surrounding areas such that it would result in flooding on- or off-site.	LS	N	LS	LS
Impact HYD-5: The Project would not create or contribute runoff water which would exceed the capacity of existing or planned drainage systems, or provide substantial additional sources of polluted runoff.	LS	N	LS	LS
Impact HYD-6: The Project could develop structures which would impede or redirect flood flows.	LS	N	LS	LS [↓]
Impact HYD-7: The Project could conflict with a water quality control plan or sustainable groundwater management plan.	LS	N	LS	LS
Impact C-HYD-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts with respect to hydrology and water quality to which the Project would have a cumulatively considerable contribution.	LS	N	LS	LS
4.9. Land Use, Plans and Policies				
Impact LUP-1: The Project would not divide an established community.	LS	N	LS	LS
Impact LUP-2: The Project, including the proposed amendments to the General Plan and zoning designation, would not conflict with adopted applicable land use plans and policies such that the Project is inconsistent with the General Plan.	LS	N	LS	LS [↓]
Impact C-LUP-1: Development of the Project, in combination with past, present, existing, approved, pending and reasonably foreseeable future projects within and in the vicinity of the Project site, would not result in significant cumulative impacts to land use and planning.	LS	N	LS	LS
4.10. Noise				
Impact NOI-1: Construction of the Project would result in a temporary increase in ambient noise levels.	LSM	N	LSM [↓]	LSM [↓]
Impact NOI-2: Occupants of the proposed Project buildings could be exposed to high noise levels.	LS	N	LS	N
Impact NOI-3: Project operations could cause a long-term increase in ambient noise levels in the Project site vicinity. (LSM	N	LSM [↓]	N
Impact C-NOI-1: Project construction activities, in conjunction with construction noise from cumulative development noise in the vicinity of the Project site, could cause a substantial temporary or periodic increase in ambient noise levels in the Project site vicinity during construction.	LS	N	LS	LS

Legend

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↑↓	Impact is more severe or less severe than project impact, after mitigation

TABLE 5-2 (CONTINUED)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.

BOLD/SHADED designations indicate change from Project impact.

	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
Impact C-NOI-2: Operation of the proposed Project, in conjunction with cumulative development, would not cause a substantial permanent increase in ambient noise levels in the Project vicinity.	LS	N	LS	LS
4.11. Population and Housing				
Impact POP-1: The Project would not directly or indirectly induce substantial population growth.	LS	N	LS↓	N
Impact C-POP-1: The Project, in conjunction with cumulative development, would not result a significant cumulative impact by directly or indirectly causing substantial growth, and to which the Project would have a cumulatively considerable contribution	LS	N	LS	LS
4.12. Public Services and Recreation				
Impact PUB-1: The Project would increase the demand for fire protection and emergency medical services, but would not result in the need for new or physically altered facilities, the construction of which would cause significant environmental impacts.	LSM	N	LSM↓	LS
Impact PUB-2: The Project would increase the demand for police protection services, but would not result in the need for the provision of new or physically altered facilities, the construction of which would cause significant environmental impacts.	LS	N	LS↓	LS↓
Impact PUB-3: The Project would increase the demand for public school services, but would not result in the need for the provision of new or physically altered facilities.	LS	N	LS↓	N
Impact PUB-4: The Project would increase the demand for child care services, but would not result in the need for the provision of new or physically altered facilities.	LS	N	LS↓	N
Impact PUB-5: The Project would increase the use of existing parks or other recreational facilities, but not such that substantial physical deterioration would occur or new or expanded facilities would be required.	LS	N	LS↓	LS↓
Impact C-PUB-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts on public services and recreation to which the Project would have a cumulatively considerable contribution.	LS	N	LS	LS

Legend

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TABLE 5-2 (CONTINUED)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.

BOLD/SHADED designations indicate change from Project impact.

	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
4.13. Transportation				
Impact TRF-1: Project construction would result in temporary increases in truck traffic and construction worker traffic.	LSM	N	LSM↓	LSM↓
Impact TRF-2: Project-generated increases in heavy truck traffic on area roadways during Project construction could result in substantial damage to or wear of public roadways.	LSM	N	LSM↓	LSM↓
Impact TRF-3: Total Home-Based VMT per resident generated by the Project would be greater than 15 percent below the regional VMT for similar uses in Contra Costa County, resulting in a significant impact for the Project.	SU	N	SU	SU
Impact TRF-4a: The Project would increase traffic volumes on residential roadway segments near the Project site resulting in obstacles (or hazards) for project vehicle traffic.	LSM	N	LSM↓	LSM↓
Impact TRF-4b: The Project would not have adverse impacts to the project site's vehicle system.	LS	N	LS	LS
Impact TRF-5: The Project could increase ridership on public transit serving the Project area.	LS	N	LS↓	LS↓
Impact TRF-7a: Emergency access to the Project site would be through existing streets that would be incompatible with the existing transportation infrastructure by exposing emergency vehicles to hazards. (Criterion d) (Potentially Significant)	LSM	N	LSM	LSM
Impact TRF-7b: The Project would not have adverse impacts to the project site's emergency vehicle system.	LS	N	LS	LS
Impact C-TRF-8: The Project with a General Plan amendment would increase the Countywide VMT, resulting in a significant impact for the Project	SU	N	SU	LS
4.14. Utilities and Service Systems				
Impact UTIL-1: The Project would increase domestic and emergency water demand, but would not exceed water supplies available from existing entitlements and resources.	LSM	N	LSM↓	LSM↓
Impact UTIL-2: The Project would require or result in construction of new or expanded water facilities, the construction of which would cause significant environmental effects.	LSM	N	LSM	LSM
Impact UTIL-3: The Project would require or result in construction of new or expanded stormwater drainage facilities, the construction of which could cause significant environmental effects.	LSM	N	LSM	LSM

