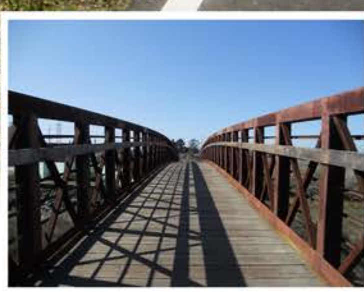
Final EIR

SAN FRANCISQUITO CREEK FLOOD REDUCTION, ECOSYSTEM RESTORATION, AND RECREATION PROJECT SAN FRANCISCO BAY TO HIGHWAY 101

SCH# 2010092048

October 2012



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San Francisquito Creek Flood Reduction, Ecosystem Restoration, and Recreation Project San Francisco Bay to Highway 101

Findings of Fact and Statement of Overriding Considerations

This document presents Findings of Fact (Findings) and a Statement of Overriding Considerations (Statement) by the San Francisquito Creek Joint Powers Authority (SFCJPA)—a regional government agency whose members are the Cities of Palo Alto, Menlo Park, and East Palo Alto; the San Mateo County Flood Control District, and the Santa Clara Valley Water District (District)—regarding the Final Environmental Impact Report (Final EIR) for the San Francisquito Creek Flood Reduction Project, East Bayshore Road to San Francisco Bay (Project), for which the SFCJPA is acting as the California Environmental Quality Act (CEQA) lead agency. The Findings and Statement presented herein were prepared in compliance with CEQA and the State's CEQA Guidelines. Substantial evidence supporting all findings made herein is contained in the Environmental Impact Report (EIR) and/or the record of proceedings.

If a proposed project would have significant adverse effects on the environment, CEQA requires the lead agency to prepare findings describing how those effects would be reduced or avoided. Under California Public Resources Code Section 21081[a], several findings are possible.

(1) Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

(2) Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.

(3) Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report.

For any significant effects that cannot be avoided or reduced to a less-than-significant level, the lead agency must describe the reasons why mitigation or adoption of an alternative approach is infeasible (California Public Resources Code Section 21081[a][3]). Adoption of a project that would have significant adverse effects on the environment requires that the lead agency identify the project benefits that are evaluated as outweighing its significant effects on the environment (Public Resources Code Section 21081[b]).

Background

The Project would construct flood reduction facilities along an approximately 1.5-mile stretch of San Francisquito Creek (Creek) from East Bayshore Road to San Francisco Bay (Bay).

Flooding from the Creek is a common occurrence. The most recent flood event occurred as a result of record creek flows in February 1998, when the Creek overtopped its banks in several areas, affecting approximately 1,700 residential, commercial, and public structures and causing more than $28 million in property damages. The maximum instantaneous peak flow recorded during the February 1998 event was 7,200 cubic feet per second (cfs). The U.S. Army Corps of Engineers (USACE) estimates that the 1998 flood was a 45-year flood event. A 100-year flood event[1] is anticipated to result in flows of 9,400 cfs at the mouth of the Creek. These flows would exceed the existing capacity of the Creek (San Francisquito Creek Joint Powers Authority 2009).

The Project would increase conveyance and retention capacity of floodwaters from runoff and San Francisco Bay tides to protect residents and property from flood events along the lower section of the Creek, from East Bayshore Road to the San Francisco Bay.

Project Description

Increasing the Creek's capacity from San Francisco Bay to East Bayshore Road would be achieved by:

- Degrading a portion of an unmaintained levee downstream of Friendship Bridge to allow flood flows from the Creek channel into the Palo Alto Baylands Nature Preserve (Baylands Preserve) north of the Creek.
- Excavating sediment deposits within the channel to maximize conveyance.
- Rebuilding levees and relocating a portion of the southern levee to widen the channel to reduce influence of tides and increase channel capacity.
- Constructing floodwalls in the upper reach to increase capacity and maintain consistency with the California Department of Transportation's (Caltrans) enlargement of the U.S. 101/East Bayshore Road Bridge over San Francisquito Creek (Caltrans facility).

Major Project elements include:

- An overflow terrace at marsh elevation adjacent to the Baylands Preserve.
- Levee setback and improvements to widen the channel and increase levee height and stability between East Palo Alto and the Palo Alto Golf Course.
- Floodwalls in the upper reach downstream of East Bayshore Road.
- Extension of Friendship Bridge via a boardwalk across new marshland within the widened channel.

The majority of the Project elements would occur on properties in Palo Alto and East Palo Alto and owned by the City of Palo Alto; or within Santa Clara Valley Water District (District) or City of East Palo Alto rights-of-way.

[1] The 100-year flood is more accurately referred to as the 1 percent annual exceedance probability flood because it is a flood that has a 1 percent chance of being equaled or exceeded in any single year. A 100-year flood has approximately a 63.4 percent chance of occurring in any 100-year period, not a 100 percent chance of occurring, but conversely could theoretically occur in consecutive years.

The Project elements proposed to improve management of flood flows along the Creek from East Bayshore Road to San Francisco Bay include opening the Creek channel to flow in to the Baylands Preserve, reconfiguring levees, creating a marshplain terrace to convey high flows, installing floodwalls; widening of the Creek channel; and constructing access roads for maintenance purposes.

Scoping and Draft EIR Circulation

The District submitted the Notice of Preparation (NOP) for the Project to the State Clearinghouse on September 15, 2010. Two public scoping meetings were held in September 2010. To reach as many community members as possible, the first meeting (midday Wednesday, September 29, 2010) was held at the East Palo Alto Senior Center in East Palo Alto, and the second meeting (Thursday evening, September 30, 2010) was held at the International School of the Peninsula in Palo Alto. Both meetings were publicized through direct mailings to approximately 11,000 affected and interested households, offices, and agencies.

The SFCJPA circulated the Draft EIR for a 45-day public and agency review period, beginning on July 30, 2012 and concluding on September 13, 2012. The Draft EIR and Notice of Completion were transmitted to the State Clearinghouse on July 30, 2012. Bound hard copies of the Draft EIR were placed on reserve at several public venues, including the East Palo Alto Public Library, Palo Alto Public Library, and the SFCJPA's offices. The Draft EIR was also made available in electronic format online, via the District's website. Notice of the Draft EIR's availability was e-mailed to interested parties, including adjacent residents and other community members who had requested Project notification. Two public hearings to solicit comments on the Draft EIR were held at 6 p.m. on August 15 and August 29, 2012 at East Palo Alto City Hall (2415 University Avenue) in the East Palo Alto City Council Chambers.

Final EIR

The Final EIR for the proposed Project is on file in the SFCJPA's offices at 1020 Blossom Hill Road, Menlo Park, California. It is also available online at: www.sfcjpa.org. The Final EIR consists of the following materials: copies of all comments on the Draft EIR received by the SFCJPA; the SFCJPA's responses to those comments; and the complete text of the EIR, including revisions made in response to comments received. The Final EIR and all associated materials in the administrative record are incorporated herein by this reference.

Findings of Fact

Regarding the EIR prepared for the proposed Project, the SFCJPA finds as follows. The findings are summarized in Table 1.

Table 1. Impacts and Mitigation for the San Francisquito Creek Flood Reduction, Ecosystem Restoration, and Recreation Project San Francisco Bay to Highway 101

Impact	Mitigation	Level of Impact After Mitigation [a,b] Construction	O&M
Aesthetics			
Impact AES1—Substantial Damage to Scenic Resources within a State Scenic Highway	No mitigation is required.	NI	NI
Impact AES2—Substantial Effect on a Scenic Vista	No mitigation is required.	LTS	LTS
Impact AES3—Alteration in Existing Visual Character or Quality of the Site and Its Surroundings	No mitigation is required.	LTS	LTS
Impact AES4—Creation of a New Source of Light or Glare	No mitigation is required.	LTS	NI
Air Quality			
Impact AQ1—Conflict with or Obstruction of Applicable Air Quality Plan	No mitigation is required.	LTS	n/a
Impact AQ2—Violation of Any Air Quality Standard or Substantial Contribution to Existing or Projected Air Quality Violation	Mitigation Measure AQ2.1—Implement Tailpipe Emission Reduction for Project Construction. Mitigation Measure AQ2.2—Fleet Modernization for Onroad Material Delivery and Haul Trucks during Construction. Mitigation Measure AQ2.3—Modernization for Directional Drilling Equipment during Construction. Mitigation Measure NV1.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents. Mitigation Measure NV1.3—Designate Construction Noise and Air Quality Disturbance Coordinator to Address Resident Concerns.	SU	n/a
Impact AQ3—Exposure of Sensitive Receptors to Substantial Pollutant Concentrations	Mitigation Measure AQ2.1—Implement Tailpipe Emission Reduction for Project Construction. Mitigation Measure AQ2.2—Fleet Modernization for Onroad Material Delivery and Haul Trucks during Construction. Mitigation Measure AQ2.3—Modernization for Directional Drilling Equipment during Construction.	SU	n/a

Impact	Mitigation	Level of Impact After Mitigation [a,b] Construction	O&M
	Mitigation Measure NV1.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents.		
	Mitigation Measure NV1.3—Designate Construction Noise and Air Quality Disturbance Coordinator to Address Resident Concerns.		
Impact AQ4—Creation of Objectionable Odors	Mitigation Measure AQ2.1—Implement Tailpipe Emission Reduction for Project Construction.	LTS/M	n/a
	Mitigation Measure AQ2.2—Fleet Modernization for Onroad Material Delivery and Haul Trucks during Construction.		
	Mitigation Measure AQ2.3—Modernization for Directional Drilling Equipment during Construction.		
	Mitigation Measure NV1.3—Designate Construction Noise and Air Quality Disturbance Coordinator to Address Resident Concerns.		
Biological Resources			
Impact BIO1—Disturbance or Loss of Special-Status Plant Populations	Mitigation Measure BIO1.1—Conduct Botanical Surveys	LTS/M	NI
	Mitigation Measure BIO1.2—Confine Construction Disturbance and Protect Special-Status Plants during Construction		
	Mitigation Measure BIO1.3—Compensate for Loss of Special-Status Plants		
Impact BIO2—Disturbance, Injury, or Mortality of Western Pond Turtles	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training	NI	NI
	Mitigation Measure BIO2.2—Implement Survey and Avoidance Measures to Decrease Disturbance to Western Pond Turtles		
	Mitigation Measure BIO2.3—Daily Surveys and Monitoring of Construction Activities to Decrease Disturbance to Western Pond Turtles		
Impact BIO3—Disturbance of Nesting Migratory Birds and Raptors (Excluding Burrowing Owl)	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training	LTS/M	NI
	Mitigation Measure BIO3.1—Establish Buffer Zones for Nesting Raptors and Migratory Birds (Excluding Burrowing Owl)		

Impact	Mitigation	Level of Impact After Mitigation [a,b] Construction	O&M
Impact BIO4—Disturbance of Western Burrowing Owls and Habitat	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training	LTS/M	NI
	Mitigation Measure BIO4.1—Implement Survey and Avoidance Measures for Western Burrowing Owls Prior to Construction Activities		
Impact BIO5—Disturbance of California Clapper Rail and California Black Rail and Habitat	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training	LTS/M	LTS/M
	Mitigation Measure BIO5.1—Implement Survey and Avoidance Measures for California Clapper Rail and California Black Rail Prior to Construction Activities		
	Mitigation Measure BIO5.2—Produce and Implement Habitat Monitoring Plan for Habitat within the Faber Tract Prior to Construction Activities		
Impact BIO6—Disturbance of Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew and Habitat	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training	LTS/M	LTS/M
	Mitigation Measure BIO6.1—Implement Survey and Avoidance Measures for Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Prior to Construction		
Impact BIO7—Disturbance of California Least Tern and Western Snowy Plover and Habitat	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training	LTS/M	LTS/M
	Mitigation Measure BIO7.1—Implement Survey and Avoidance Measures for California Least Tern and Western Snowy Plover Prior to Construction Activities		
Impact BIO8—Disturbance of California Red-Legged Frog and San Francisco Garter Snake and Habitat	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training	LTS/M	NI
	Mitigation Measure BIO8.1—Implement Survey and Avoidance Measures for California Red-Legged Frog and San Francisco Garter Snake Prior to Construction Activities		
Impact BIO9—Disturbance of Steelhead Trout and Suitable Habitat	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training	LTS/M	NI
	Mitigation Measure BIO9.1—Implement Avoidance Measures for Steelhead Trout Prior to Construction Activities		
Impact BIO10—Temporary Degradation of Instream Habitat	No mitigation is required.	LTS	NI

Impact	Mitigation	Level of Impact After Mitigation [a,b] Construction	O&M
Impact BIO11—Disturbance or Loss of Riparian Habitat	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training Mitigation Measure BIO11.1—Identify and Protect Riparian Habitats Mitigation Measure BIO11.2—Restore Riparian Habitat	LTS/M	NI
Impact BIO12—Disturbance or Loss of State- or Federally Protected Wetlands	Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training Mitigation Measure BIO12.1—Avoid and Protect Jurisdictional Wetlands during Construction	LTS/M	NI
Impact BIO13—Loss of, or Damage to, Protected Trees	Mitigation Measure BIO13.1—Transplant or Compensate for Loss of Protected Landscape Trees, Consistent with Applicable Tree Protection Regulations Mitigation Measure BIO13.2—Protect Remaining Trees from Construction Impacts	LTS/M	NI
Cultural and Paleontological Resources			
Impact CR1—Effect of Ground Disturbance on Undocumented Cultural Resources, Including Human Remains	Mitigation Measure CR1.1—Conduct a Preconstruction Cultural Field Survey and Cultural Resources Inventory and Evaluation Mitigation Measure CR1.2—Conduct Worker Awareness Training for Archaeological Resources Prior to Construction	LTS/M	LTS/M
Impact CR2—Substantial Adverse Change to Historical Resources	No mitigation is required.	NI	NI
Impact PALEO1—Damage to Significant Paleontological Resources	Mitigation Measure Paleo1.1—Conduct a Preconstruction Paleontological Resources Field Survey and Paleontological Resources Inventory and Evaluation Mitigation Measure Paleo1.2—Conduct Worker Awareness training for Paleontological Resources Prior to Construction Mitigation Measure CR1.3—Stop Work Immediately if Buried Cultural Resources are Discovered Inadvertently	LTS/M	NI
Geology and Soils			
Impact GEO1—Exposure to Surface Fault Rupture Hazards	No mitigation is required.	LTS	LTS
Impact GEO2—Exposure to Seismic Groundshaking Hazards	No mitigation is required.	LTS	LTS

Impact	Mitigation	Level of Impact After Mitigation [a,b] Construction	O&M
Impact GEO3—Exposure to Seismically Induced Liquefaction Hazards	No mitigation is required.	LTS	LTS
Impact GEO4—Exposure to Landslide and Other Slope Failure Hazards	No mitigation is required.	LTS	LTS
Impact GEO5—Location on Unstable or Expansive Soil	No mitigation is required.	LTS	LTS
Impact GEO6—Soil Erosion and Loss of Topsoil	No mitigation is required.	LTS	LTS
Greenhouse Gas Emissions			
Impact GHG1—Generate Greenhouse Gas Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment	Mitigation Measure GHG1.1—Implement BAAQMD Best Management Practices for Construction	LTS/M	n/a
Impact GHG2—Conflict with an Applicable Plan, Policy, or Regulation Adopted for The Purpose of Reducing the Emissions of Greenhouse Gases	No mitigation is required.	LTS	n/a
Hazardous Materials and Public Health			
Impact HAZ1—Creation of Hazard through Transport, Use, or Disposal of Hazardous Materials	Mitigation Measure HAZ1.1—Preparation and Implementation of a Spill Prevention, Control, and Countermeasure Plan Mitigation Measure HAZ1.2—Require Proper Storage and Handling of Potential Pollutants and Hazardous Materials	LTS/M	LTS/M
Impact HAZ2—Exposure of Workers or the Public to Existing Hazardous Materials Contamination	Mitigation Measure HAZ2.1—Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials Are Encountered	LTS/M	LTS/M
Impact HAZ3—Generation of Hazardous Emissions/Use of Hazardous Materials within 0.25 Mile of Schools	However, Mitigation Measure HAZ1.1 requires all hazardous materials to be handled, stored, and used in a manner consistent with relevant regulations and guidelines.	LTS/M	LTS/M
Impact HAZ4—Located on a Site that is Included on a List of Hazardous Materials Sites	No mitigation is required.	LTS	LTS
Impact HAZ5—Create a Safety Hazard for People in the Project Area Due to the Proximity to an Airport	No mitigation is required.	LTS	LTS
Impact HAZ6—Interference with Emergency Response or Evacuation Plan	Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan	LTS/M	LTS
Impact HAZ7—Exposure of People or Structure to Risk of Wildland Fires	No mitigation is required.	NI	NI

Impact	Mitigation	Level of Impact After Mitigation [a,b] Construction	O&M
Impact HAZ8—Breeding or Harborage of Disease Vector Organisms	Mitigation Measure HAZ8.1—Prevent Mosquito Breeding during Project Construction	LTS/M	LTS/M
Hydrology and Water Resources			
Impact HWR1—Effects on Flood Hazards	Mitigation Measures HWR1.1—Design of Temporary Relocation of Storm Drainage Facilities during Construction Mitigation Measures HWR1.2—Design of Permanent Relocation of Storm Drainage Facilities	LTS/M (HWR1.1)	LTS/M (HWR1.2)
Impact HWR2—Effects on Groundwater Supply and Recharge	No mitigation is required.	LTS	LTS
Impact HWR3—Degradation of Water Quality	No mitigation is required.	LTS	LTS
Impact HWR4—Effects on Designated Beneficial Uses	No mitigation is required.	LTS	LTS
Land Use and Planning			
Impact LU1—Physical Division of an Established Community	No mitigation is required.	NI	NI
Impact LU2—Conflict with Applicable Plan, Policy, or Regulation	No mitigation is required.	LTS	LTS
Impact LU3—Conflict with Applicable Habitat Conservation Plan or Natural Communities Conservation Plan	No mitigation is required.	NI	NI
Noise and Vibration			
Impact NV1—Noise Levels in Excess of Applicable Standards	No mitigation is required.	LTS	LTS
Impact NV2—Excessive Groundborne Vibration Levels	Mitigation Measure NV2.1—Conduct Construction Vibration Monitoring and Implement Vibration Control Approach(es)	LTS/M	LTS
Impact NV3—Substantial Permanent Increase in Ambient Noise	No mitigation is required.	NI	LTS
Impact NV4—Substantial Temporary Increase in Ambient Noise	Mitigation Measure NV4.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents Mitigation Measure NV4.2—Implement Work Site Noise Control Measures	LTS/M	NI

Impact	Mitigation	Level of Impact After Mitigation [a,b] Construction	O&M
	Mitigation Measure NV4.3—Designate a Noise and Air Quality Disturbance Coordinator to Address Resident Concerns Mitigation Measure NV4.4—Install Temporary Noise Barriers		
Public Services			
Impact PS1—Adversely Affect Fire Protection Services or Require the Provision of New or Physically Altered Fire Protection Facilities	No mitigation is required.	LTS	LTS
Impact PS2—Adversely Affect Police Services or Require the Provision of New or Physically Altered Police Facilities	No mitigation is required.	LTS	LTS
Impact PS3—Adversely Affect Schools or Require the Provision of New or Physically Altered School Facilities	No mitigation is required.	NI	NI
Recreation			
Impact REC1—Result in the Need for Development of New Parks or Recreational Facilities, the Need for the Expansion of Existing Facilities, or the Increased Use of Existing Parks or Other Recreational Facilities, thereby Resulting in Substantial Physical Deterioration	No mitigation is required.	LTS	LTS
Impact REC2—Result in Reduced Availability of Existing Recreational Facilities or Uses	Mitigation Measure REC-1—Compensate the City of Palo Alto for the Conversion of 7.4 Acres of the Palo Alto Municipal Golf Course to Accommodate Project Features	LTS	SU
Traffic and Transportation			
Impact TT1—Potential to Conflict with an Applicable Plan, Ordinance or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System	No mitigation is required.	LTS	NI
Impact TT2—Potential to Conflict with an Applicable Congestion Management Program	No mitigation is required.	LTS	NI
Impact TT3—Potential to Create Traffic Safety Hazards	Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan	LTS/M	NI
Impact TT4—Potential to Obstruct Emergency Access	Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan	LTS/M	NI
Impact TT5—Potential to Conflict with Alternative Transportation	Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan	LTS/M	NI

Impact	Mitigation	Level of Impact After Mitigation [a,b] Construction	O&M
Utilities and Service Systems			
Impact UT1—Adversely Affect Water Supply, Water Treatment Facilities, Wastewater Treatment Facilities, Storm Drainage Facilities, or Gas or Electric Service	No mitigation is required.	LTS	NI
Impact UT2—Adversely Affect Landfill Capacities	No mitigation is required.	LTS	NI
Cumulative			
Air Quality (criteria pollutants)	Mitigation Measure AQ2.1—Implement Tailpipe Emission Reduction for Project Construction. Mitigation Measure AQ2.2—Fleet Modernization for Onroad Material Delivery and Haul Trucks during Construction. Mitigation Measure AQ2.3—Modernization for Directional Drilling Equipment during Construction. Mitigation Measure NV1.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents. Mitigation Measure NV1.3—Designate Construction Noise and Air Quality Disturbance Coordinator to Address Resident Concerns.	SU	n/a

[a] The greatest level of impact on any of the project elements is recorded here. Some project elements could sustain a lower level of impact than indicated.

[b] Impact level in increasing order.

B = Beneficial.
NI = No Impact.
LTS = Less Than Significant.
LTS/M = Less Than Significant with Mitigation.
SU = Significant and Unavoidable.

O&M = operations and maintenance.

Significant Impacts that Can Be Mitigated to a Less-than-Significant Level

AQ4— Creation of Objectionable Odors

Impact

Project construction activities could generate odors associated with diesel exhaust, paving activities, and other construction-related sources. Odors would be temporary and localized but could still result in disturbance, potentially rising to the level of a significant impact, for all Project elements, especially where construction takes place in close proximity to residences.

Mitigation

Odor impacts would be reduced to less-than-significant levels through *Mitigation Measure AQ2.1—Implement Tailpipe Emission Reduction for Project Construction*, which requires all construction contractors to implement the exhaust Basic Construction Mitigation Measures and Additional Construction Mitigation Measures recommended by the Bay Area Air Quality Management District (BAAQMD) to control exhaust emissions; *Mitigation Measure AQ2.2—Fleet Modernization for Onroad Material Delivery and Haul Trucks during Construction*, which requires that all on-road heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater used at the Project site will comply with U.S. Environmental Protection Agency (EPA) 2007 on-road emission standards for particulate matter less than 10 microns in diameter (PM10) and oxides of nitrogen (NO_X); *Mitigation Measure AQ2.3—Modernization for Directional Drilling Equipment during Construction*, which requires that the contractor's equipment used for directional drilling meet EPA Tier 2 or higher emissions standards, in addition to being outfitted with the best available control technology (BACT) devices certified by the California Air Resources Board (CARB) that achieve emissions reductions no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations; and *Mitigation Measure NV1.3—Designate Construction Noise and Air Quality Disturbance Coordinator to Address Resident Concerns*, which designates a representative to act as construction noise and air quality disturbance coordinator, responsible for resolving construction noise and air quality concerns.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures AQ2.1, AQ2.2, AQ2.3, and NV1.3 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to creation of objectionable odors during construction would be less than significant.

BIO1—Disturbance or Loss of Special-Status Plant Populations

Impact

For all Project elements, construction activities could damage or remove individuals of the following special-status species with potential to occur in the Project area: Alkali milkvetch, San Joaquin spearscale, Congdon's tarplant, Point Reyes bird's-beak, Hairless popcornflower, Slender-leaved pondweed, California seablite, and/or Saline clover. However, it is unlikely that the Project would have any impact on Slender-leaved pondweed, if it is determined to be present. Substantial loss of individuals of any of these species as a result of construction disturbance (earthwork, staging activities, foot traffic, vehicle traffic, or other activity) or destruction of suitable habitat adjacent to an existing population could result in a significant impact on the species.

Mitigation

To ensure that significant impacts on special-status plants during Project construction are avoided if possible, and are compensated if they cannot be avoided, the SFCJPA will implement the following measures: *Mitigation Measure BIO1.1—Conduct Botanical Surveys*, *Mitigation Measure BIO1.2—Confine Construction Disturbance and Protect Special-Status Plants during Construction*, and *Mitigation Measure BIO1.3—Compensate for Loss of Special-Status Plants*.

Mitigation Measure BIO1.1 requires a qualified botanist to survey suitable habitat in the Project area for special-status plants during the appropriate blooming periods for each species, in accordance with the California Native Plant Society (CNPS) Botanical Survey Guidelines (California Native Plant Society 2001). *Mitigation Measure BIO1.2* would be implemented if it is determined that individuals of identified special-status plant species could be affected by construction traffic or activities, and it requires that construction disturbance be confined to the minimum area necessary to complete the work and is required to avoid encroachment on adjacent habitat. If deemed necessary by a qualified botanist, a species-appropriate buffer area determined in consultation with agency (California Department of Fish and Game [DFG] and U.S. Fish and Wildlife Service [USFWS]) staff will be protected from encroachment and damage during construction by installing temporary construction fencing. *Mitigation Measure BIO1.3* would be implemented if any individuals of listed special-status plants are present and cannot be effectively avoided through implementation of Mitigation Measure BIO1.2 and requires that the SFCJPA will develop and implement a compensation plan so that there is no net loss of special-status plants.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO1.1, BIO1.2, and BIO1.3 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance or loss of special-status plant populations during construction would be less than significant.

BIO2—Disturbance, Injury, or Mortality of Western Pond Turtles

Impact

In the Project area, levee lowering on the right bank, levee raising on the right bank, levee raising on the left bank and levee relocation, construction of the access road on the left bank, and modification to Friendship Bridge have the potential to disturb upland habitat adjacent to the freshwater pond in the Project area and could result in the loss of western pond turtle individuals or nests; this potential for disturbance and loss would represent a significant impact.

Mitigation

Impacts to western pond turtles would be reduced to less than significant by implementing *Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training*, *Mitigation Measure BIO2.2—Implement Survey and Avoidance Measures to Decrease Disturbance to Western Pond Turtles*, and (if necessary) *Mitigation Measure BIO2.3—Daily Surveys and Monitoring of Construction Activities to Decrease Disturbance to Western Pond Turtles*.

Mitigation Measure BIO2.1 requires that prior to construction, Worker Awareness Training be conducted to inform construction workers of their responsibilities regarding sensitive environmental resources. *Mitigation Measure BIO2.2* requires that prior to the start of construction activities at Project element sites that could support western pond turtle, the SFCJPA retain a qualified biologist to conduct preconstruction surveys for western pond turtles in all suitable habitats in the vicinity of the work sites. If preconstruction surveys identify active nests, the biologist will establish no-disturbance buffer zones in consultation with DFG. If turtles are observed during the surveys, then *Mitigation Measure BIO2.3* will be implemented, which requires that SFCJPA retain a qualified biologist to conduct preconstruction surveys for western pond turtles in all suitable habitats in the vicinity of work sites that will be active within the 3 days prior to the onset of site preparation and construction activities with the potential to disturb turtles or their habitat. If a turtle is found during the daily preconstruction survey, construction in the vicinity of the turtle will not commence until the turtle is removed from the Project area to be relocated to suitable habitat outside of the Project limits per DFG protocols and permits.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1, BIO2.2, and BIO2.3 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance, injury, or mortality of western pond turtles during construction would be less than significant.

BIO3—Disturbance of Nesting Migratory Birds and Raptors (Excluding Burrowing Owl)

Impact

For all Project elements, heavy equipment and human activity during construction would increase noise in the vicinity of the work area, potentially resulting in disturbance of birds nesting and foraging in the area. If occupied nests are present on or adjacent to the construction area, construction activities could result in the abandonment of nests, the death of nestlings, and the destruction of eggs in active nests. Migratory birds, raptors, and their nests are protected under the Migratory Bird Treaty Act and the California Fish and Game Code. Disturbance of nesting migratory birds or raptors thus represents a significant impact.

Mitigation

Implementation of *Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training* described under BIO2 above, and *Mitigation Measure BIO3.1—Establish Buffer Zones for Nesting Raptors and Migratory Birds (Excluding Burrowing Owl)* would reduce the potential for impacts on nesting raptors and migratory birds to less than significant. *Mitigation Measure BIO3.1* requires that prior to the start of construction activities that begin during the migratory bird nesting period (between January 15 and August 31 of any year), SFCJPA retain a qualified wildlife biologist to conduct a survey for nesting raptors and migratory birds that could nest along the Project corridor, and with the exception of raptor nests, inactive bird nests may be removed. If an active nest is discovered during these surveys, the qualified wildlife biologist will establish a no-disturbance buffer zone around the nest tree or nest in consultation with DFG, and construction will be stopped if necessary.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1 and BIO3.1 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of nesting migratory birds and raptors (excluding burrowing owl) during construction would be less than significant.

BIO4—Disturbance of Western Burrowing Owls and Habitat

Impact

Project elements with potential to affect this species include levee lowering on the right bank, levee raising on the left bank and levee relocation, construction of the floodwall on the left bank, construction of the downstream access road on the right bank, and construction of the upstream access road on the right bank. Construction activities within these Project element sites during the nesting period could result in direct injury or mortality, as well as disturbance impacts related to elevated noise and human presence. Impacts could be significant.

Mitigation

Implementation of *Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training* described under Impact BIO2 above (western burrowing owl awareness will be included in the preconstruction worker awareness training required for all construction personnel) and *Mitigation Measure BIO4.1—Implement Survey and Avoidance Measures for Western Burrowing Owls Prior to Construction Activities* would reduce this impact to less than significant. *Mitigation Measure BIO4.1* requires that, prior to any construction activity, the SFCJPA retain a qualified wildlife biologist to conduct seasonally appropriate preconstruction surveys for burrowing owls. If any western burrowing owls are found within the disturbance area, or if any nesting western burrowing owls are found within 250 feet of the construction footprint, during the survey or at any time during the construction process, SFCJPA will notify DFG and will proceed under DFG direction. Any necessary buffers will be established in consultation with DFG.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1 and BIO4.1 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation.

With these measures in place, impacts related to disturbance of western burrowing owls and their habitat during construction would be less than significant.

BIO5—Disturbance of California Clapper Rail and California Black Rail and Habitat

Impact

Clapper rail and black rail are considered to have a high potential to be present in suitable habitat within and adjacent to the Project area. Disturbance of species and habitat could result from construction activities associated with the following Project elements: levee lowering on right bank, levee raising on right bank, construction of the floodwall on right bank, levee raising on left bank and levee relocation, construction of the floodwall on left bank, modification of Friendship Bridge, and all marshland restoration Project elements. In addition, maintenance of Project facilities identified as being in or near suitable habitat associated with levee lowering on right bank would have some potential to disturb California clapper rail and California black rail, and the project would result in spill flows into the Faber Tract, which while historically consistent with natural functions, have not occurred in at least 50 years due to the channelization of San Francisquito Creek. Thus, operation and maintenance impacts could be significant.

Mitigation

Implementation of *Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training* described under Impact BIO2 above (California clapper rail and California black rail awareness will be included in the preconstruction worker awareness training required for all construction personnel), *Mitigation Measure BIO5.1—Implement Survey and Avoidance Measures for California Clapper Rail and California Black Rail Prior to Construction Activities*, and *Mitigation Measure BIO5.2—Produce and Implement Habitat Monitoring Plan for Habitat within the Faber Tract Prior to Construction Activities* would reduce disturbance on California clapper rail and California black rail to less than significant.

Mitigation Measure BIO5.1 states that work activities within 50 feet of California clapper rail habitat will not occur within 2 hours before or after extreme high tides (6.5 feet or above) when the marshplain is inundated. In addition, seasonally appropriate surveys will be conducted by a permitted biologist. During breeding season, if necessary, Project activities occurring within 500 feet of active nests will be postponed until after young have fledged. Outside breeding season, if necessary, no-disturbance buffer will be established, and no work will occur within the buffer until the biologist verifies that California clapper rail or California black rail individuals have left the area. If individuals are routinely observed in the work area, a species avoidance plan will be developed in coordination with USFWS and DFG. *Mitigation Measure BIO5.2* states that the SFCJPA or its approved designee will be responsible for the development and implementation of a habitat monitoring plan for existing (i.e., pre-Project) habitat within the Faber Tract that will document baseline conditions prior to Project implementation. Plan approval by USFWS and DFG will be necessary before implementation of activities recommended by the plan.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1, BIO5.1, and BIO5.2 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of California clapper rail and California black rail and habitat during construction and operation and maintenance would be less than significant.

BIO6—Disturbance of Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew and Habitat

Impact

Construction activities occurring in the Project element sites could disturb salt marsh harvest mouse and salt marsh wandering shrew and habitat for the following Project elements: levee lowering on right bank, levee raising on right bank, construction of the floodwall on right bank, levee raising on left bank and levee relocation, construction of the floodwall on left bank, modification to Friendship Bridge, and all marshplain restoration Project elements. In addition, increasing in periodicity of fluvial inputs associated with the levee lowering on right bank could potentially result in habitat changes detrimental to salt marsh harvest mouse and salt marsh wandering shrew.

Mitigation

Implementation of *Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training* described under BIO2 above (salt marsh harvest mouse and salt marsh wandering shrew awareness will be included in the preconstruction worker awareness training required for all construction personnel), *Mitigation Measure BIO5.2—Produce and Implement Habitat Monitoring Plan for Habitat within the Faber Tract Prior to Construction Activities* (which is described under Impact BIO5 above), and *Mitigation Measure BIO6.1—Implement Survey and Avoidance Measures for Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Prior to Construction* would reduce these impacts to less than significant. *Mitigation Measure BIO6.1* requires that construction and maintenance work, including site preparation, be avoided to the extent possible within suitable habitat for these species during their breeding seasons (February 1 to November 30). As work during the species' breeding seasons will be necessary, a species avoidance plan will be developed and implemented in consultation with USFWS and DFG. In addition, vegetation clearing will be monitored by a permitted biologist, and appropriate measures will be taken if individuals are observed.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1, BIO5.2, and BIO6.1 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of salt marsh harvest mouse and salt marsh wandering shrew and habitat during construction and operation would be less than significant.

BIO7—Disturbance of California Least Tern and Western Snowy Plover and Habitat

Impact

Levee lowering on the right bank has potential to disturb California least tern and western snowy plover. Construction activities serving this Project element would occur near suitable habitat for these species and could disturb nesting or foraging individuals that could be present. Disturbance of nesting or foraging California least tern and western snowy plover would be a significant impact. In addition, because California least tern and western snowy plover have potential to occur in habitat in the Faber Tract, flooding from San Francisquito Creek associated with levee lowering on right bank and subsequent habitat alteration could affect these species as well. This habitat alteration would be significant.

Mitigation

Implementation of *Mitigation Measures BIO2.1—Develop and Implement Worker Awareness Training* described above under BIO2 (California least tern and western snowy plover awareness will be included in the preconstruction worker awareness training required for all construction personnel), *Mitigation Measure BIO7.1—Implement Survey and Avoidance Measures for California Least Tern and Western Snowy Plover Prior to Construction Activities*, and *Mitigation Measure BIO5.2—Produce and Implement Habitat Monitoring Plan for Habitat within the Faber Tract Prior to Construction Activities* (which is described under BIO5) would reduce this impact to less than significant. *Mitigation Measure BIO7.1* requires that construction work, including site preparation, will be avoided to the extent possible within and near (500 feet) suitable habitat for these species during their breeding seasons. In addition, prior to the initiation of work within 500 feet of suitable habitat (regardless of the time of year), a permitted biologist will be retained to conduct surveys of appropriate habitat for California least tern and western snowy plover and their nests, and Project activities will be postponed or appropriate buffers will be established, if necessary. If individuals are routinely observed in or within 500 feet of the work area or do not leave the work area, a species avoidance plan will be developed in coordination with USFWS and DFG.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1, BIO5.2, and BIO7.1 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of California least tern and western snowy plover and habitat during construction and operation would be less than significant.

BIO8—Disturbance of California Red-Legged Frog and San Francisco Garter Snake and Habitat

Impact

The following Project elements have potential to disturb California red-legged frog and San Francisco garter snake: levee lowering on right bank, levee raising on right bank, and levee raising on left bank and levee relocation. Construction activities for these Project elements would occur near suitable habitat for California red-legged frog and San Francisco garter snake and could disturb individuals that might be present in the uplands and in the ponds. Such an effect could constitute a significant impact.

Mitigation

Implementation of *Mitigation Measures BIO2.1—Develop and Implement Worker Awareness Training* described above under BIO2 (California red-legged frog and San Francisco garter snake awareness will be included in the preconstruction worker awareness training required for all construction personnel) and *Mitigation Measure BIO8.1—Implement Survey and Avoidance Measures for California Red-Legged Frog and San Francisco Garter Snake Prior to Construction Activities* would reduce this impact to less than significant. *Mitigation Measure BIO8.1* requires that SFCJPA retain a permitted biologist to conduct a survey of the freshwater ponds and surrounding upland habitat prior to initiation of construction activities in accordance with applicable protocols, and buffer areas and/or a species avoidance plan will be developed in coordination with USFWS and DFG if needed.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1 and BIO8.1 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of California red-legged frog and San Francisco garter snake and habitat during construction would be less than significant.

BIO9—Disturbance of Steelhead Trout and Suitable Habitat

Impact

Construction activities for all Project elements would occur near suitable habitat for steelhead trout and could disturb individuals that could be present in San Francisquito Creek. Such an effect would be considered a significant impact.

Mitigation

Implementation of *Mitigation Measures BIO2.1—Develop and Implement Worker Awareness Training* (steelhead trout and habitat awareness will be included in the preconstruction worker awareness training required for all construction personnel) and *Mitigation Measure BIO9.1—Implement Avoidance Measures for Steelhead Trout Prior to Construction Activities* would reduce this impact to less than significant. *Mitigation Measure BIO9.1* requires that no in-channel construction activities will occur during the steelhead migration period, to reduce the likelihood that steelhead are present during construction activities, and a qualified fisheries biologist, approved by the National Marine Fisheries Service (NMFS), will survey the construction area 1 to 2 days before the Project begins. If no surface water is present in the immediate construction area, fish will not be relocated. If water is present, additional procedures will be implemented to capture and relocate fish as described in the Final EIR.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1 and BIO9.1 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of steelhead trout and suitable habitat during construction would be less than significant.

BIO11—Disturbance or Loss of Riparian Habitat

Impact

The only Project element that would affect riparian habitat is channel widening and marshplain creation and restoration in the upper reach of San Francisquito Creek in the Project area. Extensive trimming, pruning, or removal of riparian habitat could represent a significant impact.

Mitigation

Implementation of *Mitigation Measures BIO2.1—Develop and Implement Worker Awareness Training* (which is described under BIO2), *Mitigation Measure BIO11.1—Identify and Protect Riparian Habitats*, and *Mitigation Measure BIO11.2—Restore Riparian Habitat* would reduce impacts to less than significant by replacing any riparian areas permanently impacted. *Mitigation Measure BIO11.1* requires that the SFCJPA retain a qualified biologist or ecologist to survey and demarcate riparian habitat on or adjacent to the proposed areas of construction in the upper reach of San Francisquito Creek. Riparian areas not slated to accommodate Project construction will be protected from encroachment and damage during construction by installing temporary construction fencing to create a no-activity exclusion zone in accordance with International Society of Arboriculture tree protection zone recommendations and any additional requirements of the resource agencies with jurisdiction. *Mitigation Measure BIO11.2* makes the SFCJPA responsible for restoring permanently affected riparian habitat at a mitigation-to-impact ratio of 2:1, and restoring temporarily affected habitat at a minimum impact-to-mitigation ratio of 1:1 to ensure no net loss of riparian habitat in the affected stream reach. A Mitigation Monitoring Plan (MMP) will be developed in the context of the federal and state permitting processes under the Clean Water Act and California Fish and Game Code, and will include success criteria as specified by the permitting agencies.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1, BIO11.1, and BIO11.2 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of or loss of riparian habitat during construction and operation would be less than significant.

BIO12—Disturbance or Loss of State- or Federally Protected Wetlands

Impact

Levee and floodwall construction activities would temporarily and permanently affect diked marsh and tidal salt marsh habitat. Additionally, marshplain creation and restoration activities would temporarily affect tidal salt marsh habitat.

Mitigation

Implementation of *Mitigation Measures BIO2.1—Develop and Implement Worker Awareness Training*, which is described under BIO2, and *Mitigation Measure BIO12.1—Avoid and Protect Jurisdictional Wetlands during Construction* would minimize impacts on wetlands not within the grading footprint, including the low-flow channel, to less than significant. *Mitigation Measure BIO12.1* requires that a qualified resource specialist (biologist, ecologist, or soil scientist) clearly identify wetland areas outside of the direct impact footprint with temporary orange construction fencing before site preparation and construction activities begin at each site or will implement another suitable low-impact measure. Construction will not encroach upon jurisdictional wetlands identified by the wetland specialist.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO2.1 and BIO12.1 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of or loss of state- or federally protected wetlands during construction would be less than significant.

BIO13—Loss of, or Damage to, Protected Trees

Impact

Construction of all Project elements could damage and/or would remove protected tree species outside of riparian habitat. Damage to protected trees affecting their chances of survival and/or removal of any protected trees would be considered a significant impact. Note that removal of trees in riparian habitat is addressed and compensated separately under BIO11.

Mitigation

Implementation of *Mitigation Measure BIO13.1—Transplant or Compensate for Loss of Protected Landscape Trees, Consistent with Applicable Tree Protection Regulations* and *Mitigation Measure BIO13.2—Protect Remaining Trees from Construction Impacts* would reduce this impact to less than significant. *Mitigation Measure BIO13.1* requires that protected landscape trees slated for removal be transplanted or replaced as appropriate in accordance with a landscape plan. *Mitigation Measure BIO13.2* provides that trees not designated for removal will be protected from damage during construction by the installation of temporary fencing in a manner consistent with International Society of Arboriculture tree protection zone recommendations.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures BIO13.1 and BIO13.2 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to disturbance of, or damage to, protected trees during construction would be less than significant.

PALEO1—Damage to Significant Paleontological Resources

Impact

Project construction activities for all Project elements, such as excavations associated with channel widening and floodwall placement, could affect sensitive, previously undisturbed geologic units, potentially unearthing and damaging previously unknown paleontological resources or unique geologic features. According to available geologic maps, such sensitive native sediments, may exist on both sides of the channel nearest the upstream portion of the Project area. Any such disturbance could result in a significant impact on sensitive deposits potentially containing paleontological resources. The remainder of the Project site is in areas mapped as artificial fill and artificial levee deposits of varying depth. Should Project-related excavation extend below artificial fill, the Project could result in a significant impact on sensitive deposits underlying the artificial fill potentially containing paleontological resources.

Mitigation

Implementation of *Mitigation Measure Paleo1.1—Conduct a PreConstruction Paleontological Resources Field Survey and Paleontological Resources Inventory and Evaluation*; *Mitigation Measure Paleo1.2—Conduct Worker Awareness training for Paleontological Resources Prior to Construction;* and *Mitigation Measure CR1.3—Stop Work Immediately if Buried Cultural Resources are Discovered Inadvertently* would reduce impacts on paleontological resources to less than significant level. *Mitigation Measure Paleo1.1* requires that the SFCJPA retain qualified personnel to conduct a paleontological resources field survey to determine whether significant resources exist, and paleontological resources monitoring will be conducted if necessary. *Mitigation Measure Paleo1.2* requires that prior to the initiation of any site preparation and/or start of construction, all construction workers receive training overseen by a qualified professional paleontologist, to ensure that forepersons and field supervisors can recognize paleontological resources in the event that any are discovered during construction. *Mitigation Measure CR1.3* requires that if paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the SFCJPA and other agencies as appropriate.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures Paleo1.2 and CR1.3 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation.

With these measures in place, impacts related to damage to significant paleontological resources during construction would be less than significant.

GHG1—Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Impact

Individual projects contribute to the cumulative effects of climate change by directly or indirectly emitting greenhouse gases (GHGs) during construction phases. Project operation would not generate any direct long-term, operational emissions, or contribute to indirect emissions. While not established as a construction threshold, construction-related emissions from the Project are slightly above the Bay Area Air Quality Management District's (BAAQMD) 1,100 metric ton operational threshold.

Mitigation

As discussed above, the BAAQMD's Air Quality Guidelines do not recommend a GHG emission threshold for construction-related emissions. However, they do recommend implementation of best management practices (BMPs) to help control and reduce GHG emissions. Implementation of the BAAQMD's BMPs is therefore required to reduce construction-related GHG emissions. Impact GHG1 is considered less than significant with implementation of *Mitigation Measure GHG1.1—Implement BAAQMD Best Management Practices for Construction*, which requires use of alternative fueled vehicles, local building materials, and construction waste recycling.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measure GHG1.1 is feasible and will adopt it as described in the Final EIR. This measure will be incorporated into the Project construction documents (plans and specifications) to ensure its implementation. With this measure in place, impacts related to generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment during construction would be less than significant.

HAZ1—Creation of Hazard through Transport, Use, or Disposal of Hazardous Materials

Impact

Construction of all Project elements would require the use of hazardous substances such as vehicle fuels, lubricants, and solvents. Improper storage and handling, including spills and releases, could result in exposure of the workers and the general public to toxins and carcinogens, a significant impact. In addition, Periodic activities required to maintain the new Project elements would require the use of vehicle fuels, lubricants, etc., and could also require solvents, paints, paving media, and other substances and would be similar to existing maintenance requirements. As for construction, improper storage and handling, including spills and releases, could result in exposure of the workers and the general public to toxins and carcinogens, a significant impact.

Mitigation

Implementation of *Mitigation Measure HAZ1.1—Preparation and Implementation of a Spill Prevention, Control, and Countermeasure Plan* and *Mitigation Measure* and *HAZ1.2—Require Proper Storage and Handling of Potential Pollutants and Hazardous Materials* would reduce this impact to less than significant. *Mitigation Measure HAZ1.1* requires that the project applicant prepare and implement a Spill Prevention, Control, and Countermeasure Plan before any construction activities begin; and *Measure HAZ1.2* requires that the storage and handling of potential pollutants and hazardous materials be in accordance with all local, state and federal laws and other requirements.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures HAZ1.1 and HAZ 1.2 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment during construction and maintenance would be less than significant.

HAZ2—Exposure of Workers or the Public to Existing Hazardous Materials Contamination

Impact

Due to current and historic uses of properties adjacent to the Project site, there is a possibility of undocumented soil and/or groundwater contamination that, if disturbed, could impact the Project site. This translates to some risk that construction workers or the public could be exposed to hazardous substances through disturbance during Project construction, potentially constituting a significant impact.

Mitigation

Any impacts would be reduced to a less-than-significant level by implementing *Mitigation Measure HAZ1.1—Preparation and Implementation of a Spill Prevention, Control, and Countermeasure Plan*, which is described above under HAZ1, and *Mitigation Measure HAZ2.1—Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials Are Encountered* would reduce this impact to less than significant.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures HAZ1.1 and HAZ2.1 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to exposure of workers or the public to existing hazardous materials contamination during construction would be less than significant.

HAZ3—Generation of Hazardous Emissions/Use of Hazardous Materials within 0.25 Mile of Schools

Impact

The upstream portion of the Project reach is located within 0.25 mile of the International School of the Peninsula. Because construction would require the use of a variety of hazardous substances, there would be some potential for exposure of students, school employees, and the public to hazardous materials. The same would be true for ongoing maintenance activities. This is a potentially significant impact for all Project elements.

Mitigation

This impact would be reduced to less than significant by implementing *Mitigation Measure HAZ1.1—Preparation and Implementation of a Spill Prevention, Control, and Countermeasure Plan*, which is described above under HAZ1.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measure HAZ1.1 is feasible and will adopt it as described in the Final EIR. This measure will be incorporated into the Project construction documents (plans and specifications) to ensure its implementation. With this measure in place, impacts related to generation of hazardous emissions/use of hazardous materials within 0.25 Mile of schools during construction and maintenance would be less than significant.

HAZ6—Interference with Emergency Response or Evacuation Plan

Impact

For all Project elements, the presence of construction equipment and vehicles, worker activities, and materials storage would have the potential to impede emergency access to the Project site and/or interfere with emergency evacuation plans. This would also be true for maintenance activities, although to a lesser degree because fewer pieces of equipment and vehicles would typically be involved. This is a potentially significant impact.

Mitigation

Implementation of *Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan*, which requires contractors to develop and implement a traffic control plan for each construction site and would impose similar requirements for maintenance activities, would reduce this impact to less than significant.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measure *TT1* is feasible and will adopt it as described in the Final EIR. This measure will be incorporated into the Project construction documents (plans and specifications) to ensure its implementation. With this measure in place, impacts related to interference with an emergency response or evacuation plan during construction and maintenance would be less than significant.

HAZ8—Breeding or Harborage of Disease Vector Organisms

Impact

Construction of any of the Project elements has potential to create of expand the potential for mosquito breeding in the Project area, which would be a significant impact.

Mitigation

Mitigation Measure HAZ8.1—Prevent Mosquito Breeding During Project Construction, which requires that the SFCJPA ensure that standing water that accumulates on the construction site is gone within four days (96 hours) and that construction personnel will property dispose of unwanted or unused artificial containers and tires, would reduce this impact to less than significant.

Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measure HAZ8.1 is feasible and will adopt it as described in the Final EIR. This measure will be incorporated into the Project construction documents (plans and specifications) to ensure its implementation. With this measure in place, impacts related to breeding or harborage of disease vector organisms during construction would be less than significant.

HWR1—Effects on Flood Hazards

Impact

For all Project elements, clear water diversions associated with Project construction have the potential to disrupt storm water flows within the Creek during significant storm events. Temporary relocation of storm drains would occur during the dry season. This is a potentially significant impact. In addition, the permanent alteration of storm drainage facilities as a result of new Project facilities (i.e., levees) could affect conditions during flood events. This impact has the potential to be significant if relocated storm drains are not designed to accommodate preconstruction flood flows.

Mitigation

Mitigation Measure HWR1.1—Design of Temporary Relocation of Storm Drainage Facilities during Construction states that temporary storm drainage design during construction will include the necessary review and assessment of alternative routes and ancillary facilities to ensure that they can safely accommodate the redirected flow to the same level of design and performance (i.e., storm drain capacity) as that of the existing facilities until such time that the original facilities are restored. Implementation of *Mitigation Measure HWR1.1* reduces construction impacts to less than significant. *Mitigation Measure HWR1.2—Design of Permanent Relocation of Storm Drainage Facilities* states that the permanent relocation of stormwater conveyance facilities would be designed so as not to alter the original outlet locations and internal routes. The design will include the necessary review and assessment of pipeline additions and ancillary facilities to ensure that they can safely accommodate flood flows to the same level of design and performance (i.e., storm drain capacity) as that of the existing facilities. Implementation of *Mitigation Measure HWR1.2* reduces operational impacts to less than significant.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures HWR1.1 and HWR1.2 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to flood hazards during construction and operation would be less than significant.

NV2—Excessive Groundborne Vibration Levels

Impact

For all Project elements, pile driving associated with Pacific Gas and Electric (PG&E) tower relocations is expected to exceed the thresholds at which vibration may become an annoyance and/or damage plaster-walled residential structures for homes within 50 feet of the proposed tower locations. In addition, vibration impacts may be significant for the first row of homes located within approximately 25 feet of the construction sites using heavy construction equipment that is not high-impact equipment.

Mitigation

Mitigation Measure NV2.1—Conduct Construction Vibration Monitoring and Implement Vibration Control Approach(es) would reduce this impact to less than significant. It requires that during periods of construction, SFCJPA retain a qualified acoustical consultant or engineering firm to conduct vibration monitoring at homes or occupied vibration-sensitive buildings to determine if the measured peak particle velocity (PPV) is in excess of 0.2 inches/second. If the threshold is exceeded, construction activity will cease and alternative methods of construction and excavation will be considered. In addition, if permitted, a preconstruction survey will be conducted that documents any existing cracks or structural damage at vibration-sensitive receptors by means of color photography or video, and a designated complaint coordinator (Mitigation Measure NV1.3) will be responsible for handling and responding to any complaints received during such periods of construction.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measure NV2.1 is feasible and will adopt it as described in the Final EIR. This measure will be incorporated into the Project construction documents (plans and specifications) to ensure its implementation. With this measure in place, impacts related to excessive groundborne vibration levels during construction would be less than significant.

NV4—Substantial Temporary Increase in Ambient Noise

Impact

For all Project elements, construction activities could result in substantial short-term noise increases at noise-sensitive land uses that could rise to the level of a significant impact.

Mitigation

Implementation of *Mitigation Measure NV4.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents*, *Mitigation Measure NV4.2—Implement Work Site Noise Control Measures*, *Mitigation Measure NV4.3—Designate a Noise and Air Quality Disturbance Coordinator to Address Resident Concerns*, and *Mitigation Measure NV4.4—Install Temporary Noise Barriers* would reduce this impact to less than significant.

Mitigation Measure NV4.1 requires that SFCJPA provide advance written notification of the proposed construction activities to all residences and other noise- and air quality–sensitive uses within 750 feet of the construction site, including the name and contact information of the person responsible for ensuring that reasonable measures are implemented to address the problem. *Mitigation Measure NV4.2* requires that SFCJPA require all contractors to adhere to specific noise control measures. *Mitigation Measure NV4.3* states that SFCJPA will designate a representative to act as construction noise and air quality disturbance coordinator, responsible for resolving construction noise and air quality concerns. *Mitigation Measure NV4.4* requires that if a resident or school employee submits a complaint about construction noise, and SFCJPA is unable to reduce noise levels to below the significance threshold (exceeding 110 dBA at a distance of 25 feet) through other means, SFCJPA will install temporary noise barriers to reduce noise levels below the applicable construction noise standard, and work will be suspended until barriers are installed.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures NV4.1, NV4.2, NV4.3, and NV4.4 are feasible and will adopt them as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. With these measures in place, impacts related to substantial temporary increases in ambient noise during construction would be less than significant.

TT3—Potential to Create Traffic Safety Hazards

Impact

For all Project elements, the presence of large, slow-moving construction-related vehicles and equipment among the general-purpose traffic on roadways in the study area could result in safety hazards, which would be a significant impact.

Mitigation

To address the potential for safety hazards related to construction traffic, SFCJPA would implement *Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan*, which requires contractors to develop and implement a traffic control plan for each construction site, would reduce this impact to less than significant.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measure TT1 is feasible and will adopt it as described in the Final EIR. This measure will be incorporated into the Project construction documents (plans and specifications) to ensure its implementation. With this measure in place, impacts related to potential to create traffic safety hazards during construction would be less than significant.

TT4—Potential to Obstruct Emergency Access

Impact

At all Project work areas, construction would have the potential to affect emergency vehicle access. Construction-related traffic could also delay or obstruct the movement of emergency vehicles on local area roadways. This would be a potentially significant impact.

Mitigation

Implementation of *Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan*, which is described above under TT3, would include provisions to ensure unrestricted access and passage for emergency vehicles and would reduce this impact to less than significant.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measure TT1 is feasible and will adopt it as described in the Final EIR. This measure will be incorporated into the Project construction documents (plans and specifications) to ensure its implementation. With this measure in place, impacts related to potential to obstruct emergency access during construction would be less than significant.

TT5—Potential to Conflict with Alternative Transportation

Impact

Construction of all Project elements would require closure of existing pedestrian and bicycle trails located on both sides of the Project portion of the Creek and Friendship Bridge. In addition, the support transit and/or bikeways on the designated truck routes of the Project could be interrupted by slow moving trucks. The impact on the alternative transportation would be temporary but significant.

Mitigation

Implementation of *Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan*, which is described above under TT3, would include provisions for maintaining safe, efficient passage for transit, bicyclists, and pedestrians and would reduce this impact to less than significant.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measure TT1 is feasible and will adopt it as described in the Final EIR. This measure will be incorporated into the Project construction documents (plans and specifications) to ensure its implementation. With this measure in place, impacts related to potential to conflict with alternative transportation during construction would be less than significant.

Significant Impacts that Cannot Be Fully Mitigated

AQ2—Violation of Any Air Quality Standard or Substantial Contribution to Existing or Projected Air Quality Violation

Changes or alterations have been required in, or incorporated into, the Project which mitigate the significant effects on the environment, but the SFCJPA finds that mitigation is unlikely to reduce NO_X emissions to a less than significant level (i.e., mitigation is unlikely to reduce NO_X emissions below BAAQMD daily emission threshold of 54 pounds per day [lbs/day]), and that no alternate or additional mitigation that would provide such a reduction has been identified as feasible. Consequently, the SFCJPA finds that a significant residual impact is likely during construction of some of the Project elements.

The following mitigation measures, as described in the Final EIR, will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation: *Mitigation Measure AQ2.1—Implement Tailpipe Emission Reduction for Project Construction*, *Mitigation Measure AQ2.2—Fleet Modernization for Onroad Material Delivery and Haul Trucks during Construction*, *Mitigation Measure AQ2.3—Modernization for Directional Drilling Equipment during Construction*, *Mitigation Measure NV1.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents*, *Mitigation Measure NV1.3—Designate Construction Noise and Air Quality Disturbance Coordinator to Address Resident Concerns*. The proposed mitigation measures represent all feasible, cost-effective mitigation measures to reduce exhaust emissions to be implemented by the construction contractor. Although the maximum emissions would be generated only when construction activities from all Project elements overlap and would likely to be short-term, the impact would still be significant and unavoidable with mitigation incorporated.

With implementation of all feasible mitigation, Project construction would generate daily emissions of NO_X exceeding the BAAQMD threshold for various Project components during all construction phases: Utility Relocation, Phase One, and Phase Two. During the Utility Relocation phase, gas line work and directional drilling would result in daily NO_X emissions of 65.71 lbs/day. During Phase One, construction of the new left bank levee and construction of the right bank levee would result in daily NO_X emissions of 110.45 and 94.63 lbs/day, respectively. During Phase Two, Conservative Scenario 1—overlap of gas line work, directional drilling, and construction of new left bank levee (Utility Relocation and Phase One) would result in daily NO_X emissions of 176.16 lbs/day. In addition, a second scenario was evaluated for Phase Two. Conservative Scenario 2— overlap of site prep, installation of right and left bank floodwalls, and flatbed trailer truck trips (Phase Two) would result in daily NO_X emissions of 68.45 lbs/day.

In summary, the SFCJPA has adopted mitigation (Measures AQ2.1, AQ2.2, AQ2.3, NV1.1, and NV1.3) that comprise all of the approaches identified as feasible to reduce criteria pollutant impacts associated with construction of various Project elements. However, even with these measures in place, pollutant levels could intermittently be high enough to exceed BAAQMD thresholds. Any such exceedance would constitute a significant residual impact, and is considered unavoidable.

AQ3—Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Changes or alterations have been required in, or incorporated into, the Project which mitigate the significant effects on the environment, but the SFCJPA finds that mitigation is unlikely to reduce Toxic Air Contaminant (TAC) emissions to a less-than-significant level (i.e., mitigation is unlikely to reduce TAC emissions below BAAQMD daily emission thresholds: annual PM2.5 concentration of 0.3 micrograms per cubic meter [$\mu g/m^3$], cumulative diesel particulate matter [DPM] cancer risk of 100 per million, and cumulative average annual PM2.5 concentration of 0.8 $\mu g/m^3$), and that no alternate or additional mitigation that would provide such a reduction has been identified as feasible. Consequently, the SFCJPA finds that a significant residual impact is likely during construction of some of the Project elements.

The following mitigation measures, as described in the Final EIR, will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation: *Mitigation Measure AQ2.1—Implement Tailpipe Emission Reduction for Project Construction*, *Mitigation Measure AQ2.2—Fleet Modernization for Onroad Material Delivery and Haul Trucks during Construction*, *Mitigation Measure AQ2.3—Modernization for Directional Drilling Equipment during Construction*, *Mitigation Measure NV1.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents*, *Mitigation Measure NV1.3—Designate Construction Noise and Air Quality Disturbance Coordinator to Address Resident Concerns*. The proposed mitigation measures represent all feasible, cost-effective mitigation measures to reduce exhaust emissions to be implemented by the construction contractor.

With implementation of all feasible mitigation, Project construction would generate daily emissions of PM2.5 and DPM exceeding the BAAQMD threshold for various Project elements during all construction phases: Utility Relocation, Phase One, and Phase Two. During the Utility Relocation phase, construction of Shoofly Towers (T1-4) and gas line work/directional drilling would result in annual PM2.5 concentrations of 0.65 and 0.40 $\mu g/m^3$, respectively. During Phase One, site preparation would result in an annual PM2.5 concentration of 0.46 $\mu g/m^3$; construction of new left bank levee would result in an annual PM2.5 concentration of 0.52 $\mu g/m^3$; modifications to Friendship Bridge would result in an annual PM2.5 concentration of 0.35 $\mu g/m^3$; and channel widening and marsh plain terracing would result in an annual PM2.5 concentration of 1.57 $\mu g/m^3$, cumulative DPM cancer risk of 141.83/million, and cumulative average annual PM2.5 concentration of 2.45 $\mu g/m^3$. During Phase Two, site preparation would result in a cumulative DPM cancer risk of 139.77/million and a cumulative average annual PM2.5 concentration of 1.13 $\mu g/m^3$; installation of right and left bank floodwalls would result in an annual PM2.5 concentration of 3.46 $\mu g/m^3$, cumulative DPM cancer risk of 149.23/million, and a cumulative average annual PM2.5 concentration of 4.35 $\mu g/m^3$; construction of upstream access road on right and left banks would result in a cumulative DPM cancer risk of 139.83/million and a cumulative average annual PM2.5 concentration of 1.18 $\mu g/m^3$; Conservative Scenario 1—overlap of gas line work, directional drilling and construction of new left bank levee (Utility Relocation and Phase One) — would result in an annual PM2.5 concentration of 0.9 $\mu g/m^3$, a cumulative DPM cancer risk of 0.6/million, and a cumulative average annual PM2.5 concentration of 0.9 $\mu g/m^3$; Conservative Scenario 2—overlap of site prep, installation of right and left bank floodwalls, and Flatbed trailer truck trips (Phase Two) —

would result in an annual PM2.5 concentration of 3.7 μg/m^3, a cumulative DPM cancer risk of 149.3/million, and a cumulative average annual PM2.5 concentration of 4.6 μg/m^3.

In summary, the SFCJPA has adopted mitigation (Measures AQ2.1, AQ2.2, AQ2.3, NV1.1, and NV1.3) that comprise all of the approaches identified as feasible to reduce impacts associated with TAC emissions during construction of various Project elements. However, even with these measures in place, TAC levels could intermittently be high enough to exceed BAAQMD thresholds. Any such exceedance would constitute a significant residual impact, and is considered unavoidable.

REC2—Result in Reduced Availability of Existing Recreational Facilities or Uses

Changes or alterations have been required in, or incorporated into, the Project which mitigate the significant effects on the environment. The Project would relocate the levee on the left bank of San Francisquito Creek inland from its existing location, thereby widening the Creek and cutting through a portion of the Golf Course. To accommodate the new levee footprint and maintain playability of the course, holes 12 through 15 (which are adjacent to the Creek) and certain holes among the remaining fourteen holes would need to be reconfigured on a timetable to be determined by the City of Palo Alto. The total area of the Golf Course to be permanently incorporated into the Project is 7.4 acres. The converted portion of the Golf Course would remain dedicated parkland, but would be permanently converted from Golf Course use to open space as part of the Project. However, it is feasible to reconfigure the Golf Course design in order to maintain or improve the Golf Course's Professional Golfers' Association (PGA) rating and its playability. *Mitigation Measure REC-1—Compensate the City of Palo Alto for the Conversion of 7.4 Acres of the Palo Alto Municipal Golf Course to Accommodate Project Features* requires SFCJPA to provide monetary compensation to the City of Palo Alto to offset the costs of reconfiguring the Golf Course to maintain its PGA regulation status. Implementation of the proposed mitigation measure REC-1 would reduce permanent impacts on the Golf Course to a less-than-significant level.

However, *those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency* because implementation of the mitigation measure is outside SFCJPA's jurisdiction and fulfillment cannot be guaranteed. Therefore, a significant and unavoidable impact on the Golf Course is assumed. SFCJPA is committed to fulfilling the conditions described in Mitigation Measure REC-1.

In summary, the SFCJPA has adopted Mitigation Measure REC-1 that comprises all of the approaches identified as feasible to reduce impacts associated with the permanent incorporation of 7.4 acres of the Golf Course into the Project. However, even with this measure in place, because implementation of the mitigation measure is outside SFCJPA's jurisdiction and fulfillment cannot be guaranteed, a significant and unavoidable impact is assumed.

Contributions to Cumulative Impacts

Air Quality (Criteria Pollutants)

Impact and Project Contribution

The San Francisco Bay Area Air Basin is a nonattainment area for the federal 8-hour ozone standard, the state 1-hour ozone standard, and the state PM10 and PM2.5 standards; this represents a significant existing cumulative impact on air quality. Construction of the proposed project would temporarily increase emissions of ozone precursors, such as NO_X. The BAAQMD has established emissions thresholds which it believes a project's individual operational criteria pollutant emissions would be cumulatively considerable. Therefore, it considers the project-level criteria pollutant thresholds to address both project-level and cumulative impacts (Bay Area Air Quality Management District 2011). The Project's construction emissions were estimated to exceed the BAAQMD daily emission threshold for NO_X. Therefore, construction-related tailpipe emissions are expected to constitute a considerable contribution to existing cumulative air quality degradation, notwithstanding the mitigation incorporated into the Project above.

Mitigation

Implementation of Mitigation Measures AQ2.1 through AQ2.3 and Mitigation Measures NV1.1 and NV1.3 discussed above would reduce NO_X emissions, but BAAQMD's NO_X thresholds would still be exceeded. Therefore, the project's construction activities on cumulative air quality impacts are expected to be significant and unavoidable.

Finding

Changes or alterations have been required in, or incorporated into, the Project which mitigate or avoid the significant effects on the environment. SFCJPA finds that Mitigation Measures AQ2.1 through AQ2.3 and Mitigation Measures NV1.1 and NV1.3 are feasible and will adopt these measures as described in the Final EIR. These measures will be incorporated into the Project construction documents (plans and specifications) to ensure their implementation. However, even with this measure in place, the Project is expected to have a cumulatively considerable contribution to regional air quality degradation.

Alternatives to Project as Proposed

The SFCJPA certifies the following with regard to the alternatives analyzed in the EIR, as discussed in more detail below.

- The EIR describes a reasonable range of alternatives to the Project as proposed.
- The SFCJPA has evaluated the comparative merits of the alternatives and rejected them in favor of the proposed Project.

Alternatives Analyzed in EIR

CEQA requires EIRs to evaluate a reasonable range of alternatives to the proposed project, focusing on alternatives that appear to be feasible, would meet the project objectives, and would avoid or substantially lessen at least one of the proposed project's significant environmental effects. EIRs must also analyze the No Project Alternative. The Draft EIR analyzed two alternatives advanced from the preliminary alternatives analysis in addition to the Project as proposed: Alternative 3 (Golf Course Bypass) and the No Project Alternative.

Findings Regarding the Alternatives

Specific economic, legal, social, or other considerations make infeasible the alternatives identified in the EIR.

Alternative 3 (Golf Course Bypass) includes in-channel marshplain terraces, similar to the Project and a large bypass channel extending across the center of the Golf Course. It does not include levee setbacks in either the middle or upper reaches as set forth in the Project. The differentiating feature of Alternative 3 is a large bypass channel extending from south to north through the center of the Golf Course. This bypass reach would intersect the existing channel just downstream of the Baylands Athletic Center and reconnect with the main channel near the airport runway. During both normal daily flows and fluvial flood events, a portion of upstream flows would be diverted through the bypass channel, therefore significantly reducing water levels in the middle reach and conveying a large percentage of flows away from the residences of East Palo Alto. Maintenance and operations of Alternative 3 would be identical to those of the Project. Although Alternative 3 would accomplish Project goals and objectives and reduce impacts on several resources. Alternative 1 would result in greater impacts in multiple resource areas and in the severity of the impacts to those resource areas. Consequently, the proposed Project was identified as environmentally superior, and Alternative 1 was rejected.

The No Project Alternative would avoid numerous significant impacts identified for the proposed Project, but would not accomplish the Project's identified goal and objectives. As such, it cannot effectively substitute for the Project, and is rejected.

No Recirculation of the EIR is Required

The changes and new information provided in the Final EIR consist of the following.

- Clarifications to the Draft EIR analysis in response to comments received.
- Minor revisions to mitigation measures in response to comments received.
- Corrections of typographic and editorial errors.

This new information does not include identification of new significant impacts associated with the Project or mitigation measures, or new Project alternatives or mitigation measures that warrant consideration.

SFCJPA finds that the new information added to the Final EIR merely clarifies, amplifies, or makes insignificant modifications in an adequate EIR and is not "significant" within the meaning of CEQA Guidelines Section 15088.5. SFCJPA further finds that incorporating the new information and corrections does not deprive the public of a meaningful opportunity to comment on the Project or its effects, and that no information has been added to the Final EIR that would warrant recirculation pursuant to Public Resources Code Section 21092.1. This finding is based on all the information presented in the Final EIR and the record of proceedings.

Mitigation, Monitoring, and Reporting Plan

As part of the accompanying resolution SFCJPA is also approving a Mitigation, Monitoring, and Reporting Plan (MMRP) pursuant to Public Resources Code Section 21081.6. The MMRP, which is found in Appendix F of the Final EIR and is incorporated herein by this reference, is designed to enable, ensure, and document compliance with the mitigation measures imposed to avoid or substantially lessen the Project's environmental impacts as documented in the Final EIR.

Statement of Overriding Considerations

As described in the Background section, flooding from the Creek is a common occurrence and the most recent flood event in February 1998 affected approximately 1,700 residential, commercial, and public structures and caused more than $28 million in property damages. The maximum instantaneous peak flow recorded during the February 1998 event was 7,200 cfs. The USACE estimates that the 1998 flood was a 45-year flood event. A 100-year flood event is anticipated to result in flows of 9,400 cfs at the mouth of the Creek, and these flows would exceed the existing capacity of the Creek (San Francisquito Creek Joint Powers Authority 2009).

Protection from the 100-year flood (1percent flood protection) is the currently accepted standard for flood protection works, and the Project is being designed specifically to meet a goal of providing 1 percentflood protection for residents and businesses along the San Francisquito Creek corridor. Its specific objectives include the following.

- Protect properties and infrastructure between East Bayshore Road and the San Francisco Bay from Creek flows resulting from 100-year fluvial flood flows occurring at the same time as a 100-year tide that includes projected sea level rise through 2067.
- Accommodate future flood protection measures that might be constructed upstream of the Project.
- Enhance habitat along the Project reach, particularly habitat for threatened and endangered species.
- Enhance recreational uses.
- Minimize operational and maintenance requirements.

Construction of the Project as proposed would likely result in significant and unavoidable effects on air quality associated with construction of various Project elements during all Project phases and significant and unavoidable effects related to reduced availability of existing recreational facilities due to the permanent incorporation of 7.4 acres of the Golf Course into the Project. The SFCJPA has committed to all feasible mitigation to reduce these impacts, but the residual impact on air quality is still likely to be significant, and implementation of the mitigation measure for recreation impacts is outside SFCJPA's jurisdiction and fulfillment cannot be guaranteed. No additional feasible mitigation is available.

In consideration of the existing flood risks along San Francisquito Creek associated with lack of adequate capacity in the Creek channel, and the analysis of Project outcomes presented in the Final EIR, SFCJPA finds that the economic, social, and environmental benefits of meeting the Project's flood protection goals and objectives outweigh the significant and unavoidable air and recreation impacts associated with the Project's construction and operation.

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Final EIR

San Francisquito Creek Flood Reduction, Ecosystem Restoration, and Recreation Project San Francisco Bay to Highway 101

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October 2012

ICF International. 2012. San Francisquito Creek Flood Reduction, Ecosystem Restoration, and Recreation Project San Francisco Bay to Highway 101. Final. October. (ICF #00882.09). Prepared for San Francisquito Creek Joint Powers Authority, Menlo Park, CA.

Contents

List of Tables v
List of Figures vii
List of Acronyms and Abbreviations viii
Chapter 1 **Introduction 1-1**
1.1 Background 1-1
1.2 Relationship with Other Projects 1-2
1.3 Lead, Responsible, and Trustee Agencies for this EIR 1-3
1.4 Public and Agency Involvement in EIR Process 1-3
Scoping Comment Period 1-3
Public and Agency Concerns and Areas of Known Controversy 1-4
Public and Agency Review of the Draft EIR 1-5
Preparation of this Final EIR 1-5
1.5 EIR Organization and Topics Covered 1-5
Chapter 2 **Project Description 2-1**
2.1 Project Location and Setting 2-1
Project Location 2-1
Project Setting 2-1
2.2 Project Purpose and Need 2-2
Goals and Objectives 2-2
2.3 ~~Components~~Elements of the Proposed Project 2-2
Levee, Floodwall, and Access Road Construction 2-4
Marshplain Creation and Restoration 2-11
Additional Construction 2-12
Construction Staging Areas, Project Site Access, and Haul Routes 2-12
Fill Disposal and Fill Import 2-13
Utility Relocation and Removal 2-13
2.4 Construction Schedule 2-15
2.5 Operation and Maintenance 2-16
2.6 Environmental Commitments 2-16
Community Outreach 2-16
General Construction Site Housekeeping 2-17
Water Quality Protection 2-18
Safe Use of Herbicides and Pesticides 2-22
Construction Dust Control 2-23

Construction Noise Control 2-23
Aesthetics Resources Protection 2-24
Biological Resources Protection 2-24
Cultural Resources Protection 2-26
Geology and Soils Commitments 2-27
Land Use Commitments 2-27
Transportation/Traffic 2-27
2.7 Required Permits and Approvals 2-27

Chapter 3 **Environmental Analysis 3-1**
3.1 Aesthetics 3-3
Environmental Setting 3-3
Impact Analysis 3-9
3.2 Air Quality 3-14
Environmental Setting 3-14
Impact Analysis 3-17
3.3 Biological Resources 3-32
Environmental Setting 3-32
Impact Analysis 3-37
3.4 Cultural and Paleontological Resources 3-65
Environmental Setting 3-65
Impact Analysis 3-75
3.5 Geology and Soils 3-81
Environmental Setting 3-81
Impact Analysis 3-84
3.6 Greenhouse Gas Emissions 3-89
Environmental Setting 3-89
Study Area 3-90
Effects 3-90
Impact Analysis 3-91
3.7 Hazardous Materials and Public Health 3-95
Environmental Setting 3-95
Impact Analysis 3-98
3.8 Hydrology and Water Resources 3-105
Environmental Setting 3-105
Impact Analysis 3-111
3.9 Land Use and Planning 3-119
Environmental Setting 3-119

Impact Analysis ... 3-128
3.10 Noise and Vibration ... 3-130
Environmental Setting ... 3-130
Impact Analysis ... 3-134
3.11 Public Services ... 3-143
Environmental Setting ... 3-143
Impact Analysis ... 3-145
3.12 Recreation ... 3-148
Environmental Setting ... 3-148
Impact Analysis ... 3-149
3.13 Traffic and Transportation ... 3-154
Environmental Setting ... 3-154
Impact Analysis ... 3-159
3.14 Utilities and Service Systems ... 3-165
Environmental Setting ... 3-165
Impact Analysis ... 3-167
Chapter 4 **Cumulative Impacts ... 4-1**
4.1 CEQA Requirements ... 4-1
4.2 Approach and Scope ... 4-1
4.3 Proposed Project's Potential Contribution to Cumulative Impacts ... 4-5
Air Quality (criteria pollutants) ... 4-5
Chapter 5 **Other CEQA-Required Sections ... 5-1**
5.1 Significant and Unavoidable Environmental Impacts ... 5-1
Air Quality ... 5-1
Recreation ... 5-1
5.2 Significant Irreversible Environmental Changes ... 5-2
5.3 Growth-Inducing Impacts ... 5-2
Analysis of Direct Growth-Inducing Impacts ... 5-3
Chapter 6 **Alternatives ... 6-1**
6.1 Alternatives Development Process ... 6-1
Continuing Authorities Program 205 Project Alternatives ... 6-2
San Francisquito Creek Flood Reduction Alternatives Analysis ... 6-2
Alternatives Carried Forward for Analysis ... 6-5
6.2 Alternatives to the Proposed Project ... 6-6
No Project Alternative ... 6-6
Alternative 3 (Golf Course Bypass) ... 6-6
6.3 Impacts of Alternatives ... 6-7

6.4 Identification of Environmentally Superior Alternative 6-12
Approach 6-12
Results 6-12
Chapter 7 **Persons Consulted and List of Preparers 7-1**
7.1 ICF International 7-1
Chapter 8 **References 8-1**

Appendix A Scoping Summary Report
Appendix B Supplemental Regulatory Background
Appendix C BAAQMD CEQA Thresholds of Significance Options and Justification Report
Appendix D Air Quality Modeling Results
Appendix E Response to Comments with Original Public and Agency Comment
Appendix F Mitigation, Monitoring, and Reporting Plan

Tables

Page

2-1 Summary of Project ~~Components~~Elements 2-3

2-2 Summary of Construction Methodology, Timing, and Equipment 2-5

2-3 Permit Requirements Potentially Applicable to the Project 2-28

3.1-1 County and City Policies Relevant to Aesthetics 3-4

3.2-1 Ambient Air Quality Monitoring Data from Redwood City Monitoring Station, Redwood City 3-15

3.2-3 Estimated Construction Emissions 3-21

3.2-4 Estimated Construction Emissions with Mitigation 3-23

3.2-5 TAC Health Risks—Project Level 3-28

3.2-6 TAC Health Risks—Cumulative Level 3-29

3.2-8 TAC Health Risks with Mitigation 3-30

3.3-1 Special-Status Plants with Potential to Occur in Project Footprint ..... follows 3-36

3.3-2 Special-Status Fish and Wildlife with Potential to Occur in Project Footprint ..... follows 3-36

3.3-3 Timing of Surveys for Special-Status Plants 3-39

3.4-1 Studies Conducted Within or Adjacent to the Project Area 3-70

3.4-2 Geologic Units Underlying the San Francisquito Creek Project Area 3-74

3.4-3 Society of Vertebrate Paleontology's Recommended Treatment for Paleontological Resources, by Sensitivity Category 3-76

3.5-1 Soils at the Project Site 3-82

3.5-2 Maximum Credible Earthquake and Recurrence Interval for Principal Active Faults in Project Area 3-83

3.6-1 Estimated Construction GHG Emissions 3-93

3.8-1 Overview of Water Quality Impairments in Project Area 3-109

3.8-2 Designated Beneficial Uses 3-110

3.9-1 Summary of Goals and Policies in the City of Palo Comprehensive Plan Relevant to the Project 3-121

3.9-2	Summary of Policies in the City of Palo Alto Baylands Master Plan Relevant to the Project	3-122
3.9-3	Summary of Goals and Policies in the City of East Palo General Plan Relevant to the Project	3-124
3.9-4	Summary of Goals and Policies in the East Palo Bay Access Master Plan Relevant to the Project	3-125
3.9-5	Land Uses On and Adjacent to the Project Site	3-127
3.9-6	Project Compatibility with Applicable Planning Documents	follows 3-130
3.10-1	Typical A-Weighted Sound Levels	3-132
3.10-2	Typical Levels of Groundborne Vibration	3-133
3.10-3	Typical Maximum Noise Emission Levels by Construction Equipment	3-135
3.10-4	Vibration Source Levels for Construction Equipment	3-135
3.10-5	Construction Equipment by Phase	3-136
3.10-6	Estimated Onsite Construction Noise Levels	3-138
3.12-1	Golf Courses in the Project Vicinity	3-152
3.13-1	Intersection Average Delay and Traffic Flow Conditions for LOS Designations	3-155
3.13-2	Existing U.S. 101 Level of Service	3-156
3.13-3	Existing Freeway Ramp Capacity Analysis	3-157
3.13-4	Existing Intersection Level of Service	3-157
3.13-5	Bicycle Facilities in Study Area	3-158
4-1	Summary of Need for Cumulative Impacts Analysis	4-2
6-1	Anticipated Environmental Impacts of Alternative 1 and the No Project Alternative	6-8

Figures

Follows Page

2-1	Project Site	2-2
2-2	Project Components	2-2
2-3	Haul Routes	2-12
2-4	Existing and Proposed PG&E Utilities	2-14
3.1-1	Viewpoints Key	3-8
3.1-2	Viewpoints A, B, C, and D	3-8
3.1-3	Existing and Simulated Views of Phase Two Project Reach	3-12
3.4-1	Paleontologically Sensitive Areas	3-80
3.5-1	Soils	3-82
3.5-2	Fault Zones	3-84
3.9-1	Land Use	3-120
3.12-1	Recreational Facilities in the Project Vicinity	3-148

Acronyms and Abbreviations

µ inch	microinch
µg/m^3	micrograms per cubic meter
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ABC	Across Barrier Connections
ACE	Altamont Commuter Express
ADT	average daily traffic
AIA	airport influence area
ATHS	Air Toxics Hot Spots
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
BAMP	East Palo Alto Bay Access Master Plan
BAWSCA	Bay Area Water Supply and Conservation Agency
Bay	San Francisco Bay
bgs	below ground surface
BMPs	best management practices
C/CAG	City/County Association of Governments of San Mateo County
CAA	federal Clean Air Act
CAAQS	California ambient air quality standards
Cal/OSHA	California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
Caltrans facility	U.S. 101/East Bayshore Road Bridge over San Francisquito Creek
CAP	Continuing Authorities Program
CARB	California Air Resources Board
CBC	California Building Standards Code
CCAA	California Clean Air Acts
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CH_4	methane
CHSC	California Health and Safety Code
CLUP	Comprehensive Land Use Plan
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Creek	San Francisquito Creek
CRHR	California Register of Historical Resources
CWA	federal Clean Water Act
cy	cubic yards
dB	Decibel
dBA	A-weighted decibel
DFG	California Department of Fish and Game
District	Santa Clara Valley Water District
DPM	Diesel Particulate Matter

DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
EPAPD	East Palo Alto Police Department
EPASD	East Palo Alto Sanitary District
ESA	federal Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHGs	greenhouse gases
Golf Course	Palo Alto Municipal Golf Course
GVWR	gross vehicle weight rating
GWP	global warming potential
HDR	HDR Environmental, Operations and Construction Inc.
HI	hazard index
HRA	health risk assessment
HTRW	Hazardous Toxic Radioactive Waste
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
JPA	San Francisquito Creek Joint Powers Authority's
LA&S	Light, Air & Space Construction
L_{dn}	Day-Night Level
LDS	light-duty steel
~~LDS~~	~~new light duty steel~~
L_{eq}	Equivalent Sound Level
L_{eq} 1h	1-hour A-weighted equivalent sound level
LOS	Level of service
LRA	Local Responsibility Area
MBTA	Migratory Bird Treaty Act
MCE	maximum credible earthquake
MHHW	mean higher high water
MMP	Mitigation and Monitoring Plan
MMT	million metric tons
MPFPD	Menlo Park Fire Protection District
MS4s	municipal separate storm sewer systems
MTBE	methyl tert-butyl ether
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NOC	Notice of Completion

NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historical Places
NSR	New Source Review
NTU	Nephelometric Turbidity Units
NWIC	Northwest Information Center
PAFD	Palo Alto Fire Department
Palo Alto Airport	Palo Alto Airport of Santa Clara County
PAPD	Palo Alto Police Department
PAUSD	Palo Alto Unified School District
PG&E	Pacific Gas & Electric
PM	particulate matter
PM10	PM less than 10 microns in diameter
PM2.5	PM less than 2.5 microns in diameter
PPV	peak particle velocity
Project	San Francisquito Creek Flood Protection and Ecosystem Restoration Project, East Bayshore Road to San Francisco Bay
RCSD	Ravenswood City School District
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
RWQCP	Regional Water Quality Control Plant
SAFZ	San Andreas Fault Zone
SBWMA	South Bay Waste Management Authority
SCCVCD	Santa Clara County Vector Control District
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
~~SCVWD~~	~~Santa Clara Valley Water District~~
SF_6	sulfur hexafluoride
SFPUC	San Francisco Public Utilities Commission’s
SIL	Significant Impact Level
SLE	St. Louis encephalitis virus
SLR	Sea Level Rise
SMaRT	Sunnyvale Materials Recovery and Transfer Station
SMCMVCD	San Mateo County Mosquito and Vector Control District
SMP	Stream Maintenance Program
SM-STOPPP	San Mateo Countywide Stormwater Pollution Prevention Program
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SR	State Route
State Water Board~~’s~~	California Water Resources Control Board~~’s~~
SUHSD	Sequoia Union High School District
Superfund Act	Comprehensive Environmental Response, Compensation, and Liability Act
SWPPP	Storm Water Pollution Prevention Plan
TACs	toxic air contaminants
TMDL	Total Maximum Daily Load
TNM	Traffic Noise Model
TPZ	Traffic Pattern Zone
U.S. 101	U.S. Highway 101
UBC	Uniform Building Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

USPS	United States Postal Service
UST	underground storage tank
V/C	Volume-to-capacity ratio
VdB	vibration decibel
VHFHSZ	Very High Fire Hazard Severity Zones
VTA	Santa Clara Valley Transportation Authority
WEE	western equine encephalomyelitis virus
WNV	West Nile Virus

Chapter 1
Introduction

This document is the Final Draft Environmental Impact Report (EIR) analyzing the environmental effects of the San Francisquito Creek Joint Powers Authority's (SFCJPA) proposed San Francisquito Creek Flood Reduction, Ecosystem Restoration, and Recreation Project San Francisco Bay to Highway 101 (Project).

The Draft EIR was circulated for a 45-day public review period from July 30, 2012 through September 13, 2012. The Project would construct flood reduction facilities along an approximately 1.5-mile stretch of San Francisquito Creek (Creek) from East Bayshore Road to San Francisco Bay (Bay).

This EIR has been prepared in compliance with the California Environmental Quality Act (CEQA) to provide an objective analysis to be used by the lead agency (SFCJPA), as well as other agencies and the public, in their considerations regarding the implementation, rejection, or modification of the Project as proposed. The EIR itself does not determine whether the Project will be implemented; it serves only as an informational document in the local planning and decision-making process. Following public review of this EIR, SFCJPA's Board of Directors will use the information it contains, together with comments submitted by other agencies and the public during the EIR review period, to evaluate if and how the Project should proceed. SFCJPA's member agencies will use information in this EIR in deciding whether to allow the Project to construct facilities on their lands, and resource agencies such as the California Department of Fish and Game (DFG)and the San Francisco Bay Regional Water Quality Control Board (RWQCB) will use EIR analyses in assessing whether to grant the permits necessary for the Project to proceed.

1.1 Background

The SFCJPA, formed in 1999 following the flood of 1998, is a regional government agency whose members include the Cities of Palo Alto, Menlo Park, and East Palo Alto; the San Mateo County Flood Control District, and the Santa Clara Valley Water District (District). The SFCJPA implements flood management, ecosystem restoration and recreational enhancements throughout the San Francisquito Creek watershed and floodplain.

Flooding from the Creek is a common occurrence. The most recent flood event occurred as a result of record creek flows in February 1998, when the Creek overtopped its banks in several areas, affecting approximately 1,700 residential, commercial, and public structures and causing more than $28 million in property damages. The maximum instantaneous peak flow recorded during the February 1998 event was 7,200 cubic feet per second (cfs). The U.S. Army Corps of Engineers (USACE) estimates that the 1998 flood was a 45-year flood event. A 100-year flood event[1] is

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[1] The 100-year flood is more accurately referred to as the 1 percent annual exceedance probability flood because it is a flood that has a 1 percent chance of being equaled or exceeded in any single year. A 100-year flood has approximately a 63.4% chance of occurring in any 100-year period, not a 100 percent chance of occurring, but conversely could theoretically occur in consecutive years.

anticipated to result in flows of 9,400 cfs at the mouth of the Creek. These flows would exceed the existing capacity of the Creek (San Francisquito Creek Joint Powers Authority 2009).

The Project would increase conveyance and retention capacity of floodwaters from runoff and San Francisco Bay tides to protect residents and property from flood events along the lower section of the Creek, from East Bayshore Road to the San Francisco Bay.

1.2 Relationship with Other Projects

Concurrently, the California Department of Transportation (Caltrans) is in the process of planning and design to replace the U.S. Highway 101 (U.S. 101), East Bayshore Road, and West Bayshore Road crossings over the Creek, and will improve the Creek conveyance capacity of the structures to the SFCJPA's design standards. The SFCJPA is also working as the local sponsor with USACE to initiate a comprehensive flood management plan for San Francisquito Creek. The Project also adjoins areas of the San Francisco Bay covered by the South Bay Salt Ponds Restoration Project and the South San Francisco Bay Shoreline Study.

The South Bay Salt Ponds Restoration Project will restore tidal connectivity to some 15,000 acres of former salt evaporation ponds recently acquired from Cargill Inc. by a coalition of federal and state resource agencies and private foundations. Additional goals include providing opportunities for public access and recreational use and improving South San Francisco Bay flood management. For more information on the South Bay Salt Ponds Restoration Project, see the project web page at http://www.southbayrestoration.org/index.html.

The South San Francisco Bay Shoreline Study is a joint undertaking by USACE, the California Coastal Conservancy, and the District, and is aimed at identifying one or more projects for flood damage reduction and ecosystem restoration to be recommended for federal funding. Other participating agencies are the U.S. Fish and Wildlife Service (USFWS), DFG, and the Alameda County Flood Control District. For more information on the South San Francisco Bay Shoreline Study, see the project web page at http://www.southbayshoreline.org/index.html.

Since the fall of 2009, staff from the SFCJPA and one of its member agencies, the District, have been analyzing capital improvements necessary to provide 100-year flood protection for the flood-prone reach of San Francisquito Creek upstream of U.S. 101. Creek capacity improvements under analysis include bridge replacement, channel widening and naturalization, floodwall construction or enhancement, a bypass culvert, and an upstream detention facility. It is likely that a suite of these alternatives will be required to address the flooding problem. This analysis is being conducted locally, but adheres to USACE's planning standards. It is important to note that upstream improvements to flow capacity cannot not be constructed until project improvements at U.S. 101 and downstream to the San Francisco Bay are completed.

The Palo Alto Municipal Golf Course (Golf Course) Reconfiguration Project is an effort being undertaken by the City of Palo Alto, in response to the planning of this Project, to determine how to reconfigure the Golf Course to accommodate the San Francisquito Creek Flood Protection and continue to maintain the Golf Course's number of holes and par rating. The Golf Course Project also contemplates other recreational improvements at the Golf Course site. For more information on the Palo Alto Municipal Golf Course Reconfiguration Project, see the Golf Course web page at http://www.cityofpaloalto.org/gov/depts/csd/golf/default.asp.

1.3 Lead, Responsible, and Trustee Agencies for this EIR

SFCJPA is the lead agency for the CEQA compliance for the Project. The following public agencies have been identified as responsible agencies (i.e., additional public agencies that have discretionary approval authority over the Project, per State CEQA Guidelines Section 15381) and/or trustee agencies (i.e., those that have jurisdiction by law over natural resources affected by a project and held in trust for the people of California, per State CEQA Guidelines Section 15386).

- California Department of Fish and Game (responsible and trustee).
- San Francisco Bay Regional Water Quality Control Board (responsible).
- Bay Conservation and Development Commission (responsible).
- County of Santa Clara (responsible).
- County of San Mateo (responsible).
- City of Palo Alto (responsible).
- City of East Palo Alto (responsible).
- Santa Clara Valley Water District (responsible).
- San Mateo County Flood Control District (responsible).
- Caltrans (responsible).

While agencies of the federal government are not defined as public agencies under CEQA (per State CEQA Guidelines Section 15379), the following additional federal agencies do have discretionary approval power over the Project.

- USACE
- National Marine Fisheries Service (NMFS)
- USFWS

1.4 Public and Agency Involvement in EIR Process

Scoping Comment Period

Scoping refers to the public outreach process used under CEQA to determine the coverage and content of an EIR. Scoping is initiated when the lead agency issues a formal Notice of Preparation (NOP) announcing the beginning of the EIR process. The District submitted the NOP for the Project to the State Clearinghouse on September 15, 2010. As required by CEQA Guidelines Section 15082, the NOP provided information on the background, goals, and objectives of the Project; announced preparation of and requested public and agency comment on the EIR; and provided information on the public scoping meetings to be held in support of the EIR.

Two public scoping meetings were held in September 2010. To reach as many community members as possible, the first meeting (midday Wednesday, September 29, 2010) was held at the East Palo

Alto Senior Center in East Palo Alto, and the second meeting (Thursday evening, September 30, 2010) was held at the International School of the Peninsula in Palo Alto. Both meetings were publicized through direct mailings to approximately 11,000 affected and interested households, offices, and agencies.

At each meeting, attendees were greeted by SFCJPA and member agency staff on arrival and asked to add their names and contact information to an attendance record to ensure that they would receive information on additional meetings and the EIR review period. Each guest was also provided a comment form and given the option of completing the form at the meeting or mailing it to the District prior to the close of the scoping period (October 15, 2010). The scoping meetings included poster displays with SFCJPA and member agency staff available to answer questions and take comments. SFCJPA staff also gave a slide presentation on the Project, and many additional questions and comments were recorded during and following the presentations.

Public and Agency Concerns and Areas of Known Controversy

Public, interest group, and agency comments on the Project during the scoping period are discussed further in the scoping summary in Appendix A. A brief overview is provided here.

The majority of **comments received from the public** can be separated into the following basic areas of concern.

- Effect of the Project on the Federal Emergency Management Agency floodplains, Flood Insurance Rate Maps, and continued need for residents to hold flood insurance.
- Effects of Project elements on the natural environment (i.e., vegetation, wildlife, surface water flows, groundwater).
- Disruption of trail use.
- Introduction of aesthetically intrusive elements into public views.
- Effects of construction traffic on local traffic circulation, noise, air quality, and public safety.
- Potential need for the SFCJPA or sponsoring agencies to take property through eminent domain.

Many **agency comments** echoed issues raised by the public; agency concerns included the following.

- Effects on vegetation and wildlife.
- Effects on stream habitat and water quality.
- Effects on adjacent baylands.
- Disruption of recreational uses during construction.
- Long-term impacts on recreational uses, including effects on the amount and quality of public access to existing trails, and potential incompatibility of flood detention with some existing recreational uses.
- Potential conflict with existing utility corridors.
- Effects of construction on emergency vehicle travel routes and access.

Additional agency comments related to jurisdictional matters and the need for consistency with local land plans and policies were received.

Public and Agency Review of the Draft EIR

CEQA requires that the lead agency notify agencies and the public that a draft EIR is complete and available for review. The official notification, referred to as a Notice of Completion (NOC), is sent to the State Clearinghouse; CEQA also requires that the lead agency provide written notice of the draft document's availability to the County Clerk's office for posting, and to any other parties who have requested it. The NOC must also be published in a general-circulation newspaper, posted on and off the project site, or mailed to residents of properties adjacent to the project site. Issuance of the NOC initiates a public review period during which the lead agency receives and collates public and agency comments on the project and the document.

The SFCJPA circulated the Draft EIR for a 45-day public review and comment period, which will start on **July 30, 2012** and conclude on **September 13, 2012**. Two public hearings to solicit comments on the Draft EIR were scheduled for 6 p.m. on **August 15 and August 29, 2012** at East Palo Alto City Hall (2415 University Avenue) in the East Palo Alto City Council Chambers. The purpose of public circulation and the public hearing was to provide agencies and interested individuals opportunities to comment on or express concerns regarding the contents of the Draft EIR. <u>A court reporter recorded the public's comments at both public meetings. Public and Agency comments on the Draft EIR were accepted through September 26, 2012.</u>

~~Comments regarding this Draft EIR should be submitted by **September 13, 2012** to:~~

~~Kevin Murray~~
~~San Francisquito Creek Joint Powers Authority~~
~~615-B Menlo Avenue~~
~~Menlo Park, California 94025~~
~~650-324-1972~~
~~email: kmurray@sfcjpa.org~~

Preparation of this Final EIR

With the completion of this Final EIR, SFCJPA's Board of Directors will use the information it contains, together with comments submitted by other agencies and the public, to evaluate how the Project should proceed. Before the lead agency can approve a project, it must prepare a Final EIR that addresses the comments received on the draft document. This Final EIR is required to include a list of all individuals, organizations, and agencies that provided comments and must contain copies of the comments received during the public review period, along with the lead agency's responses. Responses to comments and comment letters on the Draft EIR con be found in Appendix E of this Final EIR. Material changes in the content of this Final EIR from the Draft EIR, either in response to public comments, agency comments, or SFCJPA changes are represented by strikethrough for deletions and underline for additions (e.g. ~~deletions~~/<u>additions</u>).

1.5 EIR Organization and Topics Covered

In addition to this introduction, this Final EIR contains chapters that describe the Project; discuss the Project's likely impacts on the Project area's environmental resources; and evaluate the Project's potential to contribute to cumulative (longer-term and/or regional) impacts and to induce growth. It also includes a list of key staff involved in preparing the document. This Final EIR is organized in the following manner:

- Chapter 1: Introduction
- Chapter 2: Project Description
- Chapter 3: Environmental Analysis
- Section 3.1: Aesthetics
- Section 3.2: Air Quality
- Section 3.3: Biological Resources
- Section 3.4: Cultural and Paleontological Resources
- Section 3.5: Geology and Soils
- Section 3.6: Greenhouse Gases and Climate Change
- Section 3.7: Hazardous Materials and Public Health
- Section 3.8: Hydrology and Water Resources
- Section 3.9: Land Use
- Section 3.10: Noise and Vibration
- Section 3.11: Public Services
- Section 3.12: Recreation
- Section 3.13: Transportation and Traffic
- Section 3.14: Utilities and Service Systems
- Chapter 4: Cumulative Impacts
- Chapter 5: Other CEQA-Required Sections
- Chapter 6: Alternatives
- Chapter 7: Persons Consulted and List of Preparers
- Chapter 8: References
- Appendix A: Scoping Summary Report
- Appendix B: Supplemental Regulatory Background
- Appendix C: California Environmental Quality Act Thresholds of Significance
- Appendix D: Air Quality Modeling Results
- <u>Appendix E: Response to Comments with Original Public and Agency Comment</u>
- <u>Appendix F: Mitigation, Monitoring, and Reporting Plan</u>

Chapter 2
Project Description

This chapter describes the Project, including information on the Project background, purpose and need, ~~components~~elements, construction, maintenance, and required permits and approvals.

2.1 Project Location and Setting

Project Location

The San Francisquito Creek watershed encompasses a 45-square-mile basin, extending from Skyline Boulevard to San Francisco Bay. The watershed includes public and private lands in the Cities of East Palo Alto, Menlo Park, Palo Alto, Portola Valley, and Woodside; the unincorporated areas of San Mateo and Santa Clara counties; and Stanford University. The San Francisquito Creek floodplain, which has almost no overlap with the watershed, comprises almost 5 square miles.

San Francisquito Creek represents the boundary between San Mateo and Santa Clara counties in the lower watershed. The last relatively unaltered urban creek system in the South Bay, San Francisquito Creek begins at the confluence of Corte Madera Creek and Bear Creek, just below Searsville Lake in Stanford University's Jasper Ridge Biological Preserve. The mouth of the Creek opens to the San Francisco Bay adjacent to Palo Alto Airport of Santa Clara County (Palo Alto Airport) to the south and the Baylands Nature Preserve to the north. The system contains more than 71 miles of creek bed; the mainstem is approximately 14 miles long. The Project is focused on the mainstem of the Creek.

Figure 2-1 shows the Project location.

Project Setting

The Creek is located within the District's Lower Peninsula Watershed and San Mateo County's San Francisquito Creek Flood Control Zone. The City of Palo Alto and Stanford University border the Creek on the southeast; the Cities of Menlo Park and East Palo Alto border the Creek to the northwest.

For description purposes, the Project is divided into three reaches. A *reach* is a continuous part of the Creek between two specified points. The Project reach as a whole is from San Francisco Bay to East Bayshore Road. The *lower reach* is from San Francisco Bay to Friendship Bridge, the *middle reach* from Friendship Bridge to Daphne Way, and the *upper reach* from Daphne Way to East Bayshore Road. Additionally, the *right* bank refers to the San Mateo County (East Palo Alto) side of the Creek and the *left* bank refers to the Santa Clara County (Palo Alto) side of the Creek. Figure 2-2 shows the Project reaches and identifies the left and right banks.

Land uses adjacent to the Project include protected open space, residential, light industrial, and recreational. The right bank of the Project reach is bordered by residences and by tidal salt marsh; the left bank of the Project reach is bordered by businesses, the International School of the

Peninsula, the United States Postal Service (USPS) facility, the Baylands Athletic Center, the Palo Alto Municipal Golf Course (Golf Course), and Palo Alto Airport.

2.2 Project Purpose and Need

The Project would ultimately improve channel capacity for creek flows coupled with the influence of the tides of San Francisco Bay, including projected Sea Level Rise (SLR), from the downstream face of East Bayshore Road to San Francisco Bay. It would reduce local fluvial flood risks in the Project area during storm events, provide the capacity needed for future upstream improvements, increase and improve ecological habitat, and provide for improved recreational opportunities.

Goals and Objectives

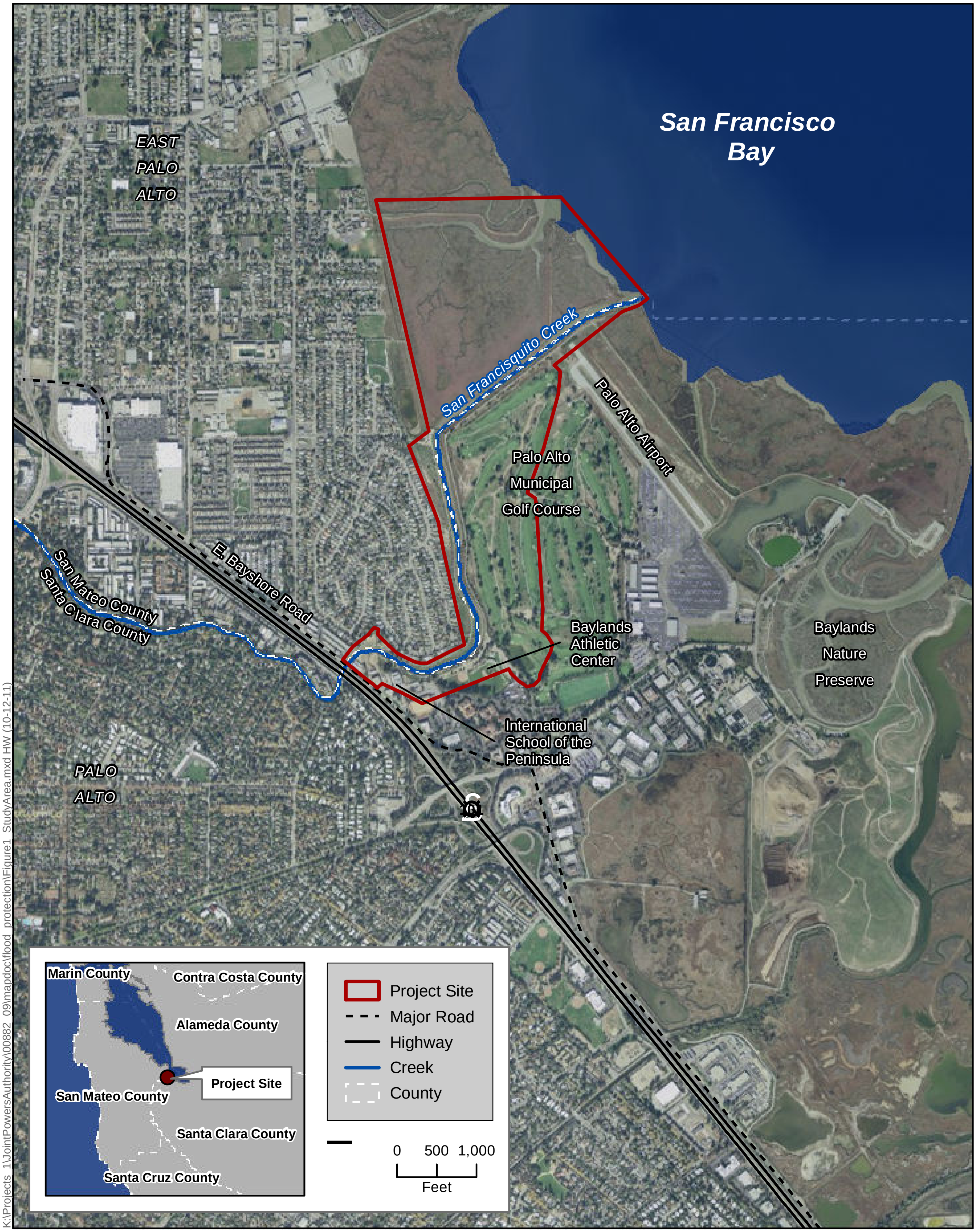
The Project's goals are to improve flood protection, habitat, and recreational opportunities within the Project reach, with the following specific objectives:

- Protect properties and infrastructure between East Bayshore Road and the San Francisco Bay from Creek flows resulting from 100-year fluvial flood flows occurring at the same time as a 100-year tide that includes projected Sea Level Rise through 2067.
- Accommodate future flood protection measures that might be constructed upstream of the Project.
- Enhance habitat along the Project reach, particularly habitat for threatened and endangered species.
- Enhance recreational uses.
- Minimize operational and maintenance requirements.

2.3 ~~Components~~<u>Elements</u> of the Proposed Project

Increasing the Creek's capacity from San Francisco Bay to East Bayshore Road would be achieved by:

- Degrading a portion of an unmaintained levee downstream of Friendship Bridge to allow flood flows from the Creek channel into the Palo Alto Baylands Preserve north of the Creek.
- Excavating sediment deposits within the channel to maximize conveyance.
- Rebuilding levees and relocating a portion of the southern levee to widen the channel to reduce influence of tides and increase channel capacity.
- Constructing floodwalls in the upper reach to increase capacity and maintain consistency with Caltrans' enlargement of the U.S. 101/East Bayshore Road Bridge over San Francisquito Creek (Caltrans facility).



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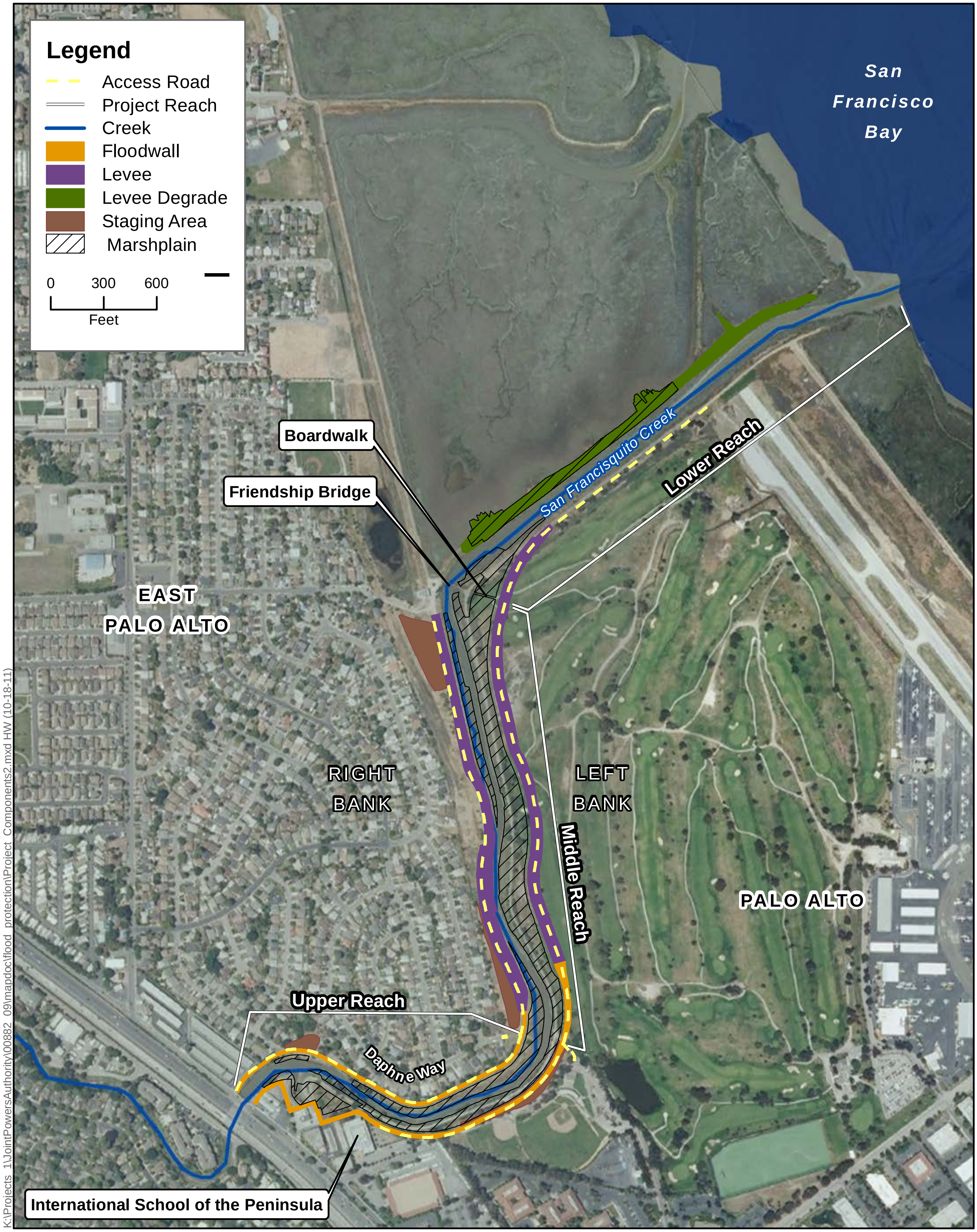
ICF INTERNATIONAL

Figure 2-1
Project Site



ICF INTERNATIONAL

Figure 2-2
Project Components

Major ~~project~~Project elements include:

- An overflow terrace at marsh elevation adjacent to the Baylands Preserve.
- Levee setback and improvements to widen the channel and increase levee height and stability between East Palo Alto and the Palo Alto Golf Course.
- Floodwalls in the upper reach downstream of East Bayshore Road.
- Extension of Friendship Bridge via a boardwalk across new marshland within the widened channel.

The majority of the Project elements would occur on properties in Palo Alto and East Palo Alto and owned by the City of Palo Alto; or within District or City of East Palo Alto rights-of-way.

The Project ~~components~~elements proposed to improve management of flood flows along the Creek from East Bayshore Road to San Francisco Bay include opening the Creek channel to flow in to the Baylands Preserve, reconfiguring levees, creating a marshplain terrace to convey high flows, installing floodwalls; widening of the Creek channel; and; constructing access roads for maintenance purposes. Project ~~components~~elements are summarized below in Table 2-1. A detailed overview of each ~~project~~Project component is provided in the sections that follow.

Table 2-1. Summary of Project ~~Components~~Elements

Project Component	Description
Levee and floodwall construction	
Levee lowering on right bank	From the mouth of the Creek at San Francisco Bay to 200 feet downstream of the existing Friendship Bridge. This would allow floodwaters to flow into the Baylands north of San Francisquito Creek.
Levee raising on right bank	From the O'Connor Pump Station tie-in near Friendship Bridge to the floodwall.
Floodwall on right bank	The right floodwall would extend from just downstream of Daphne Way to the end of the Project reach where it would connect with the Caltrans U.S. 101/East Bayshore Road facility.
Levee raising on left bank and levee relocation	Levee relocation of the middle reach and a small portion of the upper and lower reaches. The levee would be relocated inland (currently occupied by the Golf Course), creating space on the left bank for a marshplain terrace. Except for a section around the eastern footings of Friendship Bridge, the existing levee along this stretch would be removed.
Floodwall on left bank	The left floodwall would extend from the end of the left levee, along the streambed, around the Palo Alto Pump Station, to the end of the Project reach where it would connect with the Caltrans facility.
Downstream access road on right bank	The right bank downstream access road would be approximately 16 feet wide and extend from the crown of the right levee to street level to just downstream of Daphne Way.
Upstream access road on right bank	The right bank upstream access road would be approximately 12 feet wide and would extend from just downstream of Verbena Drive to the Caltrans facility at East Bayshore Road.

Project Component	Description
Access road on left bank	The left bank access road would be generally 12 feet wide and would extend from a point downstream of the International School of the Peninsula to the Palo Alto Pump Station. The access road would also be used as a public trail within the City of Palo Alto and would connect to the Baylands Athletic Center.
Friendship Bridge	The existing Friendship Bridge would be retained and extended as a boardwalk from the retained eastern footing across the new marshplain terrace to the relocated left bank levee.
Marshplain restoration	
Downstream of Friendship Bridge on right bank	High-marsh and transitional vegetation would be planted from the edge of the Creek channel to the toe of the levee from just upstream of San Francisco Bay to just downstream of Friendship Bridge.
Upstream of Friendship Bridge on right bank	High-marsh and transitional vegetation would be planted from the edge of the Creek channel to the toe of the levee from just upstream of Friendship Bridge to East Bayshore Road.
Left bank	High-marsh and transitional vegetation would be planted from the edge of the Creek channel to the base of the floodwall or the toe of the levee. In this area the marsh would be planted adjacent to the toe of the cut-and-fill area. The marsh would extend from the point at which the new levee would diverge inland from the existing levee to East Bayshore Road.

Levee, Floodwall, and Access Road Construction

Construction of Project elements would likely occur in two phases. While all Project elements could be constructed at one time if sufficient funding was secured, the two-phase construction methodology is conservatively assumed to be the preferred construction approach. A summary of the anticipated construction methodology, the proposed starting date and duration of each activity, and the equipment to be used during each phase is listed in Table 2-2.

Table 2-2. Summary of Construction Methodology, Timing, and Equipment

Project Component	Proposed Starting Date	Activity	Proposed Duration	Equipment
Utility Relocation				
PG&E Electricity Transmission	12/2012	Site and road preparation: Trees and brush trimmed in work areas	2 weeks	1 dump truck 1 grader 1 four-door pickup
	12/2012	Wood pole relocation	4 weeks	1 flat-bed truck 3 four-door pickups 3 bucket trucks 3 line trucks 1 rope truck 1 tensioner (on a trailer)
	1/2013	Demolition of wood poles and secondary wire removal	6 days	
	1/2013	Construction of shoo-fly tower at T3	2 weeks	1 pickup 1 four-door pickup 1 2-ton tool truck with air compressor 1 dump truck 1 70-ton crane 1 caterpillar (pile driver) 1 back hoe 1 concrete truck 1 pump truck
	2/2013	Tower raises (T1 and T4)	2 weeks (1 week per tower)	
	3/2013	New tower construction and demolition of T2	4 weeks	
	3/2013	Demolition of shoo-fly	1 day	
PG&E Gas Transmission	4/2013	Gas line work	4 weeks	2 4-door pickups 1 backhoe 2 flatbed truck
	4/8/2013	directional drilling	2 weeks	1 directional drill rig
	4/18/2013	export of material	1 week	2 dump trucks 1 flatbed truck
	4/25/2013	concrete	2 days	1 concrete truck
	4/27/2013	Demobilization	1 week	2 4-door pickups 1 flatbed truck
Phase One—Levees and Excavation				
Site Preparation	1/2013	Mobilization Tree Removal Clearing and Grubbing Stripping Demolition	6 weeks	4 four-door pickups 1 backhoe 1 loader 1 jackhammer 1 flat-bed truck
Construction of new left bank levee	4/2013	Site excavation Levee construction Seeding for erosion control	5 weeks	4 four-door pickups 3 excavators 1 backhoe 2 loaders 4–6 dump trucks (20 cy each) 2 water trucks

Project Component	Proposed Starting Date	Activity	Proposed Duration	Equipment
Removal of old left bank levee	6/2013	Site excavation	3 weeks	4 four-door pickups 3 excavators 1 backhoe 2 loaders 4–6 dump trucks (20 cy each) 2 water trucks
Removal of right bank levee	6/2013	Site excavation Relocation of East Palo Alto sewer line and siphon	2 weeks	4 four-door pickups 3 excavators 1 backhoe 2 loaders 4–6 dump trucks (20 cy each) 2 water trucks
Construction of right bank levee	7/2013	Levee construction Seeding for erosion control	3 weeks	4 four-door pickups 3 excavators 1 backhoe 2 loaders 4–6 dump trucks (20 cy each) 2 water trucks
Construction of downstream access road on right and left banks	8/2013	Site preparation and paving	4 weeks	4 four-door pickups 1 dump truck 1 grader 1 four-door pickup 2 concrete trucks 1 asphalt paver 1 compactor
Friendship Bridge	9/2013	Site excavation Boardwalk construction	6 weeks	4 four-door pickups 1 backhoe 1 loader 1 flat-bed truck
Channel widening and marshplain terracing	6/2013	Site excavation Terracing	10 weeks	4 four-door pickups 3 excavators 1 backhoe 2 loaders 4–6 dump trucks (20 cy each) 2 water trucks
Revegetation	9/2013	Installation of irrigation system Revegetation	6 weeks	2 four-door pickups
Phase Two—Floodwalls				
Site Preparation	5/2014	Mobilization Clearing and grubbing	3 weeks	4 four-door pickups 1 backhoe 1 loader 1 jackhammer 1 flat-bed truck

Project Component	Proposed Starting Date	Activity	Proposed Duration	Equipment
Installation of right and left bank floodwalls	6/2014	Site excavation Preparation of foundation Construction of floodwalls	5 months	4 four-door pickups 1 excavator 1 trencher 1 backhoe 1 loader 1 dump truck 1 grader 2 concrete trucks 1 flat-bed truck
Construction of upstream access road on right and left banks	10/2014	Site preparation and paving	4 weeks	4 four-door pickups 1 dump truck 1 grader 1 four-door pickup 2 concrete trucks 1 asphalt paver 1 compactor
Site Restoration	11/2014	Demobilization	2 weeks	2 four-door pickups 1 loader 1 flat-bed truck

Phase One—Levees and Excavation

This section includes a description of levee modification and relocation and floodwall construction along the Project reach on the right and left banks. Levee modification and relocation would provide several flood protection improvements. For example, lowering the right levee from San Francisco Bay to Friendship Bridge (see discussion below) would allow floodwaters to spill over onto the Baylands located north of the Creek annually during regular storm events. Additionally, relocation of the left levee in the middle reach (see discussion below) would allow for the creation of a marshplain terrace on the left bank.

The levee slopes would have a slope of 3H:1V (horizontal:vertical) on the water side and H2:1V on the land side. The levee crowns would be functionally level[2] to accommodate a bicycle/pedestrian path and would generally be 16 feet wide. However, the paths would be 12 feet wide[3] on the left and right banks, respectively, near the International School of the Peninsula and East Palo Alto residences (Figure 2-2) in order to maximize the width of the streambed where it narrows. The levee elevations would increase from downstream to the upstream ~~project~~Project extent to match the design water surface elevations.

Lower Reach

The right bank levee alterations would begin approximately 250 feet inland from the San Francisco Bay. The existing levee would be lowered to an elevation of 8 feet. The reduction in the levee elevation would continue upstream at this constant elevation to approximately 200 feet downstream of Friendship Bridge. At this point, the levee cut would change to an upward angle of

[2] Levee crowns would have a 2 percent slope to aid drainage, but would appear and feel functionally level to recreational users.
[3] 10 feet is the minimum bike path width

3:1 and would continue at this slope until it reaches the existing levee, which would remain unchanged. At the O'Connor Pump Station the levee would transition into a short floodwall that would tie into the existing structure of the O'Connor Pump Station.

The left bank levee alterations would begin approximately 460 feet downstream of Friendship Bridge, where the levee would begin to diverge landward from the existing levee starting at an elevation of 16.2 feet and increasing as the improvements move upstream.

Friendship Bridge

The abutments supporting Friendship Bridge would remain unchanged. Adjacent to the existing bridge on the left side of the Creek, the Project would include a marshplain terrace that would be graded to an elevation equal to the mean higher high water[4] (MHHW) tide elevation. This terrace would create a continuous tidal marsh beginning in the lower reach, surrounding Friendship Bridge's southeast approach, and extending upstream along the Creek's left bank. The terrace would be inundated during spring tides and more moderate stream flow events. The left end of Friendship Bridge would stand in the marshplain terrace after the Project was implemented.

A boardwalk would traverse the marsh plain from the left bank and would tie into the abutment on the left end of Friendship Bridge. The boardwalk would be the same width as Friendship Bridge, constructed of a timber deck and concrete piles, and would be designed with consideration to aesthetics that would be consistent with the Palo Alto Baylands Master Plan. The elevation of the low mark of the boardwalk would be set above the highest anticipated flood elevation, with the lowest point of the bridge a minimum of 5 feet above the marshplain terrace beneath it.

Middle Reach

The right levee would be improved to meet USACE standards in the same alignment as the existing levee, minimizing the intrusion of the Project on East Palo Alto residences. Upstream of Friendship Bridge, the right levee would be raised for much of the remaining Project extent.[5] The right levee would be constructed at elevations ranging from 16.5 to approximately 19 feet depending on the design water surface elevation. The right levee would extend for approximately 2,600 feet (0.5 mile), at which point the floodwall would begin, just downstream of Daphne Way (Figure 2-2). At this point, the levee crown would transition into the existing levee but would be designed to accommodate the floodwall that would be constructed during Phase Two. See the discussion under the subheading *Access Roads* for a description of the access road. The description of the floodwall that would be constructed in Phase Two is discussed under *Phase Two–Floodwalls.*

As described above, beginning in the lower reach, slightly downstream of Friendship Bridge, the left levee would be relocated inland from its existing location. Where the Creek turns south, the left levee would be relocated approximately 100 feet or more inland from its existing location and would cut through a portion of the Golf Course. Where the Creek straightens outs, the left levee would begin to converge with the Creek and would be located approximately 50 feet from the

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[4] The average height of the highest tide in a tidal cycle (referred to as higher high water) over a 19-year period. For shorter periods of observation, corrections are applied to eliminate known variations and reduce the result to the equivalent of a mean 19-year value.

[5] Depending on the results of geotechnical surveys, in some locations, portions of the existing levee could be re-used in the reconstructed levees.

existing levee for the remainder of the middle reach. From Friendship Bridge, the levee would vary in elevation depending on the design water surface elevation for approximately 2,500 feet (0.5 mile). At this point, approximately 350 feet north of where the Creek turns west, the levee would transition into the existing levee but would be designed to accommodate the floodwall that would be constructed during Phase Two.

Upper Reach

In the upper reach, the Creek channel would be excavated to the interior toe of the existing right and left bank levees up to the new East Bayshore Road Bridge being constructed as part of the Caltrans facility. No other work would occur in this reach during Phase One.

Levee Construction

In the lower reach on the right bank, the levee would be degraded down to an elevation of 8 feet to approximately 200 feet downstream of Friendship Bridge. Upstream of that point, the levee would be reconstructed to USACE standards in the same alignment as the existing levee. Construction on this phase of the Project is likely to occur over 5 weeks. It is expected that vehicles would be entering and leaving the Project site at the O'Connor Street access point for 25 days (see the discussion under the subheading *Construction Staging Areas, Project Site Access, and Haul Routes*).

In the lower reach on the left bank and from Friendship Bridge to the floodwalls in the upper reach, the levees would be raised using imported fill. The fill would be geotechnically engineered to USACE and District specifications and standards. Construction on this phase of the Project is likely to occur over 5 weeks. The left levee (Palo Alto Side) is a setback levee and is expected to experience 1 foot of settlement. The right levee (East Palo Alto Side) is a raise of the existing levee and therefore will experience less settlement, anticipated to be 0.5 feet. After settlement both levees will be the same height.

Levee raising would be preceded by soil conditioning and foundation preparation that would involve use of heavy equipment over 5 days. Levee raising would last approximately 4 to 5 weeks: mass-grading operations would last approximately 20 days and miscellaneous construction activities and contingencies would occur over approximately 5 days. The levee crown would be prepared to comply with District maintenance road criteria with a Class 2 aggregate base and paved with asphalt concrete.

After levee construction is complete, the sides of the levees and the margin of the paths would be seeded with appropriate native plants for erosion control.

For levee raising activities on the right bank, it is expected that vehicles would enter and leave the Project site at the O'Connor Street access point for 25 days and the Daphne Way access point for 5 days. For levee raising activities on the left bank, it is expected that vehicles would enter and leave the Project site at the Geng Road for 25 days.

Access Roads

Phase One of the Project would include the construction of access and maintenance roads on the downstream Phase One levee improvements on the right and left bank (Figure 2-2). The access roads would be used for maintenance purposes and for local trail users. The right bank is presumed to be primarily used for maintenance access and would not be paved.

The right bank downstream access road would extend from the O'Connor Pump Station to just downstream of Daphne Way. The downstream access road on the right bank would be reached from the O'Connor Street access point (see the discussion under the subheading *Construction Staging Areas, Project Site Access, and Haul Routes*). The road would be approximately 16 feet wide. This access road would be surfaced with aggregate base.

The downstream access road on the left bank would be reached from the terminus of Geng Road (see the discussion under the subheading *Construction Staging Areas, Project Site Access, and Haul Routes*). The access road would be approximately 16 feet wide and would be paved with asphalt concrete between Friendship Bridge and the Geng Road access point during Phase One.

Construction of the downstream access roads would likely last 4 weeks. Preparation of the roadbed is expected to take 10 days, and surfacing the road is expected to take 10 days. Construction would be staged from the Daphne Way access point on the right bank and Geng Road on the left bank.

Phase Two—Floodwalls

Floodwalls would be built on either side of the Phase One widened channel from East Bayshore Road to roughly just downstream from the Baylands Athletic Center to accommodate flows while minimizing the need to acquire property.

The floodwall on the right bank would range in elevation from 18.6 feet to 21.3 feet and would be approximately 586 feet long extending from just downstream of Daphne Way and continuing to the end of the Project reach where it would connect with the Caltrans facility. On the landward side the floodwall would extend approximately 3.3 feet above the grade of the access road to provide a safety barrier in the floodwall section of the ~~project~~Project.

The floodwall on the left bank would begin where the left levee crown transitions into an access road, and would follow the streambed to the Palo Alto Pump Station where it would take a sharp turn landward and trace the outline of the Palo Alto Pump Station before turning upstream and connecting to the Caltrans facility. The floodwall on the left bank would range in elevation from 18.5 feet to 20.5 feet and would be approximately 800 feet long.

At the Caltrans facility, watertight connections would transition between the metal sheet pile floodwalls on both banks and the concrete wing wall or abutment structure of East Bayshore Road.

The placement of floodwalls in the upper reach of the Project would widen the Creek channel by 30 feet approximately from the San Francisquito Creek Pump Station in Palo Alto to the basketball court next to the International School of the Peninsula.

Floodwall Construction

As discussed above, floodwalls would be constructed and installed on both sides of the Creek channel in the upper reach and a portion of the middle reach (i.e., from East Bayshore Road to roughly just downstream of the Baylands Athletic Center). The floodwalls would be constructed of sheet pile and reinforced concrete.

For floodwall installation, all access to the right bank would be from the Verbena Drive access point; the left bank would be accessed from Geng Road (see the discussion under the subheading *Construction Staging Areas, Project Site Access, and Haul Routes*). The existing levees would be excavated to prepare for installation of the reinforced concrete wall pieces and is expected to last for

10 days. A peak of approximately 30 vehicles per day is expected. Installation of the floodwalls would be preceded by preparation and compaction to prepare the foundation; these activities would occur over 10 days.

Pieces of the floodwall would be brought to the Project site by tractor trailer. Installation of the floodwall would last approximately 4 months: 72 days for installation of the floodwall panels and 10 days for miscellaneous construction activities and contingencies. The floodwalls would be tied in with the levee and with the upstream Caltrans facility.

Access Roads

The Project would include the construction of two access and maintenance roads consistent with access roads in the Phase One reach: one upstream access road behind the floodwall on the right bank and one access road behind the floodwall on the left bank (Figure 2-2). The access roads would be used for maintenance purposes for the floodwalls. On the right bank, the upstream access road would extend from just downstream of Verbena Drive to East Bayshore Road. The access road on the left bank would extend from a point downstream of the International School of the Peninsula to the Palo Alto Pump Station. Both access roads are described in further detail below.

Right Bank

The upstream access road on the right bank would be reached from the Verbena Drive access point (see the discussion under the subheading *Construction Staging Areas, Project Site Access, and Haul Routes*). The road elevation would vary from 16.7 to 17.0 feet and would extend up to meet East Bayshore Road at grade. The road would be approximately 10–12 feet wide and would be surfaced with aggregate base.

Construction of the upstream road would likely last 4 weeks. Preparation of the roadbed is expected to take 10 days, and surfacing the road 10 days. Construction would be staged from the Verbena Drive access point.

Left Bank

The access road on the left bank would be reached from the Palo Alto Pump Station access point (see the discussion under the subheading *Construction Staging Areas, Project Site Access, and Haul Routes*). At the upstream end of the levee, the path on the levee crown would transition to an access road, which would descend in elevation from 19.3 feet on the landward side of the floodwall to level out at an elevation between approximately 15 and 16 feet. The road would ascend slightly to an approximate elevation of 16.4 feet at the access road's end (at the Palo Alto Pump Station access point). The road would be approximately 12 feet wide for most of its length and would be surfaced with aggregate base. The road would be paved with asphalt concrete between the Geng Road access point and the International School of the Peninsula in Phase Two.

Marshplain Creation and Restoration

The proposed Project would create approximately 18 acres of tidal marsh on both sides of the Creek, effectively restoring tidal influence in the Project reach (see Figure 2-2). Marshplain creation would span the entire Project extent on both banks from East Bayshore Road to San Francisco Bay on the right bank and from East Bayshore Road to the end of the existing left levee on the left bank. Both sides of the channel would be planted from the toe of the levee or base of the floodwall to the edge of the Creek channel.

After Phase One levee construction is complete, the tidal marsh area would be terraced and revegetated with high-marsh plants. The high-marsh planting area would total 7.05 acres and the high-marsh transition planting area would total 10.77 acres. Additionally, in areas where rock slope protection is required, 10-foot vegetated shrub bands would be installed to provide refugia and promote long term vegetated protection and stability across the rock slope protection areas.

Native marsh plants would be used to revegetate the terraced land. Plants appropriate to the high marsh would be planted near the stream channel. Plants native to marsh transition areas would be planted in areas more distant from the Creek channel. The SFCJPA, or its designated contractor, will be responsible for the acquisition of plant material. All container stock will be propagated from native stock collected within the south San Francisco Bay and tidally influenced creeks in coordination with Santa Clara Valley Water District staff.

Additional Construction

Associated activities required to complete the Project include the following.

- Construction of tie-ins:
  - Levee from west footings of Friendship Bridge to the right bank levee (Phase One).
  - Floodwall to O'Connor Pump Station (Phase One).
  - Interim structure to connect Phase One levees to existing levees in Phase Two reach.
  - Floodwall to Caltrans abutments on both banks (Phase Two).
  - Floodwall to levee connections on both banks (Phase Two).
- Construction of Friendship Bridge boardwalk (Phase Two).
- Installation of channel rock slope protection (Phase One and Phase Two).

Right-of-way (ROW) acquisition is expected to be required during Phase Two for property adjacent to Yeaman's Auto Body, International School of the Peninsula, the U.S. Postal Service, and during Phase One for the Golf Course and the Baylands Athletic Center. All other land is within easements held by the City of East Palo Alto and the District (currently SFCJPA member agencies).

Construction Staging Areas, Project Site Access, and Haul Routes

Access to the Project site would be at the locations discussed below and (shown in Figure 2-3) potentially could be utilized during both construction phases. As previously mentioned, the *right* bank refers to the San Mateo County (East Palo Alto) side of the Creek and the *left* bank refers to the Santa Clara County (Palo Alto) side of the Creek.

Right Bank

- Site access and a construction staging area would be located at the end of O'Connor Street near the intersection with Daisy Lane in East Palo Alto. The haul route would be along O'Connor Street to Pulgas Avenue, East Bayshore Road, and Embarcadero Road to U.S. 101. This is the

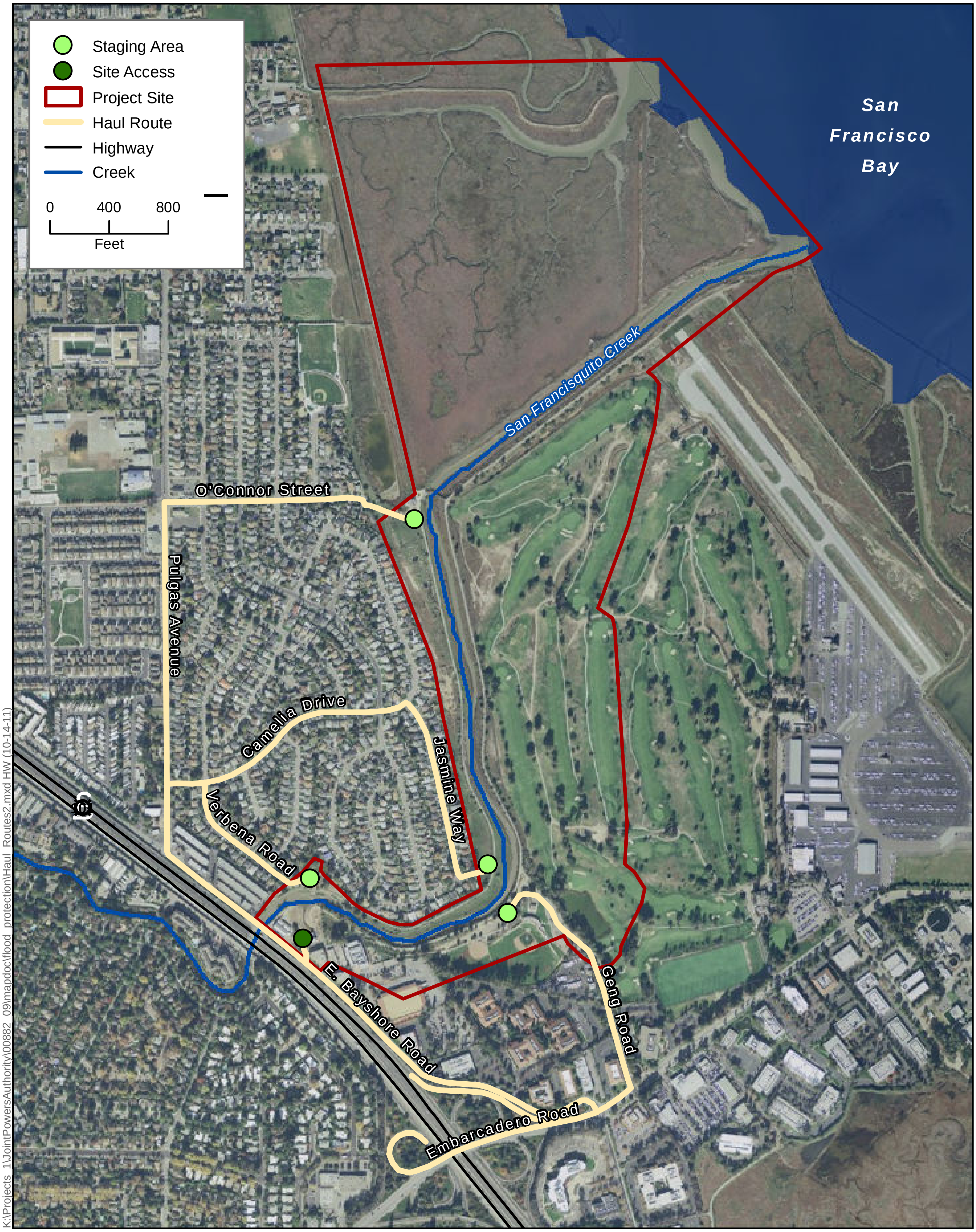

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Figure 2-3
Haul Routes

designated route for large vehicles, including dump trucks and flatbed trucks, in the City of East Palo Alto.