Legend

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TABLE 5-2 (CONTINUED)
SUMMARY OF IMPACTS: PROJECT AND ALTERNATIVES

NOTE: Significance levels shown in the table reflect levels of significance *after mitigation* and indicate maximum impact during buildout and operation, unless otherwise specified.

BOLD/SHADED designations indicate change from Project impact.

	Project	Alt 1 No Project	Alt 2 Reduced Grading / 50 percent Development	Alt 3 Reduced Grading / Self Storage (LI)
Impact UTIL-4: The Project would generate demand for wastewater utility service, and would result in the expansion of the existing wastewater collection system, the construction of which would not cause significant environmental effects.	LSM	N	LSM↓	LSM↓
Impact UTIL-5: The Project would generate solid waste, but would not exceed the permitted capacity of the landfill serving the Project site, and would comply with federal, state and local statutes and regulations related to solid waste.	LS	N	LS↓	LS↓
Impact C-UTIL-1: The Project, in conjunction with cumulative development, would not result in cumulative impacts on utilities and service systems to which the Project would have a cumulatively considerable contribution.	LS	N	LS	LS

Legend

LS	Less than significant or negligible impact; no mitigation required
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CHAPTER 6

Other Statutory Sections

In accordance with Public Resources Code Section 21100(b)(2) and State CEQA Guidelines Section 15126.2, this chapter identifies significant impacts on the environment that cannot be avoided if the Project is implemented and significant effects on the environment that would be irreversible if the Project is implemented.

6.1 Significant Unavoidable Environmental Impacts

CEQA *Guidelines* Section 15126.2(b) requires a discussion of any significant impacts that “cannot be avoided if the proposed project is implemented.” When a project is determined to have significant impacts after implementation of mitigation, the decision makers must then evaluate whether the benefits of the project outweigh the significant impacts to the environment. If the project is approved, a Statement of Overriding Considerations is required in accordance with CEQA *Guidelines* Section 15093.

Based upon the analysis in Chapter 4 (Environmental Setting, Impacts and Mitigation Measures), the Project would result in the following significant and unavoidable impacts, even with implementation of the identified mitigation measures:

- **Impact TRF-3:** Total Home-Based VMT per resident generated by the Project would be greater than 15 percent below the regional VMT for similar uses in Contra Costa County, resulting in a significant impact for the Project. **Mitigation Measure TRF-3:** Transportation and Parking Demand Management (TDM) Plan.
- **Impact C-TRF-8:** The Project with a General Plan amendment would increase the Countywide VMT, resulting in a significant impact for the Project. **Mitigation Measure TRF-3:** Transportation and Parking Demand Management (TDM) Plan.

All other impacts identified with the Project would be reduced to less than significant with the implementation of recommended mitigation measures. All Project impacts, mitigation measures and residual impact level after mitigation (if any are required) are detailed in Chapter 4 and in Table 2-1, *Summary of Impacts, Mitigation Measures and Residual Effects*, in Chapter 2 (Summary).

6.2 Significant Irreversible Environmental Changes

CEQA dictates that irretrievable commitments of resources should be evaluated to assure that such current consumption is justified (CEQA Guidelines §15126.2(c)). The CEQA Guidelines identify three distinct categories of significant irreversible changes: (1) changes in land use that would commit future generations; (2) irreversible changes from environmental actions; and (3) consumption of non-renewable resources. Project construction and operation would result in an irretrievable loss of, and irreversible commitment of, natural resources, including undeveloped open land. Project construction and operation would require the use of fossil fuels and other natural materials, such as wood and metals. Project construction and operation would also emit pollution into the air both from construction machines and vehicles during the construction phase and from vehicles traveling to and from the project site during the operation phase. These topics and others are discussed in depth in Chapter 4.

6.3 Growth Inducement

Pursuant to Section 15126.2(d) of the CEQA *Guidelines*, an EIR must address whether a project will directly or indirectly foster growth. Section 15126.2(d) calls for the EIR to:

“Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant, might, for example, allow for more construction in service areas). Increases in population may further tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.”

This analysis evaluates whether the project would directly or indirectly, induce economic, population or housing growth in the surrounding environment.