- Site access and a construction staging area would be located at the end of Daphne Way at Jasmine Way in East Palo Alto. The haul route would be along Jasmine Way to Camelia Drive, Pulgas Avenue, East Bayshore Road, and Embarcadero Road to U.S. 101. Large vehicles, including but not limited to dump trucks and flatbed trucks, will be prohibited on Daphne Way and Jasmine Way. Further vehicle restrictions on Daphne Way and Jasmine Way may be required by the City of East Palo Alto and will be determined during development of the Project Traffic Plan.
- Site access and a construction staging area would be located at the end of Verbena Drive at Abelia Way. The haul route would be along Verbena Drive to Camelia Drive, Pulgas Avenue, East Bayshore Road, and Embarcadero Road to U.S. 101. Large vehicles, including but not limited to dump trucks and flatbed trucks, will be prohibited on Verbena Drive and Camelia Drive. Further vehicle restrictions on Verbena Drive and Camelia Drive may be required by the City of East Palo Alto and will be determined during development of the Project Traffic Plan.

Left Bank

- Site access would be at the Palo Alto Pump Station, accessed from East Bayshore Road. The haul route would be along East Bayshore Road to Embarcadero Road and U.S. 101.
- Site access would be at Geng Road between the Baylands Athletic Center and the Golf Course. The haul route would be along Geng Road to Embarcadero Road and U.S. 101.

Fill Disposal and Fill Import

Approximately 108,500 cubic yards of fill would be excavated from the Project site during Phase One levee modification activities and channel widening described above. Approximately 20 percent (21,800 cubic yards) of this fill would be hauled off the site. Approximately 190,800 cubic yards of fill would need to be brought to the Project site for levee raising. It is anticipated that removed fill would be placed within the adjacent Golf Course for use in reconfiguration of the Golf Course, a separate project being managed by the City of Palo Alto. Any removed fill that cannot be utilized in the Golf Course reconfiguration project would be hauled off the site.

Utility Relocation and Removal

Project activities would require relocation or removal of electricity transmission towers and poles; abandonment of existing and construction of new gas transmission lines; and realignment or relocation of sewer lines and storm drains (Figure 2-4). These activities are described in more detail below.

Electric Utilities

Pacific Gas & Electric (PG&E) would require the relocation, removal, or raising of some electric transmission towers and wood poles on both the right and left banks in order to accommodate the Project. Figure 2-4 shows the location of each of the existing and relocated towers and wood poles and assigns each tower and pole a corresponding letter and number (pole: P; tower: T). The following discussion summarizes the proposed actions.

- P1 through P6 are existing wood transmission poles located in the City of East Palo Alto southwest of Friendship Bridge. The secondary wires (i.e., the lowest set of wires, which provide cathodic protection to the underground gas lines) would be removed from these poles.
- P7 is an existing wood transmission pole located in the City of East Palo Alto. This pole would be removed and replaced in the same location with a light-duty steel (LDS) pole of comparable height (approximately 65 feet high). The wires would run north and south.
- P8 is an existing wood transmission pole located in the City of East Palo Alto. This pole would be removed.
- P9 would be a new LDS transmission pole in the City of East Palo Alto replacing P8. P9 would be approximately 65 feet high (comparable to P8). The wires would run north and south.
- P10 would be a new LDS transmission pole. This pole would be approximately 75 feet high and the wires would be angled in an "L" from north to east, thereby crossing the Creek. The LDS pole would be anchored to the ground with additional wires.
- P11 is an existing wood transmission pole located in the City of Palo Alto that would be removed.
- P12 is an existing wood transmission pole in the City of Palo Alto that would be replaced with a new LDS transmission pole. This pole would be approximately 75 feet high and the wires would be angled in an "L" from east to south.
- T1 is an existing transmission tower in the City of East Palo Alto. This tower would be raised by 15 feet and the tower design would otherwise not change.
- T2 is an existing transmission tower in the City of Palo Alto. This tower would be removed.
- T3 would be located approximately 25 feet north of T2 and would replace T2. T3 would be 25 feet taller than T2, but would otherwise have the same design. Following completion of the Project, T3 would be located within the Creek. Therefore, there would be a fortified concrete pier supporting each leg of the tower. A shoo-fly structure would be built to allow for the construction of the new tower. The shoo-fly structure would have two wooden poles; one pole would be approximately 25 feet south of the existing tower and the second pole would approximately 75 feet north of the existing tower. The shoo-fly poles would be placed in the toe of the existing levee and would be removed once the new tower is fully operational.
- T4 is an existing transmission tower in the City of Palo Alto. This tower would be raised by 15 feet and the tower design would otherwise not change.

Gas Utilities

Portions of the PG&E gas transmission line immediately downstream of the International School of the Peninsula and upstream of Friendship Bridge on both right and lefts banks are located within the realigned channel and would need to be relocated during Phase One. Approximately 3,000 feet of the existing 20-inch gas line would be abandoned, slurried, and closed off. A new 24-inch gas pipeline would be installed on the Palo Alto side of the Creek. The pipe would cross to the East Palo Alto side near Friendship Bridge, where it would tie in to the existing pipeline (Figure 2-4).

The new pipe would tie into old pipe at the electrical transmission tower east of the recreation area parking lot, at the end of Geng Road in Palo Alto. The new pipeline would extend northward on the left bank to the approximate location of Friendship Bridge just south of O'Connor Street. Between

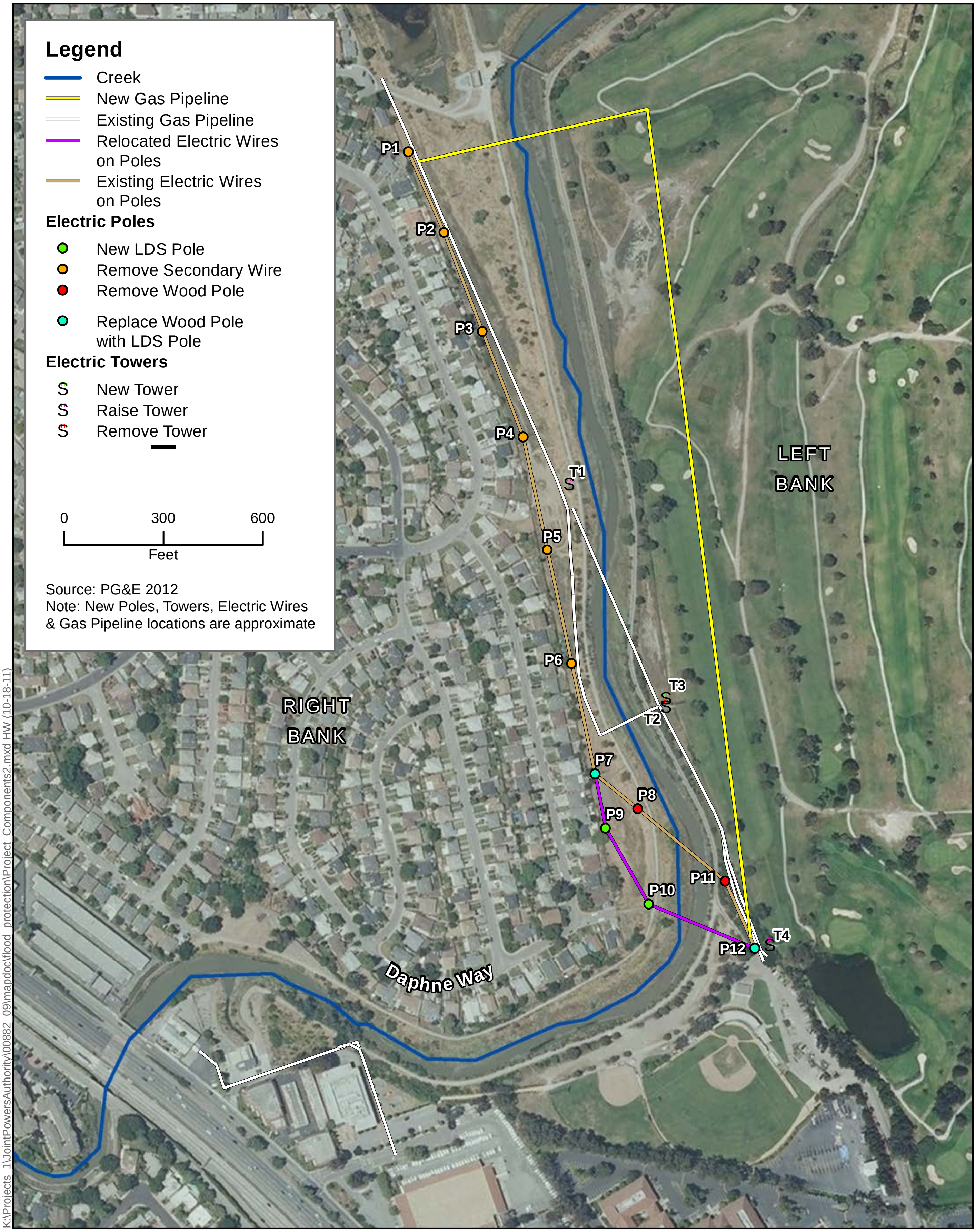

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Figure 2-4
Existing and Proposed PG&E Utilities

Geng Road and Friendship Bridge, the pipeline would lie within the Palo Alto Golf Course at a minimum of 15 feet east of the proposed new levee. At Friendship Bridge, the pipeline would cross under the Creek channel to the right bank, where the new pipe would tie into old pipe.

The tunnel for the new pipeline under the Creek channel would be bored. The trench for the pipe on the left bank would be constructed by cut and fill. The pipeline would be located a minimum of 4 feet below grade.

Construction access on the left bank would be from Geng Road across the Palo Alto Golf Course. Gas pipe construction equipment would use the same construction access route used for relocation and installation of electrical transmission lines and towers on the left bank. Three spoils storage areas, each approximately 100 by 100 feet, would be spaced evenly on the left bank. An approximately 100 by 150 foot staging area for the construction bore would be located near the terminus of Geng Road at the Baylands Athletic Center.

Construction access on the right bank would be from O'Connor Street. Gas pipe construction equipment would use temporary roads. These roads would either be used by construction equipment for both gas pipeline and electrical transmission line and tower installation or by construction equipment for gas pipeline installation only. One approximately 100 by 100 foot spoils storage area and a 100 by 100 foot termination hold would be located adjacent to the borehole site.

Use of spoils storage areas would be contingent on the suitability to reuse the spoils for covering the new pipeline at the end of construction.

Storm Drains and Sewer Lines

- An East Palo Alto Sanitary District sanitary sewer trunk line and associated manholes immediately upstream of Friendship Bridge and downstream of Friendship Bridge adjacent to the Golf Course on the left bank are located within the marshplain terrace and the realigned channel, respectively, and would be relocated during Phase One.
- Storm drains and outfalls at the East Palo Alto Pump Station would be relocated outside of the new levee footprint during Phase One.
- Storm drains and outfalls immediately downstream of the East Bayshore Frontage Road on both sides of the Creek are located within the floodwall footprint and would be relocated during Phase Two.

2.4 Construction Schedule

Phase One construction would begin in 2013 and be completed by 2015. Construction would begin with building the new levee structure outside of the existing levee, during or after completion of PG&E and EPASD modifications to existing utilities and modifications to the PAGC, and would proceed at Friendship Bridge and upstream with the excavation of the channel up to East Bayshore Road being the final Project activity. Phase Two construction of upstream floodwalls and associated maintenance roads would occur once funding was secured.

Construction activities would take place between 8 a.m. and 6 p.m. on weekdays, and 9 a.m. and 5 p.m. on Saturdays, in accordance with City of Palo Alto and City of East Palo Alto municipal codes. Final construction permits issued for the ~~project~~<u>Project</u> may place additional constraints on construction timing. Table 2-2 shows the Project elements, when construction on each is expected to begin, construction activities, and construction duration.

2.5 Operation and Maintenance

Once the Project elements are constructed, they would require maintenance to continue to function effectively, similar to existing facilities. Maintenance for the new Project elements would include activities such as removing debris from channels, which could occur during any flood season, and infrequent post-flood clean-up of the marshplain, which would be needed only after major flood events. In places where the Project is limited to replacing, expanding, or improving existing facilities (for example, the widened and deepened channel segment), post-Project maintenance would be similar to existing maintenance. Additionally, monitoring and maintenance of replacement trees and new marsh vegetation would occur, at a minimum, for 3 years following completion of the project. This activity would be minimal, consisting of invasive plant weeding and inspection of newly plated vegetation.

New facilities, such as the floodwalls and marshplain terrace, would create new maintenance needs. Routine post ~~project~~Project maintenance within the Creek channel corridor within the District's right-of-way (in Santa Clara County) would continue to be included under the District's Stream Maintenance Program (SMP). Under the SMP, the maintenance of the newly constructed floodwalls and marshplain terrace would also be covered. The Project would also replace and upgrade existing sections of concrete channel for the channel-widening ~~project~~Project element. Maintenance of the replaced concrete sections would be covered under the SMP.

Routine post ~~project~~Project maintenance within the Creek channel corridor within the East Palo Alto's right-of-way (in San Mateo County) would continue to be conducted by the city and would primarily consist of yearly inspections and regular cleaning of graffiti off of the floodwalls.

The extent and nature of post-Project activities under the SMP would be similar to what is currently taking place in both jurisdictions. No new or additional maintenance activities beyond the scope of the SMP would be required to maintain the SMP-covered Project features, and routine channel and bank maintenance would continue to incorporate all of the Best Management Practices (BMPs) required under the SMP. Because there would be no material change in SMP activities as a result of the Project, SMP maintenance is not discussed further.

2.6 Environmental Commitments

In addition to the BMPs covered under the Districts' SMP, the Project would also incorporate the following Environmental Commitments for all elements of the Project.

Community Outreach

The SFCJPA will provide advance written notification of the proposed construction activities to all residences and other traffic, noise- and air quality-sensitive uses within 750 feet of the construction site. Noticing would occur at the three specific times during the ~~project~~Project.

- When the Traffic Plan is completed.

- 30 days prior to the initiation of Phase 1 construction.
- 30 days prior to the initiation of Phase 2 construction.

No later than ~~two~~ 2 weeks prior to the initiation of each phase of construction, the SFCJPA would hold a public meeting in East Palo Alto to inform local residents about the current status of the ~~project~~Project, construction schedule, truck haul routes, and Project contact information during construction. Project contacts during construction would include the SFCJPA Project Manager, the Project Engineer, the Construction Manager designated by the SFCJPA, and at least one designated individual that would be onsite daily during construction.

General Construction Site Housekeeping

1. The work site, areas adjacent to the work site, and access roads will be maintained in an orderly condition, free and clear from debris and discarded materials. Personnel will not sweep, grade, or flush surplus materials, rubbish, debris, or dust into storm drains or waterways. Upon completion of work, all building materials, debris, unused materials, concrete forms, and other construction-related materials will be removed from the work site. (Santa Clara Valley Water District Water Quality BMP 18)
2. To prevent mosquito breeding on construction sites, the SFCJPA will require the construction contractor to ensure that surface water is gone within four days (96 hours). All outdoor grounds will be examined and unnecessary water that may stand longer than 96 hours will be drained. Construction personnel will properly dispose of unwanted or unused artificial containers and tires. If possible, any container or object that holds standing water that must remain outdoors will be covered, inverted, or have drainage holes drilled. (California Department of Public Health 2008)
3. The following general construction site housekeeping measures will be implemented as necessary within staging areas.
    a. Staging areas that are not already paved or covered with compacted aggregate base, and that are used for parking vehicles, trailers, workshops, maintenance areas, or equipment, piping, formwork, rebar, storing masonry on pallets, and metal product storage, will be graded as required, and surfaced with a minimum of 3 inches of compacted aggregate base rock over a high modulus, woven, and soil separation geo-textile. Areas storing aggregate base or other rock products will also be placed on this same geo-textile. The objective is to maintain separation between native and construction materials. Areas storing soils and sand are not required to be surfaced with aggregate base course.
    b. Aggregate base will be removed from all staging areas prior to ~~project~~Project completion and the surfaces will be regraded to their original grades or matching surrounding conditions as directed by the Engineer.
    c. Any soils contaminated with petroleum product or other hazardous materials by the Contractor will be removed by the Contractor and disposed of in accordance with local, state, and federal laws.
    d. Contractor is responsible for weed control in staging areas and material storage areas.
4. The spread of invasive nonnative plant species and plant pathogens will be avoided or minimized by implementing the following measures:

a. Construction equipment will arrive at the ~~project~~Project clean and free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species.

b. Any imported fill material, soil amendments, gravel, etc., required for construction and/or restoration activities that will be placed within the upper 12 inches of the ground surface will be free of vegetation and plant material.

c. Certified weed-free imported erosion control materials (or rice straw in upland areas) will be used exclusively.

d. To reduce the movement of invasive weeds into uninfested areas, the contractor will stockpile topsoil removed during excavation and will subsequently reuse the stockpiled soil for re-establishment of disturbed ~~project~~Project areas.

Water Quality Protection

1. The following measures will be implemented as necessary to reduce and minimize stormwater pollution during ground disturbing maintenance activities:

   a. Soils exposed due to maintenance activities will be seeded and stabilized using hydroseeding, straw placement, mulching, and/or erosion control fabric. These measures will be implemented such that the site is stabilized and water quality protected prior to significant rainfall.

   b. The preference for erosion control fabrics will be to consist of natural fibers.

   c. Appropriate measures include, but are not limited to, the following:

      - Silt Fences.
      - Straw Bale Barriers.
      - Brush or Rock Filters.
      - Storm Drain Inlet Protection.
      - Sediment Traps.
      - Sediment Basins.
      - Erosion Control Blankets and Mats.
      - Soil Stabilization (i.e. tackified straw with seed, jute or geotextile blankets, etc.).
      - Wood chips.
      - Straw mulch.

   d. All temporary construction-related erosion control methods will be removed at the completion of the ~~project~~Project (e.g., silt fences). (Santa Clara Valley Water District Water Quality BMP 41)

2. Sediments will be stored and transported in a manner that minimizes water quality impacts.

   a. Wet sediments may be stockpiled outside of a live stream or may be stockpiled within a dewatered stream so water can drain or evaporate before removal.

   b. This measure applies to saturated, not damp, sediments and depends upon the availability of a stockpile site.

c. For those stockpiles located outside the channel, water draining from them will not be allowed to flow back into the Creek or into local storm drains that enter the Creek, unless water quality protection measures recommended by RWQCB are implemented.

d. Trucks may be lined with an impervious material (e.g., plastic), or the tailgate blocked with dry dirt or hay bales, for example, or trucks may drain excess water by slightly tilting their loads and allowing the water to drain out at identified wash down stations.

e. Water will not drain directly into channels (outside of the work area) or onto public streets without providing water quality control measures

f. Streets and affected public parking lots will be cleared of mud and/or dirt by street sweeping (with a vacuum-powered street sweeper), as necessary, and not by hosing down the street. (Santa Clara Valley Water District Water Quality BMP 4)

3. Oily, greasy, or sediment-laden substances or other material that originate from the ~~project~~Project operations and may degrade the quality of surface water or adversely affect aquatic life, fish, or wildlife will not be allowed to enter, or be placed where they may later enter, any waterway.

4. The ~~project~~Project will not increase the turbidity of any watercourse flowing past the construction site by taking all necessary precautions to limit the increase in turbidity as follows.

   a. Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases will not exceed 5 percent.

   b. Where natural turbidity is greater than 50 NTU, increases will not exceed 10 percent.

   c. Where the receiving water body is a dry creek bed or storm drain, waters in excess of 50 NTU will not be discharged from the ~~project~~Project.

   d. Water turbidity changes will be monitored. The discharge water measurements will be made at the point where the discharge water exits the water control system for tidal sites and 100 feet downstream of the discharge point for non-tidal sites. Natural watercourse turbidity measurements will be made in the receiving water 100 feet upstream of the ~~discharge site~~ diversion structure. Natural watercourse turbidity measurements will be made prior to initiation of ~~project~~Project discharges, preferably at least 2 days prior to commencement of operations, after a rain event, and/or a change in construction activity with daily water quality monitoring conduct at least twice per day. (Santa Clara Valley Water District Water Quality BMP 40)

5. Vehicles will be washed only at the approved area in the corporation yard. No washing of vehicles will occur at job sites. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 9)

6. No fueling will be done in a waterway or immediate flood plain, unless equipment stationed in these locations is not readily relocated (i.e., pumps, generators).

   a. For stationary equipment that must be fueled on the site, containment will be provided in such a manner that any accidental spill of fuel will not be able to enter the water or contaminate sediments that may come in contact with water.

   b. Any equipment that is readily moved out of the waterway will not be fueled in the waterway or immediate flood plain.

c. All fueling done at the job site will provide containment to the degree that any spill will be unable to enter any waterway or damage riparian vegetation. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 10)

7. No equipment servicing will be done in a stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators).
   a. Any equipment that can be readily moved out of the channel will not be serviced in the channel or immediate flood plain.
   b. All servicing of equipment done at the job site will provide containment to the degree that any spill will be unable to enter any channel or damage stream vegetation.
   c. If emergency repairs are required in the field, only those repairs necessary to move equipment to a more secure location will be done in a channel or flood plain.
   d. If emergency repairs are required, containment will be provided equivalent to that done for fueling or servicing. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 11)
8. Measures will be implemented to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means.
   a. Prior to entering the work site, all field personnel will know how to respond when toxic materials are discovered.
   b. The discharge of any hazardous or nonhazardous waste as defined in Division 2, Subdivision 1, Chapter 2 of the California Code of Regulations (CCR) will be conducted in accordance with applicable State and federal regulations.
   c. In the event of any hazardous material emergencies or spills, personnel will call the Chemical Emergencies/Spills Hotline at 1 800 510 5151. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 12)
9. Prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water.
   a. Field personnel will be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills.
   b. No fueling, repair, cleaning, maintenance, or vehicle washing will be performed in a creek channel or in areas at the top of a channel bank that may flow into a creek channel. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 13)
10. Spill prevention kits appropriate to the hazard will always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations).
    a. Prior to entering the work site, all field personnel will know the location of spill kits on crew trucks and at other locations within District facilities.
    b. All field personnel will be advised of these locations and trained in their appropriate use. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 14)
11. Runoff from soil stockpiles will be avoided. If soil is to be stockpiled, no run-off will be allowed to flow to a creek.
12. Coffer dams will be used for tidal work areas. For tidal areas, a downstream cofferdam will be constructed to prevent the work area from being inundated by tidal flows. By isolating the work

area from tidal flows, water quality impacts are minimized. Downstream flows continue through the work area and through pipes within the cofferdam.

a. Installation of coffer dams will begin at low tide.

b. Waters discharged through tidal coffer dam bypass pipes will not exceed 50 NTU over the background levels of the tidal waters into which they are discharged.

c. Coffer dams shall not be constructed of earthen fill due to potential adverse water quality impacts in the event of a failure. ~~Coffer dams in tidal areas may be made from earthen material. If earth is used, the downstream and upstream faces will be covered by a protected covering (e.g., plastic or fabric) if needed to minimize erosion.~~

d. Coffer dams constructed of gravel shall be covered by a protective covering (e.g., plastic or fabric) to prevent seepage.

13. Groundwater will be managed at work sites. If high levels of groundwater in a work area are encountered, the water will be pumped out of the work site. If necessary to protect water quality, the water will be directed into specifically constructed infiltration basins, into holding ponds, or onto areas with vegetation to remove sediment prior to the water re-entering a receiving water body. Water pumped into vegetated areas will be pumped in a manner that will not create erosion around vegetation.

14. Sanitary/septic waste will be managed. Temporary sanitary facilities will be located on jobs that last multiple days in compliance with California Division of Occupational Safety and Health (Cal/OSHA) regulation 8 CCR 1526. All temporary sanitary facilities will be placed outside of the Creek channel and flood plain and removed when no longer necessary.

In addition, as part of the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) and the San Mateo Countywide Stormwater Pollution Prevention Program (SM-STOPPP), required under Waste Discharge Requirements and NPDES Permit for the discharge of stormwater runoff from the municipal separate storm sewer systems (MS4s) overseen by the San Francisco Bay Water Board, all construction sites are required to have site-specific and seasonally and phase-appropriate effective BMPs (San Francisco Bay Regional Water Quality Control Board 2009). SFCJPA will be responsible for ensuring compliance with all local and State regulations, including the RWQCB NPDES permits and local BMPs for jurisdictions adjoining the ~~project~~Project site~~these stormwater requirements and programs~~. The Project specifications require that the Project construction contractor prepare a SWPPP and erosion control and sedimentation plan showing placement of BMPs at various stages of construction in conformance with requirements, and all SWPPP documents and plans will be stamped by a State-certified Qualified SWPPP Developer (QSD).~~employ a Qualified SWPPP Practitioner to implement and document the pollution prevention measures outlined in the SWPPP prepared for the Project.~~ The Project will implement measures to accomplish objectives specified in SFCJPA's *San Francisquito Creek Watershed Analysis and Sediment Reduction Plan*, which fulfills NPDES permit provisions that require the co-permittees of the SCVURPPP and SM-STOPPP within the Creek watershed to assess and implement sediment management measures in the watershed (San Francisquito Creek Joint Powers Authority 2004). Water quality protection standards during construction will comply with the most protective BMPs of the local jurisdictions and the State of California.

Safe Use of Herbicides and Pesticides

1. Pesticides products are to be used only after an assessment has been made regarding environmental, economical, and public health aspects of each of the alternatives. The following pesticides are used by the District.

   a. Herbicides.

      - To control algae, weeds and undesirable vegetation.
      - To minimize fire hazards.
      - To maintain flood conveyance of waterways.
      - To maintain compliance with State and Federal requirements.

   b. Insecticides.

      - Used only in and around District buildings, or in the case of a serious pest outbreak, on landscape and re-vegetation facilities.
      - Used only after all other methods, such as prevention or natural nontoxic control methods, have proven ineffective.
      - Where required, the lowest toxicity will be used in accordance with the label and the details of this policy.

   c. Rodenticides.

      - To control burrowing rodents, including ground squirrels, moles and gophers, in District flood control levees, excluding known and potential habitat for salt marsh harvest mouse and salt marsh wandering shrew. No rodenticides or fumigants will be used within the range of the salt marsh harvest mouse or California clapper rail as identified on District range maps. Methods of rodent control within salt marsh harvest mouse or California clapper rail habitat will be limited to live trapping. All live traps shall have openings measuring no smaller than 2 inches by 1 inch to allow any salt marsh harvest mouse that inadvertently enter the trap to easily escape. All traps will be placed outside of pickleweed areas and above the high tide line.
      - In areas where rodenticides are used, carcass retrieval surveys will be conducted daily for acute toxins and weekly for anticoagulants to minimize secondary poisoning impacts during the use period. Any spilled bait will be cleaned up immediately.
      - Alternatives such as trapping and smoke bombs are used wherever practical prior to rodenticide use. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 2)

2. All herbicide use will be consistent with approved product specifications. Applications will be made by, or under the direct supervision of, State Certified applicators under the direction of a licensed Pest Control Advisor. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 1)

3. Only herbicides and surfactants registered for aquatic use will be applied within the banks of channels within 20 feet of any water present. Aquatic herbicide use will be limited to July 1st through October 15th. If rain is forecast then application of aquatic herbicide will be rescheduled. (Santa Clara Valley Water District Hazards & Hazardous Materials BMP 8)

Construction Dust Control

1. Dust control measures for all construction sites:

   a. Bay Area Air Quality Management District (BAAQMD) Basic Control Measures for construction emissions of PM10 will be implemented at all construction sites. Current measures stipulated by the BAAQMD CEQA Guidelines include the following (Bay Area Air Quality Management District 2010):

      - All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day under normal conditions. Watering periodicity can be increased or decreased as necessitated by site specific conditions as determined by the SFCJPA's designated construction manager and with the SFCJPA's approval.
      - All haul trucks transporting soil, sand, or other loose material off the site will be covered.
      - All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
      - All vehicle speeds on unpaved roads will be limited to 15 mph.
      - All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
      - Idling times will 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, Section 2485 of CCR). Clear signage will be provided for construction workers at all access points.
      - All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation.

   b. A publicly visible sign will be posted, with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person will respond and take corrective action ~~within 48 hours~~ as soon as is feasible and no later than 24 hours after the complaint is made. The Air District's phone number, as well as the contact numbers for the SFCJPA Project Manager, Designated Construction Manager, and a designated contact with the City of East Palo Alto will also be visible to ensure compliance with applicable regulations. ~~(Santa Clara Valley Water District Air Quality BMP 1)~~

Construction Noise Control

1. The SFCJPA will implement practices that minimize disturbances to residential neighborhoods surrounding work sites.

   a. In general, work will be conducted during normal working hours and as required by the Cities of Palo Alto and East Palo Alto. Extending weekday hours and working weekends may be necessary to complete some projects.

b. Internal combustion engines will be equipped with adequate mufflers.

c. Excessive idling of vehicles will be prohibited.

d. All construction equipment will be equipped with manufacture's standard noise control devices.

e. The arrival and departure of trucks hauling material will be limited to the hours of construction.

f. The use of Jacobs Compression Release Brakes (commonly known as "jake brakes") is prohibited in residential areas. (Santa Clara Valley Water District Noise BMP 2)

Aesthetics Resources Protection

1. To buffer the effects of construction activities and staging on aesthetic values, SFCJPA will require contractors to provide visual screening for the active construction site, including the construction staging and laydown area. Screening will consist of 8-foot-high chain-link fence covered with fabric or an equivalent. It will be put in place during the first week of construction and will remain until construction is complete and equipment is demobilized.

Biological Resources Protection

1. Existing access ramps and roads to waterways will be used where possible. If temporary access points are necessary, they will be constructed in a manner that minimizes impacts on waterways:

   a. Temporary project access points will be created as close to the work area as possible to minimize running equipment in waterways and will be constructed so as to minimize adverse impacts.

   b. Any temporary fill used for access will be removed upon completion of the project. Site topography and geometry will be restored to pre-Project conditions to the extent possible. (Santa Clara Valley Water District Biological Resources BMP 4)

2. Migratory bird nesting surveys will be performed prior to any project-related activity that could pose the potential to affect migratory birds. Inactive bird nests may be removed, with the exception of raptor nests. No birds, nests with eggs, or nests with hatchlings will be disturbed. (Santa Clara Valley Water District Biological Resources BMP 8)

3. Nesting exclusion devices may be installed to prevent potential establishment or occurrence of nests in areas where construction activities would occur. All nesting exclusion devices will be maintained throughout the nesting season, or until completion of work in an area makes the devices unnecessary. All exclusion devices will be removed and disposed of when work in the area is complete. (Santa Clara Valley Water District Biological Resources BMP 10)

4. Impacts on native aquatic vertebrates will be avoided or minimized. Native aquatic vertebrates (fish, amphibians and reptiles) are important ~~components~~elements of stream ecosystems. Native aquatic vertebrates may or may not be able to rapidly recolonize a stream reach if the population is eliminated from that stream reach. If native aquatic vertebrates are present when cofferdams, water bypass structures, and silt barriers are to be installed, an evaluation of the stream and the native aquatic vertebrates will be conducted by a qualified biologist. The qualified biologist will consider:

a. Native aquatic species present at the site.

b. The ability of the species to naturally recolonize the stream reach.

c. The life stages of the native aquatic vertebrates present.

d. The flow, depth, topography, substrate, chemistry and temperature of the stream reach.

e. The feasibility of relocating the aquatic species present.

f. The likelihood the stream reach will naturally dry up during the work season.

Based on consideration of these factors, the qualified biologist may make a decision to relocate native aquatic vertebrates. The qualified biologist will document in writing the reasons to relocate native aquatic species, or not to relocate native aquatic species, prior to installation of cofferdams, water bypass structures or silt barriers.

If the decision is made to relocate the native aquatic species, then the operation will be based on the District's Fish Relocation Guidelines.

5. Local ecotypes of native plants will be planted and appropriate erosion-control seed mixes will be chosen. Whenever native species are prescribed for installation on District fee properties or easements, the following steps will be taken by a qualified biologist or vegetation specialist:

   a. Evaluate whether the plant species currently grows wild in Santa Clara County.

   b. If the plant species currently grows wild in Santa Clara County, the qualified biologist or vegetation specialist will determine whether the plant installation must include local natives, i.e. grown from propagules collected in the same or adjacent watershed, and as close to the project site as feasible.

   A qualified biologist or vegetation specialist will be consulted to determine which seeding option is ecologically appropriate and effective. The following guidelines will inform the biologist or vegetation specialist's determination.

   c. For areas that are disturbed, an erosion control seed mix may be used consistent with the District Guidelines and Standards for Land Use Near Streams, Design Guide 5, 'Temporary Erosion Control Options.'

   d. In areas with remnant native plants, the qualified biologist or vegetation specialist may choose an abiotic application instead, such as an erosion control blanket or seedless hydro-mulch and tackifier to facilitate passive revegetation of native species.

   e. Temporary earthen access roads may be seeded when site and horticultural conditions are suitable.

   f. If a gravel or wood mulch has been used to prevent soil compaction per BI-11, this material may be left in place [if ecologically appropriate] instead of seeding.

   Seed selection will be ecologically appropriate as determined by a qualified biologist, per *Guidelines and Standards for Land Use Near Streams, Design Guide 2: Use of Local Native Species; and, Supplemental Landscaping\Revegetation Guidelines* (ISO document WQ71001).

6. Animal entry and entrapment will be avoided.

   a. All pipes, hoses, or similar structures less than 12 inches diameter will be closed or covered to prevent animal entry. All construction pipes, culverts, or similar structures, greater than

2-inches diameter, stored at a construction site overnight, will be inspected thoroughly for wildlife by a qualified biologist or properly trained construction personnel before the pipe is buried, capped, used, or moved.

b. If inspection indicates presence of sensitive or state- or federally-listed species inside stored materials or equipment, work on those materials will cease until a qualified biologist determines the appropriate course of action.

c. To prevent entrapment of animals, all excavations, steep-walled holes or trenches more than 6-inches deep will be secured against animal entry at the close of each day. Any of the following measures may be employed, depending on the size of the hole and method feasibility.

- Holes will be securely covered (no gaps) with plywood or similar materials at the close of each working day, or any time the opening will be left unattended for more than 1 hour.
- In the absence of covers, the excavation will be provided with escape ramps constructed of earth or untreated wood, sloped no steeper than 2:1, and located no farther than 15 feet apart.
- In situations where escape ramps are infeasible, the hole or trench will be surrounded by filter fabric fencing or a similar barrier with the bottom edge buried to prevent entry.

Cultural Resources Protection

1. Work in areas where archaeological artifacts are found will be restricted or stopped until proper protocols are met. Work at the location of the find will halt immediately within 30 feet of the find. A Consulting Archaeologist will visit the discovery site as soon as practicable for identification and evaluation pursuant to Section 21083.2 of the Public Resources Code and Section 15126.4 of the California Code of Regulations. If the archaeologist determines that the artifact is not significant, construction may resume. If the archaeologist determines that the artifact is significant, the archaeologist will determine if the artifact can be avoided and, if so, will detail avoidance procedures. If the artifact cannot be avoided, the archaeologist will develop within 48 hours an Action Plan which will include provisions to minimize impacts and, if required, a Data Recovery Plan for recovery of artifacts in accordance with Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines. (Santa Clara Valley Water District Cultural Resources BMP 2)
2. Work in areas where any burial site is found will be restricted or stopped until proper protocols are met. Upon discovering any burial site as evidenced by human skeletal remains, the County Coroner will be immediately notified. No further excavation or disturbance within 30 feet of the site or any nearby area reasonably suspected to overlie adjacent remains may be made except as authorized by the County Coroner, California Native American Heritage Commission, and/or the County Coordinator of Indian Affairs. (Santa Clara Valley Water District Cultural Resources BMP 3)

Geology and Soils Commitments

1. All new construction will be designed based on recommendations from geotechnical analyses of the Project site.
2. The contractor(s) retained for construction and revegetation of the proposed Project will be required to stockpile excavated topsoil so it can be reused for revegetation on the Project site as needed. To ensure maximum topsoil recovery, topsoil will be stockpiled separately from other excavated materials.

Land Use Commitments

1. Project design will be consistent with guidelines presented in San Francisco Bay Conservation and Development Commission's *Shoreline Spaces: Public Access Design Guidelines for the San Francisco Bay* (2005) and *Public Access and Wildlife Compatibility* (2001) and *City of Palo Alto's Site Assessment and Design Guidelines, Palo Alto Baylands Nature Preserve* (2005).

Transportation/Traffic

1. Suitable public safety measures will be used. Fences, barriers, lights, flagging, guards, and signs will be installed as determined appropriate by the public agency having jurisdiction, to give adequate warning to the public of the construction and of any dangerous condition to be encountered as a result thereof.

2.7 Required Permits and Approvals

The Project would be subject to numerous federal, state, and local regulations that protect various aspects of environmental quality. More detailed information on regulatory requirements is provided in Chapter 3. Table 2-3 presents a summary of permit requirements, organized by agency with jurisdiction.

Table 2-3. Permit Requirements Potentially Applicable to the Project

Agency with Jurisdiction	Regulation(s)	Required Authorization
San Francisco Bay Regional Water Quality Control Board	Federal Clean Water Act, Sections 401 and 402 California Porter-Cologne Water Quality Control Act	401 Water Quality Certification or Waste Discharge Requirements, National Pollutant Discharge Elimination System (NPDES) general permit for discharge of stormwater from construction sites
Bay Area Air Quality Management District	Authority to Construct/ Permit to Operate	An "Authority to Construct" is issued after District engineers review a proposed project and determine if it is capable of complying with air quality laws; and a "Permit to Operate", is issued after the project is built and compliance is demonstrated.
U.S. Army Corps of Engineers	Federal Clean Water Act, Section 404, 33 U.S.C 408 National Environmental Policy Act (NEPA)	Permits for dredge and fill activities below ordinary high water mark in waters of the United States; Federal action requires NEPA compliance
USFWS	Federal Endangered Species Act (ESA)	Potential need for "take" authorization of terrestrial species under ESA Section 7 will be determined through USACE consultation with USFWS
National Marine Fisheries Service (NMFS)	ESA	Potential need for "take" authorization of Steelhead under ESA Section 7 will be determined through USACE consultation with NMFS
DFG	California Endangered Species Act (CESA) California Fish and Game Code Section 2081 California Fish and Game Code Section 1602	Potential need for "take" authorization under Section 2081 *ff*. of the California Fish and Game Code will be determined through consultation with DFG Streambed Alteration Agreement for activities affecting bed/banks of a jurisdictional stream
State Office of Historic Preservation	National Historic Preservation Act State Office of Historic Preservation requirements California Public Resources Code	Authorization under Section 106 of the National Historic Preservation Act
San Francisco Bay Conservation and Development Commission	California McAteer-Petris Act and Federal Coastal Zone Management Act	Permits for consistency with the Bay Plan and Bay Plan policies that guide future uses of the Bay and shoreline areas.
City of Palo Alto	Local plans and regulations	Permitting entity for work on City land or public right-of-way.
City of East Palo Alto	Local plans and regulations	Permitting entity for work on City land or public right-of-way.

Chapter 3
Environmental Analysis

This chapter addresses existing environmental conditions and the Project's potential impacts on environmental resources, examining each resource in a separate subsection. The discussion for each resource topic consists of two sections: Environmental Setting and Impact Analysis. Environmental Setting describes existing environmental conditions in the areas that would be affected by the Project. Impact Analysis discusses potential environmental impacts associated with constructing and operating each of the proposed Project.

Thresholds of Significance and Level of Effect. CEQA requires an EIR to identify "significant" impacts—that is, impacts that exceed an adopted threshold of severity and thus require *mitigation* (i.e., measures or activities adopted to avoid the impact, reduce its severity, or compensate for it). Each chapter in this EIR identifies the criteria used to assess the potential severity of the Project's effects on the resource discussed in that chapter. To provide the degree of specificity required by CEQA and the State's CEQA Guidelines, the following terminology is used to evaluate the level of significance of impacts.

- A finding of *no impact* is made when the analysis concludes that the proposed project would not affect the particular environmental resource.
- An impact is considered *less than significant* if the analysis concludes that there would be no substantial adverse change in the environment and that no mitigation is needed.
- An impact is considered *less than significant with mitigation* if the analysis concludes that there would be no substantial adverse change in the environment with the inclusion of the mitigation measure(s) described.
- An impact is considered *significant* or *potentially significant* if the analysis concludes that there could be a substantial adverse effect on the environment.
- An impact is considered *significant and unavoidable* if the analysis concludes that there could be a substantial adverse effect on the environment and no feasible mitigation measures are available to reduce the impact to a less-than-significant level.
- An impact is considered *beneficial* if the analysis concludes that there would be a positive change in the environment.

Topics Not Covered in Detail in this EIR

The following topics commonly included in EIRs have been omitted from this document because they involve resources that would not be affected by the proposed project.

- Agricultural resources
- Mineral resources
- Population and housing

The paragraphs below briefly explain the reasons why detailed analysis of these topics is not needed in this EIR.

Agricultural Resources

Changes in the status of agricultural lands may constitute significant impacts under CEQA; examples include direct conversion of state-designated Important Farmlands to nonagricultural use, conflict with Williamson Act (California Land Conservation Act) contracts, and various other types of environmental changes that have the potential to result indirectly in conversion of farmland to nonagricultural use. No agricultural land exists at the Project site or in the Project area. No impacts on agricultural resources would result from Project implementation or operation. Moreover, the Project would not alter land use planning or the overall mosaic of land uses in the project area. Consequently, the SFCJPA has concluded that the Project does not have the potential to contribute directly or indirectly to conversion of farmland to nonagricultural use, and agricultural resources are not discussed further.

Mineral Resources

A project is typically considered to result in a significant impact on mineral resources when it results in the loss of availability of a known mineral resource important to the region and State or a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. The Palo Alto Comprehensive plan "does not include policies relating to mineral resources because Palo Alto does not contain any mineral deposits of regional significance (City of Palo Alto 2007). The East Palo Alto General Plan does not contain any policies relating to mineral resources (City of East Palo Alto 1999). The Project site and the area along the margin of the Bay to the west contain no identified mineral resources. Land underlying the Bay is not classified for presence or absence of mineral resources (Kohler-Antablin 1996). There are no mineral extraction uses in the Project area. Land uses adjacent to the Project site are incompatible with mineral resource extraction activities. These uses are a school, an athletic center, a golf course, an airport, a nature preserve, and urban development. There would be no impact during Project construction or operation and mineral resources are not discussed further.

Population and Housing

A project is typically considered to have a significant impact on population or housing if it displaces a substantial number of people or a substantial number of existing housing units or if it induces substantial population growth in the Area. While construction activities would occur within the Cities of East Palo Alto and Palo Alto, construction would not result in the displacement of any homes or people. The Project would not require the extension of existing roads or other infrastructure that would directly or indirectly induce substantial population growth. The Project would include the construction of access roads, but these roads would be used for maintenance activities and as public trails and would not result in population growth. No adverse impacts on population or housing are anticipated, and these issues are not discussed further.

3.1 Aesthetics

This section provides environmental analysis of the Project's impacts on aesthetics. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from Project construction and implementation, and describes mitigation to minimize the level of impact.

Environmental Setting

Regulatory Context

Aesthetic values are protected indirectly through a variety of federal, state, and local laws and programs. The federal government does not explicitly regulate visual quality but recognizes its importance and preserves aesthetic values through the National Park, National Wildlife Refuge, National Monument, and National Scenic Byway Systems. At the state level, aesthetic values are preserved through the establishment of state parks and preserves, and through the California Scenic Highway Program. In addition, although local jurisdictions are not required to address visual resources as a separate topic in their general plans, several of the required general plan elements—including land use, conservation, and open space—relate indirectly to the aesthetic issues faced by communities as they manage their growth. General plans may also contain additional elements on topics of concern to the local community; common themes that bear on aesthetics and visual resources include recreation and parks, community design, and heritage or cultural resources.

The San Mateo County and Santa Clara County general plans, and the Palo Alto Comprehensive Plan contain language requiring the preservation of aesthetic/visual resources values, as summarized in Table 3.1-1. Appendix B, *Relevant Regulations*, also includes local, state, and federal regulations that are applicable to aesthetic resources. In addition, the Baylands Master Plan includes Design Guidelines for site features such as fences, signs, paving, and other elements. These Design Guidelines are intended to help provide a consistent approach to design, placement, and construction of common landscape elements that respect the landscape character, establish a distinctive identity, and set a standard of quality within the Baylands (City of Palo Alto 2005).

Table 3.1-1. County and City Policies Relevant to Aesthetics

Document	Policy
Santa Clara County General Plan (1994)	**C-RC 57:** The scenic and aesthetic qualities of both the natural and built environments should be preserved and enhanced for their importance to the overall quality of life for Santa Clara County. **C-RC 58:** The general approach to scenic resource preservation on a countywide basis should include the following strategies: a. conserving scenic natural resources through long range, inter-jurisdictional growth management and open space planning; b. minimize development impacts on highly significant scenic resources; and c. maintaining and enhancing scenic urban settings, such as parks and open space, civic places, and major public commons areas. **C-RC 62:** Urban parks and open spaces, civic places, and public commons areas should be designed, developed and maintained such that the aesthetic qualities of urban settings are preserved and urban livability is enhanced. Natural resource features and functions within the urban environment should also be enhanced. **C-GD 4:** Development activity should minimize degradation of the natural environment and avoid diminishment of heritage resources.
San Mateo County General Plan (1986)	**Conservation, Open Space, Parks & Recreation** **Goal 4:** Expand the aesthetic and functional contributions made to the urban environment by public open spaces, trail systems, scenic roadways, and street trees and plantings. **C/OS 9.1: Development Requirements.** Require new developments to protect and enhance the character of scenic roadways and trails designated on Figure C/OS-4, including but not limited to treatment of signs and screening, land uses, and preservation of view corridors.
Palo Alto Comprehensive Plan (1998)	**Views:** **Policy L-3**: Guide development to respect views of the foothills and East bay hills from public streets in the developed potions of the City. Palo Alto's backdrop of forested hills to the southwest and San Francisco Bay to the northeast is a character-defining element of the City. Views from the Baylands are equally striking, taking in the Bay, the East Bay hills, and the Santa Cruz Mountains. These visual connections are part of what makes Palo Alto attractive. The design and siting of new buildings should take into account impact on views, and should frame existing views of the hills, where possible. **Map L-4**. Community Design Features. This map identifies major view corridors within the Baylands. **Scenic Routes and Gateways:** **Program L-71**: Recognize …Embarcadero Road … as scenic routes. **Program T-57**: Provide a planting strip and bicycle/pedestrian path adjacent to Embarcadero Road that is consistent with the open space character of the Baylands. **Map L-4**. Community Design Features. This map identifies Embarcadero Road east to Harbor Road as a scenic route, and identifies Embarcadero Road at East Bayshore Road as a gateway

Document	Policy
City of Palo Alto Baylands Master Plan (2008)	The *Baylands Master Plan* observed that the essential character of the Baylands (open, spacious, horizontal, with little or nothing between the planes of ground and water and the sky) was established by the tideland marsh areas. The following is a list of applicable policies; the full text is found in Appendix B. • Overall Environmental Quality Policy No. 10 • Flood Protection Policy Nos. 2 and 3
City of East Palo Alto General Plan (1999)	**Land Use Element** **Goal 2.0** Create an enhanced image and identity for East Palo Alto. **Policy 2.1.** Enhance the image of the community by improving the appearance of public areas and entrances to the City along University Avenue, Bay Road, Willow Road, and Newbridge Street. **Policy 2.2.** Promote high quality in the design of all public and private development projects. **Goal 3.1** Enhance the character of community neighborhoods. **Policy 3.1.** Preserve and enhance the quality of East Palo Alto neighborhoods by avoiding or abating the intrusion of disruptive, non-conforming buildings and uses. **Policy 3.2.** Ensure that new development is compatible with the physical characteristics of its site, surrounding land uses and available public infrastructure. **Policy 3.3**. Utilize programs for rehabilitation of physical development within the City to improve community neighborhoods. **Economic Development Element** **Goal 8.0**. Improve the City's image through promotion of its desirable characteristics, including natural, human and historical resources, and its locational characteristics (transportation, real estate, bridge, climate, bay views) and environmental features. **Policy 8.2.** Maintain adequate environmental controls to preserve and provide an attractive and healthy environment, and maintain strong controls to enhance the viability of neighborhoods. **Conservation and Open Space Element** **Goal 1.0** Identify and conserve important historic, archaeologic, and palentologic resources. **Policy 1.2.** Protect and conserve buildings or sites of historic significance. **Goal 2.0** Preserve and enhance important natural resources and features. **Policy 2.1.** Conserve, protect, and maintain important natural plant and animal communities, such as the baylands, Cooley Landing, San Francisquito Creek, the shoreline, and significant tree stands. **Policy 2.2.** Conserve and protect important watershed areas and soils through appropriate site planning and grading techniques, revegetation and soil management practices, and other resource management techniques.

Document	Policy
	Policy 2.3. Preserve existing and increase the number of trees within the community.
	Policy 2.4. Maximize enjoyment and promotion of natural resource areas, such as the baylands, Cooley Landing, San Francisquito Creek, and the shoreline.
Sources: County of Santa Clara 1994, County of San Mateo 1986, City of Palo Alto 1998, City of Palo Alto 2005, City of East Palo Alto 1999.	

Study Area

The study area for the aesthetics analysis is the Project site and the Project viewshed.

Existing Conditions

Regional Setting

The San Francisquito Creek is located between the cities of Palo Alto and East Palo Alto and serves as the boundary between Santa Clara and San Mateo counties. The Project site is located northeast of U.S. 101. Prominent aesthetic features in the area include the San Francisco Bay, the Dumbarton Bridge, the Diablo Range (the Inner Coast Range), and the Santa Cruz Mountains (the Outer Coast Range).

Site Characteristics

The Project site is undeveloped open space consisting of the San Francisquito Creek, the Bay Trail, the Palo Alto Baylands, and Friendship Bridge. The Bay Trail is paved on the left bank from Geng Road to Friendship Bridge. There is an unpaved trail from Friendship Bridge to approximately 500 feet downstream of the Palo Alto Airport, where the trail ends at a wooden bench facing the Bay. There is also unpaved trail from just downstream of the Bayshore Road Pump Station to Geng Road. Friendship Bridge is a self-weathering metal bridge with wooden planking that spans the San Francisquito Creek.

There are commercial uses at the upstream end of the upper reach. There are one-story, single-family homes located behind a partially wooden fence along the upper reach of the right bank. In the middle reach of the right bank, the residences are located behind private property fences. The residences are at least approximately 135 feet from the crown of the existing levees. In the lower reach of the right bank, there is open space covered in medium to medium-high grasses. There are high power lines and utility poles and towers lining the right bank. The upper reach of the left bank contains commercial uses and a school. The Golf Course runs along the majority of the left bank. The single-runway Palo Alto Airport is situated at the downstream end of the lower reach. From the Project site, there are distant views of the Diablo and Santa Cruz Mountain Ranges, the City of Fremont, San Francisco Bay, and the Dumbarton Bridge.

Visual Resources

Santa Cruz and Diablo Ranges

The Santa Cruz Mountains are located to the west of the Project site and form the backdrop for much of the developed areas surrounding the Project site. While distant views of the Santa Cruz Mountains from the Project site exist, views are partially obstructed by intervening power lines and by the existing topography.

The Diablo Range is located to the east of the Project site on the far side of San Francisco Bay. The Diablo Range forms the backdrop for views of San Francisco Bay and the City of Fremont. Distant views of the Diablo Range are visible from the Project site.

Scenic Roadways

There are no designated state scenic highways within the Project area. According to the California Scenic Highway Mapping System, SR 280 is a designated scenic highway in San Mateo County from the Santa Clara County line to the San Bruno city limit. In Santa Clara County, SR 9 is a designated state scenic highway from the Santa Cruz County line to the Los Gatos city limit (Caltrans 2011). The Project site is located approximately 4 miles northeast of SR 280 and approximately 13 miles north of SR 9. Given the intervening growth and other obstructions, there are no views to or from these roadways to the Project site.

The City of Palo Alto Comprehensive Plan identifies Sand Hill Road, University Avenue, Embarcadero Road, Page Mill Road, Oregon Expressway, I-280, Arastradero Road (west of Foothill Expressway), Junipero Serra Boulevard/Foothill Expressway, and Skyline Boulevard as scenic routes. The closest route to the Project site is Embarcadero Road, located approximately 0.3 mile south of the Project site. The Project site is not visible from Embarcadero Road, nor is Embarcadero Road visible from the Project site.

Sensitive Viewers

Public views are considered to be sensitive when they have high scenic quality and are experienced by large groups of people. Sensitive viewers from the Project site include recreationists using the Bay Trail. The degree to which these views would be affected by the Project varies depending on the viewers' locations and duration of the view. For example, because of the curvature of the Creek and adjacent Trail, and the heavy vegetation along the Trail, recreationists views are often blocked and are of a moderate duration.

Four publically accessible viewpoints (A, B, C and D) were selected for analysis to represent existing views from the Project site. Three of the views (A, C, and D) are looking downstream (east); Viewpoint B is looking upstream (west). There is at least one view from within each of the Project's three reaches; there are two views from within the upper reach. Figure 3.1-1 provides a key to the location and direction of these viewpoints.

Views from the Project Site

Views from the Project Site include views of the Baylands and existing residential development to the north, San Francisco Bay and Diablo Mountains to the east, the Golf Course and Palo Alto Airport to the south, and the Santa Cruz Mountains to the north. Many views from the Project site are restricted to views of the Trail itself.

Viewpoint A—Upper Reach (looking downstream)

Viewpoint A provides a view from East Bayshore Road looking downstream towards the upper reach of the Project site (see Viewpoint A on Figure 3.1-2). Recreationists using the Bay Trail, pedestrians, bicyclists, and motorists along East Bayshore Road, and employees at the Yeaman Auto Body Shop and Palo Alto Upholstery, can see these views. Recreationists along the Trail and motorists both have short-term, temporary views as they are in transit through the area. Recreationists using the Bay Trail are considered high-sensitivity viewers, and employees and motorists are considered low-sensitivity viewer groups. There are also some residences within the upper reach that have views of the Project area within the upper reach. The viewpoint demonstrates that the Creek in lined with dense, unkempt groundcover and shows that there are commercial/industrial buildings on both banks, resulting in a low-quality view. Because the upper reach of the Creek meanders, views are limited to the first curve of the Project reach. Distant views of the Diablo Mountains are interrupted by trees.

Viewpoint B—Upper Reach (looking upstream)

Viewpoint B is located just upstream of Geng Road and provides views from the Bay Trail looking towards East Bayshore Road (see Viewpoint B on Figure 3.1-2). This view is upstream of the designated Bay Trail, but is still seen by recreationists venturing off the Bay Trail. Recreationists using the unpaved trail have short-term, temporary views as they are in transit through the area and are considered high-sensitivity viewers. Similar to Viewpoint A, this viewpoint demonstrates that the Creek is lined with dense, unkempt groundcover. Lights associated with the baseball/softball fields at the Baylands Athletic Center and the building associated with the Palo Alto Pump Station are visible in the distance. Distant views of the Santa Cruz Mountains are interrupted by trees.

Viewpoint C—Middle Reach

Views within the middle reach consist of dense vegetation including groundcover and shrubs (see Viewpoint C on Figure 3.1-2). Recreationists on the Bay Trail have views to the north of the Creek and the roofs of single-story houses in East Palo Alto. Views of the Golf Course to the south consist of open space interspersed with trees. The quality of these views is not high because they are often blocked by heavy groundcover, shrubs, and trees. Electric utility poles and towers are connected by horizontal electric wires, which line the skyline. The curvature of the Creek, coupled with the dense vegetation, restrict distant views. As recreationists approach the lower reach, there are views of the Friendship Bridge a rust-colored horizontal footbridge. Recreationists using the Bay Trail are considered high-sensitivity viewers. They generally have short-term, temporary views as they are in transit through the area.

Viewpoint D—Lower Reach

As recreationists travel downstream on the left bank of the Creek, their views within the lower reach become more expansive (see Viewpoint D on Figure 3.1-2). Groundcover is much lower, allowing for uninterrupted views of the Creek and the Baylands on the right bank. To the far side of the Baylands, there are distant views of single-story homes and the Dumbarton Bridge, interspersed with electric towers and horizontal electric wires. To the east, there are unobstructed distant views of the San Francisco Bay and the Diablo Mountains. To the south, there are views of the Golf Course and Palo Alto Airport. The quality of the views of the Bay and Mountains are not high because these are typical urban views. These views are not unique as they are available from many different areas in

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Figure 3.1-1
Viewpoints Key

Viewpoint A: East Bayshore Road looking downstream (upper reach)

Viewpoint B: Geng Road looking upstream (upper reach)

Viewpoint C: Middle reach looking downstream

Viewpoint D: Lower reach looking towards the Bay

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Figure 3.1-2
Viewpoints A, B, C, and D

the Bay Area. Recreationists using the Bay Trail are considered high-sensitivity viewers. They generally have short-term, temporary views as they are in transit through the area.

Impact Analysis

Methods and Significance Criteria

The Project's potential impacts on aesthetic resources were assessed qualitatively, based on existing visual quality and the proposed Project-related changes proposed.

For the purposes of this analysis, an impact was considered to be significant and require mitigation if it would result in any of the following.

- Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- Substantial adverse effect on a scenic vista.
- Substantial degradation of the visual character or quality of the project site and its surroundings.
- Creation of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact AES1—Substantial Damage to Scenic Resources within a State Scenic Highway

Summary by Project Element: Impact AES1—Substantial Damage to Scenic Resources within a State Scenic Highway		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	No Impact	No Impact

There are no state-designated scenic highways within 4 miles of the Project site. Due to intervening development, trees, and topography, the Project site is not visible from any state-designated scenic highway. Given the intervening distance and built up nature of the site surroundings, the Project would have no direct effect on trees, rock outcroppings, or historic resources visible within these corridors.

Although there are no state designated scenic highways that would be affected by the Project, the City of Palo Alto identifies Embarcadero Road as a local scenic route. Embarcadero Road is approximately 0.3 mile south of the Project site. The Project site would not be visible to motorists travelling along this route due to intervening vegetation, topography, and development. Therefore, the Project would not affect views from this scenic corridor and no impact would occur. No mitigation is required.

Impact AES2—Substantial Effect on a Scenic Vista

Summary by Project Element: Impact AES2—Substantial Effect on a Scenic Vista		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant

According to the Palo Alto Comprehensive Plan (Map L-4), there are no designated scenic vistas from the Project site. However, there are major view corridors and distant views of San Francisco Bay, the Dumbarton Bridge, and the Diablo and Santa Cruz Mountains for recreationists within the lower reach. None of the Project elements would impede these views. There are no tall structures that would substantially change the existing view. The Project would not adversely affect views of any scenic resource and impacts would be less than significant.

Impact AES3—Alteration in Existing Visual Character or Quality of the Site and Its Surroundings

Summary by Project Element: Impact AES3—Alteration in Existing Visual Character or Quality of the Site and Its Surroundings		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant

Construction

Existing visual quality along the Project site varies along the Project Reach. Project construction would include levee bank lowering and raising, construction of access roads, channel widening, construction of the Friendship Bridge boardwalk, revegetation and marshplain terracing, and installation of flood walls. These activities would result in temporary visual disruption and would create views of construction debris, construction staging and materials storage areas, soil stockpiles, and construction vehicles and equipment. Principal viewer groups including recreationists using the Bay Trail, are expected to be moderately to highly sensitive to changes to the site's aesthetic quality and residents in East Palo Alto living in the homes along the Creek. Because the period of construction-related visual disruption would be limited (up to 5 months), construction would result in less-than-significant aesthetic impacts. To ensure that construction impacts remain less than significant, the SFCJPA would provide visual screening for construction staging and equipment storage areas. With this measure in place, and in consideration of the temporary nature of construction activities, residual aesthetic impacts of construction of the Project site would remain less than significant.

Operation

The Project would not result in substantial long-term changes in the aesthetic quality of the Project site. Upon completion of construction, visual changes would include raised and relocated PG&E transmission poles and towers, relocated levees, marshplain restoration, and the addition of the boardwalk connecting Friendship Bridge to the relocated levee on the left bank. The visual changes resulting from each of these elements is described below.

- **PG&E Electric Transmissions Poles and Towers**. As described in Chapter 2, the Project would include the relocation, raising, and removal of some PG&E electric transmission poles and towers within the Project site. There would be no net change in the number of transmission poles and towers in the Project site. The electric poles and towers are visible to recreationists, golfers, and the residents, and are the only tall structures in the Project vicinity.
  - The Project would remove the secondary wires (i.e., the lowest wires) from six wood transmission poles located along the Creek in the City of East Palo Alto. This would improve views as it would eliminate some of the horizontal electric wires currently impeding views.
  - The Project would replace four existing wood transmission poles with new light duty steel (LDS) poles.[6] Two of these poles would be replaced in the same location; two of these poles would be replaced and relocated to provide better alignment for the electricity wires. Each of the new LDS poles would be approximately 10 feet taller than the existing 65-foot high poles. The existing poles are already much higher than the tree line. The 10-foot increase in pole height would not substantially affect the visual quality of the Project site.
  - The Project would raise two existing 75-foot-high steel lattice transmission towers by approximately 15 feet. The tower designs would otherwise not change. The towers are visible to recreationists on the Bay Trail and golfers at the Golf Course. As the towers already extend above the tree line, an additional 15 feet would not substantially affect the visual quality of the Project site.
  - The Project would remove, relocate, and replace one existing transmission tower. The existing tower is located between the Bay Trail and the Golf Course, approximately 600 feet downstream of Geng Road on the right bank. The new tower would be relocated approximately 25 feet north of the existing location and would be approximately 25 feet taller than the existing tower. Aside from the height, the new tower would have the same design as the existing tower. Upon completion of the Project, this transmission tower would ultimately be located within the Creek. While this would be a visual change, it would not substantially alter the visual character of the Project site because a tower already exists in its approximate location. The raised height of the tower would have a minimal impact on golfers.
- **Relocated and Raised Levees and Channel Widening.** The Project would include the relocation of existing levees to accommodate a wider Creek channel. In some places, the Project would not relocate the levee, but would raise the levee in place by approximately 3–4 feet. While raising the levee would result in altered views of the Creek itself, the resulting view would still be that of a Creek with levees on either side with associated low vegetation. Therefore, the relocated and raised levees would not substantially alter the visual character of the Project site.
- **Marshplain Restoration.** As described in Chapter 2, *Project Description*, the Project would create approximately 18 acres of tidal marsh on both sides of the Creek. The Project would remove the existing vegetation on both banks of the Creek and replace it with native marsh from the edge of the Creek channel to the toe of the levee or the base of the floodwall. The Project would also include the creation of a marshplain terrace adjacent to the relocated left bank levee near Friendship Bridge. The restored tidal marsh and marshplain terrace would have a higher

[6] LDS poles are delivered "rust" colored and do not change over time.

visual quality than the existing unkempt vegetation and would not substantially alter the visual character of the Project site; therefore, impacts would be less than significant.

- **Boardwalk**. The Project would include the addition of a new public boardwalk extending from the eastern footing of Friendship Bridge, across the new marshplain terrace, to the relocated left bank levee. The boardwalk would be the same width as Friendship Bridge and would be constructed of timber deck and concrete piles. The elevation of the low mark of the boardwalk would be set above the highest anticipated flood elevation, with the lowest point of the bridge a minimum of 5 feet above the marshplain terrace beneath it. The boardwalk would be designed in accordance with the Palo Alto Baylands Nature Preserve Design Guidelines (City of Palo Alto 2005) and the San Francisco Bay Trail Design Guidelines (Association of Bay Area Governments 1999). As described above, these Guidelines are intended to help provide a consistent approach to design, placement, and construction of common landscape elements that respects the landscape character, established a distinctive identity, and sets a standard of quality within the Baylands. The boardwalk would provide views similar to views from Friendship Bridge. The boardwalk would appear to be a visual extension of the Bridge and would not substantially alter the visual character of the Project site; therefore, impacts would be less than significant.

- **Floodwalls.** There are existing floodwalls on both sides of the Creek that extend from East Bayshore Road to approximately 190 feet downstream. New floodwalls would be constructed and installed on both sides of the Creek channel in the upper reach and a portion of the middle reach. The floodwalls would be constructed out of sheet pile and reinforced concrete. The floodwalls would have a maximum height of approximately 21 feet from the Creek bed and 3.3 feet above the top of outside access roads. For trail users the floodwalls would commonly be visible only as the approximately 3.3 feet safety height above the trail. Views for the average trail user into the interior floodwalls would be different and have been simulated in Figure 3.1-3. While this change does represent a substantial visual difference in the interior view of the channel, the view is fleeting or obstructed for the majority of users. The change would not be significant in that the trail would still be contextually perceived in the same way and would not dominate the overall view, which would otherwise be unaltered. The majority of users on the trail would only perceive a small wall.

- **Trees.** The City of East Palo Alto identifies protected trees as relevant to the visual character of the community. As described in Section 3.3 (*Biological Resources*), Mitigation Measures BIO13.1 and BIO13.2 would replace trees at a minimum 1:1 ratio in the project vicinity. Because USACE guidelines prohibit planting of trees within 15 feet of the new levees, trail users would perceive minor changes in the visual context, but the overall nature of the view, with new trees in close proximity to the facility, would not result in a significant change in the visual character of the Project site.

None of these project ~~components~~<u>elements</u> would substantially alter the visual character of the Project site. Therefore, impacts on the visual quality of character of the Project site and its surroundings would be less than significant.

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Figure 3.1-3
Existing and Simulated Views of Phase Two Project Reach

Impact AES4—Creation of a New Source of Light or Glare

Summary by Project Element: Impact AES4—Creation of a New Source of Light or Glare		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	No Impact

Construction

The Project would not include any nighttime construction; it is anticipated that there would be no need for nighttime construction lighting or security lighting at the Project site. Therefore, short-term impacts related to new sources of light and glare are expected to be less than significant.

Operation

None of the Project elements would incorporate new sources of nighttime lighting. Lighting along the path to the International School of the Peninsula and in other locations would be replaced in kind. The Bay Trail is not currently lit and there are no plans for the Project to add lighting. Therefore, there would be no changes in lighting. Additionally, none of the Project elements would be constructed of materials that would produce glare. The electric transmission towers are an existing feature that have dull surfaces and do not produce glare. The LDS poles would be delivered "rust" color and would not produce glare. Furthermore, the project would not result in an increase in the number of towers or poles. There would be no impact related to long-term increases in nighttime light generation or fugitive glare.

3.2 Air Quality

Environmental Setting

Regulatory Context

Air quality is protected by the federal Clean Air Act (CAA) and California Clean Air Act (CCAA) and by local air district planning pursuant to the acts. At the federal level, the EPA administers the CAA. In California, the CCAA is administered by the California Air Resources Board (CARB) at the state level and by the air quality management districts at the regional and local levels. BAAQMD has local jurisdiction over the Project area.

EPA and CARB have established national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively, for six criteria pollutants: carbon monoxide (CO); nitrogen dioxide (NO_2); sulfur dioxide (SO_2); ozone; lead; and particulate matter (PM), including PM less than 10 microns in diameter (PM10), and PM less than 2.5 microns in diameter (PM2.5). The pollutants of greatest concern in the Santa Clara County are CO, ozone, PM10, PM2.5, and toxic air contaminants (TACs).

Areas are classified as either *in attainment* or *in nonattainment* with respect to state and federal ambient air quality standards. These classifications are made by comparing actual monitored air pollutant concentrations to state and federal standards. If a pollutant concentration is lower than the state or federal standard, the area is considered to be *in attainment* of the standard for that pollutant. If pollutant levels exceed a standard, the area is considered a *nonattainment* area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated *unclassified*.

Appendix B provides additional information, including the specifics of the federal and state ambient air quality standards and BAAQMD CEQA emission thresholds.

Study Area

The study area for analysis of air quality impacts is the project site, and the area immediately surrounding and within 1000 feet of the project site, as required by BAAQMD.

Existing Conditions

Climate and Air Quality in the Project Area

While the primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted from those sources, meteorological conditions and topography are also important factors. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

Air pollution potential in the Santa Clara Valley is high. High summer temperatures, stable air, and mountains surrounding the valley combine to promote ozone formation. In addition to the many local sources of pollution, ozone precursors from San Francisco, San Mateo, and Alameda counties are carried by prevailing winds to the Santa Clara Valley. The shape of the valley tends to channel pollutants to the southeast. In addition, on summer days with low-level temperature inversions, ozone can be recirculated by southerly drainage flows in the late evening and early morning and by the prevailing northwesterly winds in the afternoon. A similar recirculation pattern occurs in the winter, affecting levels of CO and particulate matter. This movement of the air up and down the valley increases the impact of the pollutants significantly.

Existing air quality conditions in the Project area can be characterized by monitoring data collected in the region. The air quality monitoring station closest to the Project site is the Redwood City station located at 897 Barron Avenue, which monitors for ozone, CO, and PM2.5. Data for PM10 is not available at the Redwood City station, so PM10 data come from the next-closest station in San Jose (Jackson Street station). Recent air quality monitoring results from the Redwood City and Jackson Street monitoring stations are summarized in Table 3.2-1. The data represent air quality monitoring for the last 3 years for which a complete dataset is available (2009–2011).

As indicated in Table 3.2-1, the Redwood City monitoring station has experienced two violations of the state 1-hour ozone standard, one violation of the state 8-hour ozone standard, one violation of the federal 8-hour ozone standard, and one violation of the federal 24-hour PM2.5 standard during the last 3 years. There were no violations of the federal or state CO standards, nor federal or state PM10 standards, or federal PM2.5 standards at the Redwood City or Jackson Street monitoring stations during this period.

Table 3.2-1. Ambient Air Quality Monitoring Data from Redwood City Monitoring Station, Redwood City

Pollutant Standards	2009	2010	2011
Ozone			
Maximum 1-hour concentration (ppm)	0.087	0.113	0.076
Maximum 8-hour concentration (ppm)	0.063	0.077	0.061
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	0	2	0
NAAQS 8-hour (>0.075 ppm)	0	1	0
CAAQS 8-hour (>0.07 ppm)	0	1	0
Carbon monoxide (CO)			
Maximum 8-hour concentration (ppm)	1.76	1.72	1.67
Number of days standard exceeded[a]			
NAAQS 8-hour (≥9.0 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
PM10[b, c]			
National[d] maximum 24-hour concentration (μg/m³)	41.1	44.2	40.1
National[d] second-highest 24-hour concentration (μg/m³)	40.6	37.4	35.4
State[d] maximum 24-hour concentration (μg/m³)	43.3	46.8	42.0
State[d] second-highest 24-hour concentration (μg/m³)	43.0	38.0	37.2
National annual average concentration (μg/m³)	19.5	18.9	17.1
State annual average concentration (μg/m³)[f]	20.3	19.5	-

Pollutant Standards	2009	2010	2011
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 μg/m³)[g]	0	0	0
CAAQS 24-hour (>50 μg/m³)[g]	0	0	0
PM2.5			
National[d] maximum 24-hour concentration (μg/m³)	31.7	36.5	24.2
National[d] second-highest 24-hour concentration (μg/m³)	28.4	31.2	21.9
State[e] maximum 24-hour concentration (μg/m³)	34.2	32.7	20.5
State[e] second-highest 24-hour concentration (μg/m³)	28.5	16.7	15.0
National annual average concentration (μg/m³)	8.6	8.3	-
State annual average concentration (μg/m³) [f]	-	–	-
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 μg/m³)	0	1	0

Notes: CAAQS = California ambient air quality standards.
NAAQS = national ambient air quality standards.
– = insufficient data available to determine the value.

[a] An exceedance is not necessarily a violation.

[b] Measurements usually are collected every 6 days.

[c] Measurements collected from Jackson Street station, San Jose.

[d] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[e] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, state statistics are based on California approved samplers.

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

[g] Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.

Sources: California Air Resources Board 2012

Based on monitoring data such as those shown in Table 3.2-1, EPA has designated Santa Clara and San Mateo counties as a marginal nonattainment area for the 8-hour ozone NAAQS, a non-attainment area for the PM2.5 NAAQS, and a maintenance area for the CO NAAQS (Environmental Protection Agency 2012). CARB has classified Santa Clara and San Mateo counties as a nonattainment area for the 1-hour ozone CAAQS (serious nonattainment), 8-hour ozone CAAQS, PM10 CAAQS, and PM2.5 CAAQS. Santa Clara and San Mateo counties are classified as an attainment area for the CO CAAQS (California Air Resources Board 2012).

Sensitive Receptors in the Project Area

BAAQMD generally defines a *sensitive receptor* as a facility or land use that houses or attracts members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Sensitive receptors located in the vicinity of the Project site include numerous single-family homes and other residential uses (condominiums, apartments), as well as schools, parks, and community centers. The Project site is bordered to the southeast by the Palo Alto Municipal Golf Course and Baylands Athletic Center, and to the west entirely by residences, parks, and multi-use trails (approximately 100-250 feet from the project boundary). The International School of the Peninsula and East Palo Alto U.S. Post Office are adjacent to the Project site along the south bank of the upper reach (also approximately 100-250 feet from the project boundary), and the Eastside College Preparatory School is 2,000 feet west of the lower reach.

Impact Analysis

Assessment Methods

The air quality analysis focuses on construction emissions. Construction activities associated with the Project would generate short-term emissions of ROG, NO_X, CO, PM10, and PM2.5. Emissions would originate from on-road hauling trips, worker commute trips, construction-site fugitive dust, and off-road construction equipment. Construction-related emissions would vary substantially depending on the level of activity, operation of specific equipment, and wind and precipitation conditions. Construction emissions were estimated based on the construction activities anticipated for each element, as described in the section titled *Construction Activities by Project Element*. Tools and assumptions used to calculate the emissions associated with on-site equipment, on-road vehicles, and site fugitive dust are described here.

- **On-Site Equipment:** Exhaust emissions from operation of on-site equipment were calculated using the CalEEMod model (Version 2011.1.1). The load factors for construction equipment were updated to reflect the values presented the 2011 Carl Moyer Guidelines, which were based on CARB's most recently released load factor data (California Air Resources Board 2011). Analysis assumed an 8-hour construction workday, 24 days per month.
- **On-Road Vehicles:** Exhaust emissions from truck haul trips and worker commute trips were calculated using the EMFAC2011 emissions model. The numbers of haul trips were estimated on the exported and imported materials provided by HDR Environmental, Operations and Construction Inc. (HDR). The capacity of trucks that would typically be used for equipment and supply delivery and soils hauling is assumed to be 10 cubic yards(cy), except the 20-cy dump trucks used for soil hauling for levee modification, levee raising, and channel widening activities. Round-trip truck haul distances were assumed to be 40 miles based on the proximity of likely suppliers and debris disposal sites. The numbers of workers required to complete construction activities was provided by HDR and is assumed to be 24 workers for each construction ~~component~~element.
- **Land Disturbance and Earth Moving:** Fugitive dust emissions generated by land disturbance and earth moving were quantified using the CalEEMod with the disturbed acreages and earthwork volume provided by HDR.

Construction emissions were modeled separately for each of the Project elements. To assess the maximum (worst-case) level of pollutant emissions likely during each year of construction, emissions for all Project elements that would be constructed in the same year were evaluated together—this gives the maximum total Project-related air quality impact for each year of construction.

Significance Criteria

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Conflict with, or obstruction of, the applicable air quality plan.
- Violate air quality standards or substantially contribute to existing or projected air quality violation.
- Expose sensitive receptors to substantial pollutant concentrations.
- Generate objectionable odors affecting a substantial number of people.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a non-attainment area under NAAQS and CAAQS.

A cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area under federal or state air quality standards typically also constitutes a significant impact. This issue is discussed in Chapter 4, *Cumulative Impacts*. Impacts of greenhouse gas emissions from construction equipment are discussed in Section 3.6, *Greenhouse Gas Emissions and Climate Change*.

According to the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make significance determinations for potential impacts on environmental resources. Within the San Francisco Bay Area Air Basin, which includes Santa Clara and San Mateo Counties, BAAQMD is responsible for ensuring that state and federal ambient air quality standards are not violated. BAAQMD develops and enforces air quality regulations for non-vehicular sources, issues permits, participates in air quality planning, and operates a regional air quality monitoring network. BAAQMD's requirements for analysis of construction-related pollutant emissions are contained in its CEQA Guidelines (Bay Area Air Quality Management District 2011a). As part of an effort to attain and maintain ambient air quality standards for ozone, PM2.5, and PM10, BAAQMD has also established thresholds of significance for these air pollutants and their precursors (ROG and NO_X) in its CEQA Guidelines (Bay Area Air Quality Management District 2011a). The thresholds for analysis of construction-related pollutant emissions are presented in Table 3.2-2.

Table 3.2-2. BAAQMD Project-Level Criteria Pollutant Emissions Thresholds

Pollutant	Construction	Operations
ROG	54 lbs/day	54 lbs/day or 10 tons/year
NO_X	54 lbs/day	54 lbs/day or 10 tons/year
CO	–	Violation of CAAQS
PM10 (total)	–	-
PM10 (exhaust)	82 lbs/day	82 lbs/day or 15 tons/year
PM2.5 (exhaust)	54 lbs/day	54 lbs/day or 10 tons/year
PM10 /PM2.5 (fugitive dust)	Best management practices (BMPs)	-
TACs (Project-level)	Increased cancer risk of 10 in 1 million; increased non-cancer risk of greater than 1.0 (hazard index [HI]); PM2.5 increase of greater than 0.3 micrograms per cubic meter	Same as construction
TACs (cumulative)	Increased cancer risk of 100 in 1 million; increased non-cancer risk of greater than 10.0; PM2.5 increase of greater than 0.8 microgram per cubic meter at receptors within 1,000 feet	Same as construction
Odors	–	Five complaints per year averaged over 3 years

Source: Bay Area Air Quality Management District 2011a.

In March 2012, an Alameda County Superior Court ruled that BAAQMD needed to comply with CEQA prior to adopting their 2010 Air Quality CEQA Guidelines, which included the above significance thresholds for criteria air pollutants and greenhouse gases. The Superior Court did not determine whether the thresholds were valid on the merits, but found that the adoption of the thresholds was a project under CEQA. The court ordered a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until BAAQMD complied with CEQA. In May 2012, the BAAQMD filed an appeal with the Court of Appeal, First Appellate District, and the plaintiff filed a cross-appeal shortly thereafter.

While the BAAQMD is no longer recommending its significance thresholds for use by local agencies at this time, the BAAQMD-proposed thresholds are supported on substantial evidence and are appropriate for use to determine significance in the environmental review of this project. Specifically, the Authority has determined that the BAAQMD thresholds are well-founded grounded on air quality regulations, scientific evidence, and scientific reasoning concerning air quality and greenhouse gas emissions. Using these thresholds for the project also allows a rigorous standardized approach of determining whether the project would cause a significant air quality impact. BAAQMD's Justification Report, which explains the agency's reasoning for adopting the thresholds, is provided as an Appendix C in this CEQA document. Below is a summary of the basis upon which the BAAQMD's thresholds were developed.

The significance thresholds, as shown in Table 3.2-2, for criteria pollutants (ROG, NO_X, PM10, and PM2.5) are based on the stationary source emission limits of the federal Clean Air Acts (CAA) and the BAAQMD Regulation 2, Rule 2. The federal New Source Review (NSR) program, created by the federal CAA, set the emissions limits to ensure that stationary sources of air pollution are constructed in a manner that is consistent with attainment of NAAQS. Similarly, to ensure that new stationary sources do not cause or contribute to a violation of an NAAQS, BAAQMD Regulation 2 Rule 2 requires any new source that emits criteria air pollutants above specified emissions limits to offset those emissions. Although the emission limits are adopted in the regulation to control stationary source emissions, when addressing public health impacts of regional criteria pollutants, the amount of emissions is the key determining factor, regardless of source. Thus, the emission limits are appropriate for the evaluation of land use development and construction activities as well as stationary sources. Those projects that result in emissions below the thresholds would not be considered to be projects that would contribute to an existing or projected air quality violation or result in a considerable net increase in criteria pollutant emissions. The federal NSR emission limits and BAAQMD's offset limits are identified in regulation on an annual basis (in tons per year). For construction activities, the limits are converted to average daily emissions (in pounds per day), as shown in Table 3.2-2, because of the short-term intermittent nature of construction activities and if emissions would not exceed the average daily emission limits, the project would also not exceed the annual levels.

Similar to the criteria pollutant thresholds, the health risk impact thresholds are developed based on the cancer and non-cancer risk limits for new and modified sources adopted in the BAAQMD Regulation 2, Rule 5 and the EPA Significant Impact Level (SIL) for PM2.5 emissions. The EPA SIL is a measure of whether a source may cause or contribute to a violation of NAAQS. Health risks due to toxic emissions from construction, though temporary, can still result in substantial public health impacts due to increases cancer and non-cancer risks. Applying quantitative thresholds allows a rigorous standardized method of determining when a construction project would cause a significant increase in increases cancer and non-cancer risks. The cumulative health risk thresholds are based on EPA guidance for conducting air toxics analyses and making risk management decisions at the facility and community-scale level and are also consistent with the ambient cancer risk in the most pristine portions of the Bay Area based on the BAAQMD's recent regional modeling analysis and the non-cancer Air Toxics Hot Spots (ATHS) mandatory risk reduction levels.

The odor threshold is consistent with the BAAQMD Regulation 7 for Odorous Substances and reflects the most stringent standards derived from the Air District rule.

Construction Activities By Project Element

Table 2-2 in Chapter 2 summarizes the construction phases, activities, and schedule for each of the Project elements. Additional information on each Project element is available in Chapter 2 (*Project Description*).

Construction Emissions

Construction of the Project would temporarily create emissions of fugitive dust and exhaust gases. Based on the construction activities described above, construction-related emissions were estimated using the CalEEMod emissions model. Results are presented in Table 3.2-3, and the Air Quality analysis calculations are provided in Appendix D. Fugitive dust emissions are typically the dominant air pollutants generated from construction activities related to site grading, excavation, and earth moving; as identified in the methodology discussion above, impact analysis assumed the incorporation of construction dust control measures consistent with BAAQMD guidance.

Table 3.2-3. Estimated Construction Emissions

	Maximum Daily Emissions in lbs/day									
Project Component	**ROG[a]**	**NOX[b]**	**CO**	**SO_2**	**PM10 Dust**	**PM10 Exhaust**	**PM10**	**PM2.5 Dust**	**PM2.5 Exhaust**	**PM2.5**
Utility Relocation	23	274	108	14	4	17	21	1	17	18
Site and road prep, grading for access to East Palo Alto side of Creek	1.5	11.4	13.0	0.0	0.7	0.6	1.3	0.1	0.6	0.7
Wood pole relocation, demo, and secondary wire removal	0.6	9.8	9.3	0.0	0.7	0.3	1.0	0.2	0.2	0.4
Construction of Shoofly Towers (T1-4), new tower construction and demolition of shoo-fly	3.4	33.2	18.4	0.0	1.0	1.3	2.3	0.2	1.3	1.5
Gas line work, directional drilling	17.0	213.6	53.0	13.8	1.0	14.9	15.9	0.2	14.9	15.1
Export of material from gas line cut/fill	0.4	4.0	7.1	0.0	0.3	0.1	0.4	0.1	0.1	0.2
Demobilization	0.3	1.9	7.5	0.0	0.3	0.0	0.3	0.1	0.0	0.1
Phase One	63	732	323	1	61	31	92	12	30	41
Site prep	3.0	18.4	19.6	0.0	0.9	1.5	2.4	0.2	1.5	1.7
Construction of new Left Bank Levee	15.7	283.9	79.2	0.4	23.2	9.7	32.9	4.8	9.1	13.9
Removal of old Left Bank Levee	5.8	40.3	34.5	0.1	4.1	2.7	6.8	0.5	2.7	3.2
Removal of old right bank levee	5.8	40.3	34.5	0.1	4.1	2.7	6.8	0.5	2.7	3.2
Haul trips for removal of left and right bank levees	0.8	20.2	3.7	0.0	1.6	0.6	2.2	0.4	0.5	0.9
Construction of right bank levee	14.2	249.1	72.8	0.3	20.7	8.7	29.4	4.2	8.2	12.4
Construction of downstream access road on right and left banks	9.3	21.1	19.7	0.0	1.1	1.3	2.3	0.2	1.3	1.5
Friendship Bridge	1.8	11.0	14.9	0.0	0.9	0.8	1.7	0.2	0.8	1.0
Channel widening and marshplain terracing	6.0	47.1	35.7	0.1	4.5	2.9	7.4	0.6	2.9	3.5
Revegetation	0.3	0.8	7.8	0.0	0.2	0.0	0.2	0.1	0.0	0.1
Phase Two	15	102	82	0	6	6	12	1	6	7
Site Prep	3.0	18.4	19.6	0.0	0.9	1.5	2.4	0.2	1.5	1.7
Installation of right and left bank floodwalls	5.2	37.1	30.7	0.0	2.7	2.5	5.1	0.4	2.5	2.9
Construction of upstream access road on right and left banks	5.3	21.1	19.7	0.0	1.1	1.3	2.3	0.2	1.3	1.5
Site restoration	0.3	1.9	8.0	0.0	0.3	0.0	0.3	0.1	0.0	0.1
Flatbed trailer truck trips for sheet pile delivery	1.0	23.6	4.3	0.0	1.2	0.7	1.9	0.3	0.6	0.9

Note: Fugitive dust emissions assume incorporation of dust control BMPs as required by BAAQMD (see *Construction Dust Control* in Section2.6, *Environmental Commitments*, in Chapter 2, *Project Description*).

[a] Reactive organic gases.

[b] Oxides of nitrogen

Existing, modified, and new Project ~~components~~elements would require maintenance that reflect current maintenance needs as included under the District's SMP. The extent and nature of post-

Project activities under the SMP would be similar to what is already taking place, with no new or additional maintenance activities occurring beyond the scope of the SMP. Overall, pollutant emissions from long-term maintenance activities are not expected to represent a substantial increase over current levels and were not evaluated quantitatively in this document, and all maintenance activities are included and covered by the SMP.

Impacts and Mitigation Measures

Impact AQ1—Conflict with or Obstruction of Applicable Air Quality Plan

Summary by Project Element: Impact AQ1—Conflict with or Obstruction of Applicable Air Quality Plan	
Project Element	**Construction Impact Level**
All Project elements	Less than Significant

A project is deemed inconsistent with air quality plans if it would result in population and/or employment growth that exceeds growth estimates included in the applicable air quality plan, which, in turn, would generate emissions not accounted for in the applicable air quality plan emissions budget. Therefore, proposed Projects must be evaluated to determine whether they would generate population and employment growth and, if so, whether that growth would exceed the growth rates included in the relevant air plans. As discussed in the introduction to Chapter 3 (*Topics Not Covered in Detail in this EIR*), the Project would not result in population or employment growth. Therefore, there would be no impact related to conflict with or obstruction of air quality plans, and no mitigation is required.

Impact AQ2—Violation of Any Air Quality Standard or Substantial Contribution to Existing or Projected Air Quality Violation

Summary by Project Element: Impact AQ2—Violation of Any Air Quality Standard or Substantial Contribution to Existing or Projected Air Quality Violation	
Project Element	**Construction Impact Level**
All Project elements	Significant with Mitigation: Significant and Unavoidable

Project construction would result in tailpipe emissions from construction equipment, as well as fugitive dust generated by ground-disturbing activities. Estimated construction emission levels are summarized in Table 3.2-3 for maximum daily emissions. As shown in Table 3.2-3, the ~~project~~Project construction would generate the maximum daily emissions of NO_X exceeding the BAAQMD threshold during the Utility Relocation phase, Phase One and Phase Two (in Phase Two, the overlap of construction ~~component~~element site prep., installation of right and left bank floodwalls, and flatbed trailer truck trips causes an exceedance of NO_X (79.1 lbs/day)).

Because the construction emissions are predicted to exceed the BAAQMD daily emission threshold for NO_X, the impact is considered significant and would require the implementation of Mitigation Measures AQ2.1 through AQ2.3 below and Mitigation Measures NV1.1 and NV1.3 described below and in Chapter 3.10 (*Noise*) of this EIR. With respect to fugitive PM10 and fugitive PM2.5, the BAAQMD CEQA Air Quality Guidelines (2011a) consider the dust impacts to be less than significant if BMPs are employed to reduce these emissions. Therefore, the construction dust impact would be less than significant with the implementation of the Mitigation Measure AQ2.2 below,

Table 3.2-4 summarizes the maximum daily emissions with implementation of Mitigation Measures AQ2.1 through AQ2.3. However, with the implementation of these mitigation measures, NO_X emissions would still exceed BAAQMD's threshold in all construction phases. The construction contractor should implement all feasible, cost-effective mitigation measures to reduce exhaust emissions. Although the maximum emissions would be generated only when construction activities from all ~~project~~Project ~~components~~elements overlap and would likely to be short-term, the impact would still be significant and unavoidable.

Table 3.2-4. Estimated Construction Emissions with Mitigation

	Maximum Daily Emissions in lbs/day									
Project Component	ROG	NO_X	CO	SO_2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Utility Relocation	9.2	115.3	101.1	2.5	3.0	3.8	6.8	0.8	3.7	4.5
Site and road prep, grading for access to East Palo Alto side of Creek	1.50	8.66	12.83	0.02	0.45	0.32	0.77	0.09	0.31	0.41
Wood pole relocation, demo, and secondary wire removal	0.63	9.76	9.28	0.02	0.70	0.27	0.97	0.20	0.25	0.44
Construction of Shoofly Towers (T1-4), new tower construction and demolition of shoo-fly	3.33	26.82	18.29	0.05	0.67	0.75	1.42	0.15	0.74	0.89
Gas line work, directional drilling	3.13	65.71	46.37	2.37	0.67	2.36	3.03	0.15	2.35	2.50
Export of material from gas line cut/fill	0.31	2.45	6.85	0.01	0.26	0.05	0.31	0.08	0.05	0.13
Demobilisation	0.30	1.86	7.45	0.01	0.25	0.04	0.30	0.08	0.04	0.12
Phase One	51.0	353.8	270.0	1.0	50.7	11.7	62.4	10.5	11.5	22.0
Site Prep	3.01	15.10	19.60	0.03	0.62	0.86	1.48	0.14	0.86	0.99
Construction of new left bank levee	9.84	110.45	53.02	0.38	21.25	2.66	23.91	4.57	2.56	7.13
Removal of old left bank levee	5.76	32.89	34.51	0.06	2.17	1.52	3.69	0.31	1.52	1.83
Removal of old right bank levee	5.76	32.89	34.51	0.06	2.17	1.52	3.69	0.31	1.52	1.83
Haul trips for removal of left and right bank levees	0.32	5.97	1.46	0.03	1.62	0.08	1.69	0.36	0.07	0.43
Construction of right bank levee	9.09	94.63	49.62	0.33	18.76	2.33	21.09	4.00	2.26	6.26
Construction of downstream access road on right and left banks	9.28	16.94	19.60	0.03	0.78	0.73	1.51	0.18	0.72	0.90
Friendship Bridge	1.79	9.23	14.94	0.02	0.62	0.49	1.10	0.14	0.48	0.62
Channel widening and marshplain terracing	5.86	34.88	34.99	0.06	2.51	1.55	4.05	0.40	1.54	1.94
Revegetation	0.28	0.80	7.79	0.01	0.21	0.01	0.22	0.07	0.01	0.08
Phase Two	14.7	87.3	82.1	0.1	4.4	3.7	8.1	1.0	3.6	4.6
Site prep	3.01	15.10	19.60	0.03	0.62	0.86	1.48	0.14	0.86	0.99
Installation of right and left bank floodwalls	5.22	29.78	30.62	0.05	1.53	1.39	2.91	0.26	1.38	1.64

	Maximum Daily Emissions in lbs/day									
Construction of upstream access road on right and left banks	5.22	16.94	19.60	0.03	0.78	0.73	1.51	0.18	0.72	0.90
Site restoration	0.32	1.92	7.99	0.01	0.26	0.04	0.31	0.08	0.04	0.12
Flatbed trailer truck trips for sheet pile delivery	0.96	23.57	4.33	0.03	1.18	0.68	1.86	0.31	0.62	0.93
Conservative Scenario 1—Overlap of gas line work, directional drilling & construction of new left bank levee (Utility Relocation & Phase One)	12.96	176.16	99.39	2.74	21.93	5.01	26.94	4.72	4.91	9.63
Conservative Scenario 2—Overlap of site prep, installation of right and left bank floodwalls, and flatbed trailer truck trips (Phase Two)	9.18	68.45	54.55	0.11	3.33	2.92	6.25	0.71	2.86	3.57
BAAQMD Thresholds	54	54			BMPs	82		BMPs	54	
Exceed Thresholds?	No	Yes (all phases)	-	-	-	No	-	-	No	-

Mitigation Measure AQ2.1—Implement Tailpipe Emission Reduction for Project Construction

According to the BAAQMD guidelines (2011a), the District will require all construction contractors to implement the exhaust Basic Construction Mitigation Measures and Additional Construction Mitigation Measures recommended by the BAAQMD to control exhaust emissions. Emission reduction measures will include at least the following measures and may include other measures identified as appropriate by the District and/or contractor.

- Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 2 minutes. Clear signage will be provided for construction workers at all access points.
- All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified visible emissions evaluator.
- The ~~project~~Project will develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NO_X reduction and 45 percent PM reduction compared to the most recent CARB fleet average. 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 become available.
- Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NO_X and PM.
- Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines.

Mitigation Measure AQ2.2—Fleet Modernization for Onroad Material Delivery and Haul Trucks during Construction.

During construction, the Project Applicant will ensure that all onroad heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used at the Project site will comply with EPA 2007 on-road emission standards for PM10 and NO_X (0.01 grams per brake horsepower-hour [g/bhp-hr] and 0.20 g/bhp-hr, respectively). The Project Applicant will submit evidence of the use of modern truck fleet to the BAAQMD.

For purposes of analysis, the mitigated reductions provided by MM-AQ-2.3 herein assume a 2007 and newer model truck fleet.

Mitigation Measure AQ2.3—Modernization for Directional Drilling Equipment during Construction.

During construction, the SFCJPA will require that the contractor's equipment used for directional drilling meet EPA Tier 2 or higher emissions standards. In addition, all directional drilling equipment will be outfitted with the best available control technology (BACT) devices certified by CARB. Any emissions control device used by the contractor will achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

The requirement of MM-AQ-2.3 and MM-AQ-2.4 will be met, unless the contractor is able to provide proof that any of these circumstances exists:

- A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.
- A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the proposed Project, but the application is not yet approved, or the application has been approved, but funds are not yet available.
- A contractor has ordered a control device for a piece of equipment planned for use on the proposed Project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the proposed Project has the controlled equipment available for lease.

Mitigation Measure NV1.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents

The SFCJPA ~~District~~ will provide advance written notification of the proposed construction activities to all residences and other noise- and air quality-sensitive uses within 750 feet of the construction site. Notification will include a brief overview of the proposed ~~project~~Project and its purpose, as well as the proposed construction activities and schedule. It will also include the name and contact information of the SFCJPA ~~District~~'s project manager or another SFCJPA ~~District~~ representative or designee responsible for ensuring that reasonable measures are implemented to address the problem (the construction noise and air quality disturbance coordinator; see Mitigation Measure NV1.3).

Mitigation Measure NV1.3—Designate Construction Noise and Air Quality Disturbance Coordinator to Address Resident Concerns

The SFCJPA ~~District~~ will designate a representative to act as construction noise and air quality disturbance coordinator, responsible for resolving construction noise and air quality concerns. The disturbance coordinator's name and contact information will be included in the preconstruction notices sent to area residents (see Mitigation Measure AQ2.2). She or he will be available during regular business hours to monitor and respond to concerns. In the event an air quality or noise complaint is received, she or he will be responsible for determining the cause of the complaint and ensuring that reasonable measures are implemented to address the problem.

Impact AQ3—Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Summary by Project Element: Impact AQ3—Exposure of Sensitive Receptors to Substantial Pollutant Concentrations	
Project Element	**Construction Impact Level**
All Project elements	Significant with Mitigation: Significant and Unavoidable

Construction Fugitive Dust

During grading and excavations activities, dust would be generated. The amount of dust generated would be highly variable and is dependent on the size of the disturbed area at any given time, amount of activity, soil conditions, and meteorological conditions. The BAAQMD CEQA Air Quality Guidelines considers the dust impacts to be less than significant if BMPs are employed to reduce these emissions. Implementation of the construction dust control measures identified in Section 2.6 of Chapter 2 (*Project Description*) would reduce construction-related fugitive dust emissions to less than significant. Dust control measures for the Project include:

1. BAAQMD Basic Control Measures for construction emissions of PM10 will be implemented at all construction sites. Current measures stipulated by the BAAQMD CEQA Guidelines include the following (Bay Area Air Quality Management District 2008):
    - All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day when conditions are dry.
    - All haul trucks transporting soil, sand, or other loose material off the site will be covered.
    - All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
    - All vehicle speeds on unpaved roads will be limited to 15 mph.
    - All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
    - Idling times will 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, Section 2485 of CCR). Clear signage will be provided for construction workers at all access points.

- All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation.

2. A publicly visible sign will be posted, with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The Air District's phone number will also be visible to ensure compliance with applicable regulations. (Santa Clara Valley Water District Air Quality BMP 1)

Toxic Air Contaminants from Construction Activity

Diesel Particulate Matter (DPM), which is classified as a carcinogenic TAC by CARB, and PM2.5 are the BAAQMD's primary pollutants of concern with regard to health risks to sensitive receptors. Cancer health risks associated with exposure to diesel exhaust are typically associated with chronic exposure, in which a 70-year exposure period is assumed. In addition, DPM and PM2.5 concentrations, and thus cancer health risks, dissipate as a function of distance from the emissions source. The BAAQMD has determined that construction activities occurring at distances of greater than 1,000 feet from a sensitive receptor likely do not pose a significant health risk.

There are multiple sensitive receptors (homes, schools, and residences) located within 1,000 feet of each ~~project~~Project ~~component~~element. Therefore, exposure to construction DPM emissions was assessed by predicting the health risks in terms of excess cancer risk, non-cancer hazard impacts, and elevated PM2.5 concentrations. The screening-level health risk assessment (HRA) is performed with the following steps:

1. Estimate the PM10 and PM2.5 exhaust emissions from on-site construction equipment operation, based on the results disclosed in Impact AQ2. The PM10 exhaust emissions were used to evaluate the increased DPM cancer risk and the DPM non-cancer hazard impact; and the PM2.5 exhaust emissions were used to evaluate the PM2.5 concentration.
2. Use the SCREEN3 dispersion model to predict the PM10 and PM2.5 hourly concentrations at the nearest sensitive land uses based on the maximum daily PM10 and PM2.5 exhaust emissions for ~~project~~Project element.
3. Calculate the ~~project~~Project-level cancer risk, non-cancer hazard index (HI), and annual PM2.5 concentrations for each ~~project~~Project element based on the SCREEN3 hourly concentrations and the construction durations.
4. Identify background stationary and highway sources within 1,000 feet of each ~~project~~Project element through Google Earth map files provided by the BAAQMD. The Google Earth map files include associated estimated risk and hazard impacts at nearby these sources. (Bay Area Air Quality Management District 2011b) Where no stationary data is available in the files, the BAAQMD was contacted to obtain the data. (Kirk pers. Comm. 2012) The cumulative HRA was analyzed by adding the background health risks from these sources to the ~~project~~Project-level health risk and hazard impacts estimated for each ~~project~~Project element.

The results of the HRA are summarized in Table 3.2-5 below for the ~~project~~Project level analysis and in the Table 3.2-6 for the cumulative analysis. As shown in the tables, the ~~project~~Project would result in increases of the non-cancer HI, cancer risk, and annual PM 2.5 concentrations at the ~~project~~Project level, and in the cancer risk and annual PM 2.5 concentrations at the cumulative levels and exceed their respective BAAQMD thresholds.

These impacts are considered significant and would require the implementation of Construction Dust Control Measures, Mitigation Measures AQ2.1 through AQ2.3 above, and Mitigation Measures NV1.1 and NV1.3.

Table 3.2-5. TAC Health Risks—Project Level

Project Element	DPM Non-Cancer Hazard Index (HI)	DPM Cancer Risk (per Million)	Average Annual PM2.5 Concentration ($\mu g/m^3$)
Utility Relocation			
Site and road prep, grading for access to East Palo Alto side of Creek	0.02	0.03	0.09
Construction of Shoofly Towers (T1-4)	0.23	1.44	1.15
Gas line work, directional drilling	0.53	1.45	2.63
Phase One			
Site Prep	0.17	0.69	0.83
Construction of new left bank levee	0.19	0.66	0.95
Removal of old left bank levee	0.07	0.15	0.36
Removal of old right bank levee	0.04	0.06	0.21
Construction of right bank levee	0.07	0.15	0.35
Construction of downstream access road on right and left banks	0.08	0.23	0.42
Friendship Bridge	0.13	0.53	0.63
Channel widening and marshplain terracing	0.57	3.93	2.84
Phase Two			
Site Prep	0.09	0.19	0.45
Installation of right and left bank floodwalls	1.26	17.37	6.28
Construction of upstream access road on right and left banks	0.11	0.30	0.54
BAAQMD Thresholds	1	10	0.3
Exceed Thresholds?	Yes	Yes	Yes

Notes:

Project ~~components~~elements that would not utilize onsite off-road equipment are excluded from this analysis.

$\mu g/m^3$ = micrograms per cubic meter

Table 3.2-6. TAC Health Risks—Cumulative Level

Project Element	Background DPM Non-Cancer Hazard Index (HI)	Background DPM Cancer Risk (per Million)	Background Average Annual PM2.5 Concentration (µg/m³)	Cumulative DPM Non-Cancer Hazard Index (HI)	Cumulative DPM Cancer Risk (per Million)	Cumulative Average Annual PM2.5 Concentration (µg/m³)
Utility Relocation						
Site and road prep, grading for access to East Palo Alto side of Creek	-	-	-	0.02	0.03	0.09
Construction of Shoofly Towers (T1-4)	-	-	-	0.23	1.44	1.15
Gas line work, directional drilling	-	-	-	0.53	1.45	2.63
Phase One						
Site Prep	-	-	-	0.17	0.69	0.83
Construction of new left bank levee	-	-	-	0.19	0.66	0.95
Removal of old left bank levee	-	-	-	0.07	0.15	0.36
Removal of old right bank levee	-	-	-	0.04	0.06	0.21
Construction of right bank levee	-	-	-	0.07	0.15	0.35
Construction of downstream access road on right and left banks	-	-	-	0.08	0.23	0.42
Friendship Bridge	-	-	-	0.13	0.53	0.63
Channel widening and marshplain terracing	0.1	139.7	0.89	0.68	143.60	3.73
Phase Two						
Site Prep	0.1	139.7	0.89	0.21	139.85	1.34
Installation of right and left bank floodwalls	0.1	139.7	0.89	1.37	157.04	7.17
Construction of upstream access road on right and left banks	0.1	139.7	0.89	0.22	139.96	1.42
BAAQMD Thresholds	-	-	-	10	100	0.8
Exceed Thresholds?	-	-	-	No	Yes	Yes

Notes:

Project ~~components~~elements that would not utilize onsite off-road equipment are excluded from this analysis.

Background levels are only displayed for those ~~project~~Project ~~components~~elements that are within 1000ft of a background stationary of highway source.

µg/m³ = micrograms per cubic meter

Table 3.2-8 summarizes the health risks with the implementation of Construction Dust Control Measures and Mitigation Measures AQ2.1 through AQ2.3. While the hazard index and concentrations are decreased substantially due to the mitigation measures, annual PM2.5 concentrations at the ~~project~~Project level would still exceed thresholds, as would cancer risk and PM2.5 concentrations at the cumulative level. Therefore, the construction-related health risk impacts would be considered significant and unavoidable with mitigation.

Table 3.2-8. TAC Health Risks with Mitigation

Project Element	DPM Non-Cancer Hazard Index (HI)	DPM Cancer Risk (per Million)	Annual PM2.5 Concentration (μg/m³)	Cumulative DPM Non-Cancer Hazard Index (HI)	Cumulative DPM Cancer Risk (per Million)	Cumulative Average Annual PM2.5 Concentration (μg/m³)
Utility Relocation						
Site and Road prep, grading for access to East Palo Alto side of Creek	0.01	0.02	0.06	0.01	0.02	0.06
Construction of Shoofly Towers (T1-4)	0.13	0.80	0.65	0.13	0.80	0.65
Gas line work, directional drilling	0.08	0.22	0.40	0.08	0.22	0.40
Phase One						
Site Prep	0.09	0.38	0.46	0.09	0.38	0.46
Construction of new left bank levee	0.10	0.36	0.52	0.10	0.36	0.52
Removal of old left bank levee	0.04	0.08	0.20	0.04	0.08	0.20
Removal of old right bank levee	0.02	0.03	0.11	0.02	0.03	0.11
Construction of right bank levee	0.04	0.08	0.20	0.04	0.08	0.20
Construction of downstream access road on right and left banks	0.05	0.13	0.23	0.05	0.13	0.23
Friendship Bridge	0.07	0.29	0.35	0.07	0.29	0.35
Channel widening and marshplain terracing	0.31	2.17	1.57	0.43	141.83	2.45
Phase Two						
Site Prep	0.05	0.10	0.25	0.17	139.77	1.13
Installation of right and left bank floodwalls	0.69	9.57	3.46	0.81	149.23	4.35
Construction of upstream access road on right and left banks	0.06	0.16	0.29	0.17	139.83	1.18
Conservative Scenario 1—Overlap of gas line work, directional drilling & construction of new left bank levee (Utility Relocation & Phase One)	0.2	0.6	0.9	0.2	0.6	0.9
Conservative Scenario 2—Overlap of site prep, installation of right and left bank floodwalls, and Flatbed trailer truck trips (Phase Two)	0.7	9.7	3.7	1.6	149.3	4.6
BAAQMD Thresholds	1	10	0.3	10	100	0.8
Exceed Thresholds?	No	No	Yes	No	Yes	Yes

Notes:

Project ~~components~~elements that would not utilize onsite off-road equipment are excluded from this analysis.

Background levels are only displayed for those ~~project~~Project ~~components~~elements that are within 1,000ft of a background stationary of highway source.

μg/m³ = micrograms per cubic meter

Impact AQ4—Creation of Objectionable Odors

Summary by Project Element: Impact AQ4—Creation of Objectionable Odors	
Project Element	**Construction Impact Level**
All Project elements	Less than Significant with Mitigation

Like many construction efforts, the proposed Project could generate odors associated with diesel exhaust, paving activities, and other construction-related sources. Odors would be temporary and localized but could still result in disturbance, potentially rising to the level of a significant impact, especially where construction takes place in close proximity to residences. Implementation of Construction Dust Control Measures, Mitigation Measures AQ2.1 through AQ2.3, and NV1.3 would reduce odor-related impacts to a less-than-significant level.

3.3 Biological Resources

This section provides environmental analysis of the Project's impacts on biological resources. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from Project construction and implementation, and describes mitigation to minimize the level of impact.

Environmental Setting

Regulatory Context

Biological resources are protected by numerous federal and state regulations, including the federal Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), and Bald and Golden Eagle Protection Act, and the California Endangered Species Act (CESA), Native Plant Protection Act, Oak Woodland Conservation Act, as well as the California Fish and Game Code. Regulations for biological resources are also established at the local level by the Counties of Santa Clara and San Mateo and the Cities of Palo Alto and East Palo Alto. For additional information, see Appendix B of this EIR.

Study Area

The study area is located in southeastern San Mateo County and northwestern Santa Clara County, on the eastern edge of East Palo Alto. The 210.0-acre biological study area is situated in an alluvial plain, alluvial fan, and tidal marsh area. The Golf Course and Palo Alto Airport are adjacent to the eastern and southern boundaries of the study area. San Francisco Bay is to the east and residential areas and tidal marshes are to the north. The western edge is formed by East Bayshore Road.

Existing Conditions

Existing conditions for biological resources were identified through a combination of literature research and site reconnaissance. Field visits to evaluate habitats for wildlife and plant species and to delineate wetlands were conducted on July 6, 7, and 8, 2010 and February 22, 2012.

Searches of the California Natural Diversity Database (CNDDB) (California Natural Diversity Database 2012), the USFWS special-status species list (U.S. Fish and Wildlife Service 2011), and the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2012) were conducted to identify all special-status plant and wildlife species that could occur in the Project region. The likelihood of each species' occurrence in the Project area was then assessed in more detail based on the species' known distribution (i.e., the locations and dates of known occurrences), and the types and quality of habitat present in the Project area.

Regional Setting

The Project area is located in the southwestern region of the San Francisco Bay area, which is characterized by warm, dry summers and mild, wet winters, with most of the rainfall occurring between November and April. Vegetation is adapted to this Mediterranean-type climate regime, and the landscape is a mosaic of drought-adapted tree, shrub, and grassland communities.

San Francisquito Creek is a perennial stream that originates in the largely undeveloped eastern foothills of the Santa Cruz Mountains between Kings Mountain and Russian Ridge, running 13 linear miles from Searsville Dam downstream to the South San Francisco Bay (Saah 1978). San Francisquito Creek flows through the southern portion of the town of Woodside, through the eastern portion of the City of Palo Alto, along the Menlo Park–Palo Alto boundary, and through the eastern portion of East Palo Alto prior to discharging into southern San Francisco Bay. Major tributaries of San Francisquito Creek downstream of Searsville Dam include Los Trancos Creek and Bear Creek. The Los Trancos Creek watershed has an area of approximately 7.6 square miles and joins the mainstem of San Francisquito Creek about 0.5 mile east of I-280 (Saah 1978). The Felt Lake Diversion, part of Stanford University's operations, is located on Los Trancos Creek at Arastradero Road. The Bear Creek watershed has an area of approximately 11.7 square miles and joins the mainstem of San Francisquito Creek about 0.3 mile below Searsville Dam.

The Project area is surrounded by residential development to the west; the Golf Course, Palo Alto Airport, and a portion of the Don Edwards San Francisco Bay National Wildlife Refuge to the south; natural land to the north; and the southern portion of San Francisco Bay to the east. The Project area itself is located on the Santa Clara Valley floor and San Francisco Bay fringe; lands to the west of the Project area are largely developed except for urban parks. Existing land uses adjacent to the Project area are low- to medium-density residential development, resource management (natural land), and public facilities (recreation, airport, and National Wildlife Refuge), with a small amount of general commercial development and interstate commerce (U.S. 101), in East Palo Alto. San Francisquito Creek enters the Project area immediately east of U.S. 101. Consistent with its setting, much of the Creek's length within the Project area has been straightened, channelized, or otherwise improved for flood protection, although it remains unlined within constructed levees.

The Faber Tract appears to have been diked as early as the 1930s and was used for pasture until the City of Palo Alto purchased the land in 1944. The dike eroded likely between 1961 and 1963, allowing some tidal exchange into the area. Dredge spoils from the Palo Alto Harbor subsequently were deposited on the tract between 1968 and 1969. San Mateo County initially established a hydrologic connection between the Faber Tract and the adjacent tidal marsh to the north by three culverts installed through the levee that separates the two areas. In 1971, San Mateo County breached the outboard levee in the northeastern corner of the Faber Tract, opening the tract to tidal action to San Francisco Bay. Artificial levees exist along both sides of San Francisquito Creek and along the western edge and interior of the Faber Tract. A footbridge (Friendship Bridge) crosses the Creek channel just south of the Faber Tract.

Biological Communities in the Project Area

Eleven habitat types occur in the Project area:[7] annual grassland, tidal salt marsh, diked marsh, freshwater marsh, freshwater pond, tidal channel and bay waters, tidal pan, valley foothill riparian,

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[7] Upland habitat and land cover types were classified according to the nomenclature developed for the California Wildlife Habitat Relationship System (Meyer and Laudenslayer 1988). Descriptions of wetland habitat types are based on site visits in 2010 and 2010 for the wetland delineation conducted to support the proposed Project (ICF International 2012, in preparation).

coastal brush scrub, ruderal, and developed areas. The following sections provide brief descriptions of each of these biological communities.

Annual Grassland

Annual grasslands in the Project area are found in scattered patches, primarily adjacent to San Francisquito Creek in the western and southwestern portions of the Project area. Annual grasslands commonly intergrade with ruderal and coyote brush scrub habitats in these areas. Annual grasslands in the Project area are dominated by nonnative annual grasses and forbs.

Tidal Salt Marsh

Tidal salt marsh vegetation is generally found immediately adjacent to the Bay, throughout the Faber Tract, Laumeister Tract, and along both sides of San Francisquito Creek. Tidal salt marsh habitat is primarily supported by tidal exchange. Dominant plant species in the tidal salt marsh community include Pacific cordgrass (*Spartina foliosa*), pickleweed (*Salicornia pacifica* [*S. virginica*]), perennial peppergrass (*Lepidium latifolium*), gumplant (*Grindelia stricta*), and alkali heath (*Frankenia salina*). Included within the mapped areas of tidal salt marsh are narrow bands of brackish tidal marsh along a few-hundred-foot section of San Francisquito Creek downstream of East Bayshore Road. In the brackish marsh, bulrush (*Schoenoplectus* sp.) is the dominant species rather than cordgrass and pickleweed. Ruderal vegetation intergrades with salt marsh species along the levee banks.

Diked Marsh

The diked marsh community is found on the landward side of the levees along San Francisquito Creek and within the Golf Course. These areas were likely tidal salt marsh habitat before construction of levees. Diked marsh habitat appears to be found in areas that did not receive significant amounts of fill material as part of levee and Golf Course construction. Common vegetation in the diked marsh community includes saltgrass (*Distichlis spicata*), pickleweed, alkali heath, Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*). These marshes generally appear to be supported primarily by incident precipitation. However, the diked marshes that occur within or adjoining the Golf Course could receive inputs from the turf sprinkler systems, both indirectly and as runoff.

Freshwater Marsh

The freshwater marsh community was mapped at only one location, along the shore of a freshwater pond within the Golf Course. The freshwater marsh is dominated by cattail (*Typha* sp.) and hardstem bulrush (*Schoenoplectus acutus*). The marsh appears to be supported by water piped into the associated freshwater pond (discussed below) and, to a lesser degree, groundwater.

Freshwater Pond

The freshwater pond was mapped at only one location, on the Golf Course. The pond appears to be supported by water piped into it for the Golf Course and, to a lesser degree, groundwater.

Tidal Channel and Bay Waters

Tidal channels exist as San Francisquito Creek and sloughs that extend into the Faber Tract and Laumeister Tract (see Tidal Salt Marsh, above). Bay waters exist as the deep water area of southern San Francisco Bay. Tidal channels and bay waters are supported by tidal action.

Tidal Pan

Three tidal pans were mapped within the Faber Tract. The pans appear to exist at approximately mean higher high water and appear to be primarily supported by extreme high tides.

Valley Foothill Riparian

A small patch of riparian habitat exists along San Francisquito Creek in the southwestern portion of the Project area. Riparian communities typically provide high-value habitat, offering escape cover, forage, and nesting opportunities for many wildlife species and creating shade that controls instream water temperatures.

Coyote Brush Scrub

Coyote brush scrub was observed in scattered areas adjacent to the levee along San Francisquito Creek. Coyote brush (*Baccharis pilularis*) is the dominant shrub species in this community with an understory of predominantly nonnative grasses and forbs. Scattered small trees and shrubs including pine (*Pinus* sp.) and California sagebrush (*Artemisia californica*) also occur in coyote brush scrub in the Project area.

Ruderal

Ruderal refers to plant species that colonize disturbed areas such as roadsides and is also used to describe disturbed areas where nonnative and/or invasive species are dominant. Because ruderal areas are typically disturbed on a regular basis by human activity, they generally provide low-quality wildlife habitat and primarily support species adapted to human presence. Within the Project area, ruderal areas are commonly found adjacent to buildings, residential buildings, parking lots, and streets. Additionally, ruderal vegetation is also found along the levees along San Francisquito Creek.

Developed Areas

Developed land in the Project area includes commercial and residential development, artificial levees along both sides of San Francisquito Creek, and recreational areas, including baseball fields and the Golf Course. Vegetation in developed areas is highly variable, ranging from nonexistent in paved areas and along the levees, mowed grasses associated with the Golf Course and recreational playing fields, to ornamental shrubs and shade trees associated with the Golf Course and residential development.

Special-Status Species

Special-status species include the following categories of plants and animals.

- Plants or animals that are listed, candidates, or proposed for listing as threatened or endangered under ESA or CESA.
- Plants listed as rare under the California Native Plant Protection Act.
- Plants that meet the CEQA definition of rare or endangered, including those considered by the CNPS to be “rare, threatened, or endangered in California” (CNPS Lists 1B and 2).
- Riparian vegetation protected under the California Fish and Game Code.
- Animals fully protected under the California Fish and Game Code.

- Animal species of special concern to DFG.

Searches of the CNDDB, CNPS database, and USFWS database were conducted to identify all special-status plant and wildlife species that could occur in the Project area. The potential for each species to occur at each of the proposed Project element sites was then assessed in more detail based on the species' known distribution (i.e., the locations and recency of recorded occurrences) and the types and quality of habitat present at each Project element site. The following sections describe special-status plant and wildlife species evaluated as having the potential to be present at one or more of the Project element sites (Table 3.3-1 and 3.3-2).

Special-Status Plants

A search of the CNDDB (California Natural Diversity Database 2012) and the CNPS database (California Native Plant Society 2012) identified 47 special-status plant species that may occur in the Project region. Based on the habitats present at each of the proposed Project element sites, and the locations and dates of the occurrences for the 47 documented species, eight of the 47species were identified as having the potential to be present at one or more of the proposed Project element sites:

- Alkali milkvetch (*Astragalus tener* var. *tener*).
- San Joaquin spearscale (*Atriplex joaquiniana*).
- Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*).
- Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre* [*Cordylanthus maritimus* ssp. *palustris*]).
- Hairless popcornflower (*Plagiobothrys glaber*).
- Slender-leaved pondweed (*Stuckenia filiformis*).
- California seablite (*Suaeda californica*).
- Saline clover (*Trifolium depauperatum* var. *hydrophilum*).

Table 3.3-1 provides an overview of these eight species.

Special-Status Fish and Wildlife

Fisheries

Steelhead (*Oncorhynchus mykiss*) is the only special-status fish species known to have been historically present in Peninsula watersheds, including San Francisquito Creek. While the present-day hydrology of the San Francisquito Creek watershed has been highly altered, the Creek still supports an anadromous run of steelhead up to Searsville Dam. Searsville Dam is the only complete migration barrier in the watershed (Leidy et al. 2005).

Terrestrial Wildlife

A search of the CNDDB and the USFWS databases identified 33 special-status wildlife species with potential to occur in the Project area (see Appendix D). Of these, 18 species (including steelhead trout discussed above) could use portions of the Project footprint:

- California red-legged frog (*Rana draytonii*).
- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*).

Table 3.3-1. Special-Status Plants with Potential to Occur in Project Footprint

Common and Scientific Name	Status[a] Federal/ State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Potential to Occur in Project Footprint[b,]
Alkali milk-vetch *Astragalus tener* var. *tener*	–/–/1B.2	Southern Sacramento Valley, northern San Joaquin Valley, east San Francisco Bay area	Grassy flats and vernal pool margins, on alkali soils, below 200 feet	Mar–Jun	Low (possibly extirpated); historic occurrences in Mayfield Slough in Palo Alto along margin of salt marsh; marginal habitat in salt marsh in the Faber and Laumeister Tracts
San Joaquin spearscale *Atriplex joaquiniana*	–/–/1B.2	Southern Sacramento Valley, northern San Joaquin Valley, east San Francisco Bay area	Alkaline soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, below 2,740 feet	Apr-Oct	Low; marginal habitat in salt marsh/brackish marsh in the Faber and Laumeister Tracts
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	–/–/1B.2	East San Francisco Bay Area, Salinas Valley, Los Osos Valley	Annual grassland, on lower slopes, flats, and swales, sometimes on alkaline or saline soils, below 700 feet	Jun–Nov	Low; small areas of marginal habitat adjacent to salt marsh/brackish marsh in the Faber and Laumeister Tracts
Point Reyes bird's-beak *Chloropyron maritimum* ssp. *palustre* [*Cordylanthus maritimus* ssp. *palustris*]	–/–/1B.2	Coastal northern California from Humboldt to Santa Clara Counties; Oregon	Coastal salt marsh, below 35 feet	Jun–Oct	Low (presumed extirpated in Santa Clara and San Mateo Counties); marginal habitat in salt marsh in the Faber and Laumeister Tracts
Hairless popcorn-flower *Plagiobothrys glaber*	–/–/1A	Coastal valleys from Marin to San Benito Counties	Alkaline meadows, coastal salt marsh and swamps at 50-590 feet	Marr–May	Low (presumed extinct); marginal habitat in salt marsh in the Faber and Laumeister Tracts
Slender-leaved pondweed *Stuckenia filiformis*	–/–/2.2	Scattered locations in California: Contra Costa, El Dorado, Lassen, Merced, Mono, Modoc, Mariposa, Placer, Santa Clara*, San Mateo, and Sierra Counties; Arizona, Nevada, Oregon, Washington	Freshwater marsh, shallow emergent wetlands and freshwater lakes, drainage channels; 300-2150 meters		Low; marginal habitat in freshwater marsh exists on the golf course; presumed extirpated in Santa Clara County.
California seablite *Suaeda californica*	E/–/1B.1	Morro Bay, San Luis Obispo County; historically found in the south San Francisco Bay	Margins of tidal salt marsh	Jul–Oct	Low; marginal habitat in salt marsh in the Faber and Laumeister Tracts
Saline clover *Trifolium hydrophilum* (*T. depauperatum* var. *hydrophilum*)	–/–/1B.2	Sacramento Valley, central western California	Salt marsh, mesic alkaline areas in grasslands, vernal pools	Apr–Jun	Low; marginal habitat in salt marsh in Faber and Laumeister Tracts

[a] Status Explanations

Federal

E	=	listed as endangered under the federal Endangered Species Act
T	=	listed as threatened under the federal Endangered Species Act
–	=	no listing

State

E	=	listed as endangered under the California Endangered Species Act
T	=	listed as threatened under the California Endangered Species Act
R	=	listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation
–	=	no listing.

California Native Plant Society

1A	=	List 1A species: plants presumed extinct in California and elsewhere
1B	=	List 1B species: rare, threatened, or endangered in California and elsewhere
2	=	List 2 species: rare, threatened, or endangered in California but more common elsewhere
3	=	List 3 species: plants about which more information is needed to determine their status
4	=	List 4 species: plants of limited distribution
0.1	=	seriously endangered in California
0.2	=	fairly endangered in California
0.3	=	not very endangered in California

[b] Likelihood of Occurrence

High:	Known occurrence of plant in project vicinity from CNDDB or other documents, or presence of suitable habitat conditions and suitable microhabitat conditions
Moderate:	Known occurrence of plant in project vicinity from CNDDB or other documents; suitable habitat is present but suitable microhabitat conditions are not
Low:	Plant not known to occur in project vicinity from CNDDB or other documents, or habitat conditions are of poor quality, or species presumed extirpated from project vicinity
None:	Plant not known to occur in project vicinity from CNDDB or other documents, or suitable habitat not present in any condition

Table 3.3-2. Special-Status Fish and Wildlife with Potential to Occur in Project Footprint

Common and Scientific Name	Status[a] Federal/State	California Distribution	Habitats	Potential to Occur within Project Footprint[b]
Invertebrates				
Euphydryas editha bayensis Bay checkerspot butterfly	T/--	Disjunct occurrences in San Mateo and Santa Clara Counties.	Associated with specific host plants that typically grow on serpentine soils.	None—no suitable habitat, as there are no serpentine soils in the project area.
Lepidurus packardi Vernal pool tadpole shrimp	E/--	Shasta County south to Merced County.	Vernal pools and ephemeral stock ponds.	None—no suitable habitat within the project area.
Tryonia imitator California brackishwater snail (=mimic tryonia)	--/--	Throughout coast from Salmon Creek, Sonoma County south to Tijuana River, San Diego County.	Coastal tidal lagoons, estuaries, and marshes.	Low—suitable habitat within the project area, but there are no CNDDB records within 2 miles of the site. Since this species is not formally listed, it is not considered further and no mitigation would be necessary.
Fish				
Acipenser medirostris Green sturgeon	T/SSC	From Mexico to Alaska in marine waters. Bays and estuaries along the west coast of North America, from British Columbia south to San Luis Obispo.	Ocean water, bays, and estuaries while not spawning. Spawn in the mainstem of freshwater rivers with connection to marine habitat and suitable deep pools.	None—no suitable habitat, as San Francisquito Creek is relatively shallow and lacks deep freshwater pools.
Hypomesus transpacificus Delta smelt	T/T	Primarily in the Sacramento–San Joaquin Estuary, but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay.	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002).	None – outside of known range and there is no suitable habitat in the project area.
Oncorhynchus mykiss Central California coast and Central Valley steelhead	T/-- (both)	Coastal drainages along the central California coast. Sacramento and San Joaquin River and their tributaries.	Cold, clear water with clean gravel of appropriate size for spawning. Most spawning occurs in headwater streams. Steelhead migrate to the ocean to feed and grow until sexually mature. Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18°C (Moyle 2002). Habitat types are riffles, runs, and pools.	High – Winter-run steelhead are known to use San Francisquito Creek as a migratory connection to spawning habitat and for juvenile rearing. None - The Central Valley steelhead range does not include the southern San Francisco Bay Area.

Common and Scientific Name	Status[a] Federal/State	California Distribution	Habitats	Potential to Occur within Project Footprint[b]
Oncorhynchus kisutch Central California coast coho salmon	E (central coast)/--	Pacific Ocean and rivers and creeks from Punta Gorda to the San Lorenzo River.	Occur in coastal streams with water temperatures < 15°C. Need cool, clear water with instream cover. Spawn in tributaries to large rivers or streams directly connected to the ocean (Moyle 2002).	None – no coho salmon runs are known to persist in San Francisquito Creek and coho salmon have been extirpated from tributaries to San Francisco Bay (NMFS 2005).
Oncorhynchus tshawytscha Central Valley and Sacramento River Chinook salmon	T (spring run)/- E (winter run)/- C (fall)/-	Sacramento and San Joaquin River and their tributaries.	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C. Habitat types are riffles, runs, and pools. (Moyle 2002)	None – The Central Valley spring-run and winter-run Chinook salmon range does not include the southern San Francisco Bay Area. None – Fall-run Chinook salmon range only includes streams in the southern San Francisco Bay Area that release imported water.
Amphibians and Reptiles				
Ambystoma californiense California tiger salamander	T/T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Sonoma County south to Santa Barbara County	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.	None - There is currently no potential for California tiger salamander to occur in the project area, as the project area does not contain suitable habitat for this species.
Rana draytonii California red-legged frog	T/SSC	Found along the coast and coastal mountain ranges of California from Mendocino County to San Diego County and in the Sierra Nevada from Butte County to Stanislaus County.	Permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation; may aestivate in rodent burrows or cracks during dry periods	Low – Freshwater ponds within the project area are low quality habitat. There are no CNDDB records within 2 miles of the project area. Nearest CNDDB record is ~3.6 miles away from the project area, on the other side of Palo Alto.
Emys marmorata Western pond turtle	–/SSC	The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries.	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests. Nests are typically constructed in upland habitat within 0.25 mile of aquatic habitat.	Moderate - Western pond turtle has the potential to occur in San Francisquito Creek, fresh to brackishwater wetlands, and the adjacent uplands within the project area. There are no CNDDB records within 2 miles of the site, but this species has been observed ~2.4 miles southwest of the project area.

Common and Scientific Name	Status[a] Federal/State	California Distribution	Habitats	Potential to Occur within Project Footprint[b]
Thamnophis sirtalis tetrataenia San Francisco garter snake	E/E, FP	Northern San Mateo County southward along the coast and the eastern slope of the Santa Cruz Mountains to the Santa Clara County line	Favors ponds, lakes, slow moving streams and marshy areas containing abundant vegetation, which it uses for cover; nearby upland habitat is important during fall and winter	Low – Freshwater ponds within the project area are low quality habitat for San Francisco garter snake. Project area is within historic salt marsh. Stanford HCP documents that San Francisco garter snake is found north and west of the Stanford Campus, and red-sided garter snake is found east and south of the campus. There is one CNDDB record for the Palo Alto quadrangle (specific location suppressed); however, this record is believed to be for habitat in the foothills located significantly west of the project area.
Birds				
Ardea herodias Great blue heron (rookery)	--/--	Nests in suitable habitat throughout California except at higher elevations in Sierra Nevada and Cascade mountain ranges.	Widely distributed in freshwater and calm-water intertidal habitats.	High - great blue heron has the potential to nest in vegetation adjacent to San Francisquito Creek within the project area and there have been numerous observations of this species in the vicinity.
Athene cunicularia hypugaea Western burrowing owl	--/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows	High – fragments of suitable habitat for western burrowing owl occur within the project area and the nearest CNDDB record is ~0.2 miles from the project area.
Brachyramphus marmoratus Marbled murrelet	T/E	From Alaska to the central coast of California.	Pacific ocean, but nesting occurs in old growth forest.	None – the project area does not contain suitable habitat for marbled murrelet.

Common and Scientific Name	Status[a] Federal/State	California Distribution	Habitats	Potential to Occur within Project Footprint[b]
Charadrius alexandrines nivosus Western snowy plover	T/SSC	Population defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to Diego County	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent	High (foraging)/low (nesting) – suitable foraging habitat for western snowy plover occurs within the project area, and there is a CNDDB record from a 2002 observation of the species within the project area. There is very limited nesting habitat within the project area that may be too far away from the South Bay for this species to utilize.
Circus cyaneus Northern harrier	--/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations	Grasslands, meadows, marshes, and seasonal and agricultural wetlands	High - northern harrier has the potential to forage and nest in the grasslands and salt marsh habitat within the project area. A 2004 CNDDB record is documented from an observation of the species within the project area.
Elanus leucurus White-tailed kite	--/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Moderate - white-tailed kite has the potential to forage in the grasslands and nest in trees within the project area. There are numerous observations of the species within the vicinity of the project area.
Egretta thula Snowy egret (rookery site)	--/--	Occurs in coastal lowlands and other lowland areas throughout California.	Shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and wet fields. Nests in dense marshes or at low heights in trees.	High – snowy egret has the potential to forage in many habitats in the project area and nest in the adjacent vegetation. There are numerous observations of the species within the vicinity of the project area.
Geothlypis trichas sinuosa Saltmarsh common yellowthroat	--/SSC	Found only in the San Francisco Bay Area in Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, and Alameda Counties	Freshwater marshes in summer and salt or brackish marshes in fall and winter; requires tall grasses, tules, and willow thickets for nesting and cover	High – suitable habitat for salt marsh common yellowthroat occurs within the project area, and there is a CNDDB record ~0.3 miles from the project area.

Common and Scientific Name	Status[a] Federal/State	California Distribution	Habitats	Potential to Occur within Project Footprint[b]
Laterallus jamaicensis conturniculus California black rail	--/T, FP	Permanent resident in the San Francisco Bay and east-ward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations	High – suitable habitat for California black rail occurs within the project area, and there is a 2005 CNDDB record from an observation within the project area.
Melospiza melodia pusillula Alameda song sparrow	--/SSC	Found only in marshes along the southern portion of the San Francisco Bay	Brackish marshes associated with pickleweed; may nest in tall vegetation or among the pickleweed	High – suitable habitat for Alameda song sparrow occurs within the project area, and there is a CNDDB record ~0.3 miles from the project area.
Pelecanus occidentalis californicus California brown pelican	D/E	The Pacific coast from Canada through Mexico.	Coastal areas. Nests on islands. Occasionally along Arizona's lakes and rivers.	None - There is currently no potential for California brown pelican to occur in the project area, as the project area does not contain suitable habitat for this species.
Phalacrocorax auritus Double-crested cormorant (rookery site)	--/--	Winters along the entire California coast and inland over the Coast Ranges into the Central Valley from Tehama County to Fresno County; a permanent resident along the coast from Monterey County to San Diego County, along the Colorado River, Imperial, Riverside, Kern and King Counties, and the islands off San Francisco; breeds in Siskiyou, Modoc, Lassen Counties.	Rocky coastlines, beaches, inland ponds, and lakes; needs open water for foraging, and nests in riparian forests or on protected islands, usually in snags	Moderate –suitable habitat for double-crested cormorant occurs within the project area and this species has been observed many times immediately adjacent to the project area.
Rallus longirostris obsoletus California clapper rail.	E/E,FP	Found along the Pacific Coast in Monterey and San Luis Obispo Counties.	From tidal mudflats to tidal sloughs	High – suitable habitat for California clapper rail occurs within the project area, and there is a 2006 CNDDB record from an observation within the project area.

Common and Scientific Name	Status[a] Federal/State	California Distribution	Habitats	Potential to Occur within Project Footprint[b]
Sternula antillarum browni California least tern	E/E	Found along the Pacific Coast of California from San Francisco to Baja California	Nest on open beaches kept free of vegetation by natural scouring from tidal action	Moderate – limited suitable habitat occurs in unvegetated portions of the project area with suitable substrate. A 1987 CNDDB record from an observation of the species ~1.8 miles from the project area.
Mammals				
Antrozonous pallidus Pallid bat	--/SSC	Widespread throughout California	Roosts in fissures in caves, tunnels, mines, hollow trees, and locations with stable temperatures.	None - There is currently no potential for pallid bat to occur in the project area. The nearest CNDDB record is located ~2.9 miles from the project area and dates back to an observation from 1951.
Dipodomys venustus venustus Santa Cruz kangaroo rat	--SSC	Central Coast of California.	Well-drained, deep soils often on slopes with chaparral or mixed chaparral and sometimes abandoned farm fields.	None - There is currently no potential for Santa Cruz kangaroo rat to occur in the project area.
Lasiurus cinereus Hoary bat	--/--	Widespread throughout California	Roosts in trees, typically within forests.	None – there is no potential for hoary bat to have a maternal roost within trees within the project area due to the exposure and proximity to the South Bay. There are no CNDDB records within 2 miles.
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	--/SSC	West side of Mount Diablo to coast and San Francisco Bay	Present in chaparral habitat and in forest habitats with a moderate understory	None - There is currently no potential for San Francisco dusky-footed woodrat to occur in the project area, as it does not contain suitable habitat for this species.
Reithrodontomys raviventris Salt marsh harvest mouse	E/E,FP	The San Francisco Bay Estuary and Suisun Marsh.	Saline to brackish salt marsh habitat.	High – suitable habitat for salt marsh harvest mouse occurs within the project area and there are CNDDB records from observations within the project area from 1991.

Common and Scientific Name	Status[a] Federal/State	California Distribution	Habitats	Potential to Occur within Project Footprint[b]
Sorex vagrans halicoetes Salt-marsh wandering shrew	-/SSC	Southern arm of the San Francisco Bay in San Mateo, Santa Clara, Alameda, and Contra Costa Counties.	Salt marshes from 6 to 9 feet above mean sea level (MSL).	Moderate – suitable habitat for salt marsh wandering shrew occurs within the project area and there are CNDDB records from observations ~2 miles from the project area from 1961.
Taxidea taxus American badger	--/SSC	Throughout California, except the northern corner of the north coast area.	Typically open areas of drier scrub, forest, and herbaceous habitats with friable soils.	None - There is currently no potential for American badger to occur in the project area, as it does not contain suitable habitat for this species.