The Project would include the construction of 144 single-family residences. Thus, as discussed in Section 4.11, *Population and Housing*, the estimated population increase for the County would be approximately 356 residents. This is a direct form of growth inducement. However, this population increase would be consistent with ABAG population estimates and growth anticipated by the *Contra Costa County General Plan* (General) Housing Element. Therefore, development of the project would not result in significant population growth.

The Project would most likely provide housing for individuals already living in Contra Costa County and would be meeting an existing housing demand that is already accounted for by the region. The Project would not generate new permanent employment opportunities. In addition, while construction of the project would generate a temporary need for construction employment (approximately one to three years), it is likely that construction workers would be those already living in Contra Costa County or the surrounding region, and therefore the temporary increase in

construction-related employment would not generate demand for new housing. Overall, any increase in employment would be minimal; the project would not induce substantial direct or indirect population growth.

Although the Project would extend infrastructure and roadways within and adjacent to the Project site, these improvements would consist of local connections to serve the Project. Thus, the Project would not remove obstacles to population growth beyond the Project site, particularly given that such growth, particularly in a substantial way, is limited by existing nearby development and land uses. As such, the project would not indirectly induce substantial population growth or development in the area, as the proposed infrastructure would not facilitate substantial development at other locations.

6.4 Cumulative Analysis

The definition and approach to cumulative impacts and cumulative analysis is discussed in Section 4.0.6 (*Cumulative Analysis*) in Chapter 4.0 of the Draft EIR. The Project's contributions to cumulative effects occur as listed below:

- **Impact C-AIR-1:** The Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative regional air quality impacts. *Project Contribution: Reduced to Less than Significant with implementation of Mitigation Measure AIR-1* (Best Management Practices for Controlling Particulate Emissions)
- **Impact C-AIR-2:** The Project, in combination with past, present, and reasonably foreseeable future development of cumulative projects would contribute to cumulative health risk impacts on sensitive receptors. *Project Contribution: Reduced to Less than Significant with implementation of Mitigation Measure AIR-2* (Enhanced Exhaust Emissions Reduction Measures)
- **Impact C-BIO-1:** The proposed Project, in conjunction with cumulative development in the region, could result in cumulative impacts on special-status species, habitats, wetlands and other waters of the U.S., to which the Project would have a cumulatively considerable contribution. *Project Contribution: Reduced to Less than Significant with implementation of the following mitigation measures: Mitigation Measure BIO-1* (Avoidance and Minimization for Impacts to Special-Status Plants); **Mitigation Measure BIO-2a** (Worker Environmental Awareness Program Training); **Mitigation Measure BIO-2b** (General Conservation Measures during Construction); **Mitigation Measure BIO-2c** (Avoidance, Minimization, and Protection Measures for Sensitive Amphibians and Reptiles); **Mitigation Measure BIO-3a** (Nesting Bird Protection Measures); **Mitigation Measure BIO-3b** (Avoid and Minimize Impacts to California Black Rail and Ridgway's Rail); **Mitigation Measure BIO-4a** (Avoidance and Minimization Measures for Salt Marsh Harvest Mouse); **Mitigation Measure BIO-4b** (Avoidance and Minimization Measures for Bats); **Mitigation Measure BIO-5a** (Salvage and Reintroduction of Creeping Wildrye Grassland); **Mitigation Measure BIO-5b** (Enhancement and Creation of Valley Oak Woodland); **Mitigation Measure BIO-6a** (Protection of Jurisdictional Wetlands and Other Waters); and **Mitigation Measure BIO-6b** (Permits and Compensation for Impacts to Wetlands and Waters).

- **Impact C-GHG-1:** The Project, in conjunction with cumulative development, would result in cumulative impacts regarding GHG emissions and climate change. *Project Contribution: Reduced to Less than Significant with implementation of Mitigation Measure GHG-1* (GHG Emissions Reduction Plan).
- **Impact C-TRF-8:** The Project with a General Plan amendment would increase the Countywide VMT, resulting in a significant impact for the Project. *Impact remains significant with implementation of Mitigation Measure TRF-3* (Transportation and Parking Demand Management [TDM] Plan).

6.5 Effects Found Not to Be Significant

This Draft EIR did not include preparation of an Initial Study, therefore all environmental factors under CEQA (specifically pursuant to Appendix F and Appendix G to the CEQA *Guidelines*) are analyzed in this Draft EIR, including environmental factors that are determined to have a less-than-significant impact or no impact. All less-than-significant impacts are detailed in Table 2-1 in Chapter 2 (Summary) and within the relevant section in Chapter 4. Factors that have no impact under the proposed Project are discussed under *Topics with No Impact or Otherwise Not Addressed in this EIR*. In particular, these include the discussions of Mineral Resources and Agricultural Resources, which are in Section 4.7, *Geology and Soils*, and Section 4.9, *Land Use, Plans and Policies*, respectively, in Chapter 4.

CHAPTER 7

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