[a] Status Explanations

Federal

E	=	listed as endangered under the ESA
T	=	listed as threatened under the ESA
PT	=	proposed for federal listing as threatened under the ESA
C	=	species for which USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded
D	=	delisted
–	=	no listing

State

E	=	listed as endangered under CESA
T	=	listed as threatened under CESA
FP	=	fully protected under the California Fish and Game Code
SSC	=	species of special concern in California
D	=	delisted
–	=	no listing

Potential Occurrence in the Project area

High:	Known occurrences of the species within the project area, or CNDDB, or other documents, records the occurrence of the species within a 2-mile radius of the project area; suitable habitat is present within the project area
Moderate:	CNDDB, or other documents, records the known occurrence of the species within a 2-mile radius of the project area; poor quality suitable habitat is present within the project area
Low:	CNDDB, or other documents, does not record the occurrence of the species within a 2-mile radius of the project area; suitable habitat is present within the project area

- Western pond turtle (*Emys marmorata*).
- Great blue heron (*Ardea herodias*) rookery.
- Western burrowing owl (*Athene cunicularia hypugea*).
- Western snowy plover (*Charadrius alexandrines nivosus*).
- Northern harrier (*Circus cyaneus*).
- White-tailed kite (*Elanus leucurus*).
- Snowy egret (*Egretta thula*) rookery.
- Salt marsh common yellowthroat (*Geothlypis trichas sinuosa*).
- California black rail (*Laterallus jamaicensis coturniculus*).
- Alameda song sparrow (also known as the South Bay song sparrow) (*Melospiza melodia pusillula*).
- Double-crested cormorant (*Phalacrocorax auritus*) rookery.
- California clapper rail (*Rallus longirostris obsoletus*).
- California least tern (*Sterna antillarum browni*).
- Salt marsh harvest mouse (*Reithrodontomys raviventris*).
- Salt marsh wandering shrew (*Sorex vagrans halicoetes*).

Impact Analysis

Methods and Significance Criteria

Impacts on vegetation and wildlife were analyzed based on existing biological conditions and resources present at each Project element site and a review of the current working design for the proposed Project elements.

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Adverse effects on populations of any special-status plant or wildlife species as a result of direct mortality, injury, or disturbance; or degradation, modification, or loss of habitat.
- Adverse effects on populations of common or special-status species wildlife as a result of obstruction of movement routes or migratory corridors used by any native resident or migratory fish or wildlife species, or impedance of the use of native wildlife breeding habitat or nursery sites. Loss or degradation of wetland habitat through direct removal, filling, hydrologic interruption, or other direct or indirect means.
- Loss or degradation of riparian habitat.
- Conflict with any local policy or ordinance protecting botanical or wildlife resources.

Potential to conflict with an adopted conservation plan (including but not limited to habitat conservation plans and natural community conservation plans) is usually also identified as a significant impact under CEQA. However, no HCP or NCCP is approved or in preparation that would cover the Project site. Hence, the proposed Project would not result in such conflicts, and this issue is not addressed further.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact BIO1—Disturbance or Loss of Special-Status Plant Populations

Summary by Project Element: Impact BIO1—Disturbance or Loss of Special-Status Plant Populations		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project Elements	Less than Significant with Mitigation	No Impact

Construction

The following special-status plant species have the potential to occur in the Project area (Table 3.3-1).

- Alkali milkvetch.
- San Joaquin spearscale.
- Congdon's tarplant.
- Point Reyes bird's-beak.
- Hairless popcornflower.
- Slender-leaved pondweed.
- California seablite.
- Saline clover.

If present, individuals of these special-status species could be damaged or removed by construction.

All but one of the eight species listed above are halophytes and would occur only in areas of brackish tidal marsh habitat and, for a few species, salt marsh habitat. Slender-leaved pondweed occurs in freshwater wetland habitat, found in only one location in the Project area. Proposed construction activities are not likely to have an impact on freshwater wetland habitat and slender pondweed has to date not been observed within the study area; therefore, it is unlikely that the Project would have any impact on this species, if it is determined to be present.

Substantial loss of individuals of any of these species as a result of construction disturbance (earthwork, staging activities, foot traffic, vehicle traffic, etc.) or destruction of suitable habitat adjacent to an existing population could result in a significant impact on the species. At worst, impacts on any or all of the eight special-status plant species with potential to occur in the Project area could be significant.

However, these species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points and removing temporary fill used for access after construction is complete, planting local ecotypes of native plants and using appropriate erosion-control seed mixes as needed, and encouraging passive revegetation as appropriate. Further, implementation of Mitigation Measures BIO1.1, BIO1.2, and BIO1.3 will ensure that impacts are avoided, reduced if they cannot be avoided, and compensated as appropriate. With these mitigation measures in place, impacts would be less than significant.

Mitigation Measure BIO1.1—Conduct Botanical Surveys

SFCJPA will retain a qualified botanist to survey suitable habitat in the Project area for special-status plants. Surveys will be conducted during the appropriate blooming periods for each species as indicated in Table 3.3-3.

Table 3.3-3. Timing of Surveys for Special-Status Plants

Species	Blooming Period	Period Surveys Should Occur[a]
Alkali milkvetch	March–June	April–May
San Joaquin spearscale	April–October	July–August
Congdon’s tarplant	June–November	July–August
Point Reyes bird’s-beak	June–October	July–August
Hairless popcorn-flower	April–May	April–May
Slender-leaved pondweed	May-July	June–July
California seablite	July–October	July–August
Saline clover	April–June	April–May

[a] Exact timing of surveys should account for annual variations in climate and weather; surveys should be timed to coincide with blooming periods of known local populations whenever possible.

Surveys will follow the CNPS Botanical Survey Guidelines (California Native Plant Society 2001). Special-status plants identified during the surveys will be mapped using a handheld global positioning system unit and documented as part of the public record. A report of occurrences will be submitted to SFCJPA and the CNDDB. Surveys will be completed before ground-disturbing activities begin; survey timing will allow for follow-up mitigation, if needed. If it is determined that individuals of identified special-status plant species could be affected by construction traffic or activities, Mitigation Measure BIO1.2 and, if necessary, Mitigation Measure BIO1.3, will be implemented.

Mitigation Measure BIO1.2—Confine Construction Disturbance and Protect Special-Status Plants during Construction

Construction disturbance will be confined to the minimum area necessary to complete the work, and will avoid encroachment on adjacent habitat. If special-status plants are found, a setback buffer will be established around individuals or the area occupied by the population, based on judgment of a qualified botanist. The plants and a species-appropriate buffer area determined in consultation with agency (DFG and USFWS) staff will be protected from encroachment and damage during construction by installing temporary construction fencing. Fencing will be brightly colored and highly visible. Fencing will be installed under the supervision of a qualified botanist to ensure proper location and prevent damage to plants during installation. Fencing will be installed before site preparation or construction work begins and will remain in place for the duration of construction. Construction personnel will be prohibited from entering these areas (the exclusion zone) for the duration of Project construction. Fencing installation will be coordinated with fence installation required by other mitigation measures protecting wetlands, riparian habitat, and mature trees.

Mitigation Measure BIO1.3—Compensate for Loss of Special-Status Plants

If any individuals of listed special-status plants are present and cannot be effectively avoided through implementation of Mitigation Measure BIO1.2, SFCJPA will develop and implement a compensation plan. The compensation plan will preserve an off-site area containing individuals of the affected species. The plan will be implemented so that there is no net loss of special-status plants. If an off-site population is not located or is not available for preservation, SFCJPA will employ a qualified nursery to collect and propagate the affected species, collected at the appropriate time of year, prior to population disturbance at the affected areas of the Project. Transplantation will also be implemented if practicable for the species affected, including mature native plants to the extent feasible.

The compensation plan will be developed by a qualified botanist in coordination with and approval of DFG or USFWS, depending on whether the plant has state or federal status, respectively, or both. The compensation area will contain a population and/or acreage equal to or greater than that lost as a result of Project implementation and will include adjacent areas as needed to preserve the special-status plant population in perpetuity. Compensation of the affected population will occur in an amount equal to or greater than the amount lost as a result of the Project to ensure that genetic diversity is preserved and no net loss of the number of individuals occurs. The quality of the population preserved will also be equal to or greater than that of the affected population, as determined by a qualified botanist retained by the SFCJPA. Compensation sites and populations will be subject to DFG and USFWS approval. The SFCJPA will be responsible for ensuring that the compensation area is acquired in fee or in conservation easement, maintained for the benefit of the special-status plant population in perpetuity, and funded through the establishment of an endowment.

A monitoring and adaptive management plan will be developed for each compensation site, subject to DFG and USFWS approval. This plan will establish success criteria for the site and will include protocols for annual monitoring of the site. The goal of monitoring will be to assess whether the plan has successfully mitigated Project impacts; monitoring will be designed to ensure that the required number of plants and/or plant acreage is being sustained through site maintenance. Factors to be monitored could include density, population size, natural recruitment, and plant health and vigor. If monitoring indicates that special-status plant populations are not maintaining themselves, adaptive management techniques will be implemented. Such techniques could include reseeding/replanting, nonnative species removal, and other management tools. The site will be evaluated at the end of the monitoring period to determine whether the mitigation has met the goal of this mitigation measure to preserve a population the same size as that affected and of equal or greater quality as that lost as a result of Project activities at the site. Criteria by which this determination will be made will be established in the monitoring plan. The monitoring plan will also address adaptive management strategies to be adopted if the evaluation determines that the site does not meet the success criteria. In that case, a monitoring plan will stay in place until the success criteria are met.

Operation and Maintenance

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds, and would not result in new impacts on special-status plants in channel or bank areas. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no impact.

Impact BIO2—Disturbance, Injury, or Mortality of Western Pond Turtles

Summary by Project Element: Impact BIO2—Disturbance, Injury, or Mortality of Western Pond Turtles		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Levee and Floodwall Construction		
Levee lowering on right bank	Less than Significant with Mitigation	No Impact
Levee raising on right bank	Less than Significant with Mitigation	No Impact
Floodwall on right bank	No Impact	No Impact
Levee raising on left bank and levee relocation	Less than Significant with Mitigation	No Impact
Floodwall on left bank	No Impact	No Impact
Downstream access road on right bank	No Impact	No Impact
Upstream access road on right bank	No Impact	No Impact
Access road on left bank	Less than Significant with Mitigation	No Impact
Friendship Bridge	Less than Significant with Mitigation	No Impact
Marshplain Restoration		
All marshplain restoration Project elements	No Impact	No Impact

Construction

The freshwater pond within the study area and an additional pond immediately adjacent to the Project's grading limits provide marginal habitat for western pond turtle. The nearest CNDDB record of western pond turtle is approximately 2.4 miles from the study area from an observation made on an unknown date. This species is not expected to occur within San Francisquito Creek at such a low reach because of increasing water salinity in proximity to San Francisco Bay. Project elements that do not occur in or near suitable habitat are identified as having no impact in the summary impact table provided for Impact BIO2 and are discussed no further; analysis of impacts on western pond turtle concentrates on the freshwater ponds and surrounding upland, which offer the most likely western pond turtle habitat.

The principal concerns with regard to construction-related disturbance of western pond turtles are disturbance during reproduction and loss of nests and young. Western pond turtles do not begin to reproduce until several years into their adult life, and nests are rarely successful because of predation by animals such as skunks (*Mephitis mephitis*) and raccoons (*Procyon lotor*). Consequently, the loss of even one nest can be devastating to the local population.

In the Project area, levee lowering on the right bank, levee raising on the right bank, levee raising on the left bank and levee relocation, construction of the access road on the left bank, and modification to Friendship Bridge have the potential to disturb upland habitat adjacent to the freshwater pond and could result in the loss of individuals or nests; this potential for disturbance and loss would represent a significant impact.

However, this species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points and preventing animal entry and entrapment. Further, implementation of Mitigation Measures BIO2.1 and BIO2.2, and, if turtles are found during surveys required in BIO2.2, also Mitigation Measure BIO2.3 would reduce this impact to a less-than-significant level.

Mitigation Measure BIO2.1—Develop and Implement Worker Awareness Training

Prior to construction, Worker Awareness Training must be conducted to inform construction ~~project~~ workers of their responsibilities regarding sensitive environmental resources. The training will include environmental education about the western pond turtles, nesting raptors and migratory birds, western burrowing owl, California clapper rail, California black rail, salt marsh harvest mouse, salt marsh wandering shrew, California least tern, western snowy plover, California red-legged frog, San Francisco garter snake, and steelhead, as well as sensitive habitat (e.g., in-stream habitat, riparian habitat, wetlands). The training will include visual aids to assist in identification of regulated biological resources, actions to take should protected wildlife be observed within the Project area, and possible legal repercussions of impacting such regulated resources.

Mitigation Measure BIO2.2—Implement Survey and Avoidance Measures to Decrease Disturbance to Western Pond Turtles

Prior to the start of construction activities at Project element sites that could support western pond turtle, SFCJPA will retain a qualified biologist to conduct preconstruction surveys for western pond turtles in all suitable habitats in the vicinity of the work sites. Surveys will take place no more than 7 days prior to the onset of site preparation and construction activities with the potential to disturb turtles or their habitat. If preconstruction surveys identify active nests, the biologist will establish no-disturbance buffer zones around each nest using temporary orange construction fencing. The demarcation will be permeable to allow young turtles to move away from the nest following hatching. The radius of the buffer zone and the duration of exclusion will be determined in consultation with DFG. The buffer zones and fencing will remain in place until the young have left the nest, as determined by the qualified biologist. If western pond turtles are found in the Project area, a qualified biologist will remove and relocate them to suitable habitat outside the Project limits, consistent with DFG protocols and permits. Relocation sites will be subject to agency approval. If turtles are observed during the surveys, then Mitigation Measure BIO2.3 will be implemented.

Mitigation Measure BIO2.3—Daily Surveys and Monitoring of Construction Activities to Decrease Disturbance to Western Pond Turtles

SFCJPA will retain a qualified biologist to conduct preconstruction surveys for western pond turtles in all suitable habitats in the vicinity of work sites that will be active within the ~~three~~3 days prior to the onset of site preparation and construction activities with the potential to disturb turtles or their habitat. If no turtles are found during the daily survey, construction will commence and be monitored for the duration of work within suitable western pond turtle habitat. If a turtle is found during the daily preconstruction survey, construction in the vicinity of the turtle will not commence until the turtle is removed from the Project area to be relocated to suitable habitat outside of the Project limits per DFG protocols and permits. Relocation sites will be subject to agency approval. Following turtle relocation, the biologist will return to the Project area and monitor construction activities that take place within suitable western pond turtle habitat.

Operation and Maintenance

As discussed in Chapter 2, *Project Description*, all in-channel and bankside maintenance of facilities improved by the Project would take place under the District's and East Palo Alto's respective maintenance programs and would primarily consist of visual inspection and minor vegetation management. The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and would not result in new maintenance-related impacts on western pond turtle. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO2, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no new impact on western pond turtles for operation and maintenance.

Impact BIO3—Disturbance of Nesting Migratory Birds and Raptors (Excluding Burrowing Owl)

Summary by Project Element: Impact BIO3—Disturbance of Nesting Migratory Birds and Raptors (Excluding Burrowing Owl)		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	No Impact

Construction

Heavy equipment and human activity during construction would increase noise in the vicinity of the work area, potentially resulting in disturbance of birds nesting and foraging in the area. If occupied nests are present on or adjacent to the construction area, construction activities could result in the abandonment of nests, the death of nestlings, and the destruction of eggs in active nests.

This noise increase resulting from construction activities would be of particular concern in marsh habitat, riparian habitat, and relatively isolated habitat that could provide nesting opportunities for a variety of migratory birds and raptors. However, because many migratory bird species are adapted to human presence, all of the Project element sites would have the potential to support onsite or adjacent nesting and foraging by protected bird species.

Migratory birds, raptors, and their nests are protected under the MBTA and the California Fish and Game Code. Disturbance of nesting migratory birds or raptors thus represents a significant impact.

However, these species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points, conducting surveys for nesting raptors and migratory birds and installing nesting exclusion devices. Further, implementation of Mitigation Measures BIO2.1 and BIO3.1 would reduce the potential for impacts on nesting raptors and migratory birds and lower the level of effect to less than significant.

Mitigation Measure BIO3.1—Establish Buffer Zones for Nesting Raptors and Migratory Birds (Excluding Burrowing Owl)

Prior to the start of construction activities that begin during the migratory bird nesting period (between January 15 and August 31 of any year), SFCJPA will retain a qualified wildlife biologist to conduct a survey for nesting raptors and migratory birds that could nest along the Project corridor, including special-status species such as salt marsh common yellowthroat, Alameda song sparrow, northern harrier, and white-tailed kite. Surveys will cover all suitable raptor and migratory bird nesting habitat that will be impacted directly or indirectly through disturbance, including habitat potentially used by ground-nesting migratory bird species.

All migratory bird nesting surveys will be performed no more than 2 weeks (14 days) prior to any Project-related activity that could pose the potential to affect migratory birds. If a lapse in Project-related work of 2 weeks or longer occurs, another focused survey will be conducted before Project work can be reinitiated. With the exception of raptor nests, inactive bird nests may be removed. No birds, nests with eggs, or nests with hatchlings will be disturbed. In addition, nesting bird preconstruction surveys will occur prior to ground disturbance, including site preparation.

If an active nest is discovered during these surveys, the qualified wildlife biologist will establish a no-disturbance buffer zone around the nest tree (or, for ground-nesting species, the nest itself). The no-disturbance zone will be marked with flagging or fencing that is easily identified by the construction crew and will not affect the nesting bird. In general, the minimum buffer zone widths will be 0.5-mile for bald and golden eagles, 25 feet (radius) for nonraptor ground-nesting species; 50 feet (radius) for nonraptor shrub- and tree-nesting species; and 250 feet (radius) for all raptor species. Buffer widths may be modified based on discussion with DFG, depending on the proximity of the nest, whether the nest would have a direct line of sight to construction activities, existing disturbance levels at the nest, local topography and vegetation, the nature of proposed activities, and the species potentially affected. Buffers will remain in place as long as the nest is active or young remain in the area. No construction presence or activity of any kind will be permitted within a buffer zone until the biologist determines that the young have fledged and moved away from the area and the nest is no longer active.

If monitoring of active nests indicates that disturbance is affecting active nests, buffer widths will be increased until the disturbance no longer affects the nest(s). If the buffer cannot be extended further, then work within the area will stop until the nest is no longer active.

Operation and Maintenance

The District and East Palo Alto maintenance activities on any of the Project elements within the Project area—particularly vegetation maintenance—may have potential to disturb nesting migratory birds and raptors in a manner similar to that of the impacts described for construction.

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and thus would not result in new impacts on nesting raptors or migratory birds. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO3, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no new impact.

Impact BIO4—Disturbance of Western Burrowing Owls and Habitat

Summary by Project Element: Impact BIO4—Disturbance of Western Burrowing Owls and Habitat		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Levee and Floodwall Construction		
Levee lowering on right bank	Less than Significant with Mitigation	No Impact
Levee raising on right bank	No Impact	No Impact
Floodwall on right bank	No Impact	No Impact
Levee raising on left bank and levee relocation	Less than Significant with Mitigation	No Impact
Floodwall on left bank	Less than Significant with Mitigation	No Impact
Downstream access road on right bank	Less than Significant with Mitigation	No Impact
Upstream access road on right bank	Less than Significant with Mitigation	No Impact
Access road on left bank	No Impact	No Impact
Friendship Bridge	No Impact	No Impact
Marshplain Restoration		
All marshplain restoration Project elements	No Impact	No Impact

Construction

Western burrowing owls have potential to nest in upland portions of the Project area with suitable foraging habitat (e.g., low-growing vegetation); there are numerous records of burrowing owls in natural areas south of the Project area. Project elements with potential to affect this species include levee lowering on the right bank, levee raising on the left bank and levee relocation, construction of the floodwall on the left bank, construction of the downstream access road on the right bank, and construction of the upstream access road on the right bank. Construction activities within these Project element sites during the nesting period (February 1–August 31) could result in direct injury or mortality, as well as disturbance impacts related to elevated noise and human presence. Impacts could be significant.

However, this species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points, conducting surveys for nesting raptors and migratory birds, and installing nesting exclusion devices. Further, implementation of Mitigation Measures BIO2.1 (western-burrowing owl awareness will be included in the preconstruction worker awareness training required for all construction personnel) and BIO4.1 would reduce this impact to a less-than-significant level.

Mitigation Measure BIO4.1—Implement Survey and Avoidance Measures for Western Burrowing Owls Prior to Construction Activities

Prior to any construction activity planned to begin during the fall and winter nonnesting season (September 1 - January 31), SFCJPA will retain a qualified wildlife biologist to conduct a preconstruction survey for burrowing owls. Surveys will be conducted no more than 7 days prior to ground-disturbing activities and will cover all suitable burrowing owl habitat subject to disturbance. If any western burrowing owls are found within the disturbance area during the survey or at any time during the construction process, SFCJPA will notify DFG and will proceed under DFG direction. If construction is planned to occur during the nesting season (February 1 - August 31), surveys for nesting owls will be conducted by a qualified wildlife biologist in the year prior to construction to determine if there is breeding within 250 feet of the construction footprint. This prior-year survey will provide the Project team advance notice regarding nesting owls in the Project area and allow ample time to discuss with DFG the appropriate course of action if nesting owls are found. In addition, same-year preconstruction surveys for nesting western burrowing owls will be conducted no more than 7 days prior to ground disturbance in all suitable burrowing owl habitat. If the biologist identifies the presence of a nesting burrowing owl in an area scheduled to be disturbed by construction, a 250-foot no-activity buffer will be established and maintained around the nest while it is active. Surveys and buffer establishment will be performed by qualified wildlife biologists, will be coordinated with DFG, and will be subject to DFG review and oversight.

Operation and Maintenance

The District's and East Palo Alto's respective maintenance programs for the Project facilities would have the potential to disturb western burrowing owls in grassland habitat.

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and thus would not result in new impacts on western burrowing owls. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO4, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no new impact.

Impact BIO5—Disturbance of California Clapper Rail and California Black Rail and Habitat

Summary by Project Element: Impact BIO5—Disturbance of California Clapper Rail and California Black Rail and Habitat

Project Element	Construction Impact Level	Operation and Maintenance Impact Level
Levee and Floodwall Construction		
Levee lowering on right bank	Less than Significant with Mitigation	Less than Significant with Mitigation
Levee raising on right bank	Less than Significant with Mitigation	No Impact
Floodwall on right bank	Less than Significant with Mitigation	No Impact
Levee raising on left bank and levee relocation	Less than Significant with Mitigation	No Impact
Floodwall on left bank	Less than Significant with Mitigation	No Impact
Downstream access road on right bank	No Impact	No Impact
Upstream access road on right bank	No Impact	No Impact
Access road on left bank	No Impact	No Impact
Friendship Bridge	Less than Significant with Mitigation	No Impact
Marshplain Restoration		
All marshland restoration Project elements	Less than Significant with Mitigation	No Impact

Construction

Clapper rail and black rail are considered to have a high potential to be present in suitable habitat within and adjacent to the Project area. California ~~C~~clapper rail and California black rail are known to use marshes adjacent to San Francisquito Creek. The Project area would only impact the top of the existing levee on the right hand side; adjacent areas that support wetland vegetation offer clapper and black rail foraging habitat and refuge would not be directly impacted. Surveys conducted in 2009 and 2010 by the Point Reyes Bird Observatory report that the mean numbers of California clapper rail and California black rail individuals on the Faber Tract were 46 and 57, respectively. No California clapper rails were observed within San Francisquito Creek during this survey effort in either 2009 or 2010 (Liu et al. 2010). Disturbance of species and habitat could result from construction activities within the Project element sites. Project elements that have potential to have an impact on California clapper rail and California black rail are shown in the summary table for Impact BIO5.

However, these species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points, conducting surveys for nesting raptors and migratory birds, and installing nesting exclusion devices. Further, Implementation of Mitigation Measures BIO2.1 (California clapper rail and California black rail awareness will be included in the preconstruction worker awareness training required for all construction personnel), BIO5.1, and

BIO5.2 would reduce disturbance on California clapper rail and California black rail to a less-than-significant level.

Mitigation Measure BIO5.1—Implement Survey and Avoidance Measures for California Clapper Rail and California Black Rail Prior to Construction Activities

Work activities within 50 feet of California clapper rail habitat will not occur within ~~two~~2 hours before or after extreme high tides (6.5 feet or above) when the marsh plain is inundated, which could prevent individuals from reaching available cover.

If work is to be conducted during the species' breeding and rearing seasons (March–August 31) within ~~500~~ 700 feet of suitable habitat, a permitted biologist will be retained to conduct protocol level surveys at the Project site including rail call surveys and rail-track surveys ~~surveys of~~in appropriate habitat for California clapper rail and California black rail (California Coastal Conservancy 2011). The surveys will be conducted no more than 48 hours prior to commencement of construction and maintenance activities and will be performed at dawn or dusk, the vocalization periods of highest intensity. Project activities occurring within ~~500~~700 feet of active nests will be postponed until after young have fledged.

Outside of breeding season, a permitted biologist will be retained to conduct surveys of appropriate habitat for California clapper rail and California black rail within the work area, including all staging and access routes, no more than 7 days prior to initiation of work within suitable habitat. If individuals are observed during this survey, a biologist will conduct an additional survey immediately prior to initiation of construction activities. If individuals are observed within or near the work area, a no-disturbance buffer (minimum 50 feet) will be implemented. If the daily work area is expanded, then a qualified biologist will survey the suitable habitat prior to initiation of work and movement of equipment that day. No work will occur within the buffer until the biologist verifies that California clapper rail or California black rail individuals have left the area.

If individuals are routinely observed in the work area, a species avoidance plan will be developed in coordination with USFWS and DFG. If no individuals are observed in accordance with the survey protocols, no buffers will be required. All vegetation removal within suitable habitat of these species, as determined by a biologist, will be done by hand to the extent possible. If movement of heavy equipment in necessary in suitable habitat or within 50 feet of habitat, then a biological monitor will observe the area in front of the equipment from a safe vantage point. If these species are detected within the area in front of the equipment, then the equipment will stop and the biologist will direct the equipment on an alternative path. If this is not possible, then equipment will stop until a clear path can be identified.

Additional avoidance measures during the construction period will include:

- An annual search for and subsequent destruction of any cat feeding stations along public walkways shall be conducted
- Before the onset of winter high tides, an annual capture and removal effort of feral cats and rats in the surrounding disturbed areas shall be conducted.

Operation and Maintenance

As discussed in Chapter 2, *Project Description*, all maintenance of facilities improved by the Project and located in upland areas near the Project element sites would take place under the District's and East Palo Alto's respective maintenance programs. Maintenance of Project facilities identified as being in or near suitable habitat would have some potential to disturb California clapper rail and California black rail. Additionally, the ~~project~~Project would result in spill flows into the Faber Tract, which while historically consistent with natural functions, have not occurred in at least 50 years due to the channelization of San Francisquito Creek. Thus, operation and maintenance impacts could be significant.

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and thus would not result in new impacts on California clapper rail and California black rail. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO5, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no new impact due to maintenance.

As part of the Project, fluvial flows, depending on the concurrent tide, are conservatively estimated to overflow into the Faber Tract on an annual basis during storm events. Additionally the 100 year tide would connect the channel to the Faber Tract. Fluvial inputs are not anticipated to occur during the breeding season (March–August 31) and are not anticipated to result in direct impacts on California clapper rail and California black rail breeding. However, regular fluvial inputs could potentially result in habitat changes detrimental to California clapper rail and California black rail. Based on modeling of the overflow into the Faber Tract (HDR 2010), At the design criteria conditions of the 100-year riverine flow coincident with the 100-year tide plus 2.17 feet of Sea Level Rise, the maximum increase in water surface elevation in the Faber Tract is estimated to be a negligible 0.2 feet (approximately 2 inches). Additionally, the Faber Tract already receives fluvial input at events approaching the 100 year event, so this would not be a new affect, but would represent an increase in the periodicity of events. As the inundation of the Faber Tract would be negligible and continue to be episodic, with the predominant influence remaining tidal, it is not anticipated that the overall flood regime of the Project would result in impacts on rail habitat. With mitigation measure BIO5.2 requiring post-~~project~~Project monitoring of the Faber Tract, potential impacts on California clapper rail and California black rail are considered a less-than-significant level.

The proposed activities are expected to affect 0.21-acre of high-quality clapper rail and black rail habitat, 0.80-acre of moderate-quality habitat, and 2.30 acres of low-quality habitat, totaling 3.31 acres of impact on California clapper rail and black rail habitat within the existing levees of San Francisquito Creek.

However, the Project would also restore 17.8 acres of high-quality habitat for California clapper rail within the wider channel. Therefore, a beneficial increase in the amount of suitable habitat for California clapper rail would occur as a result of the Project. California black rail is also expected to benefit from the use of the proposed 17.8 acres of restored habitat.

Mitigation Measure BIO5.2—Produce and Implement Habitat Monitoring Plan for Habitat within the Faber Tract Prior to Construction Activities

The SFCJPA or its approved designee will be responsible for the development and implementation of a habitat monitoring plan for existing (i.e., pre-Project) habitat within the Faber Tract that will document baseline conditions prior to Project implementation. The plan will include routine monitoring of the habitat within the Faber Tract to document changes resulting from the hydrologic reconnection of San Francisquito Creek and potential subsequent flooding into the Faber Tract. The habitat monitoring plan will include adaptive management measures to rectify potential conversion of habitat types and other issues that might arise in the Faber Tract as a result of Project implementation. Additionally, contingency measures will be developed and included in the plan in the event of habitat conversion or loss resulting from the Project. Plan approval by USFWS and DFG will be necessary before implementation of activities recommended by the plan. Routine monitoring reports will be submitted to the appropriate agencies following their completion.

Impact BIO6—Disturbance of Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew and Habitat

Summary by Project Element: Impact BIO6—Disturbance of Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew and Their Habitat

Project Element	Construction Impact Level	Operation and Maintenance Impact Level
Levee and Floodwall Construction		
Levee lowering on right bank	Less than Significant with Mitigation	Less than Significant with Mitigation
Levee raising on right bank	Less than Significant with Mitigation	No Impact
Floodwall on right bank	Less than Significant with Mitigation	No Impact
Levee raising on left bank and levee relocation	Less than Significant with Mitigation	No Impact
Floodwall on left bank	Less than Significant with Mitigation	No Impact
Downstream access road on right bank	No Impact	No Impact
Upstream access road on right bank	No Impact	No Impact
Access road on left bank	No Impact	No Impact
Friendship Bridge	Less than Significant with Mitigation	No Impact
Marshplain Restoration		
All marshplain restoration Project elements	Less than Significant with Mitigation	No Impact

Construction

Suitable habitat for salt marsh harvest mouse and salt marsh wandering shrew occurs within the Faber Tract portion of the Project area; there are CNDDB records of salt marsh harvest mouse in this area. Additionally, suitable salt marsh habitat occurs along the channel of San Francisquito Creek and these species have potential to occur in these areas. Construction activities occurring in the Project element sites could disturb salt marsh harvest mouse and salt marsh wandering shrew and habitat; the level of impact is shown in the summary table for Impact BIO6. Marshplain restoration on the left bank could have an impact on salt marsh habitat occurring within or adjacent to the Project footprint. Additionally, levee modifications have potential to affect the salt marsh habitat within the Faber Tract through potential flooding of San Francisquito Creek into this habitat.

Because construction activities would occur within suitable salt marsh habitat and could affect adjacent salt marsh habitat, significant impacts on salt marsh harvest mouse and salt marsh wandering shrew could occur.

However, these species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points and preventing animal entry and entrapment. Further, implementation of Mitigation Measure BIO2.1 (salt marsh harvest mouse and salt marsh wandering shrew awareness will be included in the preconstruction worker awareness training required for all construction personnel) and BIO6.1 would reduce these impacts to a less-than-significant level.

Mitigation Measure BIO6.1—Implement Survey and Avoidance Measures for Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Prior to Construction

Construction and maintenance work, including site preparation, will be avoided to the extent possible within suitable habitat for these species during their breeding seasons (February 1 to November 30). As work during the species' breeding seasons will be necessary, a species avoidance plan will be developed in consultation with USFWS and DFG, and implemented. The avoidance plan, at a minimum, will include the following.

- Hand vegetation removal shall start at the edge farthest form the largest contiguous salt marsh area and work its way towards the salt marsh, providing cover for salt marsh harvest mice and allowing them to move towards the salt marsh as vegetation is being removed.
- In consultation with DFG, exclusion fencing shall be placed around a defined work area immediately following vegetation removal and before Project activities begin. The final design and proposed location of the fencing shall be reviewed and approved by DFG prior to placement.
- Prior to initiation of work each day within 300 feet of tidal or pickelweed habitats, a qualified biologist shall thoroughly inspect the work area and adjacent habitat areas to determine if saltmarsh harvest mice are present. The biologist shall ensure the exclusion fencing has no holes or rips and the base remains buried. The fenced area will be inspected daily to ensure that no mice are trapped.

Prior to initiation of work within suitable habitat, a permitted biologist will be retained to monitor the hand removal of pickleweed to avoid impacts on salt marsh harvest mouse and salt marsh wandering shrew. Monitoring will occur for the duration of all clearing work within suitable habitat~~, and all clearing of pickleweed will be conducted by hand~~. If salt marsh harvest mouse or salt marsh wandering shrew are observed during clearing activities, clearing will cease and workers will move to a new area. Clearing work may begin in the area of the observation 1 day or more after the observation date.

During the survey, if salt marsh harvest mouse or salt marsh wandering shrew individuals are observed, or if active nests of these species are observed, proposed Project activities within 100 feet of the observation will be postponed and a no-disturbance buffer will be established. The buffer will remain in place until the biologist determines that the individuals have left the area and are not present in or near (100 feet) of the work area. If no individuals are observed in accordance with the survey protocols, no buffers will be required.

Work activities within 50 feet of salt marsh harvest mouse habitat will not occur within ~~two~~2 hours before or after extreme high tides (6.5 feet or above) when the marsh plain is inundated, which could prevent individuals from reaching available cover.

Operation and Maintenance

As discussed in Chapter 2, *Project Description*, all maintenance of facilities improved by the Project located in upland areas near the Project element sites would take place under the District's and East Palo Alto's respective maintenance programs. The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and thus would not result in new impacts on salt marsh harvest mouse and salt marsh wandering shrew. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO6, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no new impact from maintenance.

The hydrologic reconnection of San Francisquito Creek to the Faber Tract resulting from flooding following could change current salt marsh and salt panne habitat within the Faber Tract. As part of the Project, fluvial flows, depending on the concurrent tide, are conservatively estimated to overflow into the Faber Tract on an annual basis during storm events. Additionally the 100 year tide would connect the channel to the Faber Tract. Fluvial inputs would occur slowly, allowing a similar amount of time for salt marsh harvest mouse and salt marsh wandering shrew to reach upland refugia as under existing conditions and are not anticipated to result in impacts. However, regular fluvial inputs could potentially result in habitat changes detrimental to salt marsh harvest mouse and salt marsh wandering shrew. Based on modeling of the overflow into the Faber Tract (HDR 2010), At the design criteria conditions of the 100-year riverine flow coincident with the 100-year tide plus 2.17 feet of Sea Level Rise, the maximum increase in water surface elevation in the Faber Tract is estimated to be a negligible 0.2 feet (approximately 2 inches). Additionally, the Faber Tract already receives fluvial input at events approaching the 100 year event, so this would not be a new affect, but would represent an increasing in the periodicity of events. As the inundation of the Faber Tract would be negligible and continue to be episodic, with the predominant influence remaining tidal, it is not anticipated that the overall flood regime of the Project would result in impacts to rail habitat. With mitigation measure BIO5.2 requiring post-~~project~~Project monitoring of the Faber Tract, potential impacts on salt marsh harvest mouse and salt marsh wandering shrew are considered a less-than-significant level.

The Project activities are expected to impact 0.21-acre of high-quality habitat, 0.79-acre of moderate-quality habitat, and 1.91 acres of low-quality habitat, totaling 2.90 acres of impact on salt marsh harvest mouse and salt marsh wandering shrew habitat.

The Project would also restore 17.8 acres of high-quality habitat for salt marsh harvest mouse. Therefore, an overall increase in the amount of suitable habitat for salt marsh harvest mouse would result from implementation of the Project. The proposed restoration of 17.8 acres of salt marsh habitat is also expected to benefit salt marsh wandering shrew.

Impact BIO7—Disturbance of California Least Tern and Western Snowy Plover and Habitat

Summary by Project Element: Impact BIO7—Disturbance of California Least Tern and Western Snowy Plover and Habitat		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Levee lowering on right bank	Less than Significant with Mitigation	Less than Significant with Mitigation
All other Project elements	No Impact	No Impact

Construction

Two protected species of coastal nesting birds, California least tern and western snowy plover, use portions of unvegetated habitat on the Faber Tract. Salt panne and other unvegetated habitats within the Faber Tract provide suitable nesting and resting habitat for these species. California least terns are considered more likely to nest within the study area due to their ability to nest at a greater distance from water than western snowy plovers, and suitable nesting habitat in proximity to the South San Francisco Bay. The South Bay provides suitable foraging habitat for California least tern, and the marsh, unvegetated, and intertidal habitat within the Faber Tract provide suitable foraging habitat for western snowy plover, but neither species has been observed in the vicinity of the ~~project~~Project site.

Levee lowering on the right bank has potential to disturb California least tern and western snowy plover. Construction activities serving this Project element would occur near suitable habitat for these species and could disturb nesting or foraging individuals that could be present. Disturbance of nesting or foraging California least tern and western snowy plover would be a significant impact. As mentioned in the discussion of Impact BIO5, the Project could affect habitats within the Faber Tract through the hydrologic reconnection of San Francisquito Creek to this area and potential subsequent flooding. Because California least tern and western snowy plover have potential to occur in habitat in the Faber Tract, flooding from San Francisquito Creek and subsequent habitat alteration could affect these species as well. This habitat alteration would be considered a significant impact.

However, these species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points, conducting surveys for nesting raptors and migratory birds, and installing nesting exclusion devices. Further, implementation of Mitigation Measures BIO2.1 (California least tern and western snowy plover awareness will be included in the preconstruction worker awareness training required for all construction personnel) and BIO7.1 would reduce this impact to a less-than-significant level.

Mitigation Measure BIO7.1—Implement Survey and Avoidance Measures for California Least Tern and Western Snowy Plover Prior to Construction Activities

Construction work, including site preparation, will be avoided to the extent possible within and near (500 feet) suitable habitat for these species during their breeding seasons (March 1 to August 31). Western snowy plover may be present within suitable habitat year-round. Prior to the initiation of work within 500 feet of suitable habitat (regardless of the time of year), a permitted biologist will be retained to conduct surveys of appropriate habitat for California least tern and western snowy plover and their nests. The surveys will be conducted no more than 48 hours prior to commencement of construction activities and will be performed during optimal observation periods when these species are most active. If active nests for California least tern or western snowy plover are observed or heard during the survey, Project activities within 500 feet of the observation will be postponed until young have fledged. If individuals are observed outside of the breeding season within 500 feet of the work area, a biologist will establish a no-disturbance buffer. No work will occur within the buffer until the biologist verifies that individuals have left the area. If individuals are routinely observed in or within 500 feet of the work area or do not leave the work area, a species avoidance plan will be developed in coordination with USFWS and DFG. If no individuals are observed in accordance with the survey protocols, no buffers will be required.

Operation and Maintenance

As discussed in Chapter 2, *Project Description*, all maintenance of facilities improved by the Project and located in upland areas near the Project element sites would take place under the District's and East Palo Alto's respective maintenance programs.

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and thus would not result in new impacts on California least tern and western snowy plover. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO7, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no new impact from maintenance.

As mentioned in the discussion of Impact BIO5, the Project could affect habitats within the Faber Tract through the hydrologic reconnection of San Francisquito Creek to this area and potential subsequent flooding. Because California least tern and western snowy plover have potential to occur in habitat in the Faber Tract, flooding from San Francisquito Creek and subsequent habitat alteration could affect these species as well. This habitat alteration would be significant. Implementation of Mitigation Measure BIO5.2 would reduce the impact to a less-than-significant level.

Impact BIO8—Disturbance of California Red-Legged Frog and San Francisco Garter Snake and Habitat

Summary by Project Element: Impact BIO8—Disturbance of California Red-Legged Frog and San Francisco Garter Snake and Habitat		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Levee and Floodwall Construction		
Levee lowering on right bank	Less than Significant with Mitigation	No Impact
Levee raising on right bank	Less than Significant with Mitigation	No Impact
Floodwall on right bank	No Impact	No Impact

Summary by Project Element: Impact BIO8—Disturbance of California Red-Legged Frog and San Francisco Garter Snake and Habitat		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Levee raising on left bank and levee relocation	Less than Significant with Mitigation	No Impact
Floodwall on left bank	No Impact	No Impact
Downstream access road on right bank	No Impact	No Impact
Upstream access road on right bank	No Impact	No Impact
Access road on left bank	No Impact	No Impact
Friendship Bridge	No Impact	No Impact
Marshplain Restoration		
All marshplain restoration Project elements	No Impact	No Impact

Construction

California red-legged frog and San Francisco garter snake have a low potential to occur within the portions of the freshwater ponds that occur within the Project area. A pond located outside of and immediately northwest of the Project site is understood to catch and convey stormwater run-off from the residential neighborhood and supply it to the O'Connor Pump Station located immediately south of the pond. The pond within the Project site is entirely surrounded by a parking lot and the Golf Course, and is likely managed by the Golf Course for aesthetic value. While the Project is within historic salt marsh, these ponds represent low-quality habitat for these species.

Project elements that have potential to disturb California red-legged frog and San Francisco garter snake are identified in the summary table for Impact BIO8. Construction activities would occur near suitable habitat for California red-legged frog and San Francisco garter snake and could disturb individuals that might be present in the uplands and in the ponds. Such an effect could constitute a significant impact.

However, these species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points and preventing animal entry and entrapment. Further, implementation of Mitigation Measures BIO2.1 (California red-legged frog and San Francisco garter snake awareness will be included in the preconstruction worker awareness training required for all construction personnel) and~~,~~ BIO8.1~~, and BIO8.2~~ would reduce this impact to a less-than-significant level.

Mitigation Measure BIO8.1—Implement Survey and Avoidance Measures for California Red-Legged Frog and San Francisco Garter Snake Prior to Construction Activities

SFCJPA will retain a permitted biologist to conduct a survey of the freshwater ponds and surrounding upland habitat prior to initiation of construction activities. The surveys will be conducted according to applicable protocols and will be performed during optimal observation periods of the day when detection potential for these species is maximized. The survey will be conducted prior to initiation of construction, but such that enough time is allowed to coordinate with USFWS and DFG to develop a species avoidance plan if needed. If California red-legged frog or San Francisco garter snake individuals are observed or heard during the survey, proposed Project activities within 500 feet of the observation will be postponed. A species avoidance plan will be developed in coordination with USFWS and DFG and implemented during construction and maintenance. If no individuals are observed during the surveys, no further action will be necessary.

Operation and Maintenance

As discussed in Chapter 2 *Project Description*, all maintenance of facilities improved by the Project located in upland areas near the Project element sites would take place under the District's and East Palo Alto's respective maintenance programs. Maintenance of Project facilities identified as being in or near suitable habitat would have some potential to disturb California red-legged frog and San Francisco garter snake.

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and thus would not result in new impacts on California red-legged frog and San Francisco garter snake. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO8, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no new impact.

Impact BIO9—Disturbance of Steelhead Trout and Suitable Habitat

Summary by Project Element: Impact BIO9—Disturbance of Steelhead Trout and Suitable Habitat		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	No Impact

Construction

Steelhead are known to occur within San Francisquito Creek year-round, with adults migrating through the Project area and juveniles potentially rearing in the Project area. Construction activities for each Project element would occur near suitable habitat for these species and could disturb individuals that could be present in San Francisquito Creek. Such an effect would be considered a significant impact.

However, this species will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include evaluating the stream and native aquatic vertebrates if these are present and relocating individuals as appropriate. Further, implementation of Mitigation Measures BIO2.1 (Steelhead awareness will be included in the preconstruction worker awareness training required for all construction personnel) and BIO9.1 would reduce this impact to a less-than-significant level.

Mitigation Measure BIO9.1—Implement Avoidance Measures for Steelhead Trout Prior to Construction Activities

No in-channel construction activities will occur during the steelhead migration period (October 1–April 30), to reduce the likelihood that steelhead are present during construction activities.

A qualified fisheries biologist, approved by NMFS, will survey the construction area 1 to 2 days before the ~~project~~Project begins. If no surface water is present in the immediate construction area, fish will not be relocated. If water is present, the following procedures will be implemented.

- Before a work area is dewatered, fish will be captured and relocated to avoid injury and mortality and minimize disturbance.
- Before fish relocation begins, a qualified fisheries biologist will identify the most appropriate release location(s). Release locations should have water temperatures similar to the capture location and offer ample habitat for released fish, and should be selected to minimize the likelihood that fish will reenter the work area or become impinged on the exclusion net or screen. At this time the open reach below the ~~project~~Project site is anticipated to have suitable conditions for relocation.
- Seining or dip netting will be utilized to keep stress and injury to fish at a minimum. Given the salinity of the ~~project~~Project reach, electrofishing will not be utilized.
- To the extent feasible, relocation will be performed during morning periods. Water temperatures will be measured periodically, and relocation activities will be suspended if water temperature exceeds 18^{0}C (National Marine Fisheries Service 2000).
- Handling of salmonids will be minimized. When necessary, personnel will wet hands or nets before touching fish.
- Fish will be held temporarily in cool, shaded water in a container with a lid. Overcrowding in containers will be avoided. Fish will be relocated promptly. If water temperature reaches or exceeds NMFS limits, fish will be released and relocation operations will cease.
- If fish are abundant, capture will cease periodically to allow release and minimize the time fish spend in holding containers.
- Fish will not be anesthetized or measured. However, they will be visually identified to species level, and year classes will be estimated and recorded.
- Reports on fish relocation activities will be submitted to DFG and NMFS within 30 days of completion.
- If mortality during relocation exceeds 5% or mortality of any State or Federal listed species occurs, relocation will cease and DFG and NMFS will be contacted immediately or as soon as feasible.
- Fish relocation efforts will be performed concurrent with the installation of the diversion and will be completed before the channel is fully dewatered. The fisheries biologist will perform a second survey 1 to 2 days following the installation of the diversion to ensure that fish have been excluded from the work area and spot checks will be performed at least biweekly while the diversion is in place.

Operation and Maintenance

As discussed in Chapter 2, *Project Description*, all maintenance of facilities improved by the Project located in upland areas near the Project element sites identified above would take place under the District's and East Palo Alto's respective maintenance programs. The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and thus would not result in new impacts on special-status plants. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO9, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no new impact.

The expanded channel and new flood control facilities could potentially impact conditions for rearing steelhead in the Project reach resulting in degraded habitat and potential entrapment. In the Phase One reach, widening of the channel, planting of vegetation strips near rip-rap, the higher elevation marshplain terrace, and overflow into the Faber Tract are all anticipated to contribute to varied velocities and create velocity refuge for rearing steelhead during flood events. These changes in velocities are anticipated to beneficial to steelhead. Conservatively, no impact, beneficial or otherwise, is assumed. In the Phase Two reach, channel excavation and the installation of floodwalls are anticipated to have no appreciable net impact on in-channel velocities or in-channel refuge for steelhead. The marshplain benches and terrace are designed to slope back into the low-flow channel and would not entrap steelhead. Distributary channels in the Faber Tract provide pathways for rearing steelhead movement that would prevent entrapment of juveniles passed into the Faber Tract during high flow events. Overall, while conditions are anticipated to improve, the benefits for steelhead rearing cannot be fully guaranteed, and thus no impact is conservatively assumed.

Impact BIO10—Temporary Degradation of Instream Habitat

Summary by Project Element: Impact BIO10—Temporary Degradation of Instream Habitat		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	No Impact

Construction

As discussed in Impact HWR4 in Section 3.8, *Hydrology and Water Quality*, construction-related ground disturbance could result in increased delivery of sediment into San Francisquito Creek, depending on the location of the work. This disturbance has potential to degrade habitat immediately adjacent to the Project work site, which receives direct sediment input, and could also degrade downstream habitat to the extent that fine sediment is carried downstream. In both cases, the areas of principal concern are those that support habitat for native fish and amphibians and downstream habitat that offers direct access to the Bay.

High concentrations of suspended sediment can have both direct and indirect effects. The severity of these effects depends on the sediment concentration, duration of exposure, and sensitivity of the affected life stage. Short-term increases in turbidity and suspended sediment could disrupt feeding activities or result in avoidance or displacement of fish from preferred habitat. Chronic exposure to high turbidity and suspended sediment could also affect growth and survival by impairing respiratory function, reducing tolerance to disease and contaminants, and causing physiological stress (Waters 1995). Such impacts would be significant.

However, as identified in Impact HWR3 in Section 3.8, the District routinely implements comprehensive BMPs to protect water quality during construction. Project construction work would also require implementation of a Storm Water Pollution Prevention Plan (SWPPP), providing further oversight. These BMPs have been adopted as environmental commitments for the proposed Project, described in detail in Chapter 2, *Project Description*. These commitments include measures that will:

- Minimize stormwater pollution through implementation of erosion control measures.
- Minimize entry of new sediment into the stream channel through proper stockpiling of sediments and otherwise preventing escape of sediments from street surfaces, truck loads, and other sediment sources.
- Remove material that could affect water quality that results from Project operations from any location where it could reenter any waterway.
- Monitor turbidity and avoid increasing turbidity beyond stated thresholds.
- Ensure that all equipment maintenance (i.e., vehicle washing, refueling, equipment servicing) is done either offsite or outside the stream channel, unless equipment stationed in these locations cannot be readily relocated. If emergency repairs are required, containment will be provided.
- Prevent the accidental release of hazardous materials, chemicals, fuels, lubricants, and non-storm drainage water.
- Isolate work areas from tidal flow through use of coffer dams.
- Manage groundwater, if high levels of groundwater are encountered at a ~~project~~Project site.
- Avoid introduction of sanitary and septic waste into waterways.

With adherence to these environmental commitments, the impact would be less than significant.

Operation and Maintenance

As discussed in Impact HWR3 in Section 3.8, *Hydrology and Water Quality*, maintenance-related ground disturbance could result in increased delivery of sediment into San Francisquito Creek depending on the location of the work. This disturbance has the potential to degrade habitat immediately adjacent to the Project work site, which receives direct sediment input, and could also degrade downstream habitat to the extent that fine sediment is carried downstream. In both cases, the areas of principal concern are those that support habitat for native fish and amphibians and downstream habitat that offers direct access to the Bay.

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds and thus would not result in new impacts on instream habitat. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO10, Construction. There would be no new impact.

Impact BIO11—Disturbance or Loss of Riparian Habitat

Summary by Project Element: Impact BIO11—Disturbance or Loss of Riparian Habitat

Project Element	Construction Impact Level	Operation and Maintenance Impact Level
Levee and Floodwall Construction		
All levee and floodwall construction Project elements	No Impact	No Impact

Summary by Project Element: Impact BIO11—Disturbance or Loss of Riparian Habitat		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Marshplain Restoration		
Downstream of Friendship Bridge on right bank	No Impact	No Impact
Upstream of Friendship Bridge on right bank	No Impact	No Impact
Left bank	Less than Significant with Mitigation	No Impact

Construction

Only one small area of riparian habitat exists in the Project area. This area is found along San Francisquito Creek in the southwestern portion of the Project area. The only Project element that would affect riparian habitat is channel widening and marshplain creation and restoration in the upper reach of San Francisquito Creek in the Project area. Extensive trimming, pruning, or removal of riparian habitat could represent a significant impact.

Riparian habitat will be protected to the maximum extent practicable during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include the environmental commitments listed under Impact 10 above. Further, implementation of Mitigation Measures BIO2.1, BIO11.1, and BIO11.2 would reduce impacts to a less-than-significant level by replacing any riparian areas permanently impacted.

Mitigation Measure BIO11.1—Identify and Protect Riparian Habitats

To avoid unnecessary damage to or removal of riparian habitat, the SFCJPA will retain a qualified biologist or ecologist to survey and demarcate riparian habitat on or adjacent to the proposed areas of construction in the upper reach of San Francisquito Creek. Riparian areas not slated for trimming or removal to accommodate Project construction will be protected from encroachment and damage during construction by installing temporary construction fencing to create a no-activity exclusion zone. Fencing will be brightly colored and highly visible, and installed under the supervision of a qualified biologist to prevent damage to riparian habitat during installation. The fencing will protect all potentially affected riparian habitat consistent with International Society of Arboriculture tree protection zone recommendations and any additional requirements of the resource agencies with jurisdiction. Fencing will be installed before any site preparation or construction work begins and will remain in place for the duration of construction. Riparian vegetation that must be trimmed will be trimmed by an International Society of Arboriculture certified arborist who will minimize stress and potential damage to trees and shrubs. Construction personnel will be prohibited from entering the exclusion zone for the duration of Project construction. Access and surface-disturbing activities will be prohibited within the exclusion zone.

Mitigation Measure BIO11.2—Restore Riparian Habitat

The SFCJPA will be responsible for restoring permanently affected riparian habitat at a mitigation-to-impact ratio of 2:1, and restoring temporarily affected habitat at a minimum impact-to-mitigation ratio of 1:1 to ensure no net loss of riparian habitat in the affected stream reach. The SFCJPA will develop a Mitigation and Monitoring Plan (MMP) to ensure that all removed habitat is replaced "in kind" with the appropriate native overstory and understory species to maintain structural complexity and habitat value. The MMP will be developed in the context of the federal and state permitting processes under the CWA and California Department of Fish and Game Code, and will include success criteria as specified by the permitting agencies. The MMP will also include adaptive management guidelines for actions to be taken if the success criteria are not met. The success criteria will be met if 80% of the riparian plantings become established after 10 years. Monitoring will occur, at a minimum, during years 1, 2, 3, 5, 7, and 10, with the plantings taking place in year 0.The initial annual monitoring will assess progress of the plantings according to predetermined success criteria. If progress is not satisfactory, adaptive management actions (including replanting, nonnative species removal, etc.) could be implemented. The MMP will remain in force until the success criteria are met.

Operation and Maintenance

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds, and would not result in new impacts on riparian habitat. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO11, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no impact.

Impact BIO12—Disturbance or Loss of State- or Federally Protected Wetlands

Summary by Project Element: Impact BIO12—Disturbance or Loss of State- or Federally Protected Wetlands

Project Element	Construction Impact Level	Operation and Maintenance Impact Level
Levee and Floodwall Construction		
Floodwall on left bank	No Impact	No Impact
All other levee and floodwall construction Project elements	Less than Significant with Mitigation	No Impact
Marshplain Restoration		
All marshplain restoration Project elements	Less than Significant with Mitigation	No Impact

Construction

Approximately 3.5 acres of wetlands would be permanently or temporarily affected by Project construction: approximately 2.3 acres of tidal salt marsh, 1.1 acres of diked marsh, and 0.1 acre of tidal channel and bay waters. Levee and floodwall construction activities would temporarily and permanently affect diked marsh and tidal salt marsh habitat. Additionally, marshplain creation and restoration activities would temporarily affect tidal salt marsh habitat.

However, as described in Chapter 2, *Project Description*, marshplain restoration would result in creation and restoration of approximately 18 acres of tidal salt marsh habitat, more than five times the amount of wetland affected. Construction requiring removal of wetlands would be subject to USACE jurisdiction under Section 404 of the CWA, and DFG and RWQCB (state) jurisdiction under CWA Sections 401 and 402. Wetland disturbance and/or removal would represent a less-than-significant impact given the creation and restoration of 18 acres of tidal wetlands. Implementation of Mitigation Measures BIO2.1 and BIO 12.1 would further minimize impacts on wetlands not within the grading footprint, including the low-flow channel.

Mitigation Measure BIO12.1—Avoid and Protect Jurisdictional Wetlands during Construction

The SFCJPA will ensure that a qualified resource specialist (biologist, ecologist, or soil scientist) will clearly identify wetland areas outside of the direct impact footprint with temporary orange construction fencing before site preparation and construction activities begin at each site or will implement another suitable low-impact measure. Construction will not encroach upon jurisdictional wetlands identified by the wetland specialist. The resource specialist will use the wetland delineation (ICF ~~*in prep*~~2012) mapping prepared for the proposed Project and will confirm or modify the location of wetland boundaries based on existing conditions at the time of the survey. Exclusion fencing will be installed before construction activities are initiated, and the fencing will be maintained throughout the construction period. No construction activity, traffic, equipment, or materials will be permitted in fenced wetland areas.

Operation and Maintenance

The Project would create minimal in-channel maintenance needs, primarily limited to monitoring and removal of invasive weeds, and would not result in new impacts on in-channel wetlands. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO12, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no impact.

Impact BIO13—Loss of, or Damage to, Protected Trees

Summary by Project Element: Impact BIO13—Loss of, or Damage to, Protected Trees		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	No Impact

Construction

The Project would require removal of at least 148 trees due to levee and floodwall construction and marshplain construction and restoration (H.T. Harvey & Associates 2011). An additional 106 trees might need to be removed, but that additional removal would be evaluated to determine whether removal can be avoided during construction. Trees that might require removal are primarily landscape plantings consisting of nonnative ornamental species, including several nonnative invasive species, such as eucalyptus (*Eucalyptus* spp.), Peruvian peppertree (*Schinus molle*), Canary Island date palm (*Phoenix canariensis*), tree tobacco (*Nicotiana glauca*), olive (*Olea europaea*), and tree-of-heaven (*Ailanthus altissima*). Native tree species including coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), arroyo willow (*Salix lasiolepis*), Monterey cypress (*Hesperocyparis macrocarpa*), Hind's black walnut (*Juglans hindsii*), box elder (*Acer negundo*), blue elderberry (*Sambucus nigra* ssp. *caerulea*) and California bay (*Umbellularia californica*) would also be removed. Additionally some of the trees impacted by the Project were planted as part of mitigation projects conducted by both the District and the City of Palo Alto for the Matadero Creek and Palo Alto Pump Station projects, respectively. At this time, the SFCJPA is not proposing to modify or remove any features on private property, with the possible exception of minor tree trimming to provide equipment access without damage to private landscape trees. If additional work is necessary, the SFCJPA would work closely with property owners as needed to ensure that any work is done satisfactorily.

Some of the trees in the Project area are protected by local tree ordinances (e.g., Santa Clara County Tree Ordinance, San Mateo County Tree Ordinance, City of Palo Alto Tree Ordinance, and City of East Palo Alto Tree Ordinance). Additionally, riparian trees are protected by DFG. Of the species that could be affected, some (i.e., willow, alder, and California bay) would establish fairly quickly, and their removal would represent less of a long-term concern than removal of slower-growing species such as coast live oak and California buckeye. However, removal of any protected trees would be considered a significant impact.

In addition, construction activities—including the use of heavy equipment and vehicles, and stockpiling of excavated materials—could inadvertently damage protected trees not designated for removal by directly cutting or injuring roots, compacting soil and reducing the tree's ability to take up water, or compromising the tree's structural integrity. Injuries to limbs or trunk can alter a tree's ability to transport water and nutrients. All of these effects can decrease a tree's chances of survival, and such injuries or damage to protected trees would also be considered significant impacts.

However, trees will be protected during construction by Project environmental commitments to protect biological resources, detailed in Chapter 2, *Project Description*. These include minimizing new temporary access points. Further, implementation of Mitigation Measures BIO13.1 and BIO13.2 would reduce impacts on protected trees to a less-than-significant level. Note that removal of trees in riparian habitat is addressed and compensated separately in Impact BIO11and Mitigation Measures BIO11.1 and 11.2; Mitigation Measures BIO13.1 and BIO13.2 apply only to trees outside areas of riparian habitat (i.e., landscape trees).

Mitigation Measure BIO13.1—Transplant or Compensate for Loss of Protected Landscape Trees, Consistent with Applicable Tree Protection Regulations

Protected landscape trees slated for removal and deemed good candidates for transplantation will be considered for transplanting in conjunction with the proposed landscaping plans. Transplanted trees will be located on the site if space permits. If the number of trees to be transplanted is too large to be accommodated on the Project site, the SFCJPA will prepare a landscaping plan detailing other locations where transplanted trees will be planted, consistent with the requirements of the applicable tree protection ordinance or regulations. Transplanted trees will be subject to the monitoring and replacement requirements identified for replacement trees below.

Protected landscape trees not deemed good candidates for transplantation will be replaced. The landscaping plan for tree replacement will specifically identify the locations where replacement trees are to be planted; replacements will be planted on the site, if possible. The landscaping plan will be subject to review and approval by the agency with jurisdiction (Santa Clara County, San Mateo County, City of Palo Alto, or City of East Palo Alto).

Tree removals within the Cities of Palo Alto and East Palo Alto will be compensated for at a mitigation-to-impact ratio of 1:1, or as determined by the City. Species and location of the replacement tree will be determined in consultation with the property owner and the City.

Impacted mitigation trees associated with the Matadero Creek and Palo Alto Pump Station projects would be replaced in accordance with the terms and conditions of the respective permits for those projects and in consultation with the responsible permitting authorities for those projects, should the monitoring period for successful completion of mitigation requirements not be completed at the time of construction.

The SFCJPA will be responsible for ensuring newly planted trees will be monitored at least once a year for 3 years. Each year, trees that do not survive will be replaced in a manner consistent with the compensation required under the applicable tree ordinance. Trees planted as remediation for failed plantings will then be monitored for a period of 3 years in the same manner, and trees that do not survive will be replaced. Trees that are replaced will be consistent with the Guidelines and Standards for Land Uses near Streams prepared by the Santa Clara Valley Water Resources Protection Collaborative. The SFCJPA will be responsible for the removal of irrigation systems that are no longer used following tree establishment. Inactive irrigation systems will be removed within 5 years of satisfaction of the mitigation measure.

Mitigation Measure BIO13.2—Protect Remaining Trees from Construction Impacts

Trees not designated for removal will be protected from damage during construction by the installation of temporary fencing in a manner consistent with International Society of Arboriculture tree protection zone recommendations. Fencing will keep construction equipment away from trees and prevent unnecessary damage to or loss of protected trees on the Project site. Protected trees retained on the site and located adjacent to construction activities will be monitored as specified for newly planted trees (see Mitigation Measure BIO 13.1) and replaced if they do not survive through the monitoring period.

Operation and Maintenance

The Project would not create new maintenance-related impacts related to removal of trees in these areas. Tree removal necessitated by long-term maintenance at the new levees and floodwalls would be subject to local tree protection ordinances and be limited and compensated for in accordance with their requirements. Further, ongoing maintenance will be performed through adherence to Project environmental commitments, described above under Impact BIO13, Construction. Emergency maintenance may need to be performed during the life of the Project, but is not reasonably foreseeable and would be subject to separate approval. There would be no impact.

3.4 Cultural and Paleontological Resources

This section provides environmental analysis of the Project's impacts on the Project area. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from construction and implementation of the proposed Project, and describes mitigation to minimize the level of impact.

Environmental Setting

Regulatory Context

Cultural and paleontological resources are protected by the Federal Antiquities Act, NEPA, CEQA, California Public Resources Codes, and the local jurisdiction (county and city) planning process. Important paleontological sites and resources may also be preserved and protected through the National Natural Landmarks Program and the Native American Graves Protection and Repatriation Act, which includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on Federal and tribal lands, and penalties for noncompliance and illegal trafficking (National Park Service 1990). For additional information, see Appendix B of this EIR.

Study Area

The study area is located in the City of East Palo Alto (San Mateo County) and the City of Palo Alto (Santa Clara County). San Francisquito Creek represents the boundary between these two counties in the lower watershed. The term *right bank* of the Creek refers to the San Mateo County side, and *left bank* refers to the Santa Clara County side.

Land uses adjacent to San Francisquito Creek downstream of Friendship Bridge include protected open space and residential land uses. Land uses upstream of Friendship Bridge are residential, light industrial development, and recreational areas.

Existing Conditions

Cultural Resources Setting

Existing conditions for cultural resources were identified based on the published literature relative to prehistory, ethnography, and history of the San Francisco Bay region. To assess the potential for cultural resources within the Project corridor, a records search and literature review was conducted at the Northwest Information Center (NWIC) at Sonoma State University on March 28, 2012. The ICF International in-house cultural resources library was also consulted for pertinent unpublished archaeological reports developed for other Projects within the San Francisco Bay region.

Geoarchaeology

The Project area historically was adjacent to coastal salt marsh. In this area, prehistoric archaeological deposits can be associated with buried Holocene landforms. According to the buried site assessment performed by Byrd and Meyer (2011), the majority of the Project area is considered moderately sensitive for buried archaeological resources, with the area of greatest sensitivity (high-very high) located in the upper reach. This assessment was based on the age and distribution of surface deposits located in the Project vicinity (Byrd and Meyer 2011:39-56). Those areas of moderate sensitivity include the historic-era Bay and adjoining marshlands (the lower and middle reaches), some of which are now overlain by artificial fill deposits. Although these fill deposits themselves do not have any potential of containing intact buried sites, these deposits could overlie "pre-Bay" land surfaces that were in proximity to the former Bay margins, which could have contained buried sites.

The upper reach, with high-very sensitivity, is linked with the areas of Latest and Late Holocene alluvial deposits that border much of San Francisquito Creek (Byrd and Meyer 2011:39-56). In these areas, sites may be buried by sediments or may have been scoured by erosional processes. Because of the dense development of much of the Project area, it is possible for sites to be concealed beneath pavement. Episodic flooding and sedimentation can often "cap" buried sites to depths exceeding modern construction, and previous subsurface disturbances may not be as extensive as supposed. This is particularly true of areas adjacent to watercourses (Allen et al. 1999, Hylkema 1996). Despite the possibility that sites may have been present at the Project site, Byrd and Meyer state that several factors "indicate that additional pedestrian survey within the Project APE is unlikely to identify previously undocumented surface archaeological sites," noting that much of the lower segment of San Francisquito Creek (the current Project area) is "either heavily urbanized or appears to have been previously surveyed" (Byrd and Meyer 2011:55).

Prehistoric Context

The Project area is located along the southwest edge of the San Francisco Bay region. The San Francisco Bay-Delta Cultural Sequence, often referred to as the Central California Taxonomic System, was defined largely on the basis of stylistic variation in artifacts from burials found in the lower Sacramento Valley (Lillard et al. 1939). Over time, this sequence has been refined as research has yielded new clues to the early development of the Bay Area. The following summary is extracted from Byrd and Meyer (2011), which used several studies, including Milliken et al. (2007), Rosenthal and Meyer (2004), and Moratto (1984).

Terminal Pleistocene (13,500-11,600 cal BP)

The Terminal Pleistocene is largely contemporaneous with the Clovis and Folsom periods of the Great Plains and the Southwest and is generally considered to be represented by wide-ranging, mobile hunters and gatherers who regularly exploited large game (Haynes 2002). Throughout California, the Terminal Pleistocene is most often represented by isolated fluted points (Erlandson et al. 2007; Rondeau et al. 2007).

Early Holocene (11,600-7700 cal BP)

Early Holocene prehistoric material in the Bay Area is sparse; only four sites date to this period: two sites at Los Vaqueros Reservoir (CCO-696 and -637) in the East Bay, the Blood Alley site (SCL-178) in the Coyote Narrows of the Santa Clara Valley, and SCR-177 at Scott's Valley in the Santa Cruz Mountains (Cartier 1993, Hildebrandt 1983, Meyer and Rosenthal 1997). Their deposits, which indicate diverse resource exploitation, demonstrate that the general region was occupied throughout this time segment, but strong insight into the nature of early occupation trends is still lacking.

Middle Holocene (7700-4000 cal BP)

In the Bay Area, Middle Holocene assemblages can include various types of groundstone, points, chopping, scraping, and pounding implements, and shell beads and ornaments (Fitzgerald 1993; Meyer and Rosenthal 1998). Exploitation of the Bay's estuary, mud flats, and freshwater tidal marshes were common, and the presence of a diverse range of habitation sites, including the basal layers of some Bay margin shell mounds, suggests higher population levels, more complex adaptive strategies, and longer seasonal occupation than during the early Holocene. Notable sites include SCL-484, -674, and -832; SMA-269 and -273, and SFR-28, all which contained several isolated human burials.

Late Holocene (4000-170 cal BP)

The Late Holocene is generally divided into five "slices" based on specific types of shell beads. It is well documented in the Bay Area- over 200 sites reflect widespread occupation by complex hunter-gatherers (Milliken et al. 2007). Important mounds along the south Bay margins include the University Village site (SMA-77), the San Bruno Mountain mound (SMA-40), and the Ynigo Mound (SCL-12/H; Byrd and Berg 2009, Clark 1989, and Gerow 1968). The artifact assemblages include various types of beads and pendants, bone tools, "flower pot" mortars, and the bow and arrow. Funerary rituals were strongly patterned, and included flexed interments and "killed" grave offerings, along with occasional cremations. Extensive trade relations also appear to have flourished with neighboring groups.

Historical Context

At the time of European contact, the Santa Clara Valley was occupied by a group of Native Americans referred to by ethnographers as the Ohlone or Costanoans. The territory of the Ohlone people extended along the coast from the Golden Gate in the north to just beyond Carmel in the south and as much as 60 miles inland, encompassing a lengthy coastline as well as several inland valleys (Levy 1978). The proposed Project area was inhabited by the Puichon tribe, whose territory encompassed the west shore of San Francisco Bay between lower San Francisquito Creek and lower Stevens Creek (now the areas of Menlo Park, Palo Alto, and Mountain View (Milliken 1995:229 Map 5 and 252).

Spanish colonization of what is now California began in the late 1700s, based around a system of missions intended to convert the native peoples to Catholicism, gain control of the native population, and create economically self-sufficient colonial communities. When Mexico won its independence from Spain in 1824, one of the first acts of the new government was to secularize the missions and redistribute the mission land holdings in the form of land grants to individuals who promised to work the land, primarily by raising cattle. The southern portion of the Project area, west of San Francisquito Creek at Jasmine Way, was part of the Rancho Rincon de San Francisquito. The land east of the levee consisted of wetlands during this period (Bean and Rawls 1988, Byrd and Meyer 2011).

In 1848, the United States won the Mexican-American War and as a result gained approximately 50 percent of Mexico's territory, including what would become the state of California. Within weeks of the end of the war, gold was discovered in the Sierra Nevada foothills, and by the summer of 1849, thousands of people were arriving in California in search of their fortunes. Most of the Mexican land grants were judged invalid; the land was subject to sale, opening large acreages to new ownership and initiating a shift to farming to supply the growing demand for fresh foods. In the South Bay, a combination of wheat and barley production, dairy farms, and orchards dominated the valley floor from the 1860s until the late 1870s (Jacobson 1984).

By the 1890s, orchard production was the dominant agricultural activity in the valley, remaining in this position through the 1940s. In the late nineteenth century, Leland Stanford, Sr., established the Palo Alto Stock Farm on his 8,650 acres of land along San Francisquito Creek. He founded the Stanford University on this land in 1891. Population in the region grew substantially during the early twentieth century. Palo Alto expanded significantly, eventually incorporating Mayfield and Stanford University by early World War II (Jacobson 1984, Byrd and Meyer 2011).

Following World War II, the growth of light industry, such as salt evaporating ponds, and high-tech research and development, coupled with expanding suburbanization gradually eroded the valley's orchards. However, vestiges of the old orchards persisted throughout the area. As late as 1970, the City of San Jose—which at that time had a population of almost half a million—was still classified as partly rural by the U.S. census, and scattered areas of undeveloped land such as the Grant Road "farm parcel" in the City of Mountain View still remained (Payne 1987).One of California's earliest highways, Route 2, cut through Palo Alto, and served as the state's main north-south artery in the 1910s. By 1926, Route 2 was redesignated as U.S. 101. In 1940, the City of Palo Alto prompted the construction of a bypass route to direct traffic around the City's downtown. By the end of World War II, the Division of Highways expanded the U.S. 101 bypass to four lanes (Byrd and Meyer 2011).

Flood Control History–San Francisquito Creek

The history of flood control and channel modifications described below is summarized from the *Historical Ecology of Lower San Francisquito Creek* (Hermstad, Cayce, and Grossinger 2009).

By 1897, there had been only limited modifications to the broad tidal marsh area of Lower San Francisquito Creek. While some levees were visible, they were generally not successful in containing floodwaters (Westdahl 1897). Wilson's Landing and Clarke's Landing were clearly visible by 1897, apparently creating small areas of landfill. However, tidal marsh habitat acreage remained roughly the same as in 1857 at 1,109 acres (1,142 acres in 1857). Loss of tidal marsh could be seen along the backshore boundary; San Francisquito Creek appears to have deposited significant amounts of sediment over the marsh surface. Over the same period, presumably due to large sediment supply, the shoreline continued to build out north of the San Francisquito tidal slough, offsetting the loss in the upland transition.

Much more rapid human modification of marshlands occurred from 1900 to 1920. By this time, extensive levees had removed tidal action from much of the former marshland, extending the backshore further east. Numerous tidal flats and channels were cut off, changed course, or were otherwise altered during this time period. The first significant dredging of tidal channels began at this time. The dredged channels were notably widened; discarded bay fill began to cover surrounding tidal marsh areas. In the 1921 view, as in the 1897 picture, San Francisquito Creek did not maintain a well-defined channel through the baylands, but rather appears to have spread broadly. There is evidence of continued alluvial deposition over the baylands in the form of distinct splay deposits. This may have been the result, in part or in full, of local efforts to increase the marsh surface level for agricultural use by directing stream sediments (Clark 1924). Shoreline erosion was evident by this time.

Major re-routing of the San Francisquito Creek took place in the late 1920s (Applequist 1931, Silberling 1971) and can be seen in 1960 aerial images. Controlled by two levees each side of the channel, the Creek lay within a well-defined, excavated channel as it does today. It turned sharply north near the site of its former mouth, ran north for a length of approximately half a mile, turned to the northeast, and exited to the bay through areas of former tidal marsh and diked bayland. Areas of fill had grown substantially, subsuming areas of former tidal marsh, diked bayland, and alluvial fill. Filled areas allowed development such as the Palo Alto Municipal Golf Course and the Palo Alto Airport.

Results of Records Search and Potential for Buried Resources in the Project Area

Sources consulted in the April 2, 2012, NWIC records search conducted for the proposed Project include the list of prior studies, previously recorded sites, historical maps and literature, the National Register of Historical Places (NRHP), the California Register of Historical Resources (CRHR), and the Santa Clara County Historical Resources Index.

The records search identified no previously recorded cultural resources within the Project area. Three previously recorded resources—two prehistoric and one historic structure—were recorded within 0.5 mile of the Project area. These resources are:

- P-41-000260/ CA-SMA-264: a midden site with shell and some human bone.
- P-43-000578/ CA-SCL-583: a midden site with 3 human burials and burial-related artifacts (beads, bone items).
- P-41-002156: c. 1917 Craftsman-style farmhouse and detached garage. This resource appears CRHR-eligible under Criterion 1 for its association with the utopian agricultural colony of Runnymede (1916–1930s).

A total of 22 reports have been conducted within 0.5 mile of the Project area. Of those 22 reports, ten reports covered areas within or adjacent to the Project area (Table 3.4-1).

The remaining 12 reports included a variety of regional overviews, site-specific studies, and archaeological surveys for a variety of projects throughout Palo Alto and East Palo Alto, as well as Santa Clara and San Mateo Counties.

An additional study, *Initial Cultural Resources Investigation, San Francisquito Creek Flood Damage Reduction and Ecosystem Restoration Project, Santa Clara and San Mateo Counties, California* (Byrd and Meyer 2011) was recently conducted for all of San Francisquito Creek. This study details the environmental and cultural context for the Creek and the results of the background records search for the area along the Creek. It also discusses the potential for discovering additional resources, both undocumented historic-era structures and undocumented buried sites.

Table 3.4-1. Studies Conducted Within or Adjacent to the Project Area

Study	Title	Author(s)	Year	Location	Type of Study
3023	A Preliminary Reconnaissance of the Archaeological Resources of the East Palo Alto Redevelopment Project Area	J. Dotta	1974	adjacent to the northern part of the Project area in East Palo Alto	archaeological survey/ area-specific
3033	An archaeological reconnaissance on the proposed site of the Palo Alto Post Office in East Palo Alto (letter report)	M. P. Holman	1976	abuts/slightly in the southwestern portion of the Project area north of U.S. 101	archaeological survey/ area-specific
3163	An archaeological reconnaissance of the proposed Dumbarton Bridge replacement project (letter report)	S. Dietz	1973	runs along the western border of the Project area/ San Francisquito Creek	archaeological survey/ linear
7452	Cultural Resources Investigations, Air Products Liquid Nitrogen Facility Project, Santa Clara County	J.G. Maniery	1985	within the southern part of the Project area north of U.S. 101	archaeological survey/ area-specific
18047	Archaeological Field Inspection of the Palo Alto Golf Course, Palo Alto, Santa Clara County, CA (letter report)	M.P. Holman	1994	the Golf Course, covers that portion of the course that falls within the Project area	archaeological survey/ area-specific
24987	Archaeological Literature Search- HOV Lanes (letter report)	C. Busby	2001	along U.S. 101—abuts the southwestern portion of the Project area	archaeological survey/ linear
34175	San Francisquito Creek Pump Station, Santa Clara County, CA (letter report)	M.P. Holman	2006	within the southwestern portion of the Project area	archaeological survey/ area-specific
35123	Archaeological Survey Report for the U.S. 101 Auxiliary Lanes (Route 85 to Embarcadero Road) Project, Santa Clara County, CA	B. Byrd, M. Darcangelo	2008	along U.S. 101—abuts the southwestern portion of the Project area	infrastructure improvements (road)
37074	Extended Phase I Testing for the U.S. 101 Auxiliary Lanes (Route 85 to Embarcadero Road) Project, Santa Clara County	A. Whittaker	2008	along U.S. 101—abuts the southwestern portion of the Project area	infrastructure improvements (road)
37075	Historic Resources Compliance Report for the U.S. 101 Auxiliary Lanes (Route 85 to Embarcadero Road) Project, Santa Clara County	A. Whittaker	2008	along U.S. 101—abuts the southwestern portion of the Project area	infrastructure improvements (road)

Native American Correspondence

ICF contacted the California Native American Heritage Commission (NAHC) on April 11, 2012 to identify any areas of concern within the Project area that may be listed in the NAHC's Sacred Land File. The NAHC responded on April 13, stating that a search of their files failed to indicate the presence of Native American cultural resources in the immediate Project area. The NAHC also provided a list of contacts that may have additional information regarding cultural resources/sites in the Project area. A letter describing the Project was sent to all of the individuals and organizations on the list on April 13, 2012.

Letters were sent to the following contacts.

- Jakki Kehl.
- Katherine Erolinda Perez.
- Valentin Lopez, Chairperson, Amah Mutsun Tribal Band.
- Edward Ketchum, Amah Mutsun Tribal Band.
- Irene Zwierlein, Chairperson, Amah Mutsun Tribal Band.
- Jean-Marie Feyling, Amah Mutsun Tribal Band.
- Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan.
- Rosemary Cambra, Chairperson, Muwekma Ohlone Indian Tribe of the SF Bay Area.
- Ramona Garibay, Representative, Trina Marine Ruano Family.

Per his request, an email instead of a letter was sent to Andrew Galvan of the Ohlone Indian Tribe. Mr. Galvan replied on May 17, 2012. He stated that he was familiar with the ~~project~~Project area and would like to be kept posted on future project developments.

On May 8, Jean-Marie Feyling contacted ICF and said that she had some concerns about the sensitivity of the ~~project~~Project area. She said that her sister, Irene Zwierlein (also a Native American contact for this ~~project~~Project), had more familiarity with the ~~project~~Project area than Ms. Feyling and should be contacted regarding this ~~project~~Project. Ms. Feyling provided an additional phone number for Ms. Zwierlein.

On May 15, follow-up phone calls were placed to the following contacts: Jakki Kehl, Irene Zwierlein, and Rosemary Cambra. Jakki Kehl was not reached and it was not possible to leave a voice mail message, so a follow-up e-mail was sent to her address provided by the NAHC. A follow-up email was also sent to Edward Ketchum, who had not provided a phone number on the NAHC contact list. Voice mail messages were left for Irene Zwierlein and Rosemary Cambra. An e-mail message was also sent to Ms. Cambra on May 23 when the initial letter that was sent to her was returned, address unknown.

On May 23, follow-up phone calls were placed to the following contacts: Valentin Lopez, Katherine Erolinda Perez, Ramona Garibay, and Ann Marie Sayers. Valentin Lopez stated that this ~~project~~Project is not located in his area of main concern; however, he would like to be kept informed on ~~project~~Project developments if the Muwekma did not respond to my letter or phone calls. Voice mail messages were left for Katherine Erolinda Perez, Ramona Garibay, and Ann Marie Sayers.

All NAHC contacts were also added to the Project notification list for the DEIR.

Paleontological Resources Setting

Geographic Location and Regional Geomorphic and Geologic Setting

The San Francisquito Creek watershed drains a 45-square mile area in the southeastern San Francisco Peninsula and includes portions of East Palo Alto, Menlo Park, Palo Alto, Portola Valley, and Woodside as well as unincorporated areas within San Mateo and Santa Clara counties, and Stanford University (ICF 2012). The present ~~project~~Project area encompasses only the lower part of San Francisquito Creek between East Bayshore Freeway (Hwy 101) and the San Francisco Bay, a channel length of 1.47 miles (2.36 kilometers). In this reach, San Francisquito Creek coincides with the San Mateo/Santa Clara County boundaries.

The Project area falls within the California Coast Ranges Geomorphic Province. In the southern San Francisco Bay region this province is subdivided into three northwest-trending geomorphic features: the Santa Cruz Mountains on the west, the Santa Clara Valley and southern Bay, and the Diablo Range to the east (U.S. Army Corps of Engineers 2009). Two major fault systems (San Andreas to the west and Hayward-Calaveras to the east) approximately separate these features and have caused the central block to be progressively dropped down allowing accumulation of a thick sequence of sediments derived from the adjacent crustal blocks (U.S. Army Corps of Engineers 2009).

Before the development of these fault systems, most of what is now California was formed by accretion and deformation of marine sediments and volcanic rocks carried from the west on an oceanic crustal plate and scraped off as the plate was subducted under the western edge of the North American continental plate. Rocks formed and altered by these processes range in age from about 205 million to 65 million years and are now termed the Franciscan Complex (McFee 1993; US Army Corps of Engineers 2009; Sloan 2006). These rocks form the basement below the sequence of sedimentary deposits which underlie the Project site.

Although a thick sequence of sedimentary rock formations of Tertiary age (65 million to 2.6 million years) undoubtedly exists below the lower reaches of San Francisquito Creek, only younger (Quaternary) deposits are now present at and near the surface. Most of these were deposited in the latest portion of the Quaternary Period, termed the Holocene Epoch (about 11,800 years to the present).

The Quaternary Period includes the Pleistocene Epoch (about 2.6 million years to about 11,700 years ago) and the Holocene (Recent) Epoch, approximately the past 11,700 years (International Commission on Stratigraphy 2010). The Pleistocene Epoch is informally termed the Ice Age, although the period also includes several warm intervals during which the climate differed little from that of today. Mountain glaciers in the Sierra Range expanded during the intervening colder intervals as did continental glaciers in parts of the Midwest. However, there is no evidence of glaciation in the Coast Ranges in the San Francisco Bay area.

During the Pleistocene Epoch, changes in world-wide sea level caused by alternating periods of glacial ice accumulation and melting resulted in several cycles of flooding and drying of the San Francisco Bay (Sloan 2006). As widespread continental glaciers melted for the last time in the late Pleistocene and early Holocene, sea level rose and began to fill the Bay, though the pace of inundation slowed between about 6,000 and 7,000 years ago (Middle Holocene), allowing accumulation of widespread tidal marsh deposits (Atwater et al. 1979). Subsequent development of floodplains and the latest widespread inundation of the Bay have left a varied sedimentary record in the upper portions of the stratigraphic record.

Site Geology

Brabb et al. (2000) recognize five map units within the Project site.

> **af - Artificial fill (Historic).** Loose to very well consolidated gravel, sand, silt, clay, rock fragments, organic matter, and man-made debris in various combinations. Thickness is variable and may exceed 30 m in places. Some is compacted and quite firm, but fill made before 1965 is nearly everywhere not compacted and consists simply of dumped materials.
>
> **alf - Artificial levee fill (Historic).** Man-made deposits of various materials and ages, forming artificial levees as much as 6.5 m high. Some are compacted and quite firm, but fills made before 1965 are almost everywhere not compacted and consist simply of dumped materials. The distribution of levee fill conforms to levees shown on the most recent U.S. Geological Survey (USGS) 7.5-minute quadrangle maps.
>
> **Qhbm - Bay mud (Holocene).** Water-saturated estuarine mud, predominantly gray, green and blue clay and silty clay underlying marshlands and tidal mud flats of San Francisco Bay, Pescadero, and Pacifica. The upper surface is covered with cordgrass (Spartina sp.) and pickleweed (Salicornia sp.). The mud also contains a few lenses of well-sorted, fine sand and silt, a few shelly layers (oysters), and peat. The mud interfingers with and grades into fine-grained deposits at the distal edge of Holocene fans, and was deposited during the post-Wisconsin rise in sea-level, about 12 ka to present (Imbrie et al. 1984). Mud varies in thickness from zero, at landward edge, to as much as 40 m near north County line.
>
> **Qhb - Basin deposits (Holocene).** Very fine silty clay to clay deposits occupying flat-floored basins at the distal edge of alluvial fans adjacent to the bay mud (Qhbm). Also contains unconsolidated, locally organic, plastic silt and silty clay deposited in very flat valley floors.
>
> **Qhfp - Flood-plain deposits (Holocene).** Medium- to dark-gray, dense, sandy to silty clay. Lenses of coarser material (silt, sand, and pebbles) may be locally present. Flood-plain deposits usually occur between levee deposits (Qhl) and basin deposits (Qhb).

The great majority of the Project site is directly underlain by artificial fill and artificial levee fill. Undisturbed floodplain and basin deposits appear near the channel only in short segments within the first kilometer (approximately 0.6 mile) downstream from the East Bayshore Road bridge. Bay mud deposits are mapped near the downstream end of San Francisquito Creek within the Project area but beyond artificial levees bordering the Creek. Bay mud deposits probably also underlie much of the artificial fill near the central portion of the Project site, but the depth of fill is unknown and probably varies across the site. The three undisturbed geologic units, bay mud, basin, and floodplain deposits, are of Holocene age at the surface, but may contain mid- to early Holocene strata and even Pleistocene deposits at depth. Table 3.4-2 shows likelihood of fossil types and paleontological sensitivity of these map units.

Table 3.4-2. Geologic Units Underlying the San Francisquito Creek Project Area

Age	Geologic Unit	Map Symbol	Potential Fossil Types	Paleontological Sensitivity
Historical	Artificial fill	af	None*	None
	Artificial levee fill	alf	None*	None
Pleistocene to Recent	Bay mud deposits	Qhbm	Mammals, birds, reptiles, fish, invertebrates	High
	Basin deposits	Qhb	Mammals, birds, reptiles, fish, invertebrates	High
	Floodplain deposits	Qhfp	Mammals, birds, reptiles, fish	High

Source: Brabb et al. 2000

Paleontological Potential at the Project Site

Museum records and literature review have not directly revealed the known presence of fossils within the ~~project~~Project site boundaries. However, this is not an unexpected result in view of the paucity of natural or man-made exposures of subsurface sediments in the area. Despite limited exposures, records of the University of California Museum of Paleontology document the presence of a nearby late Pleistocene locality (UCMP Locality V91248) in sediments comparable to those found at the Project site. This locality is on the site of the former Onizuka Air Force Station near the southern tip of the bay, less than 5 miles southeast of the San Francisquito Creek site. The Pleistocene fossils appeared at a depth of about 8 to 10 feet below the present surface above a bluish clay layer suggesting bay mud deposits although sediments at the surface are mapped (Brabb et al. 2000) as Holocene floodplain and alluvial fan deposits.

Though not formally recorded, Pleistocene fossil bones have also appeared at the former Mountain View Dump, now the SMaRT Station, about 6 miles east-southeast of the Project site (Goodwin pers. comm.). The sediment types at the site are fine-grained but varied and the exact sediment type associated with the finds is not recorded.

Potentially sensitive portions of the Project site according to Brabb et al. (2000) occur in Holocene flood plain deposits (Qhfp) and Holocene basin deposits (Qhb), both near the upstream end of the site between ca. 48+00 and 75+54 feet (right bank) and between ca. 60+00 and 76+00 feet (left bank). A third geologic unit, Holocene bay mud (Qhbm), appears near the Bay margin both north and south of the distal end of San Francisquito Creek, but beyond the artificial levees that bracket the Creek.

All three of the mapped Holocene geologic units at the site are composed of relatively fine-grained sediments which carry a potential for preservation of vertebrate remains as well as potentially significant invertebrate remains. The interpreted environments of deposition of all three sediment categories are also generally favorable for fossil preservation. Whether these units are paleontologically sensitive also depends on the time interval(s) represented locally, specifically, whether the deposits preserve records dating to at least 5,000 years (approximately mid-Holocene, the criterion specified in the SVP Guidelines (2010) for significant paleontological resources).

Depth to the 5,000-year level is not yet known for any of the potentially sensitive units. However, a minimum limit might be inferred from data assembled for both natural and archeological contexts in the Santa Clara and San Francisquito Creek area (Byrd and Meyer 2011). Of the 48 samples dated 5,000 years or older, only two are shallower than 1 meter (approximately 3 feet), and all 48 are deeper than 0.75 m (approximately 2.5 feet). These data suggest that the great majority of undisturbed deposits in the area older than 5,000 calibrated years before present occur at depths greater than one meter.

In summary, the potential for the existence of vertebrate fossils at the site is deemed high.

Impact Analysis

Methods and Significance Criteria

Cultural Resources

Impact analysis for cultural resources was based on results of the records search, a review of prior cultural resources studies within the San Francisco Bay Region and the Santa Clara Valley, and professional judgment in light of the current standard of care for cultural resources within California.

For the purposes of this analysis, an impact on cultural resources was considered to be significant and to require mitigation if it would result in any of the following.

- Substantial adverse change in the significance of a historical resource that is
  - listed, or eligible for listing, in the NRHP;
  - listed, or eligible for listing, in the CRHR; or
  - included in a local register of historical resources, or otherwise identified as an important resource by a local jurisdiction or agency.
- Substantial adverse change in the significance of an archaeological resource meeting the above qualifications.
- Substantial adverse change in a "unique archaeological resource," as defined in Section 21083.2(g) of the PRC.
- Disturbance of human remains, including those interred outside of formal cemeteries.

Paleontological Resources

Impacts on paleontological resources were evaluated following guidelines published by the Society of Vertebrate Paleontology (SVP) (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995) and updated guidance available on the SVP website (www.vertpaleo.org). This analysis reflects professional judgment in light of information available from the published geologic and paleontological literature and museum databases. No new paleontological fieldwork or research was conducted for this EIR.

SVP's guidelines were developed in response to a recognized need for standardized methods to assess and mitigate impacts on paleontological resources and are now widely accepted as an industry standard. Because many fossil materials are buried in subsurface geologic units rather than exposed at the ground surface, a lead agency often cannot be certain until Project earthwork has made substantial progress whether any such resources will actually be encountered. Thus, impact analysis for paleontological resources operates based on probabilities of impact, with the goal of developing flexible strategies to support adaptive management based on information that may quite literally "come to light" during Project construction. The first step in the process is to assess the likelihood that the Project area contains significant nonrenewable paleontological resources that could be directly or indirectly impacted, damaged, or destroyed as a result of the Project. This baseline is referred to as an area's *paleontological sensitivity* or *sensitivity for paleontological resources*. Once the Project area's paleontological sensitivity is known, the likelihood of impact is constrained and an appropriate mitigation strategy can be developed, as summarized in Table 3.4-3.

Table 3.4-3. Society of Vertebrate Paleontology's Recommended Treatment for Paleontological Resources, by Sensitivity Category

Sensitivity Category	Definition	Recommended Treatment
High sensitivity	Areas underlain by geologic units from which vertebrate or significant invertebrate fossils or suites of plant fossils have been recovered.	Preliminary survey and surface salvage before construction begins. Monitoring and salvage during construction. Specimen preparation; identification, cataloging, curation, and storage of materials recovered. Preparation of final report describing finds and discussing their significance. All work supervised by a professional paleontologist who maintains the necessary collecting permits and repository agreements.
Undetermined sensitivity	Areas underlain by geologic units for which little information is available.	Preliminary field surveys by a qualified vertebrate paleontologist to assess Project area's sensitivity. Design and implementation of mitigation if needed, based on results of field survey.
Low sensitivity	Areas underlain by geologic units that are not known to have produced a substantial body of significant paleontological material.	Protection and salvage are generally not required. However, a qualified paleontologist should be contacted if fossils are discovered during construction, in order to salvage finds and assess the need for further mitigation.
No sensitivity	Areas with no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks and plutonic igneous rocks.	No requirement for protection nor impact mitigation measures relative to paleontological resources

Source: Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995.

For the purposes of this analysis, an impact on paleontological resources was considered to be significant and to require mitigation if it would result in any of the following.

- Damage to or destruction of vertebrate paleontological resources.
- Damage to or destruction of any paleontological resource that
    - provides important information about evolutionary trends, including the development of biological communities;
    - demonstrates unusual circumstances in the history of life;

- represents a rare taxon or a rare or unique occurrence;
- is in short supply and in danger of being destroyed or depleted;
- has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- provides information used to correlate strata for which it may be difficult to obtain other types of age dates.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact CR1—Effect of Ground Disturbance on Undocumented Cultural Resources, Including Human Remains

Summary by Project Element: Impact CR1—Effect of Ground Disturbance on Undocumented Cultural Resources, Including Human Remains		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	Less than Significant with Mitigation

Construction

No cultural resources are known to be present in the areas proposed for Project element construction. As discussed in *Existing Conditions*, the Project area is considered moderately (the lower and middle reaches) to highly (the upper reach) sensitive for unrecorded prehistoric cultural resources. Additionally, some Project elements, such as levee relocation and channel widening, involve some ground disturbance. It is thus possible that previously undocumented cultural resources, including human remains, could be present and, if present, could be affected during ground-disturbing activities required for Project construction. Depending on the nature of the materials involved and the extent of the disturbance and/or damage, impacts could be significant.

Implementation of Cultural Resources Protection Measures described in Chapter 2 in addition to Mitigation Measures CR1.1 and CR1.2 would reduce impacts on archaeological resources to a less-than-significant level.

Mitigation Measure CR1.1—Conduct a Preconstruction Cultural Field Survey and Cultural Resources Inventory and Evaluation

The SFCJPA will retain qualified personnel to conduct an archaeological field survey of the Project area to determine whether significant resources exist within the Project area. The inventory and evaluation will include the documentation and result of these efforts, the evaluation of any cultural resources identified during the survey, and cultural resources monitoring, if the survey identifies that it is necessary. The monitoring process will be carried out in combination with the District's standard BMPs.

Mitigation Measure CR1.2—Conduct Worker Awareness Training for Archaeological Resources Prior to Construction.

Prior to the initiation of any site preparation and/or start of construction, the applicant will ensure that all construction workers receive training overseen by a qualified professional archaeologist who is experienced in teaching nonspecialists, to ensure that forepersons and field supervisors can recognize archaeological resources (e.g., areas of shellfish remains, chipped stone or groundstone, historic debris, building foundations, human bone) in the event that any are discovered during construction.

Operation and Maintenance

As noted above, no cultural resources are known to be present in the areas proposed for Project element construction. As discussed in *Existing Conditions*, the Project area is considered moderately (the lower and middle reaches) to highly (the upper reach) sensitive for unrecorded prehistoric cultural resources.

As discussed in Chapter 2, maintenance for the new Project elements would include activities such as removing debris from channels, cleaning up the marshplain post-flood, and post-flood and annual inspection of facilities

Because the ~~project~~Project operation and maintenance does not include any earth disturbing activities beyond removal of accumulated silt, it is not anticipated that previously undocumented cultural resources, including human remains, would be affected during activities required for Project Operation and Maintenance. This impact is not considered significant.

Impact CR2—Substantial Adverse Change to Historical Resources

Summary by Project Element: Impact CR2—Substantial Adverse Change to Historical Resources		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	No Impact	No Impact

There is some potential that existing infrastructure (in particular, the parcels at the southwest end of the Project area) may have historic or historical architectural significance, although no listed resources have been identified as a result of background work to date. There is no demolition or substantial alterations proposed for built resources, therefore, there are no impacts to historical resources anticipated.

Impact PALEO1—Damage to Significant Paleontological Resources

Summary by Project Element: Impact PALEO1—Damage to Significant Paleontological Resources		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	No Impact

Project activities, such as excavations associated with channel widening and floodwall placement, could affect sensitive, previously undisturbed geologic units, potentially unearthing and damaging previously unknown paleontological resources or unique geologic features. According to available geologic maps, such sensitive native sediments, the Quaternary bay mud, basin, and floodplain sediments older than 5,000 years, may exist on both sides of the channel nearest the upstream portion of the Project area (Figure 3.4-1), most likely at depths greater than 1 meter (approximately 3 feet) below the original undisturbed surface. Any such disturbance could result in a significant impact on sensitive deposits potentially containing paleontological resources. The remainder of the Project site is in areas mapped as artificial fill and artificial levee deposits of varying depth. These sediments may contain fossils moved from their original source area(s), but because information about the original location and geologic setting would be lacking, any such fossils would be of little or no scientific interest, and hence not significant. However, should Project-related excavation extend below artificial fill, the Project could result in a significant impact on sensitive deposits underlying the artificial fill potentially containing paleontological resources.

Implementation of Mitigation Measures Paleo1.1 through Paleo1.3 would reduce impacts on paleontological resources to a less-than-significant level.

If excavations reveal fossils, and these can be salvaged under an effective mitigation program, the Project would have a beneficial impact.

Operation and Maintenance

Because the ~~project~~Project operation and maintenance does not include any earth disturbing activities beyond removal of accumulated silt, it is not anticipated that previously undocumented paleontological resources would be affected during activities required for Project Operation and Maintenance. This impact is not considered significant.

Mitigation Measure Paleo1.1—Conduct a Preconstruction Paleontological Resources Field Survey and Paleontological Resources Inventory and Evaluation

The SFCJPA will retain qualified personnel with experience in vertebrate fossil monitoring and salvage at construction sites to conduct a paleontological resources field survey of the Project area with native soils to determine whether significant resources exist within the Project area. The inventory and evaluation will include the documentation and result of these efforts, the evaluation of any paleontological resources identified during the survey, and paleontological resources monitoring, if the survey identifies that it is necessary.

Mitigation Measure Paleo 1.2—Conduct Worker Awareness training for Paleontological Resources Prior to Construction.

Prior to the initiation of any site preparation and/or start of construction, the applicant will ensure that all construction workers receive training overseen by a qualified professional paleontologist who is experienced in teaching nonspecialists, to ensure that forepersons and field supervisors can recognize paleontological resources in the event that any are discovered during construction.

Mitigation Measure CR1.3—Stop Work Immediately if Buried Cultural Resources are Discovered Inadvertently.

If paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified paleontologist with experience in vertebrate fossil monitoring and salvage at construction sites can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the SFCJPA and other agencies as appropriate. Equipment operators, supervisors, inspectors, and other field personnel will be required to report to the paleontology monitor any suspected fossil discoveries. The paleontologist will have authority to halt or redirect excavation operations in the event of discovery of vertebrate, plant, or invertebrate fossils until such time as their probable significance can be assessed and, if potentially significant, appropriate salvage measures have been implemented.

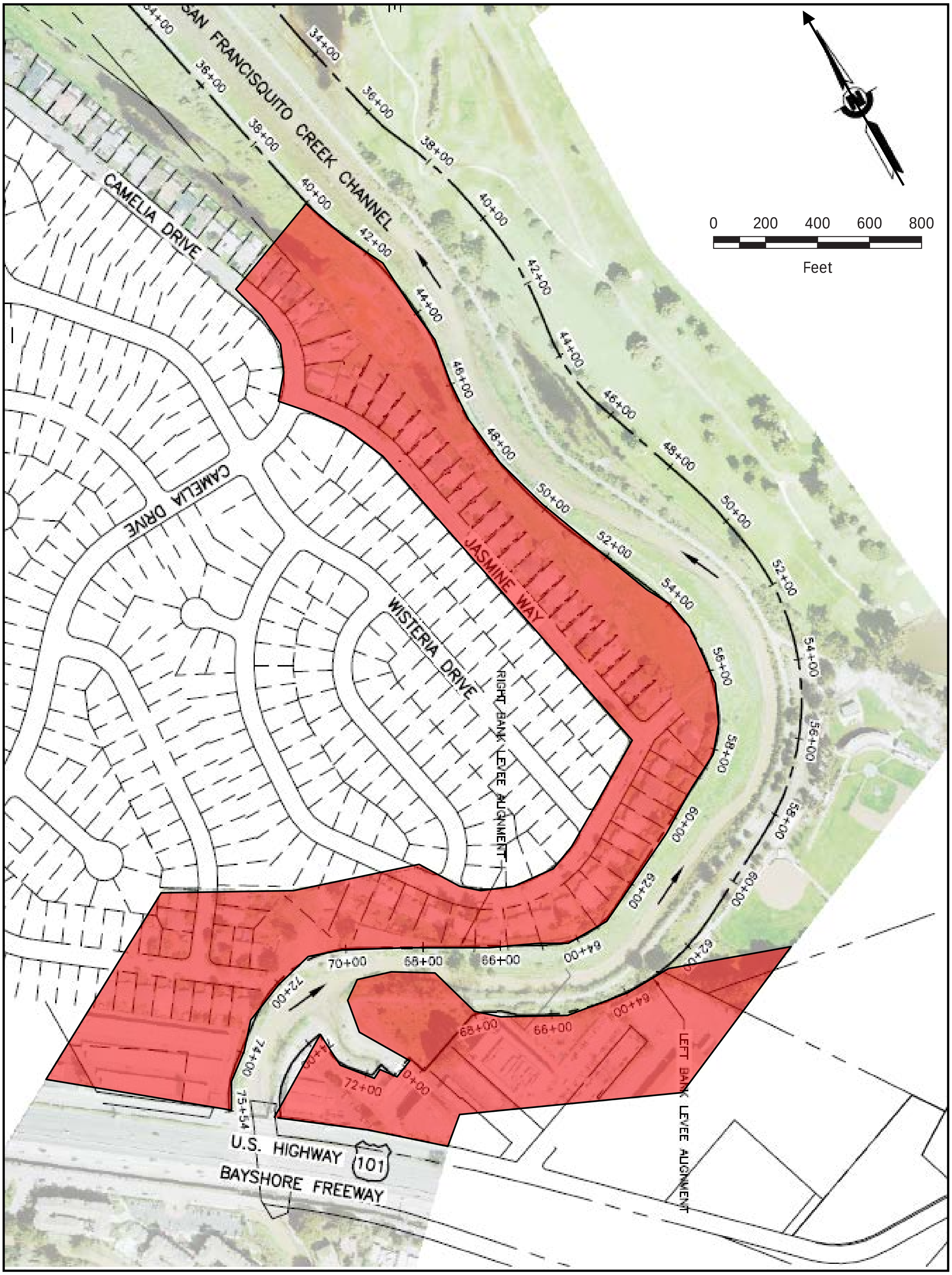
The paleontologist will properly collect and document any large vertebrate remains and recognize and appropriately sample and document any sedimentary bodies revealing small vertebrate remains. Large bulk samples may be appropriate. Minimum documentation includes exact location (GPS data), orientation, depth (elevation), and detailed geologic setting of any large- or small-vertebrate finds, including detailed diagrams showing microstratigraphy in nearby excavations supplemented with good-quality field photographs. If vertebrate fossils are discovered in spoils piles during excavation, the paleontologist will make every effort to locate and record the original site of the specimen(s) prior to disturbance.

<u>Should ground-disturbing activities within Caltrans ROW make an inadvertent burial discovery, all construction within 50 feet of the find shall cease. Caltrans' Cultural Resource Studies Office, District 4, shall be immediately contacted at (510) 286-5618. A Caltrans staff archaeologist will evaluate the finds within one business day after contact</u>.

Salvage of potentially significant specimens discovered in situ in excavated surfaces will be conducted by the paleontologist in compliance with all safety regulations and with implementation of all feasible precautions. The on-site safety inspector will hold final authority to determine whether each proposed salvage operation is consistent with established safety policies at the site. Excavation equipment and operators will be made available for short periods to remove overburden above in situ specimens, to improve safety conditions during salvage operations, or to aid in transport within the site boundaries of any large salvaged specimens which cannot be safely transported by hand.

Any potentially significant fossils recovered during the monitoring and salvage phase will be cleaned, repaired, and hardened to the level required by the repository institution, and will be donated to that institution. Any collected bulk sediment samples having the potential for small fossil vertebrate remains will be wet- or dry-screened and processed as necessary for recovery of the included fossils. Details of requirements and conditions for transfer of salvaged specimens to the repository museum will be arranged with the museum as soon as the scope of the salvaged collection becomes apparent, and will be in accordance with the recommendations outlined in SVP 1996.

On completion of the above tasks, the supervising paleontologist will prepare a final report on the implementation of the mitigation plan and results and submit it to the appropriate parties, institutions, and government agencies.



Source: Hanson 2012.

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Figure 3.4-1
Peleontologically Sensitive Areas

3.5 Geology and Soils

This section provides environmental analysis of the Project's impacts on geological resources, including soils. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from Project construction and implementation, and describes mitigation to minimize the level of impact. Impacts on paleontological resources are discussed in Section 3.4, *Cultural and Paleontological Resources*. The ~~project~~Project would have no impacts on mineral resources, as discussed in the introduction to Section 3.

Environmental Setting

Study Area

The study area for geology and soils is the Project site and the immediately surrounding area. Earthquake faults within 20 miles of the Project site were considered.

Regulatory Context

Geologic hazards and professional practice in geology are regulated at the state and local levels. The principal state regulations governing assessment and mitigation of risks related to geologic hazards are the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act, which established statewide processes to identify hazard areas and assign local jurisdictions the responsibility of evaluating and mitigating hazards within designated hazard areas. Building codes, which provide important protection from seismic and other geologic hazards, are adopted at the local jurisdiction level.

Both the City of Palo Alto and the City of East Palo Alto have adopted policies in their General Plans to minimize exposure to geologic hazards, including seismic hazards, subsidence, expansive soils, and slope stability. Both jurisdictions have adopted Uniform Business Code seismic safety restrictions (City of Palo Alto 1998; City of East Palo Alto 1999).

Existing Conditions

Regional Setting

The Project site is located in the northwestern portion of the Santa Clara Valley, part of a regionally extensive topographic depression that includes San Francisco Bay, in the Coast Ranges geomorphic province (California Geological Survey 2002; Norris and Webb 1990).

The Santa Clara Valley is bounded by the Santa Cruz Mountains on the west and the Diablo Range on the east; topography in and around the Santa Clara Valley is largely controlled by strands of the San Andreas fault system. Bedrock exposed in the Santa Cruz Mountains to the south and west of the Project site includes Mesozoic Franciscan Complex sandstone and Miocene marine sedimentary rocks. To the east, the core of the Diablo Range uplift consists of Franciscan Complex (sandstone, chert, and ultramafic rocks), overlain by and faulted against Miocene marine and terrestrial sedimentary rocks. Both the Santa Cruz Mountains and the Diablo Range are bordered by an apron of Quaternary alluvium that reaches to the bay (Wagner et al. 1990).

Santa Clara Valley slopes gradually from the Diablo Range to the east and the Santa Cruz Mountains to the west toward San Francisco Bay. The thick layer of the valley's alluvial soils was built up through the deposition of gravel, sand, and clay, and is more than 1,000 feet thick. The San Francisco Bay is largely ringed by Holocene (less than 10,000 years old) bay mud, consisting of gray, green, and blue clay as well as silty clay with lenses of well-sorted fine sand, peat, and oyster (*Ostrea* spp.) shell hash, which varies in thickness from negligible at the bay margin to as much as 120 feet at the northern county line (Brabb et al. 2000.).

Much of Santa Clara Valley, including the Project site, experienced subsidence between 1932 and 1969 as a result of the overextraction of groundwater. Since the 1960s, subsidence has been halted through the District's efforts; less groundwater is extracted, and surface reservoirs created to promote groundwater recharge have raised the water table (Galloway et al. 1999). The current limited fluctuations in groundwater levels have a low probability to cause structural damage.

Project Setting

The Project site is located on artificial fill and levee fill that overlies Holocene flood plain, flood basin, and young bay mud deposits (U.S. Army Corps of Engineers 2009), described under *Soils* below. The topography of the Project site is level to nearly level.

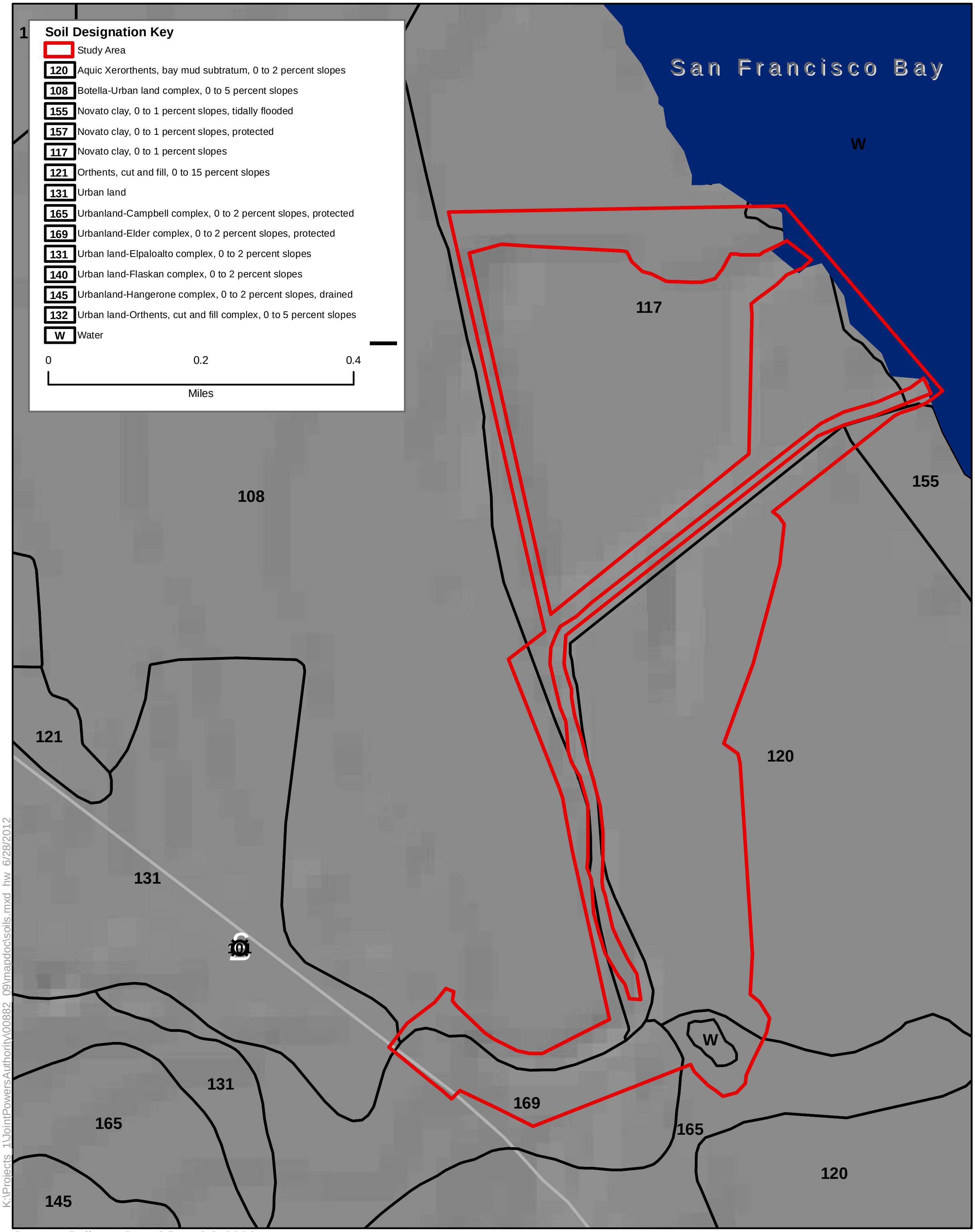
Soils

Soils at the Project site are shown in Figure 3.5-1. As stated above, levees on the Project site are of engineered fill. Soils qualities are described in Table 3.5-1.

Table 3.5-1. Soils at the Project Site

Soil Type	Erosion Hazard[a]	Shrink-Swell Hazard[b]	Corrosivity to Concrete[a]	Corrosivity to Steel[a]
Aquic Xerorthents, bay mud subtratum, 0–2 percent slopes	Slight	Low to moderate	Moderate	Moderate
Botella-Urban land complex, 0–5 percent slopes	–	Moderate	–	–
Novato clay, 0–1 percent slopes	Slight	Moderate to high	High	High
Novato clay, 0–1 percent slopes, tidally flooded	Slight	Moderate to high	High	High
Urbanland-Campbell complex, 0–2 percent slopes, protected	–	Moderate	–	–
Urbanland-Elder complex, 0–2 percent slopes, protected	–	Low	–	–
Urban land	–	–	–	–
Water	–	–	–	Moderate

Sources:
[a] Web soil survey (U.S. Natural Resources Conservation Service 2012).
[b] Soils data mart (U.S. Natural Resources Conservation Service n.d).



Source: Soils - USDA SSURGO 2006

Figure 3.5-1
Soils

All of the soils at the Project site present either no erosion hazard or slight erosion hazard. Some of the soils have moderate to high shrink-swell hazard and high corrosivity to both concrete and steel.

Seismicity

The Project site is located in the San Francisco Bay Area, near several active faults. It lies approximately 5 miles east of the San Andreas fault. Other nearby faults are the San Gregorio, Monte Vista-Shannon, Hayward, Calaveras, Green Valley, and Greenville faults. All of these faults have the potential for a large earthquake (U.S. Geological Survey 2008; U.S. Army Corps of Engineers 2009).Although no known active faults cross the Project site, and thus the risk of surface fault rupture is low, the Project site would be subject to other risks from seismic activity along one of the known active faults (Anderson et al. 1982, Bryant and Hart 2007, California Geological Survey 2002, Mualchin 1996, Weber and Cotton 1981, Wills et al. 2007). These risks include ground shaking, liquefaction, differential settlement, and lurch cracking.

Surface Fault Rupture and Groundshaking

The Project site is located in a seismically active region that is likely to experience earthquake effects during the lifespan of the Project—recent studies estimate a 63 percent probability of at least one earthquake with a magnitude of 6.7 or greater occurring on one of the faults of the greater San Francisco Bay Area in the next 30 years. The Hayward fault is the most likely source, with a greater than 30 percent probability of at least one magnitude 6.7 earthquake or larger within the next 30 years (U.S. Geological Survey Working Group on California Earthquake Probabilities 2008). Table 3.5-2 summarizes current information on earthquake recurrence intervals and maximum credible earthquake (MCE) magnitudes for the principal active faults in the Project vicinity. Nearby faults are shown in Figure 3.5-2.

No active faults have been mapped within the Project site. The risk of surface fault rupture at the Project site is thus considered minimal. However, several faults near the Project site are active (Table 3.5-2). Some of these are zoned by the state; others are recognized as active seismic sources by the California Building Standards Code (CBC) and are treated as active faults by the County, although they are not zoned by the state (U.S. Geological Survey 2008; County of Santa Clara 2002). A moderate to large earthquake on any of these faults could produce strong groundshaking in the Project area.

Table 3.5-2. Maximum Credible Earthquake and Recurrence Interval for Principal Active Faults in Project Area

Fault	Zoning Status[a]	MCE Magnitude	Distance from Project Site
Monte Vista–Shannon	Zoned by state	6.2[b]	7.0
San Andreas	Zoned by state	7.0–7.9[b]	8.5
Hayward	Zoned by state	7.2[b,c]	9.5
Calaveras	Zoned by state	6.8–7.5[b,c]	14.5
San Gregorio	Zoned by state	7.5–7.7[b,e]	18.5
Greenville	Zoned by state	7.3[b]	28.5
Green Valley	Zoned by state	6.7[b]	43.0

Fault	Zoning Status[a]	MCE Magnitude	Distance from Project Site

Sources:
[a] Bryant and Hart 2007; California Geological Survey 2002.
[b] Mualchin 1996.
[c] Anderson et al. 1982.
[d] Wills et al. 2007.
[e] Weber and Cotton 1981.

Secondary Seismic Hazards—Liquefaction, Differential Compaction, and Lateral Spreading

Liquefaction is a phenomenon in which unconsolidated soil or sediment materials lose cohesion and behave as a liquid, typically as a result of earthquake shaking. It usually occurs in sandy materials that are saturated with groundwater, at depths of no more than about 50 feet below ground surface. Liquefaction poses a hazard because liquefied materials lose their strength and may become unable to support structures built on them. This can result in severe structural damage, particularly in poorly designed or constructed structures.

The California Seismic Hazards Zonation Program classifies the Project site and the surrounding land as susceptible to liquefaction (California Geological Survey 2006). Likely effects of liquefaction at the Project site include minor settlement, slope failure, and lateral spreading resulting from moderate to major seismic events (U.S. Army Corps of Engineers 2009).

Landslide Hazards

The topography at Project site and in the surrounding area is flat to nearly flat, 0–2 percent slopes. The California Geological Survey (2006) classifies this area as having low landslide incidence and susceptibility.

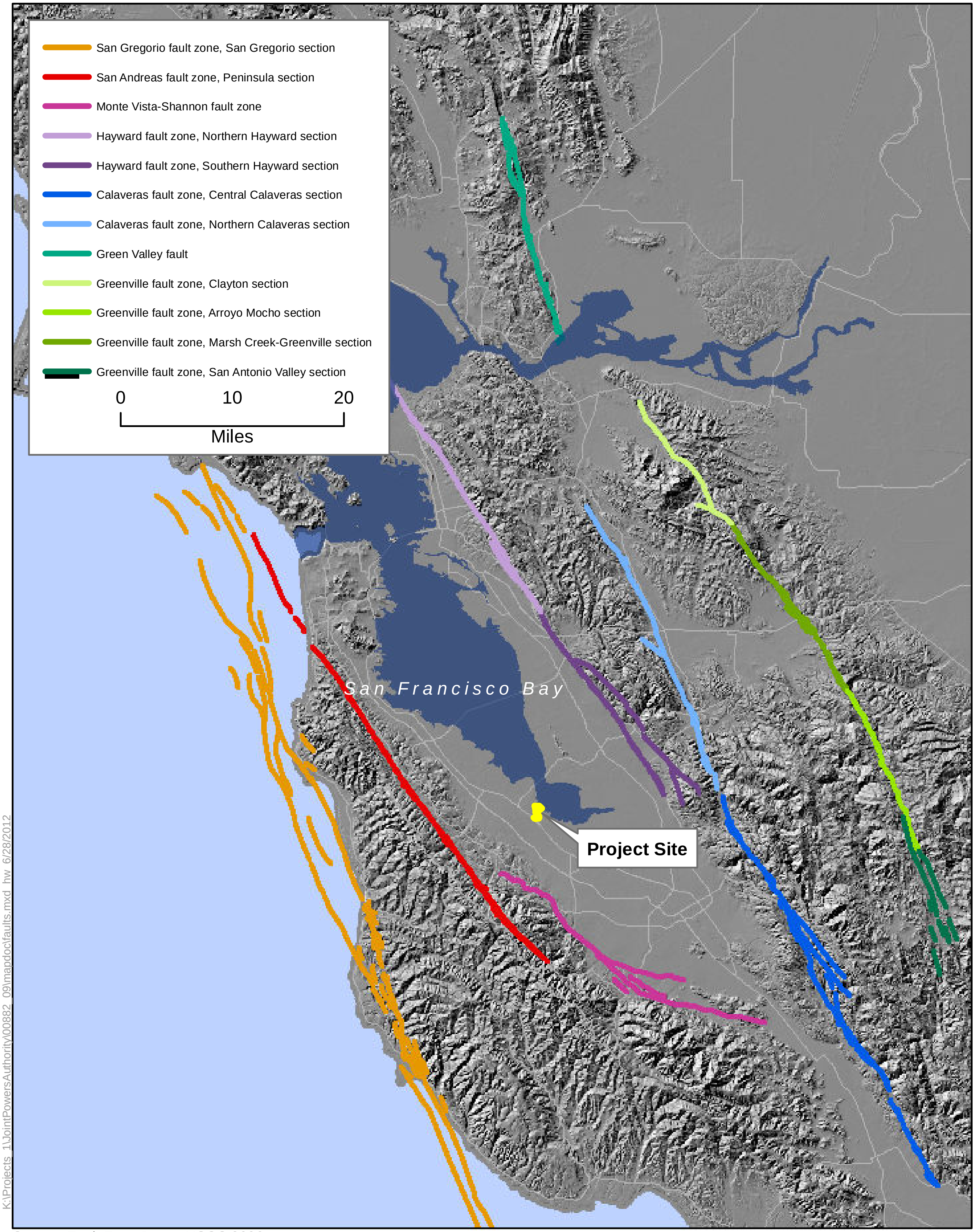
Impact Analysis

Methods and Significance Criteria

Impacts related to geology, soils, and mineral resources were evaluated qualitatively, based on professional judgment in light of the current standards of care for engineering geology, geotechnical engineering, and mineral resources conservation and management. Impact analysis relied on information from the published geologic literature; no new field studies or other research were conducted for the preparation of this EIR.

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or based on other substantial evidence of active faulting;
  - Strong seismic groundshaking;
  - Seismically induced ground failure, including but not limited to liquefaction; or



Source: Fault Zone Data - USGS 2006

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Figure 3.5-2
Fault Zones

  - Landslides, including seismically induced landslides.
- Location of structures on a geologic unit or soil that is unstable or that would become unstable as a result of construction, increasing the risk of onsite or offsite landslide or slope failure.
- Construction on expansive soil, creating substantial risks to life or property.
- Substantially accelerated soil erosion or substantial loss of topsoil.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact GEO1—Exposure to Surface Fault Rupture Hazards

Summary by Project Element: Impact GEO1—Exposure to Surface Fault Rupture		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Marshplain restoration	Less than Significant	No Impact
All other Project elements	Less than Significant	Less than Significant

No known faults cross the Project site. Accordingly, the likelihood of surface fault rupture is low.

The impact for all Project elements other than restoration of the marshplain during both construction and post-construction lifetime of the proposed Project is less than significant because of the low likelihood of surface fault rupture. The construction-period impact resulting from restoration of the marshplain is less than significant for the same reason. There would be no impact on this Project element during the life of the Project after construction is complete because restoration would be designed as closely as possible to natural conditions, which would not be negatively affected in case of surface fault rupture. No mitigation is necessary.

Impact GEO2—Exposure to Seismic Groundshaking Hazards

Summary by Project Element: Impact GEO2—Exposure to Seismic Groundshaking Hazards		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Marshplain restoration	Less than Significant	No Impact
All other Project elements	Less than Significant	Less than Significant

As discussed above, several faults with potential for a large earthquake are near the Project site. Seismic groundshaking could result in damage to all Project elements during construction of the proposed Project, and to all Project elements other than the restored marshplain during Project lifetime. However, both the City of Palo Alto and the City of East Palo Alto have adopted seismic safety restrictions for structure design from the Uniform Building Code. Access road surfaces would be constructed in accord with District and USACE standards. Furthermore, Project commitments require preparation of a site-specific geotechnical report that would specify design requirements to minimize risk of exposure to geologic hazards, including groundshaking. Conformance to these requirements would ensure that risk of exposure to groundshaking would be minimized. The impact is therefore less than significant, and no mitigation is required.

Impact GEO3—Exposure to Seismically Induced Liquefaction Hazards

Summary by Project Element: Impact GEO3—Exposure to Seismically Induced Liquefaction Hazards		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Marshplain restoration	Less than Significant	No Impact
All other Project elements	Less than Significant	Less than Significant

As discussed above, much of the Project site is susceptible to seismically induced liquefaction. If Project elements are improperly designed and constructed, liquefaction could undermine levee stability and potentially result in levee failure, including levee breach. Liquefaction could undermine road structure and boardwalk pilings, causing portions of the access road foundations and boardwalk pilings to sink, thus increasing the risk to users present on these structures. Liquefaction could damage the floodwall; however, damage to the floodwall could be repaired. Liquefaction could also increase exposure of construction and maintenance workers present on the site during a seismic event.

However, design and construction of all of these elements would be guided by recommendations of a site-specific geotechnical investigation, which would include an assessment of liquefaction potential at the site and recommendations to reduce liquefaction-related damage, if appropriate. Floodwall and boardwalk construction would also comply with requirements of the current Uniform Building Code (UBC). Access road construction would comply with District requirements. Levee construction would comply with USACE requirements. With these standards and guidance in place, impacts related to liquefaction are expected to be less than significant, and no mitigation is required.

Impact GEO4—Exposure to Landslide and Other Slope Failure Hazards

Summary by Project Element: Impact GEO4—Exposure to Landslide and Other Slope Failure Hazards		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Marshplain restoration	Less than Significant	No Impact
All other Project elements	Less than Significant	Less than Significant

Construction

As with any construction project that requires excavation and fill placement, there would be some potential for constructed (cut or fill) slopes to fail if they are improperly designed or implemented. This would be particularly true for the Project elements requiring earthwork—in particular the floodwalls and levees. This would increase the exposure to risk of nearby residents and construction workers present at the site.

However, the Cities of Palo Alto and East Palo Alto adhere to UBC earthwork standards, and all Project earthwork would proceed in accordance with the recommendations of a site-specific geotechnical investigations prepared by appropriately state-licensed engineering and geologic personnel. With code compliance and adherence to additional site-specific recommendations identified in the Project geotechnical report(s), impacts related to stability of constructed slopes would be less than significant, and no mitigation is required.

Operation and Maintenance

As stated above, the Project site is in an area of low risk for landslide because of its flat to nearly flat topography. The primary risk of slope failure during operation and maintenance of the proposed Project is on levee slopes. Slope failure on levees could increase risk of levee failure, including levee breach and risk to road integrity, thus increasing the exposure to risk of nearby residents and maintenance workers and recreational users present at the site. However, levees would be designed in accordance with USACE requirements and the recommendations of site-specific geotechnical investigations prepared by appropriately state-licensed engineering and geologic personnel. With code compliance and adherence to additional site-specific recommendations identified in the Project geotechnical report(s), impacts related to stability of constructed slopes would be less than significant, and no mitigation is required.

Impact GEO5—Location on Unstable or Expansive Soil

Summary by Project Element: Impact GEO5—Location on Unstable or Expansive Soil

Project Element	Construction Impact Level	Operation and Maintenance Impact Level
Marshplain restoration	Less than Significant	No Impact
All other Project elements	Less than Significant	Less than Significant

Some soils in the Project area have been identified as compressible or otherwise unstable. All Project structures (i.e., all Project elements other than the restored marshplain) could be damaged by expansive soils if improperly designed and constructed.

However, construction of all Project elements would be supported by a site-specific geotechnical investigation, which would include an evaluation of site soils and recommendations to ensure that cut-and-fill slopes and other aspects of the proposed facilities are appropriately designed and constructed, consistent with the current UBC earthwork standards and the prevailing engineering standard of care. Further, as specified in project design, levees would be constructed on engineered fill which would be imported to serve as foundation for the levees. Through adherence to the current UBC, project design, and additional recommendations of the site-specific geotechnical investigation, impacts associated with potential adverse soil conditions would be less than significant, and no mitigation is required.

Impact GEO6—Soil Erosion and Loss of Topsoil

Summary by Project Element: Impact GEO6—Soil Erosion and Loss of Topsoil		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Marshplain restoration	Less than Significant	No Impact
All other Project elements	Less than Significant	Less than Significant (erosion) No Impact (loss of topsoil)

Soil Erosion

As described above, soils at the Project site have low susceptibility to erosion. Site clearing, grading, and fill placement activities could have the potential to contribute to accelerated erosion; because soils at the Project site have low susceptibility to erosion the risk of increased erosion as a result of Project construction and maintenance activities requiring ground disturbance is low. Furthermore, the SFCJPA will implement extensive erosion and sediment control BMPs, as discussed in Chapter 2, *Project Description*, which will minimize erosion during both construction and Project operation periods. In addition, the work areas for several of the Project elements would be large enough that a SWPPP will be required, providing an additional regulatory mechanism to ensure effective erosion control during construction. The SFCJPA would be responsible for ensuring compliance with the requirements of its internal BMPs and any applicable SWPPPs. With erosion control BMPs, SWPPPs as required, and SFCJPA oversight in place, impacts related to accelerated erosion during construction and ground-disturbing maintenance are expected to be less than significant, and no mitigation is required.

Topsoil Loss

Construction earthwork would require removal of topsoil where it is present. Removal of this topsoil would constitute a potential impact. However, Project design includes a commitment to stockpile topsoil and reuse that topsoil on the site for revegation. The impact is less than significant for all Project elements during construction. For Project operation, there is no impact. No mitigation is required.

3.6 Greenhouse Gas Emissions

This section describes existing global climate change and greenhouse gas reduction conditions at the ~~project~~Project site, summarizes applicable regulations and policies, and analyzes potential short-term construction and long-term operational impacts on global climate change and greenhouse gas reduction conditions that could result from ~~project~~Project implementation.

Environmental Setting

Overview of Greenhouse Gas

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHG's has been implicated as the driving force for global climate change. Examples of GHGs that are produced both by natural processes and industry include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases and sulfur hexafluoride (SF_6). The primary GHGs generated by construction activities are CO_2, CH4, and N_2O.

The Intergovernmental Panel on Climate Change (IPCC) estimates that CO_2 accounts for more than 75% of all anthropogenic (i.e., human-made) GHG emissions. Three-quarters of anthropogenic CO_2 emissions are the result of fossil fuel burning, and approximately one-quarter result from land use change (IPCC 2007). CH_4 is the second largest contributor of anthropogenic GHG emissions and is the result of growing rice, raising cattle, combustion, and mining coal (National Oceanic and Atmospheric Administration 2005). N_2O, while not as abundant as CO_2 or CH_4, is a powerful GHG. Sources of N_2O include agricultural processes, nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions.

GHG emissions other than CO_2 are commonly converted into carbon dioxide equivalents (CO_2e), which takes into account the differing global warming potential (GWP) of different gases. For example, the IPCC finds that N_2O has a GWP of 310 and CH_4 has a GWP of 21. Thus, emissions of 1 metric ton of N_2O and 1 metric ton of CH_4 are represented as the emissions of 310 metric tons and 21 metric tons of CO_2e, respectively. This method allows for the summation of different GHG emissions into a single total.

Regulatory Context

Federal and State

Appendix B of this EIR provides additional information, including the specifics of the state and federal greenhouse gas quality regulations, policies, and standards and BAAQMD CEQA emission thresholds. The most stringent of these is AB 32, which requires that statewide GHG emissions be reduced to 1990 levels by 2020. It is important to note here that California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this establishes a broad framework for the State's long-term GHG reduction and climate change adaptation program. The Governor has also issued several executive orders related to the State's evolving climate change policy. Of particular importance to local governments is the direction provided by the AB 32 Scoping Plan, which recommends local governments reduce their GHG emissions by a level consistent with State goals (i.e., 15% below current levels).

Local

The BAAQMD's Air Quality Guidelines (Bay Area Air Quality Management District 2011) provide a threshold of significance of 1,100 metric tons[8] per year of CO_2e[9] for ~~project~~Project operation period of land-use development projects. The guidelines do not recommend a GHG emission threshold for construction-related emissions. However, BAAQMD recommends that GHG emissions from construction be quantified and disclosed, and that a determination regarding the significance of these GHG emissions be made in relation to meeting California Assembly Bill (AB) 32 GHG emissions reduction goals, and that BMPs be incorporated to reduce greenhouse gas emissions during construction, as feasible and applicable.

Study Area

The study area for analysis of greenhouse gas emissions impacts is the ~~project~~Project site. Global climate change is a worldwide phenomena; emissions from any single project would not result in significant impacts, but the increase of emissions worldwide has created a cumulative effect. Thresholds of significance have been established at the statewide level and are also calculated on an air basin level.

Effects

Criteria for Determination of Adverse Effect

Criteria for determining the effect of the proposed Project on global climate change and greenhouse gas reduction conditions were based on the environmental checklist form in Appendix G of the State CEQA Guidelines (14 CCR 15000 et seq.).

An effect on global climate change and greenhouse gas reduction conditions was considered adverse if construction or operation of the proposed Project would have a substantial adverse effect on

- levels of greenhouse gas emissions or,
- conformance with applicable plans, policies, or regulations adopted to reduce greenhouse gas emissions.

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[9] Equivalent CO_2 (CO_2e) is the concentration of CO_2 that would cause the same level of radiative forcing as a given type and concentration of greenhouse gas. Examples of such greenhouse gases are methane, perfluorocarbons, and nitrous oxide. CO2e is expressed as parts per million by http://en.wikipedia.org/wiki/Volume(ppmv). CO_2 is the most important anthropogenic GHG and accounts for more than 75% of all GHG emissions emitted by humans. Its atmospheric lifetime of 50 to 200 years ensures that atmospheric concentrations of CO_2 will remain elevated for decades even after mitigation efforts to reduce GHG concentrations are promulgated (IPCC 2007a). The primary sources of anthropogenic CO_2 in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (including deforestation).

Existing Conditions

California GHG emissions in 2008 totaled approximately 473.8 million metric tons (MMT) of CO2e. ARB found that transportation represents 37% of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 24% and industrial sources at 19%. Commercial and residential fuel use (primarily for heating) accounted for 9% of GHG emissions. (California Air Resources Board 2010) In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) and the industrial and commercial sectors are the two largest sources of GHG emissions, each accounting for approximately 36% of the Bay Area's 95.8 MMTCO2e emitted in 2007. Electricity generation accounts for approximately 16% of the Bay Area's GHG emissions followed by residential fuel usage at 7%, off-road equipment at 3% and agriculture at 1%. (Bay Area Air Quality Management District 2010)

Impact Analysis

Methods and Significance Criteria

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

GHG emissions from construction are evaluated on a case-by-case consideration of construction GHG emissions and best management practices. Construction emissions overall make up a small portion of overall emissions in the Bay Area, statewide and globally and are temporary in nature (unlike operational emissions). Thus, the significance of construction GHG emissions are evaluated by determining whether or not the project has incorporated feasible reduction measures that can be applied during the construction period. BAAQMD's draft operational GHG threshold is based on an analysis of future development potential in the land use sector, an estimate of the effectiveness of state-adopted GHG reduction measures, and identification of the amount of reductions needed in the Bay Area in the land use sector to promote overall GHG reductions consistent with AB 32. The threshold was based on consideration of the size of projects that would need to provide meaningful GHG reductions in order to promote overall GHG reductions consistent with AB 32.

As discussed in Section 3.2, *Air Quality* and Section 3.13, *Traffic*, the Project would not result in any long-term net increase in traffic volumes on roadway system in the Project vicinity or use a significant amount of electricity or natural gas from increased lighting or operation/maintenance requirements. Consequently, the operation and maintenance of the Project would not result in any significant impact under CEQA on GHG emissions. The assessment focuses on evaluating the GHG impacts from the construction activities.

GHG emissions from Project construction are a result of fuel use by equipment and vehicles. The primary GHG emissions generated by these sources are CO_2, CH_4, and N_2O. CO_2 emissions generated from the operation of onsite construction equipment and offsite vehicle trips were estimated using the CalEEMod Version 2011.1.1, following the same assumptions described in the Air Quality section.

Emissions of CH_4 and N_2O from diesel-powered sources (e.g., equipment, haul trucks) were determined by scaling the estimated CO_2 emissions by the ratio CH_4/CO_2 (0.000057) and N_2O/CO_2 (0.000026) emissions expected per gallon of diesel fuel according to California Climate Action Registry (2009). GHG emissions from gasoline-powered employee commutes were determined by dividing the CO_2 emissions by 0.95. This statistic is based on EPA's recommendation that CH_4, N_2O, and other GHG emissions account for 5% of on-road emissions (U.S. Environmental Protection Agency 2011).

Impacts and Mitigation Measures

Impact GHG1—Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Summary by Project Element: Impact GHG1—Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	
Project Element	**Construction Impact Level**
All Project elements	Less than Significant with Mitigation

Individual projects contribute to the cumulative effects of climate change by directly or indirectly emitting GHGs during construction phases.

As previously discussed, Project operation would not generate any direct long-term, operational emissions, or contribute to indirect emissions. This assessment therefore focuses exclusively on direct emissions generated during Project construction.

Project construction would begin in September 2012 and complete in December 2014 to account for weather constructions, seasonal restrictions, and anticipated permitting requirements. Please see Section 3.2 Air Quality for information regarding the assumptions used to make this analysis. Table 3.6-1 summarizes construction-related GHG emissions from diesel-fueled equipment and vehicles and gasoline-fueled employee vehicles. The GHG analysis calculations are provided in Appendix C.

Table 3.6-1. Estimated Construction GHG Emissions

Project Component	CO_2 (MT)	CO_2e (MT)a
Utility Relocation	90	90
Site and road prep, grading for access to East Palo Alto side of Creek	4	4
Wood pole relocation, demo, and secondary wire removal	17	17
Construction of Shoofly Towers (T1-4), new tower construction and demolition of shoo-fly	57	58
Gas line work, directional drilling	10	10
Export of material from gas line cut/fill	1	1
Demobilisation	1	1
Phase One	1043	1053
Site Prep	33	33
Construction of new left bank levee	468	472
Removal of old left bank levee	31	31
Removal of old right bank levee	21	21
Haul trips for removal of left and right bank levees	69	70
Construction of right bank levee	245	247
Construction of downstream access road on right and left banks	25	25
Friendship Bridge	23	23
Channel widening and marshplain terracing	127	128
Revegetation	1	1
Phase Two	398	402
Site Prep	16	17
Installation of right and left bank floodwalls	186	188
Construction of upstream access road on right and left banks	25	25
Site restoration	1	1
Flatbed trailer truck trips for sheet pile delivery	169	171
Total	1530	1544

Notes:
[a] CO_2e includes CH_4 and N_2O from vehicle and equipment exhaust

As shown in Table 3.6-1, construction of the proposed Project would result in GHG emissions of 1,544 metric tons of CO_2e during the construction of the ~~project~~Project. This is equivalent to adding 303 typical passenger vehicles per year to the road during the construction phase (U.S. Environmental Protection Agency 2011). While not established as a construction threshold, these construction-related emissions are also slightly above the BAAQMD's 1,100 MT operational threshold. The construction emissions are primarily the result of diesel powered construction equipment and heavy-duty haul trucks. Because construction emissions would cease once construction is complete, they are considered short-term.

As discussed above, the BAAQMD's Air Quality Guidelines do not recommend a GHG emission threshold for construction-related emissions. However, they do recommend implementation of BMPs to help control and reduce GHG emissions. Implementation of the BAAQMD's BMPs is therefore required to reduce construction-related GHG emissions. This impact is considered less than significant with mitigation.

Mitigation Measure GHG~~3~~1.1—Implement BAAQMD Best Management Practices for Construction:

- Use alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15 percent of the fleet;
- Use at least 10 percent local building materials (from within 100 miles of the ~~project~~Project site);
- Recycle at least 50 percent of construction waste or demolition materials.

Impact GHG2—Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases

Summary by Project Element: Impact GHG2—Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases	
Project Element	**Construction Impact Level**
All Project elements	Less than Significant

The State has adopted several policies and regulations for the purpose of reducing GHG emissions. The most stringent of these is AB 32, which requires that statewide GHG emissions be reduced to 1990 levels by 2020. As discussed in Impact GHG1, the Project would not generate any long-term, operation-related GHG emissions, and there is currently no regulation or threshold limiting the amount of construction-related emissions. Thus, the Project- would not conflict with the State goals listed in AB 32 or in any preceding state policies adopted to reduce GHG emissions. This impact is considered less than significant. No mitigation is required.

3.7 Hazardous Materials and Public Health

This section provides environmental analysis of the proposed Project's impacts on hazardous materials and public health. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from construction and implementation of the proposed Project, and describes mitigation to minimize the level of impact.

Environmental Setting

Regulatory Context

Public health is protected by numerous federal and state regulations, including the federal Comprehensive Environmental Response, Compensation, and Liability Act (Superfund Act) and Resource Conservation and Recovery Act. Key state regulations include the Hazardous Materials Release Response Plans and Inventory Act (1985), the Hazardous Waste Control Act, the Emergency Services Act, and the Safe Drinking Water and Toxic Enforcement Act (1986). For additional information see Appendix B of this EIR.

Study Area

The study area for the hazards and hazardous materials is site specific and hazardous materials issues generally relate to the prior history of land uses on or adjacent to the site.

Project Setting

Information on soil and ground water contamination in the Project area was drawn primarily from a Report of Sampling and Analysis (Report) prepared by HDR in December 2011 and a Technical Memorandum prepared by HDR | e^{2}M (2010) based on a review of the 2009 San Francisquito Creek Hazardous Toxic Radioactive Waste (HTRW) Study conducted by Light, Air & Space Construction (LA&S). The Report focused on the results from soil and groundwater sampling conducted along the Creek adjacent to the USPS facility. The HTRW Study included a review of available historical documents, federal and state regulatory databases, online and regulatory file reviews of select properties, interviews, and site reconnaissance. The study encompassed 500 feet to either side of the Creek and properties directly adjacent to this 500-foot extent.

For project sites not covered by HDR | e^{2}M's review, the EIR team conducted searches of the California Department of Toxic Substances Control's (DTSC's) Hazardous Waste and Substances Site List, and the California Water Resources Control Board's (State Water Board's) list of leaking underground fuel tanks (California Department of Toxic Substances Control n.d., California State Water Resources Control Board 2011). The results of the search are discussed below.

Information on public health and vector-borne diseases was obtained from records of the California Department of Public Health, Mosquito & Vector Control Association of California, and University of California (2008).

Soil and Groundwater Contamination Hazards

United States Postal Service (Laura Road)

A USPS facility is located off of Laura Lane in Palo Alto. According a review of historical records, petroleum hydrocarbons from a gasoline underground storage tank (UST) have been detected at the USPS site. Therefore, HDR collected soil samples in November 2011 from the USPS site in an area adjacent to the Creek to test for soil and groundwater contaminants. According to the soil sampling results, petroleum hydrocarbons do not exist above laboratory reporting limits. However, results of the groundwater analysis indicated the presence of methyl tert-butyl ether (MTBE) above reporting limits. MTBE is a chemical compound that is almost exclusively used as a fuel additive in motor gasoline. It has been used in gasoline since 1979 as a replacement for lead as an octane enhancer (i.e., to help reduce abnormal combustion) (U.S. Environmental Protection Agency 2008).

Yeaman Auto Body (2025 East Bayshore Road)

Yeaman Auto Body is located at 2025 East Bayshore Road, on the left bank of San Francisquito Creek. According to HDR | e²M (2010), the property was associated with automotive repair activities between 1969 and 1974 and from 1980 to present. Historical sources also listed the property as occupied by Ciardella Garden in 1978, Permashake Tile in 1965, United Power Equipment in 1959 and 1960, a garage door company in 1954, and Coca Cola in 1948. The depth to groundwater is likely less than 15 feet below grade at this property. No documented releases of hazardous materials have been reported on this property.

Palo Alto and O'Connor Pump Stations

According to HDR | e²M (2010), USTs are reported to have been and/or are currently located at the Palo Alto Road and O'Connor Pump Stations, each of which is located adjacent to the Project site. The USTs were installed in 2008 and were observed to be well maintained. However, older, historical USTs were reported at both of these sites in a database search report. Additionally, the Palo Alto Pump Station property was occupied by Ciardella, a garden supply center from sometime before 1969 until 2008, but no USTs were recorded during that period. A dump truck service area was also located on this property for some time during that period. These two prior uses could have resulted in undocumented soil or groundwater contamination at this site.

Palo Alto Municipal Golf Course

The Golf Course has been located on the left bank of the San Francisquito Creek since some time before 1956. Areas of expected hazardous materials storage including pesticide storage areas, maintenance areas, and current and former fuel storage tanks are not located near the Creek (HDR | e²M 2010).

Palo Alto Baylands Athletic Center

The Baylands Athletic Center was constructed on the left bank of San Francisquito Creek in 1970. Prior to that, the site was used as a public dump for an unknown period of time. Information known about the site is that the dump was capped sometime prior to 1970. In 1988, due to the decomposition and settling of the underlying landfill material, 1,200 tons of topsoil was imported to even the site. In recent years, additional subsidence has occurred in the Athletic Field parking lot (City of Palo Alto 2008). While landfill material in not anticipated to occur within the construction footprint, the potential does exist for landfill material to be encountered during construction.

Hazardous Materials Database

According to the California Department of Toxic Substances Control's (DTSC) and the SWRCB online hazardous materials databases, the Project site is not identified as a listed hazardous materials site. EnviroStor, the DTSC hazardous material sites database, records properties where extensive investigation and hazardous materials clean-up actions have been planned or completed. GeoTracker is the SWRCB'S data managing system for monitoring hazardous materials sites that impact groundwater. The Project site is not identified as a hazardous materials site on these maps. (California Department of Toxic Substances Control n.d., California State Water Resources Control Board 2011)

Airports

The Project site is located immediately west of the Palo Alto Airport of Santa Clara County and approximately 4.25 miles northwest of the Moffett Federal Airfield.

Evacuation Routes

According to the Palo Alto Comprehensive Plan (2007) (Maps N-6, N-7, N-8 and N-9), the nearest designated evacuation routes in Palo Alto are U.S. 101 (located on the west side of East Bayshore Road), Embarcadero Road (located approximately 0.4 mile south of the Project site), Oregon Expressway (approximately 0.6 mile south of the Project site), and Middlefield Road (approximately 1.15 miles west of the Project site).

The City of East Palo Alto has fifteen routes in which a resident can exit the city into one of the neighboring cities of Menlo Park or Palo Alto under ordinary road conditions. The evacuation routes closest to the ~~project~~Project are East and West Bayshore Road. However, because these routes are within the FEMA floodplain, they would be closed to evacuation during flood events that threaten to flood both roadways (Elizabeth Lam pers. comm.).

Vector-Borne Disease Hazards

The principal vector-borne disease concern in the Project area relates to diseases spread by mosquitoes.

Although 12 mosquito-borne viruses are known to occur in California, only west Nile virus (WNV), western equine encephalomyelitis virus (WEE), and St. Louis encephalitis virus (SLE) are significant causes of human disease. At time of this writing, WNV is having a serious impact upon the health of humans, horses, and wild birds throughout the state. In 2011, there were 158 WNV human cases in the state (California Department of Public Health, Mosquito & Vector Control Association of California, and University of California 2008); there was one case in Santa Clara County and no cases in San Mateo County (California Department of Public Health 2012).

Mosquito Breeding

Many mosquitoes lay their eggs on the surface of fresh or stagnant water. Any standing water body represents a potential breeding habitat for mosquitoes, including water in cans, barrels, horse troughs, ornamental ponds, swimming pools, puddles, creeks, ditches, and marshy areas (American Mosquito Control Association 2011). Within cities and developed areas, runoff from landscape watering, car washing, and storms often collects in retention ponds or catch basins long enough to produce mosquitoes. Mosquito larvae can develop anywhere water stands for at least 5 days (California Department of Public Health 2008).

Mosquito Control

In California, local vector control agencies have the authority to conduct surveillance for vectors, prevent the occurrence of vectors, and abate production of vectors (California Codes: Health and Safety Code Section 2040). Vector control agencies also have authority to review, comment, and make recommendations for projects with respect to their potential vector production (California Health and Safety Code Section 2041) (California Department of Public Health 2008).

To reduce mosquito populations, vector control agencies utilize a combination of abatement procedures tailored to the period in the mosquito life cycle and specific habitat conditions. Mosquito control methods may include the use of biological agents (such as mosquito fish), microbial control agents (such as *Bacillus thuringiensis israelensis* and *B. sphaericus*), pesticides, and source reductions (i.e., draining water bodies that produce mosquitoes) (California Department of Public Health 2008).

All Project elements on the left bank are within the Santa Clara County Vector Control District (SCCVCD) jurisdiction. The Project elements on the right bank are within the San Mateo County Mosquito and Vector Control District (SMCMVCD).

Wildfire Hazards

Some areas of Santa Clara and San Mateo Counties are subject to serious wildfire hazards due to local microclimate conditions, vegetation characteristics, and/or topography. According to the Very High Fire Hazard Severity Zones (VHFHSZ) in Local Responsibility Area (LRA) maps for Santa Clara County and for San Mateo County (CALFIRE 2008a; 2008b), the Project site is located in non-VHFHSZ area.

Impact Analysis

Methods and Significance Criteria

Analysis considered the potential for adverse impacts on public health and safety as a result of hazardous materials exposure, vector-borne diseases, and wildland fire. Risks were evaluated qualitatively. Analysis focused on potential for previously unreported contamination.

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Substantially increased hazard to the public or the environment due to the routine transport, use, or disposal of hazardous materials.
- Exposure of workers or the public to existing hazardous materials contamination.
- Generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials site compiled pursuant to Government Code 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- Have a substantial adverse effect on level of risk to the public or the environment related to:

- Air traffic.
- Emergency response or evacuation plans.
- Wildland fire.

- Increased breeding or harborage of disease vector organisms, leading to elevated public health risk.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact HAZ1—Creation of Hazard through Transport, Use, or Disposal of Hazardous Materials

Summary by Project Element: Impact HAZ1—Creation of Hazard through Transport, Use, or Disposal of Hazardous Materials		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	Less than Significant with Mitigation

Construction

Construction of all Project elements would require the use of hazardous substances such as vehicle fuels, lubricants, and solvents. Improper storage and handling, including spills and releases, could result in exposure of the workers and the general public to toxins and carcinogens, a significant impact. However, hazardous and potentially hazardous materials used in construction would be transported, stored, and handled in a manner consistent with all relevant regulations and guidelines, including those recommended and enforced by the U.S. Department of Transportation, Santa Clara County Department of Environmental Health, and San Mateo County Environmental Health Department. In addition, as discussed in Section 3.8, *Hydrology and Water Quality*, SFCJPA has incorporated District water quality BMP's as Project environmental commitments to ensure that water quality is protected during construction, specified in the SWPPP prepared for the Project (see Chapter 2, *Project Description*). Additionally, Mitigation Measure HAZ1.1 requires the preparation and implementation of a Spill Prevention, Control, and Countermeasure Plan and HAZ1.2 requires that the storage and handling of potential pollutants and hazardous materials be in accordance with all local, state, and federal laws. These measures would include provisions for appropriate handling of any hazardous materials used on the Project site, as well as a Spill Prevention, Control, and Countermeasure Plan to minimize the potential for, and effects of, inadvertent spills occurring during Project construction. SFCJPA will be responsible for ensuring that all BMPs for hazardous materials handling and use are properly implemented. With these procedures in place, impacts related to hazardous materials used during construction are expected to be less than significant,.

Operation and Maintenance

Periodic activities required to maintain the new Project elements would require the use of vehicle fuels, lubricants, etc., and could also require solvents, paints, paving media, and other substances and would be similar to existing maintenance requirements. With implementation of Mitigation Measure HAZ-1.1 and water quality environmental commitments described in detail in Chapter 2, *Project Description*, impacts related to the necessary use of hazardous materials during maintenance activities would be less than significant.

Mitigation Measure HAZ1.1—Preparation and Implementation of a Spill Prevention, Control, and Countermeasure Plan

The ~~project~~Project applicant with prepare and implement a Spill Prevention, Control, and Countermeasure (SPCC) Plan to minimize the potential for, and effects from, accidental spills of hazardous, toxic, or petroleum substances during construction of the ~~project~~Project. The SPCC will be completed before any construction activities begin.

Mitigation Measure HAZ1.2—Require Proper Storage and Handling of Potential Pollutants and Hazardous Materials

The storage and handling of potential pollutants and hazardous materials, including, but not necessarily limited to, gasoline, diesel, oils, paint, and solvents, will be in accordance with all local, state and federal laws and other requirements. Temporary storage enclosures, double walled tanks, berms, or other protective facilities will be provided as required by law. All hazardous materials will be stored and handed in strict accordance with the Material Safety Data Sheets for each product. A copy of each Materials Safety Data Sheet will be submitted to the Project Engineer at the time of delivery of the products to the Project site.

Impact HAZ2—Exposure of Workers or the Public to Existing Hazardous Materials Contamination

Summary by Project Element: Impact HAZ2—Exposure of Workers or the Public to Existing Hazardous Materials Contamination		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	Less than Significant with Mitigation

The report prepared by HDR (2011) indicated that there is MTBE in the groundwater at the USPS site at a level above the reporting screening limits. The technical memorandum prepared by HDR | e^{2}M (2010) identified no known hazardous materials contamination within or adjacent to the proposed areas of Project-related ground disturbance. However, due to current and historic uses of properties adjacent to the Project site, there is a possibility of undocumented soil and/or groundwater contamination that, if disturbed, could impact the Project site. Soil and/or groundwater contamination could be present for the following reasons:

- Historical activities at the Yeaman Auto Body Property.
- Existing and unknown USTs at the Palo Alto and O'Connor Pump Stations.
- Historical activities at the Palo Alto Road Pump Station property.
- Herbicide and pesticide usage at the Golf Course.
- Presence of hazardous materials in the soil or groundwater at the USPS site.
- Presence of remnant landfill materials at the Baylands Athletic Center.
- Contaminated sediment from runoff from urban uses upstream.

This translates to some risk that construction workers or the public could be exposed to hazardous substances through disturbance during Project construction, potentially constituting a significant impact. As described in Mitigation Measures HAZ-2.1, further investigation would be required if unexpected hazardous materials are encountered during construction monitoring or testing of soil suitability. Mitigation Measure HAZ-1 would further ensure that all potentially hazardous materials are handled and stored in accordance with all applicable local, state, and federal laws and regulations. Any impacts would be reduced to a less-than-significant level by implementing Mitigation Measures HAZ1.1 and HAZ2.1.

Mitigation Measure HAZ2.1—Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials Are Encountered

In the event that unknown hazardous materials are encountered during construction monitoring or testing of soil suitability, all work in the area of the discovery will stop and SFCJPA will conduct a Phase II hazardous materials investigation to identify the nature and extent of contamination and evaluate potential impacts on Project construction and human health. A Phase I investigation will be done concurrent with or prior to Phase II. If necessary, based on the outcomes of the Phase II investigation, SFCJPA will implement remediation measures consistent with all applicable local, state, and federal codes and regulations. Construction in areas known or reasonably suspected to be contaminated will not resume until remediation is complete. If waste disposal is necessary, SFCJPA will ensure that all hazardous materials removed during construction are handled and disposed of by a licensed waste-disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility, in accordance with local, state, and federal requirements.

Operation and Maintenance

No reasonable foreseeable ground-disturbing activities beyond the removal of post-Project accumulated silt would occur during ~~project~~Project maintenance and operation. This ground-disturbing activity would not expose workers to hazardous substances.

Impact HAZ3—Generation of Hazardous Emissions/Use of Hazardous Materials within 0.25 Mile of Schools

Summary by Project Element: Impact HAZ3—Generation of Hazardous Emissions/Use of Hazardous Materials with 0.25 Mile of Schools		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	Less than Significant with Mitigation

The upstream portion of the Project reach is located within 0.25 mile of the International School of the Peninsula. Because construction would require the use of a variety of hazardous substances, including vehicle fuels and lubricants, paving media, paints, solvents, etc., there would be some potential for exposure of students, school employees, and the public to hazardous materials. The same would be true for ongoing maintenance activities. However, Mitigation Measure HAZ1.1 requires all hazardous materials to be handled, stored, and used in a manner consistent with relevant regulations and guidelines. This would reduce risks related to the use of hazardous materials in proximity to the school campus to a level consistent with the current standard of care, and impacts would be less than significant.

Impact HAZ4—Located on a Site that is Included on a List of Hazardous Materials Sites

Summary by Project Element: Impact HAZ4—Located on a Site that is Included on a List of Hazardous Materials Sites		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant

The Project site is not located on a site that is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5, and therefore that Project would not create a significant hazard to the environment. The closest hazardous materials sites to the Project area are one leaking UST located at the USPS site on the upper reach of the left bank approximately 0.1 mile south of the Creek, and one leaking UST located at the former Dyna Bell site (151 Laura Lane) on the upper reach of the left bank approximately 0.1 mile south of the Creek. Site cleanup at each of these properties has been completed and the cases are now closed (California State Water Resources Control Board 2011). Because the Project site is not located on a hazardous materials site, the Project would not create a significant hazard to the public or the environment. The impact is less than significant.

Impact HAZ5—Create a Safety Hazard for People in the Project Area Due to the Proximity to an Airport

Summary by Project Element: Impact HAZ5—Create a Safety Hazard for People in the Project Area Due to the Proximity to an Airport		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant

The Palo Alto Airport of Santa Clara County is located on the left bank of the Project site. The Project site is located within the airport influence area (AIA) of Palo Alto Airport and within the airport's safety restriction area. Airport safety zones, established by the Palo Alto Airport Comprehensive Land Use Plan (CLUP) in accordance with Federal Aviation Administration (FAA) requirements (Santa Clara County Airport Land Use Commission 2008), minimize the number of people exposed to potential aircraft accidents by imposing density and land use limitations. According to the Palo Alto Airport CLUP, the majority of the Project site is located in the Traffic Pattern Zone (TPZ). The TPZ is a portion of the airport area routinely overflown by aircraft operating in the airport traffic pattern. The potential for aircraft accidents in this area is relatively low. Other portions of the Project site are located in the Runway Protection Zone, the Inner Safety Zone, and the Turning Safety Zone (Santa Clara County Airport Land Use Commission 2008). The Project would not include the construction of any Project elements in these zones. Therefore, the Project would not create a safety hazard for people in the Project area due to the proximity of the Palo Alto Airport. This impact would be less than significant.

Impact HAZ6—Interference with Emergency Response or Evacuation Plan

Summary by Project Element: Impact HAZ6—Interference with Emergency Response or Evacuation Plan		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation ~~Incorporated~~	Less than Significant

The presence of construction equipment and vehicles, worker activities, and materials storage would have the potential to impede emergency access to the Project site and/or interfere with emergency evacuation plans. This would also be true for maintenance activities, although to a lesser degree because fewer pieces of equipment and vehicles would typically be involved. To ensure that Project construction does not impede emergency response or evacuations, the SFCJPA will require contractors to develop and implement a traffic control plan for each site (see Mitigation Measure TT1), including a requirement to maintain emergency access to/through the site. Similar requirements will be imposed for maintenance activities. With these requirements in place, construction impacts on emergency access and evacuations are expected to be less than significant. Ongoing trips to the Project site during maintenance for inspections and monitoring would be limited and could be readily rescheduled or halted to accommodate emergency response vehicles.

Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan

This measure is described in detail in Section 3.13 *Traffic and Transportation*

Impact HAZ7—Exposure of People or Structure to Risk of Wildland Fires

Summary by Project Element: Impact HAZ7—Exposure of People or Structure to Risk of Wildland Fires		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	No Impact	No Impact

As described above, the Project site is located in a non-VHFHSZ area. This area is not considered to be subject to fire risk; the Project would not introduce individuals or structures to an area at risk of wildland fires. Therefore, there would be no impacts from wildland fires.

Impact HAZ8—Breeding or Harborage of Disease Vector Organisms

Summary by Project Element: Impact HAZ8—Breeding or Harborage of Disease Vector Organisms		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	Less than Significant with Mitigation

The principal concern relative to disease vectors relates to the potential for the Project to create or expand the potential for mosquito breeding in the Project area.

During construction, Mitigation Measure HAZ8-1 will require contractors to employ "good housekeeping" measures (California Department of Public Health 2008) to prevent the accumulation of standing water on construction sites. With this requirement in place, construction is not expected to result in a significant increase in mosquito breeding.

Over the long term, the Project elements would provide no new opportunities for standing water to accumulate and would have no impact on mosquito breeding. Addition of floodwalls to San Francisquito Creek would have no effect on low flows in the channel (those most subject to potential stagnancy). There would be no impact related to these elements, and no mitigation is required. The widened portions of the Creek channels would be designed consistent with current engineering standards to ensure efficient flow and prevent stagnancy during the summer low-flow months.

Mitigation Measure HAZ8.1—Prevent Mosquito Breeding During Project Construction

To prevent mosquito breeding during Project construction, SFCJPA will ensure that standing water that accumulates on the construction site is gone within 4 days (96 hours). All outdoor grounds will be examined and unnecessary water that may stand longer than 96 hours will be drained. Construction personnel will property dispose of unwanted or unused artificial containers and tires. If possible, any container or object that holds standing water that must remain outdoors will be covered, inverted, or have drainage holes drilled.

3.8 Hydrology and Water Resources

This section provides environmental analysis of the Project's impacts on hydrology and water resources. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from construction, operation, and maintenance of the Project, and describes mitigation to minimize the level of impact. Impacts related to wetlands and marsh habitat and vegetation are discussed in Section 3.3, *Biological Resources*. Impacts related to soils and geological resources along the river are discussed in Section 3.5, *Geology and Soils*. Impacts related to groundwater contamination are described in Section 3.7, *Hazardous Materials and Public Health*.

Environmental Setting

Regulatory Context

Water quality and hydrologic function are protected at the federal and state level by the federal Clean Water Act (CWA) and by California's Porter-Cologne Water Quality Control Act and Fish and Game Code Section 1602 (Lake or Streambed Alteration Agreement Program). Additional protection is provided at the local level by the Water Resources Protection Ordinance of the Santa Clara Valley Water Resources Protection Collaborative, which provides model guidelines for streamside land use planning, and by the District's Well Ordinance, which regulates water supply wells and other deep excavations with the potential to affect aquifers. The Project area falls under the jurisdiction of the counties of Santa Clara and San Mateo, the Cities of Palo Alto and East Palo Alto, and a dozen regional, state, and federal agencies. The general plans of these counties and cities also contain a number of goals, policies, and action items for water resources protection and management. For additional information on water resources regulations, see Appendix B of this EIR.

Study Area

The study area lies within the San Francisquito Creek watershed, which is the northernmost creek within Santa Clara County and serves as the boundary with San Mateo County. The mainstem of the Creek is approximately 14 miles long. It begins at the confluence of Corte Madera Creek and Bear Creek, just below Searsville Dam, and ends where it flows through a 115-foot wide channel into San Francisco Bay. The study area is located in the downstream portion of San Francisquito Creek, which consists of an approximate 1.5 mile segment extending from the U.S. 101/East Bayshore Road Bridge to the San Francisco Bay. For the purposes of the hydrological analysis, the study area was broken into three reaches; the upper reach extends from U.S. 101/East Bayshore Road to the Palo Alto Municipal Golf Course, the middle reach extends from the Golf Course to Friendship Bridge and the lower reach extends from Friendship Bridge to the San Francisco Bay.

Existing Conditions

Climate and Precipitation

San Francisquito Creek has a Mediterranean climate, with warm, dry summers and mild, wet winters. The mean annual precipitation ranges from 14.5 inches near the San Francisco Bay to 41 inches near Skeggs Point in the Santa Cruz Mountains (Santa Clara Valley Water District 2007).

Hydrology

Surface Drainage

The San Francisquito Creek watershed has a drainage area of approximately 45 square miles. Although the Creek has three main tributaries, Los Trancos, Corte Madera and Bear creeks, the proposed Project is in the lower reach of the mainstem of the Creek.

There are three small reservoirs in the San Francisquito Creek watershed that were built for water conservation and storage purposes: Searsville Reservoir on Corte Madera Creek, and Felt Reservoir and Lagunita Reservoir, which are off-stream reservoirs fed by diversions from Los Trancos Creek and San Francisquito Creek, respectively. All three reservoirs are owned and maintained by Stanford University. Searsville Reservoir (capacity 952 acre-feet) and Dam is situated just west of the university's Jasper Ridge Biological Preserve. Searsville Dam was built for the Stanford University's water supply, and does not provide potable water, flood control, or hydropower. Searsville Reservoir provides minimal regulation of flows along the Creek (U.S. Geological Survey 2010). Sediment deposition has greatly reduced the available storage capacity and operational flexibility of Searsville reservoir as a water supply facility. When the Searsville Dam was built in 1892, the reservoir capacity was 1,000 acre-feet. Since then, due to accumulating sediment from upstream, the reservoir has lost over 90% of its original water storage capacity (Stanford University, 2011). Current reservoir operations allow the lake to be drawn down between May and November for irrigation and fire protection (San Francisquito Creek Joint Powers Authority 2004). The Felt Reservoir is in the Los Trancos Creek subwatershed. Diversions occur upstream from Los Trancos Creek to Los Trancos and Lagunita Canals for irrigation on Stanford University campus (U.S. Geological Survey 2010).

USGS owns and operates a continuous stream gage on San Francisquito Creek. USGS gage number 11164500 is located on the Stanford Golf Course upstream of Junipero Serra Boulevard, provides the best long-term record of flow in the Creek with measurements from 1931 to 1941 and then from 1951 to present. Average annual flow is 21.4 cfs (San Francisquito Creek Joint Powers Authority 2004).

Low flows typically occur in the late summer or early fall, before winter rains begin. Annual minimum 30-day low flows range from zero to about 1.0 cfs. Downstream of the stream gage, low flows infiltrate to groundwater, leaving much of the streambed dry for about 6 months of the year (San Francisquito Creek Joint Powers Authority 2004). It is likely that water utilization, evaporation, and diversion of flow to maintain summer reservoir levels have further reduced spring, summer and fall flows to some extent in the San Francisquito Creek watershed (San Francisquito Creek Joint Powers Authority 2004).

Flood Risks and Flood Protection

The steep topography of the upper watershed results in short duration, high intensity runoff during storm events. Runoff in the lower, urbanized portion of the watershed is conveyed to the creeks by the municipal storm drain system, which tends to increase the magnitude of the more frequent events while slightly reducing the magnitude of very large events. The average slopes of the tributary creeks range from 100 to 160 feet/mile (0.02 to 0.03 feet/feet), whereas the slope of the lower portion of San Francisquito Creek downstream of Alpine Road ranges from 10 to 40 feet/mile (0.002 to 0.007 feet/feet) (Santa Clara Valley Water District 2007).

Flooding from the Creek is a common occurrence. The most recent flood event occurred as a result of extremely high creek flows in February 1998, when the Creek overtopped its banks in several areas. The maximum instantaneous peak flow recorded during the February 1998 event was 7,200 cfs. USACE estimates that this flood was a 45-year flood event. Other notable floods—those exceeding 5,000 cfs based on reconstructed records—have occurred in 1894, 1895, 1911, 1955, and 1982 (San Francisquito Creek Joint Powers Authority 2004). USACE (1972) also notes that between 1910 and 1972 San Francisquito Creek overflowed its banks eight times—in 1911, 1916, 1919, 1940, 1943, 1950, 1955 and 1958. It later overflowed its banks in 1982 and then again in 1998 (San Francisquito Creek Joint Powers Authority 2004). Levees and channel modifications now contain the flows that overtopped the banks earlier in the twentieth century. Overflow now mostly occurs along the lower part of the Creek, downstream of Middlefield Road (San Francisquito Creek Joint Powers Authority 2004). In response to these recurring flood events, SFCJPA has undertaken several projects within the San Francisquito Creek watershed to improve flood conveyance capacity and reduce the potential for flood damages to adjacent properties. The proposed Project is a key piece of SFCJPA's long-term comprehensive flood management strategy (San Francisquito Creek Joint Powers Authority 2012).

The Creek is located within the District's Lower Peninsula Watershed Zone and San Mateo County's San Francisquito Creek Flood Control Zone. In addition, the Creek channel is located within the Federal Emergency Management Agency (FEMA) 100-year flood zone. The 100-year flood is a flood that has a 1 percent chance of being equaled or exceeded in any single year, and can occur in subsequent years. These flows would exceed the existing capacity of the Creek (San Francisquito Creek Joint Powers Authority 2009). The flow discharge of the Creek generally increases from upstream to downstream as a result of the increasing drainage areas. The estimated 100-year flow increases from 8,800 cfs at the Stanford Golf Course (USGS Station 11164500) to 9,400 cfs at Palo Alto Airport (at the mouth of the Creek), or an approximately 7 percent increase (U.S. Army Corps of Engineers 2009).

Downstream of U.S. 101 (Station 29+88), Friendship Bridge, a pedestrian bridge, spans the existing Creek. The geometry of the crossing and the bridge approaches currently constricts the channel significantly. Projected Sea Level Rise and tidal influences can also contribute to flood impacts along the Creek. A scenario with 100-year flood flows coincident with tidal influence and taking into account Sea Level Rise over a 50-year horizon would dramatically increase the risk of flooding in the Study Area.

Groundwater Hydrology

The Project area is located within the San Mateo subbasin of the Santa Clara Valley groundwater basin, which covers approximately 75 square miles on the west side of the San Francisco Bay

(Department of Water Resources 2003). The San Mateo subbasin is bounded on the east by the San Francisco Bay, the west by the Santa Cruz Mountains, on the north by the Westside basin, and on the south by San Francisquito Creek (Department of Water Resources 2003). Groundwater in the subbasin along El Camino Real is likely to be shallowest closer to Atherton Channel and San Francisquito Creek, and deepest along the drainage divide. Groundwater flow direction is primarily in the direction of the San Francisco Bay, but may be locally influenced by the creeks or groundwater wells.

Within the San Mateo subbasin, the San Francisquito Creek aquifer is composed of coarse- and fine-grained alluvial deposits of San Francisquito Creek. The groundwater subbasin is as much as 1,000 feet thick in places (City of East Palo Alto 2011). The groundwater system includes a shallow aquifer in the sandy deposits that extends from the ground surface to about 15 to 100 feet below ground surface (bgs), and a deep aquifer beneath a laterally extensive confining clay layer (San Francisquito Creek Joint Powers Authority 2004). The deep aquifer consists of two water-bearing zones; an upper and lower zone (City of East Palo Alto 2011). The upper zone is between 200 and 300 feet bgs and the lower zone extends to depths greater than 300 feet bgs (City of East Palo Alto 2011).

Natural recharge occurs by infiltration of water from streams that enter the valley from the upland areas within the drainage basin and by percolation of precipitation that falls directly on the valley floor. Further downstream, losses are minimal and groundwater returns may supplement stream flows (San Francisquito Creek Joint Powers Authority 2004). Most of the streamflow losses or infiltration to groundwater occurs between San Mateo Drive and Middlefield Road where the Creek crosses the Pulgas fault (San Francisquito Creek Joint Powers Authority 2004). Infiltration of runoff from the foothills, over-irrigation, urban watering and leakage from water distribution and stormwater systems also contribute to groundwater recharge.

The San Mateo subbasin has not been identified or projected to be in overdraft by the California Department of Water Resources (DWR) (City of East Palo Alto 2011). Historically, groundwater resources in the area were developed to meet irrigation needs. Heavy groundwater pumping from the early 1920s to the mid-1960s caused movement of saline water from San Francisco Bay inland and land subsidence in parts of Palo Alto and East Palo Alto (City of East Palo Alto 2011). Since 1965, increased surface water deliveries from the Hetch-Hetchy system have reduced groundwater demand and allowed the restoration of the groundwater subbasin to pre-1960 levels (City of East Palo Alto 2011). However, groundwater still remains a significant water source in some communities on the San Francisquito fan, such as Atherton (San Francisquito Creek Joint Powers Authority 2004).

Water Quality

Surface Water Quality

In general, water quality in streams depends on the mineral composition of the soils and associated parent material in the watershed, the hydrologic and hydraulic characteristics of the stream and its watershed, and the types of contaminant sources present in the watershed. As shown in Table 3.8-1, the Creek is listed by the State Water Resources Control Board under the 303(d) list as impaired for Diazinon, sedimentation/siltation, and trash.

Because of the urbanized nature of the San Francisquito Creek watershed, surface water quality in the Project area is directly affected by stormwater runoff from adjacent streets and properties delivering fertilizers, pesticides, metals, hydrocarbons, and other pollutants. Typically, pollutant levels in the creeks are highest following the first storm flows of the season when constituents accumulated during the dry season are "flushed" into the creeks.

Table 3.8-1. Overview of Water Quality Impairments in Project Area

Water Body	Listed Impairments Per 2006 303(d) List	Potential Sources	EPA TMDL Completion
San Francisquito Creek	Diazinon	Urban runoff/storm sewers	2007
	Sedimentation/siltation	Nonpoint source	Est. 2013
	Trash	Illegal dumping, urban runoff/storm sewers	Est. 2021
South San Francisco Bay	Chlordane	Nonpoint source	Est. 2013
	DDT (Dichlorodiphenyltrichlorothane)	Nonpoint source	Est. 2013
	Dieldrin	Nonpoint source	Est. 2013
	Dioxin compounds (including 2,3,7,8-TCDD)	Atmospheric deposition	Est. 2019
	Furan Compounds	Atmospheric deposition	Est. 2019
	Invasive Species	Ballast water	Est. 2019
	Mercury	Atmospheric deposition, industrial point sources, municipal point sources, natural source, nonpoint source, resource extraction	2008
	PCBs and Dioxin-Like PCBs (polychlorinated biphenyls)	Unknown nonpoint source	2008
	Selenium	Domestic use and groundwater	Est. 2019

Sources: California State Water Resources Control Board 2011a

Due to the rugged topography and highly erodible soils in the upper watershed, surface water quality in San Francisquito Creek watershed is also affected by sediment. The steep, upper watershed lies southwest of the San Andreas Fault Zone (SAFZ) in the northern Santa Cruz Mountains, whereas more gradually sloping areas lie to the northeast. In the lower, tidally influenced portion of the Creek, water quality may be affected by sediments entering the Creek from South San Francisco Bay. In addition to these natural sources of sediment, surface water quality in the watershed is also affected by anthropogenic sediment sources. Urbanization has modified the hydrologic characteristics of the watershed, resulting in more rapid and greater peak storm flows, increased creek bed and bank erosion, and higher sediment loads (San Francisquito Creek Joint Powers Authority 2004). Sediment can choke the lower portions of stream channels on alluvial fans, diminishing their flood capacity. Although sediment removal activities in the study area have not been a common occurrence for flood control purposes, it is primarily considered to be a water quality issue. Due to significant sedimentation in the basin, the Creek is listed as impaired by sedimentation under CWA Section 303(d) (Table 3.8-1).

Groundwater Quality

In general, groundwater quality in the Santa Clara Valley is good; water from public supply wells meets state and federal drinking water standards without treatment (Santa Clara Valley Water District 2001). However, there are some known concerns. Near the Bay margin, historic groundwater overdraft has created areas of saltwater intrusion, where groundwater salinity is elevated by contact with seawater infiltrating into subsurface aquifers. Improperly abandoned wells have also conducted contamination from the surface into subsurface aquifers. In addition, as described in Section 3.7, *Hazardous Materials and Public Health*, the closest hazardous materials sites to the Project area are one leaking UST located at the USPS facility, on the upper reach of the left bank approximately 0.1 mile south of the Creek and one leaking UST located on the upper reach of the left bank approximately 0.1 mile south of the Creek. Site cleanup at each of these properties has been completed and the cases are now closed (California State Water Resources Control Board 2011b).

Groundwater from the San Mateo subbasin is known to have high concentrations of salts, and some wells have reported concentrations of nitrate-nitrogen that exceed EPA maximum contaminant levels (Department of Water Resources 2003). It also tends to be quite hard (high mineral content) and have high concentrations of iron and manganese (City of East Palo Alto 2011).

Designated Beneficial Uses and Impairments

Table 3.8-2 summarizes the designated beneficial uses identified for San Francisquito Creek, downstream water bodies (South San Francisco Bay), and groundwater in the Project area.

Table 3.8-2. Designated Beneficial Uses

Water Body	Designated Beneficial Uses
San Francisquito Creek	Cold Freshwater Habitat, Fish Migration, Fish Spawning, Warm Freshwater Habitat, Wildlife Habitat, Water Contact Recreation[a], Noncontact Water Recreation[a]
South San Francisco Bay	Industrial Service Supply, Commercial, Shell Fish Harvesting; Estuarine Habitat; Fish Migration; Preservation of Rare and Endangered Species; Fish Spawning;[a] Wildlife Habitat Water Contact Recreation; Noncontact Water Contact Recreation
Santa Clara Valley groundwater	Municipal and Domestic Supply, Industrial Process Supply, Industrial Service Supply, Agricultural Supply

[a] Potential Beneficial Use.

Source: San Francisco Bay Regional Water Quality Control Board 2006.

Table 3.8-1 shows 303(d)-listed water quality impairments identified in the 2010 Clean Water Act Section 303(d) and 305(b) Integrated Report (2010 California Integrated Report). The 2010 California Integrated Report was approved by the State Water Board on August 4, 2010, and approved by the U.S. Environmental Protection Agency (EPA) on November 12, 2010. Placement of a water body and its offending pollutant on the 303(d) list, initiates the development of a Total Maximum Daily Load (TMDL). TMDLs may establish “daily load” limits of the pollutant, or in some cases require other regulatory measures, with the ultimate goal of reducing the amount of the pollutant entering the water body to meet water quality standards.

Impact Analysis

Methods and Significance Criteria

Impacts were analyzed qualitatively based on professional judgment in light of the hydrologic and hydraulic analyses prepared for Project design. Analysis focused on issues related to flood hazards, groundwater supply, and surface and groundwater quality. The Project would not include dam construction; new development protected by levees or floodwalls; or new construction placing persons or structures at significant risk due to mudflow and debris flow. These issues are discussed no further in this EIR.

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Increased flood risks.
- Substantial depletion of groundwater resources or interference with groundwater recharge; interruption of groundwater supply.
- Degradation of water quality potentially affecting beneficial uses, including degradation that would result in violation of any applicable water quality standard or waste discharge requirements.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact HWR1—Effects on Flood Hazards

Summary by Project Element: Impact HWR1—Effects on Flood Hazards		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	Less than Significant with Mitigation~~Beneficial~~

Construction

Construction activities undertaken as part of the Project include grading, excavation, and fill placement, as well as terracing, all of which involve mobilizing sediment. Sediment from Project-induced erosion could accumulate in downstream drainage facilities and interfere with stream flow, thereby aggravating downstream flooding conditions during the wet season. However, as described as part of Impact HWR3, measures will be implemented to control erosion and sedimentation as part of the Project SWPPP. Therefore, these impacts would be less than significant and no mitigation is required.

Construction within the Creek would require a clear water diversion to minimize potential erosion, sediment loss, scour or increases in turbidity. The contractor would design and construct a clear water diversion consisting of cofferdams located upstream and downstream of the proposed construction activities. Temporary fill used to construct the cofferdams would be kept to the minimum footprint necessary. Water would be pumped from the upstream cofferdam to the downstream cofferdam. At the discharge location, to minimize the potential for erosion, the water flows from the pipe would be discharged via a T-pipe to reduce velocities over a riprap apron. The riprap apron would be constructed over visquine or similar material to facilitate clean-up and removal of materials. Upon completion of construction, all temporary fills associated with the dewatering including sandbags, sheet metal piling, and/or rock would be removed and the area constructed to the grades shown within the construction documents.

The potential exists for storm water flows to be released from two storm water pump stations located within the ~~project~~Project boundary. The San Francisquito Pump Station is located near U.S. 101 and the O'Connor Pump Station located near O'Connor Street. Storm water releases from these pump stations would be routed, via pump or gravity flow, to the lower cofferdam for release. The contractor would coordinate construction activities with the regulators of these pump stations to insure proper care is taken to maintain the use of each pump station and clear water diversion.

Three small private storm drain structures currently release flow to the Creek. One of these structures, located at Yeaman's Auto Body shop, would be removed by the contractor. The second and third of these structures, located near a private storage facility and at the rear of an elementary school, would be maintained. Penetrations would be constructed through the proposed flood wall to maintain these storm water outfalls. The new outfall structures would have equivalent or greater hydraulic capacity as the existing outfall structures.

Clear water diversions have the potential to disrupt storm water flows within the Creek during significant storm events. Temporary relocation of storm drains would occur during the dry season. With the implementation of Mitigation Measure HWR-1, this impact is considered less-than significant.

Mitigation Measure~~s~~ HWR1.1—Design of Temporary Relocation of Storm Drainage Facilities during Construction

A temporary disruption in stormwater conveyance facilities located in the immediate Project construction footprint could result in the temporary relocation and re-routing of outfalls. The temporary design will include the necessary review and assessment of alternative routes and ancillary facilities to ensure that they can safely accommodate the redirected flow to the same level of design and performance (i.e., storm drain capacity) as that of the existing facilities until such time that the original facilities are restored.

Operation and Maintenance

Currently, the Creek does not have adequate flood conveyance capacity to protect residents and property along the lower section of the Creek, from East Bayshore Road to the San Francisco Bay during a 100-year flood event. Several factors in the Project area increase the risk of flooding including restricted floodplain connectivity, flow conveyance restrictions, and channel deposition. The diminished performance with tidal influence and projected Sea Level Rise at 26 inches within a 50-year horizon, places the surrounding urban area at an increased risk during a 100-year flood. To restore the appropriate level of flood control protection to the public, the Project would be designed to protect against the elevation conditions resulting from a 100-year flood event occurring at the same time as a predicted 100-year high tide event, plus 26 inches of Sea Level Rise. The new design would provide capacity for 9,300 cfs (18.2 feet in elevation) at the U.S. 101 to 9,400 cfs (12.52 feet in elevation) at the confluence of San Francisquito Creek with the San Francisco Bay. Under existing conditions, the Creek segment only has the capacity to receive approximately 4,200 cfs, a flow that is slightly less than a 10-year flood event. The new design would more than double the channel capacity and would provide greater than the 100-year level of protection as defined by FEMA (San Francisquito Creek Joint Powers Authority 2010). The Project proposes to partially restore the function of the natural creek channel, allowing flow into the Faber Tract portion Baylands Preserve; reconfigure levees; create a marshplain terrace to convey high flows; install floodwalls; remove existing sediment deposition areas along the Creek channel; and reconstruct access roads for maintenance purposes. A minimum 3-foot freeboard[10] would be incorporated along the entire study area with a 4-foot freeboard at all bridge crossings. In addition, the Friendship Bridge would be designed to provide a capacity greater than project design 100-year flood surface water elevations in the Creek. A bypass channel into the Golf Course would be constructed to increase flood conveyance by creating access to the floodplain. Levees downstream from the reinforced PG&E transmission tower (T3) located within the Creek would be raised and set back to also accommodate for a greater capacity than 100-year flood surface water elevations in the Creek. Wind run up and wave set up are also contained in the new freeboard, levee and floodwall heights. With the conservative design elevation, the minimum 3-foot freeboard, levee and floodwall modifications, and rip-rap design to dissipate flows along channel, the Project is anticipated to accommodate for potentially increased flows beyond the design criteria conditions, such as a result of a tsunami or seiche. As a result, the Project would represent a beneficial impact on the overall function of existing flood protection infrastructure and improve the general state of the local flood safety for the protection of life and property adjacent to the Project. No mitigation is required.

Flows into the Faber Tract could impact the levee between the Faber Tract and East Palo Alto based on modeling of flows into the Faber Tract (HDR 2010) at the design criteria conditions of the 100-year flood flows coincident with the 100-year tide plus 2.17 feet of Sea Level Rise. At this condition, the maximum increase in water surface elevation in the Faber Tract is estimated to be a 0.2 feet (approximately 2 inches). While the ~~project~~Project is designed for conveyance of a maximum 9,400 cfs event concurrent with a 100-year tide event and projected Sea Level Rise, the Project itself would not receive this level of flood event until future projects upstream of the Project are implemented. Under existing conditions, a maximum of approximately 4,500 cfs can be delivered to the Project reach and therefore this Project would not induce impacts on the Faber Tract . As improvements are made upstream of the Project reach, the SFCJPA intends to improve the levee between the Faber Tract and East Palo Alto, and thus future potential impacts on this levee are not expected to occur. This impact is considered less than significant. No mitigation is required.

The permanent alteration of storm drainage facilities as a result of new Project facilities (i.e., levees) could affect conditions during flood events. This impact has the potential to be significant if relocated storm drains are not designed to accommodate preconstruction flood flows. With the implementation of Mitigation Measure HWR-2, this impact is considered less-than significant.

[10] *Freeboard* is the increment of levee height added to the design flood height to increase the likelihood of the design flood event being contained without the levee overtopping. Freeboard is added primarily to provide a buffer in height to accommodate uncertainty in the estimated design flood level.

Mitigation Measure~~s~~ HWR1.2—Design of Permanent Relocation of Storm Drainage Facilities

The permanent relocation of stormwater conveyance facilities would be designed so as not to alter the original outlet locations and internal routes. The design will include the necessary review and assessment of pipeline additions and ancillary facilities to ensure that they can safely accommodate flood flows to the same level of design and performance (i.e., storm drain capacity) as that of the existing facilities.

Impact HWR2—Effects on Groundwater Supply and Recharge

Summary by Project Element: Impact HWR2—Effects on Groundwater Supply and Recharge		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
Levee and Floodwall Construction		
Levee lowering on right bank	No Impact	No Impact
Levee raising on right bank	Less than Significant	Less than Significant
Floodwall on right bank	Less than Significant	Less than Significant
Levee raising on left bank and levee relocation	Less than Significant	Less than Significant
Floodwall on left bank	Less than Significant	Less than Significant
Downstream access road on right bank	Less than Significant	Less than Significant
Upstream access road on right bank	Less than Significant	Less than Significant
Access road on left bank	Less than Significant	Less than Significant
Friendship Bridge	No Impact	Less than Significant
Marshplain Restoration		
Downstream of Friendship Bridge on right bank	No Impact	No Impact
Upstream of Friendship Bridge on right bank	No Impact	No Impact
Left bank	No Impact	No Impact

Construction

None of the Project elements would require the use of groundwater. While foundation construction of levees would involve localized groundwater dewatering activities, the Project would not significantly affect groundwater resources because the required excavations would intersect only the shallow water table; dewatering would temporarily remove groundwater with only localized and inconsequential effects on the regional groundwater system. Dewatering could result in short-term, localized alterations in groundwater levels near the surface in the immediate vicinity of the construction site but this reduction would not cause a widespread, regional drawdown. Changes to groundwater occurrence and levels due to Project construction, operation, and maintenance, if groundwater levels are affected at all, would not detrimentally affect regional groundwater production or change the existing water quality. The San Francisco Bay Regional Water Quality Control Board (San Francisco Bay Water Board) has regulations specific to dewatering activities that typically involve reporting and monitoring requirements. There would be no long-term impact related to increased groundwater use or reduction of supply. No existing water wells would be decommissioned during construction. Impacts on existing groundwater supplies would be less than significant, and no mitigation is required.

Operation and Maintenance

Project operation and maintenance are not expected to require additional increases or decreases in impervious surfaces; additional impacts on groundwater resources during the Project's operational life are thus not anticipated, and the analysis described below focuses on outcomes of constructing the proposed Project facilities.

The following facilities would increase the extent of impervious surface or reduce percolation and groundwater recharge in the Project area:

- Proposed raised levee crowns surfaced with aggregate base and asphalt concrete.
- New floodwalls constructed out of sheet pile and reinforced concrete.
- Two access and maintenance roads: one upstream access road behind the floodwall on the right bank and one access road behind the floodwall on the left bank. Both would be re-surfaced with aggregate base. The new access road on the left bank would have a paved surface from Geng Road to Friendship Bridge totaling 0.98 acre of asphalt paving. Both would have a width of approximately 12 feet.
- Construction of a replacement PG&E transmission tower T3 located within the Creek, and fortified concrete pier supporting each leg of the tower.

Groundwater recharge generally occurs upstream from the Project area. In addition, the increase in impervious area as a result of the construction of these facilities would be very small compared to the overall Project Area. Consequently, impacts on groundwater as a result of these Project elements are not expected to be significant. No mitigation is required.

Impact HWR3—Degradation of Water Quality

Summary by Project Element: Impact HWR3—Temporary Degradation of Water Quality		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant

Construction

Activities required to construct all Project elements—including site clearing, excavation, and fill placement, as well as demolition of existing facilities, where required—would have the potential to contribute to erosion and subsequent increased input of fine sediments into the Creek, potentially resulting in degraded water quality. Additionally, hazardous materials such as gasoline, oils, grease, and lubricants from construction equipment could be released accidentally during construction. Accidental discharge of these materials to the Creek could adversely affect water quality, endanger aquatic life, or result in violation of water quality standards or waste discharge requirements. However, because the Project would require land disturbance of greater than one acre of land, a SWPPP would be required under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ) (Construction General Permit) (see Appendix B for details). The SWPPP would include provisions to control erosion and sedimentation, as well as a Spill Prevention, Control, and Countermeasure Plan to avoid and, if necessary, clean up accidental releases of hazardous materials (see Section 3.7, *Hazardous Materials and Public Health*). The General Permit also would require the Project to sample and test storm water and non-storm water discharges from the site for turbidity, pH, and other potential pollutants.

While preliminary investigations have determined that known areas of contamination are outside of the construction footprint, response to any currently unknown migration of these contaminants or currently unknown areas of contamination that are identified during preconstruction testing would be coordinated with the applicable local authority and appropriately handled as described in Mitigation Measure HAZ2.1 (see Section 3.7, *Hazardous Materials and Public Health*).

In addition, as part of the SCVURPPP and the SM-STOPPP, required under Waste Discharge Requirements and NPDES Permit for the discharge of stormwater runoff from the MS4s overseen by the San Francisco Bay Regional Water Quality Control Board, all construction sites are required to have site specific, and seasonally and phase-appropriate, effective BMPs (San Francisco Bay Regional Water Quality Control Board 2009). SFCJPA would be responsible for ensuring compliance with these stormwater requirements and programs. The Project specifications require that the Project construction contractor employ a Qualified SWPPP Practitioner to implement and document the pollution prevention measures outlined in the SWPPP prepared for the Project. The Project would implement measures to accomplish objectives specified in SFCJPA's *San Francisquito Creek Watershed Analysis and Sediment Reduction Plan*, which fulfills NPDES permit provisions that require the co-permittees of the SCVURPPP and SM-STOPPP within the Creek watershed to assess and implement sediment management measures in the watershed (San Francisquito Creek Joint Powers Authority 2004). With the SWPPP and associated measures in place, impacts related to degradation of water quality during construction are expected to be less than significant, and no mitigation is required.

Operation and Maintenance

Ongoing maintenance activities would have some potential to degrade water quality through mechanisms very similar to those discussed for Project construction—sediment mobilization, inadvertent spills, and releases of fuels and lubricants, and others.

In addition, pesticides could be used to prevent the growth of vegetation in and around floodwalls and levees. Potential spills and leaks occur infrequently and would be addressed using spill kits provided in maintenance vehicles. Pesticides would be applied in compliance with California Department of Pesticide Regulation requirements to minimize impacts on water quality.

Maintenance for the new Project elements would include activities such as infrequent post-flood clean-up of the marshplain, which would be needed only after major flood events. These activities would remove potential materials that would threaten water quality and result in a beneficial impact. However, as identified in Chapter 2 and per SWPPP requirements, the SFCJPA or responsible maintenance agencies would implement post-construction BMPs to protect water quality, and these BMPs would apply to all Project maintenance activities. With these measures in place, maintenance-related impacts on water quality are expected to be less than significant. No mitigation is required.

Impact HWR4—Effects on Designated Beneficial Uses

Summary by Project Element: Impact HWR4—Effects on Designated Beneficial Uses		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant

Construction

The proposed flood protection improvements are intended to improve flood safety and surface hydrologic function in the San Francisquito Creek and would not physically impede the abilities of these water bodies or downstream waters (South San Francisco Bay and Santa Clara Valley groundwater) to satisfy their designated beneficial uses.

As shown in Table 3.8-2, the beneficial uses of Cold Freshwater Habitat, Fish Migration, Fish Spawning, Warm Freshwater Habitat, and Wildlife Habitat, as well as the potential beneficial uses of Water Contact Recreation and Noncontact Water Recreation have been identified for the Creek. All of these uses could be affected by degradation of water quality; as discussed under Impact HWR3 and in Section 3.3, *Biological Resources*, construction- and maintenance-related impacts on water quality would be controlled to a less-than-significant level by BMPs. The Santa Clara and San Mateo Countywide Water Pollution Prevention Programs include a construction site inspection and control program at all construction sites to prevent construction site discharges of pollutants and impacts on beneficial uses of receiving waters (San Francisco Water Board 2009). SFCJPA would be responsible for ensuring compliance with these program requirements. Project activities are therefore not expected to result in water quality degradation affecting beneficial uses for the Creek, or downstream waters. No mitigation is required.

The Project is also considered unlikely to result in significant increases in water temperature in the Creek. Trees removed for Project construction would be replaced as required by local ordinances, mitigation for impacts to riparian habitat, and the terms and conditions of Project permits (see Section 3.3, *Biological Resources*). Existing riparian vegetation in the ~~project~~Project area is limited. Particularly given the influence of regular tidal influx of bay water on ambient water temperatures, the loss of riparian vegetation is not anticipated to impact water temperatures. No mitigation is required.

Operation and Maintenance

Project operation is not expected to affect water temperatures in a manner that would significantly degrade Cold Freshwater Habitat values. As discussed in Section 3.12, *Recreation*, Project construction would result in temporary reduction in recreational access to some parts of the Creek corridor with established recreational uses (access points along the Bay Trail), but uses would be restored following construction. Therefore, there would be no long-term impedance of Non Water Contact Recreational Uses, and impacts would be less than significant. Impacts on wildlife habitat values, including fisheries uses, are discussed in detail in Section 3.3, *Biological Resources* and are similarly expected to be less than significant with incorporation of mitigation measures identified in Section 3.3. This impact is considered less than significant. No mitigation is required.

The Project is anticipated to have negligible upstream and downstream impacts on geomorphology and beneficial uses related to sediment dynamics. Upstream of the Project, the channel is highly constrained, including by highway culverts immediately upstream of the Project. Downstream of the Project, there is negligible fluvial influence within the tidal influence of San Francisco Bay beyond existing flood flows that would continue to occur following Project construction.

Additionally, as described under Impact HWR1, while the Project is designed for conveyance of a maximum 9,400 cubic feet per second (cfs) event concurrent with a 100-year tide event and projected Sea Level Rise, the Project itself would not receive this level of flood event until future projects upstream of the Project are implemented. Following construction, a maximum of approximately 4,500 cfs could be delivered to the Project reach, and therefore this Project would not result in immediate hydraulic changes that would impact geomorphology outside the Project reach. The Project would not receive any additional flood flow conveyance until such time that upstream improvements are completed and those projects would address upstream geomorphic processes. Hence, the Project would not result in significant changes to sediment mobility or geomorphic function upstream or downstream of the Project.

Overall, impacts on beneficial uses in the Creek are expected to be less than significant, and minor benefits may occur with the increase in the extent of tidal marsh in the lower section of the Creek. No additional mitigation is required.

No impacts are associated with the designated beneficial uses for the South San Francisco Bay, Ocean, Commercial, and Sport Fishing, Estuarine Habitat, Industrial Service Supply, Fish Migration, Navigation, Preservation of Rare and Endangered Species, Water Contact Recreation, Nonwater Contact Recreation, Shell Fish Harvesting, Fish Spawning, Wildlife Habitat. The Project would not modify, use, or replenish these waters directly and therefore could only affect their beneficial uses indirectly, via the quality of flows entering the Bay from the Creek and of recharge waters entering the aquifer through pervious creek bed materials.

Potential dewatering of groundwater aquifers for levee construction would not have long-term impacts on the beneficial uses of the Santa Clara Valley Groundwater (Municipal and Domestic Supply, Industrial Process Supply, Industrial Service Supply, Agricultural Supply). Dewatering activities would be temporary, localized and would only affect shallow groundwater; and groundwater would ultimately be recharged by infiltration of water from streams, percolation of precipitation and landscape irrigation.

Because the Project is not expected to affect water quality significantly, impacts on downstream beneficial uses are also expected to be less than significant, and no mitigation is required.

3.9 Land Use and Planning

This section analyzes the compatibility of the Project with existing planning documents and regulations related to land use planning. Because the Project involves improvement of bicycle and pedestrian trails, this section analyzes the Project's compatibility with policies in the planning documents that involve integration of bicycle and pedestrian trails into the community. For a discussion of Project impacts on traffic and transportation, see Section 3.13, *Traffic and Transportation*.

Environmental Setting

Regulatory Setting

Lands at the Project site are planned and managed according to the following general and master plans.

- Palo Alto Comprehensive Plan (City of Palo Alto 1998).
- Palo Alto Baylands Master Plan (City of Palo Alto 2008).
- East Palo Alto General Plan (City of East Palo Alto 1999).
- East Palo Alto Bay Access Master Plan (City of East Palo Alto 2007).

The Project site is also in Palo Alto AIA defined by the Palo Alto Airport CLUP, where land uses should be compatible with airport use.

Four bicycle plans provide context for bicycle trail planning and projects.

- Metropolitan Transportation Commission's Regional Bicycle Plan for the San Francisco Bay Area (Metropolitan Transportation Commission 2009).
- Santa Clara Countywide Bicycle Plan (Santa Clara Valley Transportation Authority 2008).
- Palo Alto Bicycle and Pedestrian Transportation Plan (City of Palo Alto 2011).
- East Palo Alto Bicycle Transportation Plan (City of East Palo Alto 2011).

Table 3.9-1 provides a summary of the goals and policies in these documents.

General Plans

Land use and planning are the province of local governments in California. All cities and counties are required by the state to adopt a general plan establishing goals and policies for long-term development, protection from environmental hazards, and conservation of identified natural resources (California Government Code 65300). General plans lay out the pattern of future residential, commercial, industrial, agricultural, open-space, and recreational land uses within a community. To facilitate implementation of planned growth patterns, general plans typically also include goals and/or policies addressing the coordination of land use patterns with the development and maintenance of infrastructure facilities and utilities.

Government Code Section 65302 lists seven "elements" or chapters that cities and counties must include in their general plans: land use, circulation, housing, conservation, open space, noise, and safety. The land use element typically has the broadest scope of the mandatory general plan elements. This central element describes the desired distribution, location, and extent of the jurisdiction's land uses, which may include housing; business; industry; open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty; education, public buildings and grounds; solid and liquid waste disposal facilities; and other public and private uses of land.

Local jurisdictions implement their general plans by adopting zoning, grading, and other ordinances. Zoning identifies the specific types of land uses that are allowed on a given site and establishes the standards that would be imposed on new development.

City of Palo Alto Comprehensive Plan 1998–2010

The City of Palo Alto Comprehensive Plan provides a vision, policies, and implementation programs whose focus includes fostering increasing housing density while maintaining a sense of community character, reducing reliance on automobile transport, protecting and restoring natural areas, and maintaining and enhancing effectiveness of commercial and employment cities.

The City of Palo Alto is largely developed. Approximately 55 percent of the city's area is parkland, preserves, or under agricultural use. Most of the remaining land is developed for urban use, including residential, with very little land vacant and available for development. Planning goals and policies are intended to retain this approximate balance.

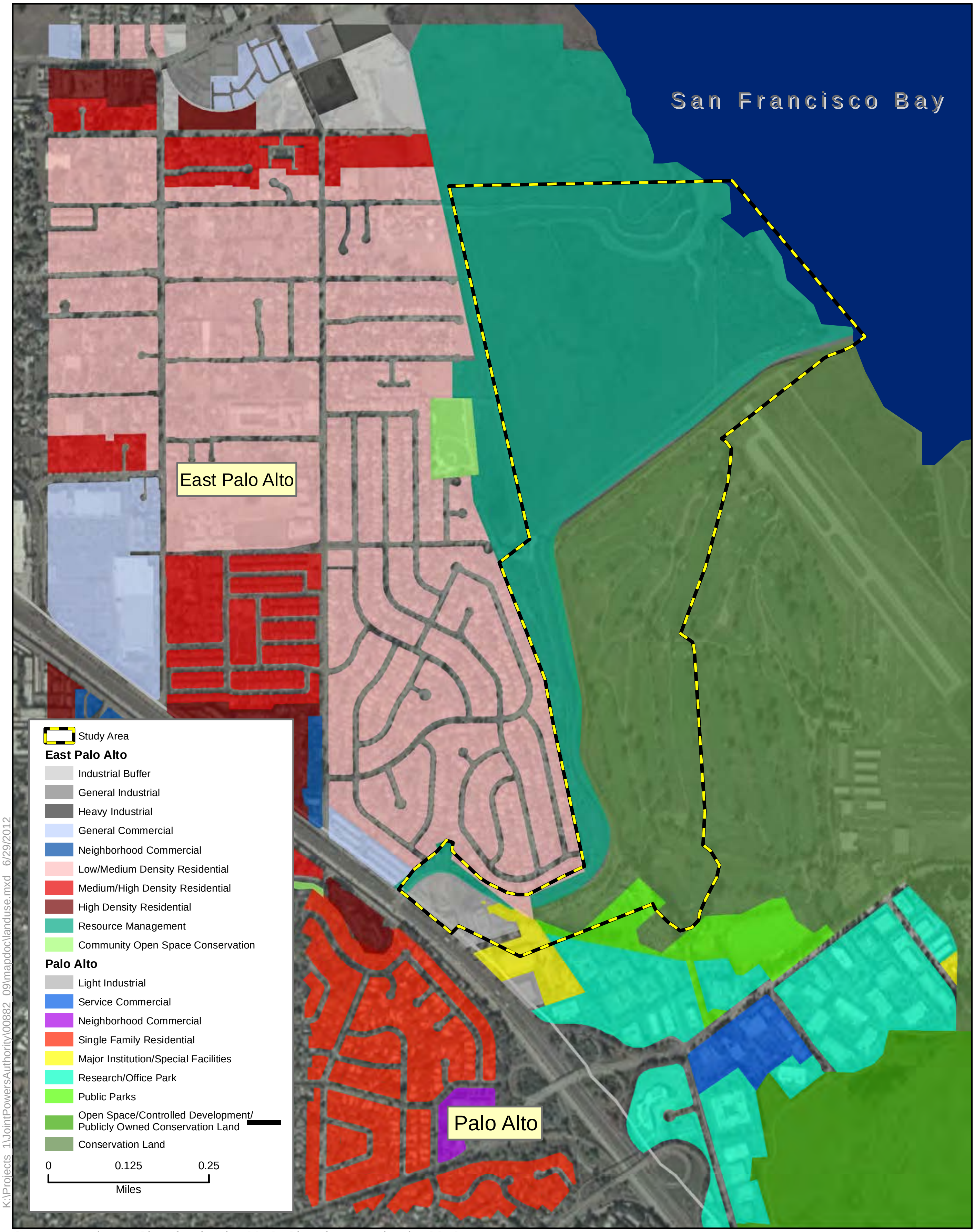
The Comprehensive Plan emphasizes the need to preserve and improve the aesthetic qualities of Palo Alto's natural and built environment. Many of the policies involve preservation of natural areas, integration of natural areas into overall city design and function, and use of artwork and well-designed signage to augment an aesthetically pleasing environment.

Much of the Baylands is open space. Only about 200 acres of the Baylands is in urban use, and all urban use of the Baylands pre-dates the publication of the Baylands Master Plan in 1978. The approximately 1,700 acres that remain are used for recreation and resource conservation (City of Palo Alto 1998).

Land Use Designations

The City of Palo Alto Comprehensive Plan describes the following open space land use designations for land within the Project site and immediately surrounding it (City of Palo Alto 1998) (Figure 3.9-1).

> **Publicly Owned Conservation Land:** Open lands whose primary purpose is the preservation and enhancement of the natural state of the land and its plants and animals. Only compatible resource management, recreation, and educational activities are allowed.
>
> **Public Park:** Open lands whose primary purpose is active recreation and whose character is essentially urban…
>
> **Research/Office Park:** Office, research, and manufacturing establishments whose operations are buffered from adjacent residential uses. Stanford Research Park is an example. Other uses that may be included are educational institutions and child care facilities. Compatible commercial service uses such as banks and restaurants, and residential or mixed uses that would benefit from the proximity to employment centers, will also be allowed. Additional uses, including retail services, restaurants,



Source: Landuse - City of Palo Alto 2012, City of East Palo Alto 2012

Figure 3.9-1
Land Use

commercial recreation, churches, and private clubs may also be located in Research/Office Park areas, but only if they are found to be compatible with the surrounding area through the conditional use permit process. Maximum allowable floor area ratio ranges from 0.3 to 0.5, depending on site conditions.

Major Institution/Special Facilities: Institutional, academic, governmental, and community service uses and lands that are either publicly owned or operated as non-profit organizations. Examples are hospitals and City facilities.

Light Industrial: Wholesale and storage warehouses and the manufacturing, processing, repairing, and packaging of goods. Emission of fumes, noise, smoke, or other pollutants is strictly controlled. Examples include portions of the area south of Oregon Avenue between El Camino Real and Alma Street that historically have included these land uses, and the San Antonio Road industrial area. Compatible residential and mixed use projects may also be located in this category. Floor area ratio will range up to 0.5.

Goals and Policies

The City of Palo Alto Comprehensive Plan includes goals to maintain a "well-designed, compact city with attractive neighborhoods…and open spaces" that "foster community" by preserving and enhancing parks and recreational areas near neighborhoods. The plan also includes a goal to encourage non-automotive transport for recreation and for commuting, and to enhance aesthetic qualities of transportation corridors, including bicycle and pedestrian paths. The goals are summarized below in Table 3.9-1.

Table 3.9-1. Summary of Goals and Policies in the City of Palo Comprehensive Plan Relevant to the Project

Resource Area	Goals
Land Use	The City of Palo Alto's land use goals are to continue to foster a "well-designed, compact city" that has a sense of community, public gathering places in walking distance of neighborhoods, and vibrant and diverse economic centers that are aesthetically pleasing and that "enhance the image and character of the City."
Natural Environment	The City's natural environment goals include protection of biological and physical natural resources; conservation of the foothills, Baylands, creeks, and riparian areas as open space and "elements of community design;" protection from natural hazards such as earthquake and flooding; minimization of adverse effects from hazardous materials and noise; and clean air.
Transportation	The City's transportation goals explicitly include promotion of walking and bicycling as recreational and commute options, in addition to encouraging less reliance on single-occupant vehicles and maintaining an efficient roadway network.
Community Services	The City's community services goals include investment in and maintenance of community facilities such as open spaces and parks, and equal access to these facilities for all residents.

Source: City of Palo Alto 1998.

Palo Alto Baylands Master Plan

The City of Palo Alto Baylands Master Plan policies generally encourage preservation and enhancement of the Baylands' environmental quality; guide recreation development so that it is least destructive to wildlife habitat; and limit development, vehicle parking areas, and aboveground utility lines. Policies are summarized below in Table 3.9-2.

Table 3.9-2. Summary of Policies in the City of Palo Alto Baylands Master Plan Relevant to the Project

Resource	Policies
Environmental Quality	Keep marshes open to the Bay along the entire shoreline. Control access to environmentally sensitive habitat. Restore species diversity to upland areas.
Access and Circulation	Expand bicycle and pedestrian activities and reduce motorized vehicle traffic. Maintain, protect, and improve existing trails and paths, including expansion of continuous trails and access to the regional trail system. Implement bicycle circulation improvements described in the Palo Alto Bicycle Transportation Plan and the Palo Alto Comprehensive Plan, including improving pedestrian and bicycle access at San Francisquito Creek. Restrict recreational access to the flood basin.
Flood Protection	Coordinate flood protection with relevant jurisdictions. Mitigate new levee construction that intrudes on marsh or wetlands.
Baylands Athletic Center	Continue current activities. Maintain and improve night lighting standards to minimize glare.
Golf Course	Continue present use.
Airport	Airport activities should not increase the level of activity or intrusion into open space.
Private Lands	Ensure future development is consistent with the Palo Alto Comprehensive Plan.

Source: City of Palo Alto 2008.

City of East Palo Alto General Plan

The existing City of East Palo Alto General Plan was completed in 1999. East Palo Alto is currently leading a general plan update process. The existing general plan provided the planning context analyzed in this section.

The “Vision for the Future” expressed in the current City of East Palo Alto General Plan (1999) was for East Palo Alto to become, by 2005, a “vibrant urban community” that celebrates its diversity, “social richness,” and natural resources. Particular emphasis was on planned economic growth and “focal points within neighborhoods to promote neighborly collaboration,…cooperation,…community identity[,] and active citizen participation.”

The City of East Palo Alto General Plan identifies areas of the city with distinct character and issues. The two neighborhoods adjacent to the Project site are the Gateway III/Gardens Neighborhood and the Baylands Neighborhood.

The Gateway III/Gardens neighborhood is adjacent to the Baylands neighborhood, and is bounded by San Francisquito Creek to the east. The eastern portion of the neighborhood is single-family residential and resource management, the resource management lands encompassing San

Francisquito Creek, and the portion of the neighborhood that is in the Baylands. The general plan indicates that land use in this portion of the neighborhood would remain as described.

The Baylands neighborhood is adjacent to the Gateway III/Gardens neighborhood. All 214 acres of the Baylands neighborhood is designated for resource management and passive recreational uses. It encompasses San Francisquito Creek, Baylands, marsh, and salt ponds. The general plan indicates that land use in this neighborhood would remain as described.

Land Use Designations

The City of East Palo Alto General Plan describes the following open space land use designations for land within the Project site and immediately surrounding it (City of East Palo Alto 1999) (Figure 3.9-1).

Community Open Space Conservation: Provides for public recreational uses such as indoor and outdoor athletic facilities, public parkland and open space, and community facilities. (Adjacent to the Project site.)

Resource Management: Provides for preservation of environmentally sensitive open space lands in natural conditions.

General Commercial. Retail, office, and service businesses serving a community-wide market or a broader market. Residential uses can be integrated.

Low/Medium Density Residential: Detached single-family dwellings at a density of up to eight units per acre.

Medium/High Density Residential. Single-family and multi-family dwellings at a density of up to 17 units per acre. (Adjacent to the Project site.)

Issues and Policies

The City of East Palo Alto General Plan includes goals to "[e]nhance the character of community neighborhoods" and "[i]mprove the business environment in the City" through supporting economic growth, conserving its natural and historic resources, and improving public access to those resources. The plan also includes goals to encourage bicycle use for recreation and for commuting. The goals are summarized below in Table 3.9-3.

Table 3.9-3. Summary of Goals and Policies in the City of East Palo General Plan Relevant to the Project

Resource Area	Goals
Land Use	The City of East Palo Alto's land use goals include enhancing the character of its neighborhoods, mentioning specifically those neighborhoods adjacent to the Baylands and San Francisquito Creek; and effective coordination with public facilities and service providers.
Economic Development	The City's economic goals include maintaining, improving, and promoting its natural and historical resources and location to attract business and thus diversify and expand its revenue base
Circulation	The City's circulation goals include promoting a circulation system that supports bicycle and pedestrian travel.
Conservation/Open Space	The City's conservation and open space goals include conservation of natural plant and animal communities; watersheds and soils; archeological, and historical, and paleontological resources. The goals also include maintaining and improving public parks, recreational facilities, and open space; and helping maintain good air quality.
Noise	The City's noise goals aim to minimize noise from transportation and non-transportation sources through effective land use planning and through the use of noise-reducing devices.
Safety	The City's safety goals include protecting the community from hazards and improving the ability of the City to respond to natural and human-caused emergencies.

Source: City of East Palo Alto 1999.

East Palo Alto Bay Access Master Plan

The East Palo Alto Bay Access Master Plan (BAMP)includes specific suggestions to connect East Palo Alto neighborhoods to the Bay, as well as recommendations for recreational enhancement. Specifically, this plan states that San Francisquito Creek is "a natural recreation corridor that should play a major role in ensuring that all East Palo Alto residents have access to the Bay" and is "an underutilized resource in the City of East Palo Alto." This plan suggests that improvements to the corridor should include expansion of the riparian canopy, and proposes trails, pocket parks, and interpretive signage to encourage use of recreational opportunities connecting to the Baylands. The plan's goals are summarized below in Table 3.9-4.

Table 3.9-4. Summary of Goals and Policies in the East Palo Bay Access Master Plan Relevant to the Project

Resource Area	Goals
Public Bay Access	Public Bay Access—The BAMP will provide public access to the Bay in East Palo Alto. Improved public access will allow all East Palo Alto residents to spend time along the Bay. The BAMP is an opportunity to maximize the access to the Bay and to ensure that development in the Ravenswood Business District creates open space and recreational opportunities.
Open Space for Families	Open Space for Families—The BAMP will ensure that the public access is designed to meet the needs of the large family and renter households in East Palo Alto[;]...the best use would be usable open space connected by a network of trails.
Environmental Protection	Environmental Protection—The BAMP will ensure that the public access to the Bay is designed, developed, and maintained to protect the existing natural resources and habitats. The public access improvements must be designed and sited to both provide access and protect the wildlife.
Connectivity	Connectivity—The BAMP will ensure that all East Palo Alto residents can use pedestrian trails to connect to the Bay and to existing and future parks. Connecting East Palo Alto residents to local and regional parks and open space will expand and improve their recreational opportunities and the quality of life.
Economic Development	Economic Development—The BAMP will increase the market desirability of the Ravenswood Business District. Well-designed recreational amenities increase the market value of office and R&D buildings.
Source: City of East Palo Alto 2007.	

Other Local and Regional Plans

The Project site lies within the area defined by the Palo Alto Airport CLUP where land uses should be compatible with airport use and by the Metropolitan Transportation Commission's Regional Bicycle Plan for the San Francisco Bay Area.

Palo Alto Airport Comprehensive Land Use Plan

The Project lies within the Palo Alto Airport's AIA, which is defined by the Palo Alto Airport CLUP as that portion of Palo Alto east of the Bayshore Freeway, bounded by U.S. 101, San Francisquito Creek, Charleston Slough, and Barron Creek. The AIA is central to interpretation of compatibility between airport land use and adjacent land uses (Santa Clara County Airport Land Use Commission 2008).

Some projects within the AIA must be reviewed for land use compatibility with the Palo Alto Airport CLUP, and for others, review is voluntary. Non-airport development projects that do not require a zone change or a land use designation change but do increase the square footage of the development by 50 percent or more are encouraged to undertake voluntary referral.

The Palo Alto Airport CLUP states that existing agricultural and open space uses should be preserved for their compatibility (Santa Clara County Airport Land Use Commission 2008).

Metropolitan Transportation Commission Regional Bicycle Plan for the San Francisco Bay Area

The Metropolitan Transportation Commission Regional Bicycle Plan Update focuses on a Regional Bikeway Network, bicycle access to public transit, and bicycle transportation innovations, such as specially designed lands, traffic signals, and bicycle parking. The San Francisco Bay Trail belongs to the Regional Bikeway Network, and is thus of central importance to the Bicycle Plan.

Santa Clara Countywide Bicycle Plan

The Santa Clara Countywide Bicycle Plan focuses on bikeway projects that extend the Cross County Bicycle Corridor, provide safe routes to major transit centers, and provide non-motorized crossing of a major barrier such as a waterway or freeway. The purpose of the Cross County Bicycle Corridor network is to provide connections between cities in the county, between the county and adjacent counties, and to "major regional trip attractors" (Santa Clara Valley Transportation Authority 2008). The Project area includes Corridor T-R4–Bay Trail. Safe routes to major transit centers include transit centers for Santa Clara Valley Transportation Authority (VTA), Caltrain, Altamont Commuter Express (ACE), and Amtrak; and VTA light rail stations. The Project area does not include potential bicycle trail projects designated as a safe route to a transit center. The Across Barrier Connections (ABC) and Roadway Crossings Inventory includes both existing bicycle paths across barriers and current gaps in the bicycle network where no designated bicycle path crosses the barrier. The Project area does not include any ABC projects (Santa Clara Valley Transportation Authority 2008).

San Mateo County Comprehensive Bicycle and Pedestrian Plan

The San Mateo County Comprehensive Bicycle and Pedestrian Plan provides a vision of bicycling and walking in San Mateo County and goals and policies that will lead the County to fulfill that vision (San Mateo County 2011). The vision is that

> San Mateo County has an interconnected system of safe, convenient and universally accessible bicycle and pedestrian facilities, for both transportation and recreation. These facilities provide access to jobs, homes, schools, transit, shopping, community facilities, parks and regional trails throughout the county. At the same time, the county has strengthened its network of vibrant, higher-density, mixed-use and transit-accessible communities, that enable people to meet their daily needs without access to a car.

The desired result of this vision is that more people will ride bicycles and walk than choose to drive; the transportation system will become more balanced, equitable and sustainable; and traffic congestion, pollution, the county's carbon footprint will improve. The plan's goals relevant to the Project are provide a comprehensive Countywide system of facilities for bicyclists and pedestrians, achieve greater proportion of bicyclists and pedestrians over automobile commuters, and ensuring that existing bicycle and pedestrian facilities will be either maintained or replaced by future road works.

Palo Alto Bicycle Transportation Plan

The Palo Alto Bicycle Transportation Plan emphasizes bicycle path network improvements and maintenance, education, and environmental protection. High-priority bicycle paths are those that are part of the Cross County Bicycle Network, and network of bicycle paths that provide continuous connections between Santa Clara County jurisdictions and to adjacent counties. The Plan also provides additional recommendations including pedestrian facilities to improve integration of facilities such as parks and community trails (City of Palo Alto 2011).

East Palo Alto Bicycle Transportation Plan

The East Palo Alto Bicycle Transportation Plan will be used to implement the Bay Access Master Plan and the General Plan until the existing General Plan is updated. This transportation plan provides for a connection from East Palo Alto to San Francisco Bay. The Bay Access Master Plan embraces a pedestrian/bicycle overpass by specifically foreseeing a connection to San Francisco Bay through a Class I Bicycle trail (i.e., separate shared-use path). The East Palo Alto Bicycle Plan implements the BAMP's vision by implementing this connection across U.S. 101. (City of East Palo Alto 2011.)

Study Area

The land use and planning study area encompasses the Project site and immediately adjacent lands in the city of East Palo Alto and the city of Palo Alto.

Existing Conditions

The Project site is located within the city of Palo Alto and the city of East Palo Alto. The Project site is bounded on the southwest by East Bayshore Road and U.S. 101.

Each city's general plan details the land uses envisioned throughout the plan area when the plan was developed. Each city's zoning ordinance establishes permissible land uses. Table 3.9-5 and Figure 3.9-1 show planned land uses on and adjacent to the Project site.

Table 3.9-5. Land Uses On and Adjacent to the Project Site

Jurisdiction	Project Site	Adjacent
City of Palo Alto	Publicly Owned Conservation Land Public Park Research/Office Park Major Institution/Special Facility Light Industrial	Publicly Owned Conservation Land Public Park Research/Office Park Major Institution/Special Facility Light Industrial
City of East Palo Alto	Resource Management Low/Medium Density Residential	Resource Management Low/Medium Density Residential General Commercial Community Open Space Conservation

Sources: City of East Palo Alto 2008; City of Palo Alto 1998.

Most of the Project site is either publicly owned conservation land (City of Palo Alto 1998) or resource management land (City of East Palo Alto 1999, 2008), with some nonresidential land uses. Adjacent land uses also include residential land use. The Project maintains and improves bicycle path linkages to Palo Alto and East Palo Alto bicycle trail systems.

The Project site is adjacent to the Palo Alto Airport, within its Inner Safety Zone, and San Francisquito Creek passes through the Runway Protection Zone.

Impact Analysis

Methods and Significance Criteria

Impacts on land use and planning were analyzed based on general plans, planning maps, zoning ordinances, local and regional plans concerning use of and access to the Baylands, and zoning maps for the City of Palo Alto and City of East Palo Alto.

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact LU1—Physical Division of an Established Community

Summary by Project Element: Impact LU1—Physical Division of an Established Community

Project Element	Construction Impact Level	Operation and Maintenance Impact Level
All Project elements	No Impact	No Impact

The proposed Project would be implemented along the San Francisquito Creek corridor, which forms a natural boundary between the communities on either side of it, as well as providing common recreational space. The Project would not change boundaries of or access between communities. While Friendship Bridge would be temporarily closed, this bridge is not a primary connection between communities, but rather serves a recreation purpose. Further, closure of the bridge would not exceed 5 months. There would be no impact, and no mitigation is required.

Impact LU2—Conflict with Applicable Plan, Policy, or Regulation

Summary by Project Element: Impact LU2—Conflict with Applicable Plan, Policy, or Regulation

Project Element	Construction Impact Level	Operation and Maintenance Impact Level
Access road on the right bank	Less than Significant	Less than Significant
All other Project elements	Less than Significant	No Impact

Construction activities for all Project elements would involve impacts that could be disruptive to local residents. However, any such potential impacts (e.g., noise or traffic) would be controlled through local code and through resource-specific mitigation as required under CEQA. Impacts under construction would be less than significant. No further mitigation is required.

Project operation for all Project elements would be fully compatible with existing general plans and other local and regional plans. See Table 3.9-6 for a detailed assessment of consistency with applicable goals, policies, and programs.

The impact would be less than significant. No mitigation is required.

Impact LU3—Conflict with Applicable Habitat Conservation Plan or Natural Communities Conservation Plan

Summary by Project Element: Impact LU3—Conflict with Applicable Habitat Conservation Plan or Natural Communities Conservation Plan		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	No Impact	No Impact

The Project site is not within the area that would be covered by the Santa Clara Valley Habitat Conservation Plan if it is approved. There would be no impact.

3.10 Noise and Vibration

This section provides environmental analysis of noise and vibration impacts associated with implementation of the Project. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from construction and implementation of the Project, and describes mitigation to reduce the level of impact where feasible.

Environmental Setting

Regulatory Context

Acceptable levels of environmental noise are regulated at the local level through the general plan process and city and county noise ordinances. Groundborne vibration is not regulated explicitly, although the Federal Transit Administration (FTA) and Caltrans have identified thresholds at which vibration becomes a concern (annoying and/or damaging) (Federal Transit Administration 2006; California Department of Transportation 2004). Local regulations have also been established by the Cities of Palo Alto and East Palo Alto.

- **City of Palo Alto:** Noise within Palo Alto is regulated by Chapter 9.10 of the Palo Alto Municipal Code. The ordinance specifies prohibited actions for construction noise in the Section 9.10.060 (b). No individual piece of equipment shall produce a noise level exceeding 110 A-weighted decibel (dBA) at a distance of 25 feet and the noise level at any point outside of the property plane of the Project shall not exceed 110 dBA. Construction activities are prohibited between the hours of 6 p.m. and 8 a.m. on weekdays, between the hours of 6 p.m. and 9 a.m. on Saturdays, or at any time on Sundays and holidays.
- **City of East Palo Alto:** Noise within East Palo Alto is regulated by Chapter 8.52 (Noise Control) of the City Municipal Code. The ordinance specifies prohibited actions for construction noise in the Section 8.52.350.E. Noise from construction activity is exempt from the noise standards in the ordinance, provided that all construction is limited to the daytime hours between 7 a.m. and 8 p.m.
- **Federal Transit Administration:** FTA guidelines specify two separate limits on construction vibration: one to prevent structural damage and a second, lower, limit to avoid annoyance. This analysis used the FTA's annoyance threshold as the CEQA significance threshold because it is the more stringent of the two FTA limits. The FTA's vibration impact thresholds are based on the number of times per day the vibration-generating event typically occurs. Based on the "infrequent event" definition (fewer than 30 vibration events per day), the allowable vibration limit is 80 vibration decibel (VdB) for residential areas, assuming no more than 30 vibration events per day (3–4 per hour, over an 8-hour workday).
- **Caltrans:** Caltrans identifies the limit on construction vibration for potential cosmetic damage to plaster-walled residences as 0.2 inch per second of peak particle velocity (PPV) (California Department of Transportation 2004).

Table 3.9-6. Project Compatibility with Applicable Planning Documents

	Policies	**Program**	**Consistency Discussion**
City of Palo Alto Comprehensive Plan			
GOAL L-1: A well-designed, compact city, providing residents and visitors with attractive neighborhoods, work places, shopping districts, public facilities, and open spaces.	POLICY L-4: Maintain Palo Alto's varied residential neighborhoods while sustaining the vitality of its commercial areas and public facilities.	N/A	Consistent. The Project would improve flood protection in residential, commercial, and public areas upstream of the Project site; and environmental quality in the Baylands.
GOAL L-9: Attractive, inviting public spaces and streets that enhance the image and character of the City.	POLICY L-68: Integrate creeks and green spaces with the street and pedestrian/bicycle path system.	N/A	Consistent. The Project would improve the scenic qualities of the San Francisquito Creek riparian corridor and surrounding Baylands, including improved trails and signage. The Project would also rebuild to existing or better conditions the access road along the levee crown that serves as the Bay Trail for recreationists.
	POLICY L-69: Preserve the scenic qualities of Palo Alto roads and trails for motorists, cyclists, pedestrians, and equestrians.	PROGRAM L-71: Recognize … Embarcadero Road … [and] Oregon Expressway … as scenic routes.	
	POLICY L-79: Design public infrastructure, including paving, signs, utility structures, parking garages and parking lots to meet high quality urban design standards. Look for opportunities to use art and artists in the design of public infrastructure. Remove or mitigate elements of existing infrastructure that are unsightly or visually disruptive.	PROGRAM L-81: Encourage the use of compact and well-designed utility elements, such as transformers, switching devices, and backflow preventers. Place these elements in locations that will minimize their visual intrusion.	
GOAL N-1: Palo Alto's foothills and Baylands will continue to be conserved as open space over the term of this plan. The City will seek out new opportunities for permanent open space in both areas	POLICY N-1: Manage existing public open space areas … in a manner that meets habitat protection goals, public safety concerns, and low impact recreation needs.	PROGRAM N-2: Examine and improve management practices for natural habitat and open space areas, including the provision of access to open space for City vehicles and equipment, to ensure that natural resources are protected.	Consistent. The Project site would remain as open space.
		PROGRAM N-3: Review the need for access controls in environmentally sensitive areas, including the baylands, foothills, and riparian corridors.	
	POLICY N-2: Support regional and sub-regional efforts to acquire, develop, operate, and maintain an open space system extending from Skyline Ridge to San Francisco Bay.	PROGRAM N-4: Seek additional sources of funding, including state and federal programs, to finance open space acquisition and development.	
	POLICY N-3: Protect sensitive plant species resources from the impacts of development.	N/A	
	POLICY N-8: Preserve and protect the Bay, marshlands, salt ponds, sloughs, creeks, and other natural water or wetland areas as open space.	N/A	
GOAL N-2: Conservation of Creeks and Riparian Areas as Open Space Amenities, Natural Habitat Areas, and Elements of Community Design.	POLICY N-9: Avoid fencing, piping, and channelization of creeks when flood control and public safety can be achieved through measures that preserve the natural environment and habitat of the creek.	N/A	Consistent. The Project would use restoration as a primary tool in flood protection. The Project would also provide improved protection for sensitive species and natural communities, including minimizing site disturbance and potential for erosion.
	POLICY N-10: Work with the Santa Clara Valley Water District and other relevant regional agencies to enhance riparian corridors and provide adequate flood control by use of low impact restoration strategies.	N/A	

	Policies	Program	Consistency Discussion
	POLICY N-11: Preserve the integrity of riparian corridors.	PROGRAM N-7: Adopt a setback along natural creeks that prohibits the siting of buildings and other structures, impervious surfaces, outdoor activity areas, and ornamental landscaped areas within 100 feet of the top of a creek bank. Allow passive or intermittent outdoor activities and pedestrian, equestrian, and bicycle pathways where there are adequate setbacks to protect the natural riparian environment. Within the setback area, provide a border of native riparian vegetation at least 25 feet along the creek bank.	
		PROGRAM N-9: Participate in a San Francisquito Creek Coordinated Resource Management and Planning (CRMP) process with adjacent cities.	
	POLICY N-12: Preserve the habitat value of creek corridors through the preservation of native plants and the replacement of invasive, non-native plants with native plants.	N/A	
	POLICY N-13: Discourage creek bank instability, erosion, downstream sedimentation, and flooding by minimizing site disturbance and vegetation removal on or near creeks and carefully reviewing grading and drainage plans for development near creeks and elsewhere in the watersheds of creeks.	N/A	
GOAL N-3: A Thriving "Urban Forest" That Provides Ecological, Economic, and Aesthetic Benefits for Palo Alto.	PROGRAM N-16: Continue to require replacement of trees, including street trees lost to new development, and establish a program to have replacement trees planted offsite when it is impractical to locate them onsite.	N/A	Consistent. The Project includes mitigation to compensate for loss of protected landscape trees, consistent with applicable tree protection regulations.
	POLICY N-17: Preserve and protect heritage trees, including native oaks and other significant trees, on public and private property.	N/A	
GOAL N-4: Water Resources that are Prudently Managed to Sustain Plant and Animal Life, Support Urban Activities, and Protect Public Health and Safety.	POLICY N-21: Reduce non-point source pollution in urban runoff from residential, commercial, industrial, municipal, and transportation land uses and activities.	PROGRAM N-29: Actively participate in programs such as the Santa Clara Valley Urban Runoff Pollution Prevention Program to improve the quality of stormwater runoff.	Consistent. The Project includes environmental commitments and mitigation to minimize stormwater pollution; increases in water turbidity; saltwater intrusion; and entry of sediment, hazardous materials, septic waste, and other pollutants into waterways. Further, the SFCJPA participates in the Santa Clara Valley Urban Runoff Pollution Prevention Program.
	POLICY N-23: Reduce the discharge of toxic materials into the City's sanitary sewer collection system by promoting the use of Best Management Practices.	N/A	
GOAL N-5: Clean, Healthful Air for Palo Alto and the San Francisco Bay Area.	POLICY N-26: Support regional, state, and federal programs that improve air quality in the Bay Area.	PROGRAM N-39: Assist the Bay Area Air Quality Management District (BAAQMD) in its efforts to achieve compliance with existing air quality regulations.	Consistent. The Project includes environmental commitments and mitigation to control construction dust and construction equipment emissions.
	POLICY N-29: All potential sources of odor and/or toxic air contaminants should be adequately buffered, or mechanically or otherwise mitigated to avoid odor and toxic impacts that violate relevant human health standards.	N/A	
GOAL N-6: An Environment Free of the Damaging Effects of Biological and Chemical Hazardous Materials.	POLICY N-30: Minimize the use of toxic and hazardous materials. Encourage the use of alternative materials and practices that are environmentally benign.	N/A	Consistent. The Project includes environmental commitments that control use of herbicides, insecticides, and rodenticides. Further, the Project includes mitigation that requires

	Policies	Program	Consistency Discussion
	POLICY N-37: Ensure the environmentally sound disposal of solid waste.	N/A	preparation of a spill prevention and response plan, and proper storage and handling of potential pollutants and hazardous materials. The Project also mitigation that requires work stoppage, investigation, and possible remediation in the event that unknown hazardous materials are encountered.
GOAL N-8: An Environment That Minimizes the Adverse Impacts of Noise.	POLICY N-41: When a proposed project is subject to CEQA, the noise impact of the project on existing residential land uses should be evaluated in terms of the increase in existing noise levels and potential for adverse community impact, regardless of existing background noise levels. If an area is below the applicable maximum noise guideline, an increase in noise up to the maximum should not necessarily be allowed.	N/A	Consistent. The Project includes environmental commitments to minimize noise impacts on residential land uses during construction. The Project also includes mitigation to assess potential for vibration during construction and to implement vibration control. Further, the Project includes mitigation to provide advance notification of construction schedule to residents.
	POLICY N-43: Protect the community and especially sensitive noise receptors, including schools, hospitals, and senior care facilities, from excessive noise.	N/A	
GOAL N-10: Protection of Life and Property From Natural Hazards, Including Earthquake, Landslide, Flooding, and Fire.	POLICY N-50: Implement public safety improvements, such as access roads and other infrastructure, in a manner that is sensitive to the environment.	N/A	Consistent. The Project includes environmental commitments and mitigation to protect native species, natural communities and habitat, air quality, water quality, and all other environmental issues addressed under CEQA.
	POLICY N-51: Minimize exposure to geologic hazards, including slope stability, subsidence, and expansive soils, and to seismic hazards including groundshaking, fault rupture, liquefaction, and landsliding.	PROGRAM N-69: Strictly enforce Uniform Building Code seismic safety restrictions.	Consistent. The Project will conform to City of Palo Alto seismic safety restrictions and USACE and District standards.
		PROGRAM N-73: Require preparation of a report from an engineering geologist that reviews geologic, soils, and engineering reports for developments in hazard areas…	Consistent. The Project includes an environmental commitment to base Project design on recommendations from a site-specific geotechnical analysis.
	POLICY N-53: Minimize exposure to wildland and urban fire hazards through rapid emergency response, proactive code enforcement, public education programs, use of modern fire prevention measures, and adequate emergency management preparation.	N/A	Consistent. The Project would not involve construction, maintenance, or other project operational activities that would affect the ability of emergency response departments to provide those emergency response services.
Goal T-1: Less Reliance on Single-Occupant Vehicles	POLICY T-1: Make land use decisions that encourage walking, bicycling, and public transit use.	PROGRAM T-1: Encourage infill, redevelopment, and reuse of vacant or underutilized parcels employing minimum density requirements that are appropriate to support transit, bicycling, and walking.	Consistent. Improvements to the recreational trail support choices for walking and bicycling.
Goal T-3: Facilities, Services, and Programs that Encourage and Promote Walking and Bicycling	POLICY T-14: Improve pedestrian and bicycle access to and between local destinations, including public facilities, schools, parks, open space, employment districts, shopping centers, and multi-modal transit stations.	PROGRAM T-22: Implement a network of bicycle boulevards, including extension of the southern end of the Bryant Street bicycle boulevard to Mountain View.	Consistent. The Bay Trail that runs through the Project site is part of Palo Alto's network of bicycle boulevards. Improvements to this trail, which include a new surface and interpretive signage, encourage walking and bicycling and contribute to a positive user experience.
	POLICY T-20: Improve maintenance of bicycle and pedestrian infrastructure.	PROGRAM T-29: Provide regular maintenance of off-road bicycle and pedestrian paths, including sweeping, weed abatement, and pavement maintenance.	
	POLICY T-22: Improve amenities such as seating, lighting, bicycle parking, street trees, and interpretive stations along bicycle and pedestrian paths and in City parks to encourage walking and cycling and enhance the feeling of safety.	N/A	

	Policies	Program	Consistency Discussion
GOAL C-4: Attractive, Well-maintained Community Facilities That Serve Palo Alto Residents.	POLICY C-24: Reinvest in aging facilities to improve their usefulness and appearance. Avoid deferred maintenance of City infrastructure.	PROGRAM C-19: Develop improvement plans for the maintenance, restoration and enhancement of community facilities, and keep these facilities viable community assets by investing the necessary resources.	Consistent. A primary purpose of the Project is to improve flood control, while at the same time maintaining and enhancing the natural function and beauty of the San Francisquito Creek corridor and the Baylands and its value as a recreational resource.
	POLICY C-25: Make infrastructure improvements on public open space only when these improvements are consistent with the goals of protecting and conserving the natural environment.	N/A	
	POLICY C-26: Maintain and enhance existing park facilities.	PROGRAM C-23: Study and recommend methods of private and public financing for improved park maintenance, rehabilitation, and construction.	
GOAL C-5: Equal Access to Educational, Recreational, and Cultural Services for All Residents.	POLICY C-29: Strategically locate public facilities and parks to serve all neighborhoods in the City.	N/A	Consistent. The Baylands is the primary open space area in the eastern part of the City of Palo Alto.
	POLICY C-32: Provide fully accessible public facilities to all residents and visitors.	PROGRAM C-27: Continue to implement Americans with Disabilities Act (ADA) requirements in City facilities including, but not limited to, sidewalk curb cuts, building entrances, meeting room access, and sight and hearing adjuncts.	Consistent. Areas designated as trails will be ADA-compliant.
City of Palo Alto Baylands Master Plan			
Environmental Quality	2. Recognize and maintain the relationship between the urbanized Embarcadero Road corridor in the northwest and the remaining recreation-oriented three-quarters of the Baylands. Allow no more urban intrusion.	N/A	Consistent. The Project would maintain the recreation orientation of the Baylands, and would not either directly involve or induce urbanization.
	3. Expand bicycle and pedestrian activities while reducing vehicle traffic in the Baylands.	N/A	Consistent. The Project would not add new bicycle and pedestrian facilities, but it does represent an investment in recreation infrastructure.
	4. Restrict storage and parking of vehicles in the Baylands.	N/A	Consistent. The Project would not add new parking to the Project area.
	5. Keep marshes open to the Bay along the entire shoreline.	N/A	Consistent. The Project would maintain connectivity between the Baylands and the Bay and, in some areas, would improve connectivity.
	6. Control access to environmentally sensitive marshland and upland meadow habitat.	N/A	Consistent. Project environmental commitments and mitigation would protect sensitive marshland and upload meadow habitat during Project construction. Existing access restrictions would be maintained under Project operation.
	7. Restore the diversity of plants and animals to disturbed upland sites.	N/A	Consistent. The Project includes restoration of transitional marsh habitats and removal of invasive species in areas of restoration.
	8. Ensure there is sufficient native food and cover for wildlife.	N/A	Consistent. The Project would improve native cover through removal of invasive plant species and replanting with native plants.

	Policies	Program	Consistency Discussion
	10. Allow access to the flood basin only in certain seasons to protect the waterfowl and shorebird refuge area.	N/A	Consistent. Human access to flood basins would be restricted to maintenance personal, due to safety concerns. Maintenance access would be consistent with current maintenance easement agreements.
	11. Eliminate telephone and electric wires and poles from the Baylands.	N/A	Consistent. While the Project would not eliminate utility wires and poles from the Baylands, neither would it introduce new wires and poles.
	12. Continue to allow intensive, structured, and special use recreation only where it is the least destructive to wildlife habitat.	N/A	Consistent. Existing trails and recreational facilities would be maintained under the Project.
	13. Follow guidelines established in the Site Assessment and Design Guidelines, Palo Alto Baylands Nature Preserve published in 2005.	N/A	Consistent. Any signage, vehicle controls, paving, fences and enclosures, and site furniture will conform to guidelines established in Site Assessment and Design Guidelines, Palo Alto Baylands Nature Preserve published in 2005. Project design would be approved by the Palo Alto Architectural Review Board before Project implementation.
	14. Comply with Airport Comprehensive Land Use Plan adopted by the Santa Clara County Airport Land Use Commission.	N/A	Consistent. The Project would not involve human use of the airport safety zones in excess of specifications in the Airport Comprehensive Land Use Plan.
Access and Circulation	2. Encourage only limited automobile access and reduce vehicle traffic in the Baylands as far as possible. Expand bicycle and pedestrian activities and make it easier for people to use transit systems.	N/A	Consistent. The Project would improve bicycle and pedestrian access to the Baylands and would not introduce new vehicle traffic into the Baylands.
	18. Maintain, protect, and improve the present nature trails. …	N/A	Consistent. The Project would maintain, protect, and improve the trail along San Francisquito Creek in the Baylands.
	19. Separate pedestrian, bicycle and vehicle routes will be planned for, and these routes will be on land except where it is necessary to span sensitive water areas and to connect them with existing systems.	N/A	Consistent. The Project includes a dedicated bicycle and pedestrian route.
	25. Implement the improvements to bicycle circulation in the Baylands described in the Palo Alto Bicycle Transportation Plan and the Comprehensive Plan including improving pedestrian/bicycle access to the Baylands across Highway 101 e.g., at Adobe Creek, Matadero Creek, San Francisquito Creek, and San Antonio Road…	N/A	Consistent. The Project would implement improvements to bicycle circulation along San Francisquito Creek and would not interfere with any of the other named improvements.
	27. Maintain the four improvements made to the San Francisco Bay Trail regional bike route that create a continuous off-road bike path system from Mountain View to Cooley Landing: • A paved bike off-road path along Geng Road… • An extension of the bridges at Adobe and Matadero Creeks on the east side of Bayshore Freeway… • A pedestrian-bike bridge (Friendship Bridge) over San Francisquito Creek… • An access control fence along the north side of the golf course…	N/A	Consistent. The Project would include pedestrian-bicycle use of Friendship Bridge and would not interfere with any of the other named improvements.

	Policies	Program	Consistency Discussion
	28. Maintain access to the regional trail system: • from the pedestrian bridge over Bayshore Freeway at Embarcadero Road (completed 1985) • from the public easement to Byxbee Park along the south side parallel to the urbanized area. • along Matadero Creek. • under Highway 101 at Adobe Creek (seasonal underpass that connects West Bayshore and East Meadow Circle to trails along East Bayshore Road). Also integrate the City's bike paths and trail system with auto and public transit facilities to make free and easy movement possible through the Baylands and to connect with regional systems to the south, west, and north.	N/A	Consistent. The Project would continue to provide bicycle access through the Baylands.
	30. Restrict access to protect breeding species and their habitat and to preserve and enhance flood basin wildlife and vegetation.	N/A	Consistent. Project environmental commitments and mitigation would protect species during Project construction. Existing restrictions would be maintained under Project operation.
	31. Use of the flood basin would be compatible if: a. access were closed or substantially restricted during the breeding season, approximately March 30 to June 30; b. access were limited to existing trails and those above the high-water line with the proposed flood plain mitigation project. A continuing survey should be started to establish the most productive and critical wildlife areas in the flood basin. If necessary, access to trails that cross or are next to sensitive areas should be closed or regulated; c. most uses, including bicycle trails, were limited and encouraged only along the perimeter levees of the flood basin; d. a portion or portions of the flood basin were closed to unguided access and reserved for occasional educational use under supervision.	N/A	Consistent. Project environmental commitments and mitigation would control access to the flood control channel during Project construction. Existing access restrictions would be maintained under Project operation.
Flood Protection	1. Coordinate any flood protection on San Francisquito Creek with the cities of East Palo Alto and Menlo Park, the Santa Clara Valley Water District, and the San Mateo County Flood Control District by participating in the San Francisquito Creek Joint Powers Authority which was jointly established by these agencies in 1999.	N/A	Consistent. The Project would be led by the San Francisquito Creek Joint Powers Authority, a regional government agency whose members include the Cities of Palo Alto, Menlo Park, and East Palo Alto; the San Mateo County Flood Control District, and the Santa Clara Valley Water District. The Project includes mitigation to address impacts resulting from levee construction.
	2. Do not allow new levee construction to intrude on any marsh or wetlands without appropriate mitigation.	N/A	
Baylands Athletic Center	1. Continue current Athletic Center activities.	N/A	Consistent. The Project would not impede current activities at the Athletic Center either during the construction phase or during Project operation.
	2. Maintain and continue to improve standards of low external glare night lighting.	N/A	
Golf Course	1. Continue its present use.	N/A	Consistent. While the Project would involve changing use of some the land currently used by the Golf Course, the Project is consistent with Palo Alto Golf Course Reconfiguration Project, undertaken under the Master Plan.
	2. Continue with the implementation of the Palo Alto Municipal Golf Course Master Improvement Plan.	N/A	

	Policies	Program	Consistency Discussion
Airport	4. The second runway, provided for in the 1976 Santa Clara County Airport Master Plan, will not be built… Maintain the native grasses planted on the abandoned second runway pad and leave as open space…	N/A	Consistent. The Project would not convert open space around the Palo Alto Airport to another land use.
East Palo Alto General Plan			
Land Use Goal 2.0: Create an enhanced image and identity for East Palo Alto. Discussion: East Palo Alto is attempting to enhance its image as a distinctive, identifiable community among communities in San Mateo County. The community possesses desirable physical qualities including the baylands, Cooley Landing, San Francisquito Creek, and the shoreline areas…	Policy 2.1: Enhance the image of the community by improving the appearance of public areas and entrances to the City along University Avenue, Bay Road, Willow Road, and Newbridge Street.	N/A	Consistent. The Project would enhance the beauty and natural function of the Baylands, including its use as a recreation resource.
Land Use Goal 3.0: Enhance the character of community neighborhoods. Discussion: East Palo Alto contains a number of distinct neighborhoods defined by natural and man- made physical features, such as the baylands, San Francisquito Creek, the Bayshore Freeway and other major roads, and land uses…	Policy 3.1: Preserve and enhance the quality of East Palo Alto neighborhoods by avoiding or abating the intrusion of disruptive, nonconforming buildings and uses.	N/A	Consistent. In addition to enhancing the quality of the neighborhoods adjacent to the Project site, THE Project was designed to preserve a planned pocket park adjacent to the Project site.
Land Use Goal 4.0: Provide effective coordination with public facilities and services providers. Discussion: Public facilities and services, including water and sewer service, flood control, fire protection and law enforcement, education, road maintenance, and natural gas, electricity and communications, are necessary to support the community of East Palo Alto…	Policy 4.1: Work closely with local public facilities and services providers to meet community needs.	N/A	Consistent. The Project would be led by the San Francisquito Creek Joint Powers Authority, a regional government agency whose members include the Cities of Palo Alto, Menlo Park, and East Palo Alto; the San Mateo County Flood Control District, and the Santa Clara Valley Water District.
	Policy 4.2: Participate with other public agencies providing facilities and services to East Palo Alto in cooperative efforts to address important regional issues.	N/A	
Economic Development Goal 2.0: Increase the City's ability to provide needed services and facilities by diversifying and expanding its revenue base. Discussion: The City also needs to diversify its mix of land uses so it will be able to recapture a portion of the sales tax revenues that are being spent in other communities…	Policy 2.2. Encourage tourism as a local industry.	N/A	Consistent. The Baylands is identified as an important natural, cultural, and recreational resource in East Palo Alto. Investment in this resource has potential to lead to improved tourism opportunities.
	Policy 2.3. Encourage the location of tourist and recreation-oriented commercial development along the freeway.	N/A	
Economic Development Goal 8.0: Improve the City's image through promotion of its desirable characteristics, including natural, human, and historical resources, and its locational characteristics (transportation, real estate, bridge, climate, bay views) and environmental features. Discussion: To successfully attract new businesses and to generate desired economic development, the City will need to improve its overall image.	Policy 8.1: Maintain adequate environmental quality controls to preserve and provide an attractive and healthy environment, and maintain strong controls to enhance the viability of neighborhoods.	N/A	Consistent. The Baylands is identified as an important natural, cultural, and recreational resource in East Palo Alto. Investment in this resource has potential to attract new businesses.
	Policy 8.2: Actively promote the City's natural resources and open spaces as a means of encouraging economic use and attracting businesses and people of diverse economic backgrounds to East Palo Alto.	N/A	
Economic Development Goal 9.0: Improve the business environment in the City by undertaking infrastructure and street improvements, enhancing blighted and under-developed areas, and creating identifiable destination points within the City. Discussion: Public infrastructure in East Palo Alto needs to be improved to support long-term growth and development. To make economic use of the City's natural features, public access to the shoreline and waterfront areas require improvement.	Policy 9.2: Promote East Palo Alto as a destination point for non-residents by promoting on the City's unique shorelines and waterfront assets, baylands and historical resources.	N/A	Consistent. The Project would improve flood control infrastructure by reducing flood hazards in the Project area. Further, the Project would improve the Baylands, consistent with the policy to promote this area of the City.

	Policies	Program	Consistency Discussion
Circulation Goal 1.0: Support development of an efficient regional transportation system. Discussion: …Roadway facilities within East Palo Alto accommodate regional traffic resulting in congestion on the Bayshore Freeway (U.S. 101), University Avenue, East Bayshore Road, and Willow Road. Planning for the needs of the community necessarily includes recognition of the related transportation needs and planning efforts of the surrounding communities, county and region…	Policy 1.1: Support implementation of the Countywide Transportation Plan. NOTE: The Countywide Transportation Plan prioritizes "[i]ncreas[ing] the use of bicycles as a travel mode by developing a comprehensive bikeway system…"	N/A	Consistent. The Project would contribute to the comprehensive bikeway system envisioned under the Countywide Transportation Plan.
	Policy 1.2: Work closely with adjacent jurisdictions and transportation agencies to ensure that development projects within and near East Palo Alto can be accommodated by the regional transportation system.	N/A	Consistent. The Project would be led by cross-jurisdictional joint powers authority agency.
Circulation Goal 3.0: Increase use of public transit and non-vehicular methods of travel. Discussion: Many residents and employees in East Palo Alto rely on public transit… Non-vehicular methods of modes of travel, such as bicycling or walking, can also reduce demands on the roadway system where necessary improvements exist to promote those methods…	Policy 3.3: Provide and maintain a circulation system that supports bicycle and pedestrian travel.	N/A	Consistent. The Project would continue to provide and would improve on facilities for bicycle transport and walking.
Conservation/Open Space Goal 1.0: Identify and conserve important historic, archaeologic [sic] and paleontologic [sic] resources. Discussion: East Palo Alto includes a number of important cultural resources and potential resource areas that should be conserved to provide a link to the community's history and heritage…	Policy 1.1: Protect areas of important archaeologic and paleontologic resources.	N/A	Consistent. The Project includes mitigation that will protect archeological and paleontological resources if they are discovered during project construction. Project operation is unlikely to uncover archeological or paleontological resources.
	Policy 1.2: Protect and conserve buildings or sites of historic significance.	N/A	Consistent. The Project includes mitigation that will protect historic resources during project construction. Project operation is unlikely to disturb historic resources. Project operation would not change access to historic resources.
Conservation/Open Space Goal 2. 0: Preserve and enhance important natural resources and features. Discussion: Many important natural features, such as the baylands, San Francisquito Creek, and the shoreline are a part of the East Palo Alto community. These resources provide visual changes in the urban environment that create interest, and are landmarks that communicate a sense of place and location in the community…	Policy 2.1: Conserve, protect and maintain important natural plant and animal communities, such as the baylands, Cooley Landing, San Francisquito Creek, the shoreline and significant tree stands.	N/A	Consistent. The Project includes environmental commitments and mitigation to minimize impacts on nesting migratory birds and raptors, sensitive native aquatic vertebrates, sensitive native wildlife species, native plants, and landscape trees; riparian, instream, wetland, and other habitats; and water resources, including sediment and erosion management. The Project also includes improvements, including interpretive signage, that will enhance use of the Baylands.
	Policy 2.2: Conserve and protect important watershed areas and soils through appropriate site planning and grading techniques, revegetation and soil management practices, and other resource management techniques.	N/A	
	Policy 2.3: Preserve existing and increase the number of trees within the community.	N/A	
	Policy 2.4: Maximize enjoyment and promotion of natural resource areas, such as the baylands, Cooley Landing, San Francisquito Creek, and the shoreline.	N/A	
Conservation/Open Space Goal 4. 0: Improve air quality. Discussion: Air quality in the Bay Area does not presently meet state and federal standards. Cooperation among all agencies in the area is necessary to achieve desired improvements to air quality. East Palo Alto can participate and contribute its share in those efforts by proper planning for land use and transportation.	Policy 4.1: Cooperate with the Bay Area Association of Governments and the Bay Area Air Quality Management District in their efforts to implement the regional Air Quality Management Plan.	N/A	Consistent. The Project includes environmental commitments and mitigation that will ensure compliance with BAAQMD standards.
	Policy 4.2: Cooperate and participate in regional air quality management planning, programs and enforcement measures.	N/A	
Conservation/Open Space Goal 6.0: Provide adequate open space and recreational opportunities. Discussion: Open space and recreational opportunities are	Policy 6.2: Provide parkland improvements that are durable and economical to maintain.	N/A	Consistent. The portion of the Project that consists of restoration will be self-maintaining. Paving of trails would be done to current design standards.

	Policies	Program	Consistency Discussion
important components of urban living. As new development is proposed in East Palo Alto, open space and recreational opportunities need to be provided to maintain quality of life in the community…	Policy 6.3: Maximize the utility of existing parks, recreational facilities and open space within East Palo Alto.	N/A	Consistent. The Project will provide park, recreational, and open space amenities.
Conservation/Open Space Goal 8.0: Improve access to open space and recreation resources. Discussion: Open space and recreational resources access is an important aspect of the quality of life in urban areas. Greater access can be provided through joint use agreements with other public owners of open space and recreational lands. Physical access to specific sites can also be improved to promote greater use…	Policy 8.1: Create joint use agreements with school districts, water districts and other public agencies to allow greater access to open space and recreational lands.	N/A	Consistent. The Project lead is the SFCJPA, a joint agency. The Project would also create new joint use agreements between SFCJPA and the local land and easement holders.
	Policy 8.2: Provide physical improvements, such as parking lots, sidewalks, trails, access points or other facilities that promote greater use of recreation and open space lands and the bay.	N/A	Consistent. The Project includes improvements to the that part of the Bay Trail that runs along the top of the levee as part of the access road, improvements to Friendship Bridge, and a boardwalk leading from Friendship Bridge across the restored marsh.
Noise Goal 1.0: Minimize the effects of noise through proper land use planning. Discussion: Certain areas within East Palo Alto are subject to high noise levels. Consideration of the sources and recipients of noise early in the land use planning process can be an effective method of minimizing the impact of noise on population in the community…	Policy 1.2: Provide noise control measures, such as berms, walls, and sound attenuating construction in areas of new construction or rehabilitation.	N/A	Consistent. The Project includes environmental commitments and mitigation to minimize effects of noise generated during construction and maintenance activities.
Noise Goal 2.0: Minimize transportation and non-transportation-related noise impacts. Discussion: Transportation noise is a primary factor affecting the overall quality of life in East Palo Alto… Noise sources that are not directly related to transportation include construction noise, manufacturing noise, and property maintenance activities…	Policy 2.2: Reduce the impacts of noise-producing land uses and activities on noise-sensitive land uses.	N/A	Consistent. The Project includes environmental commitments and mitigation to minimize effects of noise generated during construction and maintenance activities.
Safety Goal 1.0: Reduce the risk to the community from hazards associated with geologic conditions, seismic activity and flooding. Discussion: In the Bay Area, communities are subject to risk attributable to certain natural hazards, such as geologic conditions, seismic activity, fire, and flooding…	Policy 1.1: Reduce the risk of impacts from geologic and seismic hazards by applying proper development engineering and building construction requirements.	N/A	Consistent. Project construction would adhere to requirements and standards set by the Uniform Building Code, Santa Clara Valley Water District, and U.S. Army Corps of Engineers.
	Policy 1.2: Protect the community from flooding hazards by providing and regularly maintaining flood control facilities.	N/A	
Safety Goal 2. 0: Protect the community from hazards associated with aircraft overflights, hazardous materials use, fire, ground transportation accidents, and criminal activity. Discussion: Certain human activities, such as flying, use of hazardous or toxic materials, use of combustibles, and criminal actions, expose the population of East Palo Alto to risk. The risk of exposure to these hazards can be reduced to acceptable levels through proper planning and regulation of human activities.	Policy 2.2: Cooperate with responsible federal, state and county agencies to minimize amounts and reduce the risk from the use and transport of hazardous materials.	N/A	Consistent. Hazardous and potentially hazardous materials used in Project construction and maintenance would be transported, stored, and handled in a manner consistent with all relevant regulations and guidelines, including those recommended and enforced by the U.S. Department of Transportation, Santa Clara County Department of Environmental Health, and San Mateo County Environmental Health Department.
	Policy 2.3: Provide fire protection to reduce the risk of fire.	N/A	Consistent. The Project would not involve construction, maintenance, or other project operational activities that would increase likelihood of fire, nor would it interfere with the ability of local fire departments to provide fire protection services.
	Policy 2.5: Provide police protection to address criminal activity.	N/A	Consistent. Neither construction nor operation of the Project would alter the ability of local jurisdictions' police departments to service the Project area.

	Policies	Program	Consistency Discussion
Safety Goal 3.0: Improve the ability of the City to respond to natural and human-caused emergencies. Discussion: Major emergencies arise periodically in developed urban areas. Proper preparation for emergencies is an essential action to minimize the disruption, personal injury, and property damage associated with such events...	Policy 3.1: Support the development of local preparedness plans and multi-jurisdictional cooperation and communication for emergency situations.	N/A	Consistent. The Project would not change the ability of local jurisdictions to respond to emergency situations.
East Palo Alto Bay Access Master Plan			
Public Bay Access- The BAMP will provide public access to the Bay in East Palo Alto… Improved public access will allow all East Palo Alto residents to spend time along the Bay. The BAMP is an opportunity to maximize the access to the Bay and to ensure that development in the RBD creates open space and recreational opportunities…		N/A	Consistent. The Project would provide improved public access to the Bay Trail.
Open Space for Families-The BAMP will ensure that the public access is designed to meet the needs of the large family and renter households in East Palo Alto[;]…the best use would be usable open space connected by a network of trails.		N/A	Consistent. The Project would involve improvements of Friendship Bridge and that part of the Bay Trail that runs along the top of the levee as part of the access road. These Project elements art part of a regional network of trails connecting open space in the Baylands.
Environmental Protection-The BAMP will ensure that the public access to the Bay is designed, developed, and maintained to protect the existing natural resources and habitats… The public access improvements must be designed and sited to both provide access and protect the wildlife… To the extent possible, improvements should adhere to BCDC's *Shoreline Spaces, Public Access Design Guidelines for the San Francisco Bay*; and BCDC's *Public Access and Wildlife Compatibility*.		N/A	Consistent. Design of the Project will provide flood control and maintenance and recreational access while protecting existing natural resources and habitats. Project environmental commitments include complying with guidelines put forth in BCDC's *Shoreline Spaces, Public Access Design Guidelines for the San Francisco Bay*; and BCDC's *Public Access and Wildlife Compatibility*.
Connectivity- The BAMP will ensure that all East Palo Alto residents can use pedestrian trails to connect to the Bay and to existing and future parks... Connecting East Palo Alto residents to local and regional parks and open space will expand and improve their recreational opportunities and the quality of life.		N/A	Consistent. The Project would maintain access from East Palo Alto to the Bay Trail, which connects to other areas in the Baylands.
Economic Development- The BAMP will increase the market desirability of the RBD [Ravenswood Business District]. Well-designed recreational amenities increase the market value of office and R&D buildings…		N/A	Consistent. Consistent. The Project would include improvements to that part of the Bay Trail that runs along the top of the levee as part of the access road and Friendship Bridge. Design would be consistent with regional design guidelines developed by San Francisco Bay Conservation and Development Commission.
EPA BAMP Trail Priorities	T1= Bay Trail South: This trail section completes the Bay Trail gap between Weeks Street and Bay Road. It will provide significant connectivity between East Palo Alto neighborhoods and Cooley Landing, the Palo Alto Baylands, and the Mountain View Baylands.	N/A	Consistent. The Project includes improvements to that part of the Bay Trail that runs along the top of the levee as part of the access road, maintaining connectivity between East Palo Alto neighborhoods and areas in the Baylands.
EPA BAMP Pocket Park Priorities	Pocket Park #8 (PP8): This is a proposed pedestrian pocket park located in the vicinity of Highway 101 and the San Francisquito Creek trail. The park should consist of pedestrian amenities and interpretative signs.	N/A	Consistent. The Project would not interfere with development of Pocket Park #8.

	Policies	Program	Consistency Discussion
Palo Alto Airport Comprehensive Land Use Plan			
General Compatibility	G-6 Any proposed uses that may cause a hazard to aircraft in flight are not permitted within the AIA. Such uses include electrical interference, high intensity lighting, attraction of birds (certain agricultural uses, sanitary landfills), and activities that may produce smoke, dust, or glare.	N/A	Consistent. The Project does not include elements that would create electrical interference, attract birds, produce smoke, or increase lighting level or glare. Further, the project includes environmental commitments and mitigation to minimize dust caused by construction and maintenance and conform to BAAQMD air quality standards.
	G-7 All new exterior lighting within the AIA shall be designed so as to create no interference with aircraft operations. Such lighting shall be constructed and located so that only the intended area is illuminated and off-site glare is fully controlled. The lighting shall be arrayed in such a manner that it cannot be mistaken for airport approach or runway lights by pilots.	N/A	Consistent. The Project would not involve nighttime lighting construction, so no need for nighttime construction lighting or security lighting at the Project site is anticipated. Further, none of the Project elements would incorporate new sources of nighttime lighting.
Noise	N-2 In addition to the other guidelines and policies herein, the Noise Compatibility Guidelines presented in Table 4-1 shall be used to determine if a specific land use is consistent with this CLUP.	N/A	Consistent. The Project facilities are consistent with existing uses.
Safety	S-3 Amphitheaters, sports stadiums and other very high concentrations of people shall be prohibited within the Runway Protection Zones (RPZs), Inner Safety Zones (ISZs), Turning Safety Zones (TSZs), Sideline Safety Zones (SSZs), Outer Safety Zones (OSZs) and Traffic Pattern Zones (TPZs) presented in Table 4-2.	N/A	Consistent. The Project would not substantially increase the number of people in the Project area, and thus will not substantially increase the number of people in the Runway Protection Zones, Inner Safety Zones, Turning Safety Zones, Outer Safety Zones (OSZs), and Traffic Pattern Zones. The Project site does not lie within the Sideline Safety Zone.
	S-4 Storage of fuel or other hazardous materials shall be prohibited in the Runway Protection Zone. Above ground storage of fuel or other hazardous materials shall be prohibited in the Inner Safety Zone and Turning Safety Zone. Beyond these zones, storage of fuel or other hazardous materials not associated with aircraft use should be discouraged.	N/A	Consistent. The Project will not involve storage of fuel or other hazardous materials in the Runway Protection Zone, Inner Safety Zone, or Turning Safety Zone.

	Policies	Program	Consistency Discussion
	S-7 The following uses shall be prohibited in all Airport Safety Zones: • Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator. • Any use that would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport. • Any use which would generate smoke or water vapor, or which would attract large concentrations of birds, or which may otherwise negatively affect safe air navigation within the area. • Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation, communication or navigation equipment.	N/A	Consistent. The Project does not include elements that would create electrical interference, attract birds, produce smoke, or increase lighting level or glare. Further, the project includes environmental commitments and mitigation to minimize dust caused by construction and maintenance and conform to BAAQMD air quality standards.
	S-8 Structures or trees that would interfere with an aircraft gliding to an emergency landing in a safety zone open area are not permitted.	N/A	Consistent. New utilities structures that would be installed under the Project would not be in the the Runway Safety Zone
Reconstruction	R-1 Reconstruction projects that are not subject to a previous avigation easement shall not be required to provide an avigation easement as a condition for approval.	N/A	Consistent. The Project is a reconstruction project, and the Project site was not previously subject to an avigation easement.
MTC Regional Bicycle Plan Update			
Goal 2.0: Define a comprehensive Regional Bikeway Network (RBN) that connects every Bay Area community; provides connections to regional transit, major activity centers and central business districts; and includes the San Francisco Bay Trail.	2.1 Develop a cohesive system of regional bikeways that provide access to and among major activity centers, public transportation and recreation facilities.	N/A	Consistent. The Project would improve that part of the Bay Trail that runs along the top of the levee as part of the access road and Friendship Bridge, both important elements in regional connectivity to major activity centers, public transportation, and recreation facilities; and can be used for some commute traffic.
	2.2 Ensure that the RBN serves bicyclists with diverse ability levels who are bicycling for a range of transportation and recreational purposes.	N/A	
	2.5 Encourage coordination of crossjurisdictional bicycle way-finding signage.	N/A	Consistent. Because the Project is crossjurisdictional and will be designed in accord with regional design guidelines, bicycle way-finding signage will be crossjurisdictional.
Goal 8.0: Continue to support ongoing regional bicycle planning.	8.9 Work to complete the Bay Trail and other intercounty trail systems… Work to provide connections to the California Coastal Trail by coordinating with the State Coastal Conservancy, the California Coastal Commission and Caltrans to ensure a complete system of safe and efficient trails for cyclists in the Bay Area.	N/A	Consistent. The Project would
Santa Clara Countywide Bicycle Plan			
Cross County Bicycle Corridors	The purpose of the Cross County Bicycle Corridors network is to provide continuous connections between Santa Clara County jurisdictions and to adjacent counties, and to serve the major regional trip-attractors in the County.	N/A	Consistent. The Bay Trail is an important component of the Santa Clara County Cross County Bicycle Corridors Network.

	Policies	Program	Consistency Discussion
Palo Alto Bicycle Transportation Plan			
Environmental Protections	8.2 Should any proposed bicycle projects propose the removal of established trees, the City will conduct surveys where necessary and follow the City's tree protection ordinance and mitigation requirements prior to implementing affected segments of the Bicycle Plan.	N/A	Consistent. The Project will comply with the City's tree protection ordinance and mitigation requirements,
	8.3 All surface-disturbing bike path and bike lane projects in areas of archaeological sensitivity will be subjected to archaeological assessment, intensive surface survey and/or subsurface testing as part of the project planning efforts.	N/A	Consistent. The Project includes mitigation to reduce impacts on archaeological resources through pre-construction field surveys, worker awareness training, and stop-work requirements in case archaeological resources or human remains are discovered during construction.
	8.4 Bicycle paths located near creeks will be designed so as not to cause erosion of creek banks consistent with policies and programs in the Natural Environment Element of the Comprehensive Plan.	N/A	Consistent. The Project includes environmental commitments and mitigation to minimize erosion. See Discussion under *Palo Alto Comprehensive Plan*, *Goal N-4* above.
San Mateo County Comprehensive Bicycle and Pedestrian Plan			
Goal 1: A Comprehensive Countywide System of Facilities for Bicyclists and Pedestrians	Policy 1.2: In developing a countywide system of facilities, place special attention on implementing or improving north–south routes (particularly for bicyclists) and reducing barriers to east–west access.	N/A	Consistent. The Project would maintain access to the Bay Trail, an important crossjurisdictional north-south bicycle trail. Access to the trail from the Geng Road access point would be temporarily interrupted and would last no more than 10 days. Access to the trail from the other two access points, O'Connor Pump Station and east of the Palo Alto Airport, would remain open.
	Policy 1.4: Promote cooperation among local agencies and with San Francisco and Santa Clara counties to pursue funding for multi-jurisdictional projects and implement bicycle and pedestrian facilities across jurisdictional lines.	N/A	Consistent. The Project would be implemented by SFCJPA, a crossjurisdictional and regional government agency whose members include the Cities of Palo Alto, Menlo Park, and East Palo Alto; the San Mateo County Flood Control District, and the Santa Clara Valley Water District.
Goal 2: More People Riding and Walking for Transportation and Recreation	Policy 2.7: Encourage local agencies to provide safe and convenient bicycle and pedestrian infrastructure for underserved communities.	N/A	Consistent. Recreational facilities in the Project area serve a range of socioeconomic groups, including underserved communities. The Project will continue to serve the same communities.
Goal 4: Complete Streets and Routine Accommodation of Bicyclists and Pedestrians	Policy 4.6: Discourage local agencies from removing, degrading or blocking access to bicycle and pedestrian facilities without providing a safe and convenient alternative.	N/A	Consistent. The Project would maintain access to the Bay Trail and Friendship Bridge. Access to the trail from the Geng Road access point would be temporarily interrupted and would last no more than 10 days. Access to the trail from the other two access points, O'Connor Pump Station and east of the Palo Alto Airport, would remain open.
East Palo Alto Bicycle Transportation Plan			
Funding	Recommendation 4.1.1: Use the Bike Plan to access funds that would not otherwise be available, such as the BTA.	N/A	Consistent. That part of the Bay Trail within East Palo Alto that runs along the top of the levee as part of the access road will be improved using funding for the Project, which includes funding from sources outside East Palo Alto.

Sources: City of East Palo Alto 1999, 2007, 2008, 2011; City of Palo Alto 1998, 2003, 2005, 2008, 2011; Metropolitan Transportation Commission 2009; San Francisco Bay Conservation and Development Commission 2001, 2005; San Mateo County 2001, 2011; Santa Clara County Airport Land Use Commission 2008; Santa Clara Valley Transportation Authority 2008.

Background

Terminology

- **Sound.** A vibratory disturbance transmitted by pressure waves through a medium such as air and capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB)**. A measure of sound intensity based on a logarithmic scale that indicates the squared ratio of actual sound pressure level to a reference sound pressure level (20 micropascals).
- **A-Weighted Decibel (dBA).** A measure of sound intensity that is weighted to take into account the varying sensitivity of the human ear to different frequencies of sound. The dBA scale is the most widely used for environmental noise assessments.
- **Equivalent Sound Level (L_{eq})**. L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level that would contain the same acoustical energy as the time-varying sound that actually occurs during the monitoring period. The 1-hour A-weighted equivalent sound level (L_{eq} 1h) is the energy average of A-weighted sound levels occurring during a 1-hour period.
- **Maximum Sound Levels (L_{max}).** The maximum (L_{max}) sound levels measured during a monitoring period.
- **Day-Night Level (L_{dn}).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with a 10-dB penalty added to sound levels between 10:00 p.m. and 7:00 a.m.
- **Peak Particle Velocity (PPV).** A measurement of ground vibration defined as the maximum speed at which a particle in the ground is moving, expressed in inches per second (in/sec).
- **Vibration Velocity Level (or Vibration Decibel Level, VdB).** The root mean square velocity amplitude for measured ground motion expressed in dB.

Sound and Noise

Typical A-weighted noise levels for various types of sound sources are summarized in Table 3.10-1.

Urban noise commonly represents the combined sound level contributed by several individual sources—different pieces of equipment operating on a construction site, for instance. However, the individual dB ratings for different noise sources cannot be added directly to give the sound level for the combined noise source. Instead, the combined noise level produced by multiple noise sources is calculated using logarithmic summation. For example, if one bulldozer produces a noise level of 80 dBA, then two bulldozers operating side by side would generate a combined noise level of 83 dBA (only 3 dBA louder than the single bulldozer).

In general, human sound perception is such that a change in sound level of 3 dB is just noticeable; a change of 5 dB is clearly noticeable; and a change of 10 dB is perceived as doubling or halving the sound level. A doubling of actual sound energy is required to result in a 3 dB (i.e., barely noticeable) increase in noise; in practice, for example, this means that the volume of traffic on a roadway typically needs to double to result in a noticeable increase in noise.

Table 3.10-1. Typical A-Weighted Sound Levels

Sound Source	Sound Level (dBA)	Typical Response
Carrier deck jet operation	140	Painfully loud
Limit of amplified speech	130	
Jet takeoff (200 feet) Auto horn (3 feet)	120	Threshold of feeling and pain
Riveting machine Jet takeoff (2,000 feet)	110	Very annoying
Shout (0.5 foot) New York subway station	100	
Heavy truck (50 feet) Pneumatic drill (50 feet)	90	Hearing damage (8-hour exposure)
Passenger train (100 feet) Helicopter (in flight, 500 feet) Freight train (50 feet)	80	Annoying
Freeway traffic (50 feet)	70	Intrusive
Air conditioning unit (20 feet) Light auto traffic (50 feet)	60	
Normal speech (15 feet)	50	Quiet
Living room, Bedroom, Library	40	
Soft whisper (15 feet)	30	Very quiet
Broadcasting studio	20	
	10	Just audible
	0	Threshold of hearing

Sound perception also depends on whether a new sound is similar to existing sounds in an area. Most people cannot detect differences of 1–2 dB between noise levels of a similar nature (for example, a 1-dB increase in traffic noise compared to existing traffic noise). However, under ideal listening conditions, some people can detect differences of 2 or 3 dB, and most people under normal listening conditions would probably perceive a 5-dB change in sounds of a similar nature. When a new, intruding sound is of a different nature than the background sound (for example, a car alarm compared to quiet residential sounds), most people can detect changes as small as 1 dBA.

When distance is the only factor considered, sound levels from isolated point sources of noise typically decrease by about 6 dB for every doubling of distance from the noise source. When the noise source is a continuous line, such as vehicle traffic on a highway, sound levels decrease by about 3 dB for every doubling of distance. Noise levels can also be affected by several factors other than the distance from the noise source. Topographic features and structural barriers that absorb, reflect, or scatter sound waves can affect the reduction of noise levels. Atmospheric conditions (wind speed and direction, humidity levels, and temperatures) and the presence of dense vegetation can also affect the degree of sound attenuation.

Groundborne Vibration

In addition to generating noise, traffic and heavy construction equipment can generate groundborne vibration. The effects of groundborne vibration include perceptible movement of the building floors and walls, rattling of windows, and rumbling sounds. The overall effect of vibration caused by construction activities is generally limited only to people living close to the vibration sources. Building damage can also occur but only at exceptionally high vibration levels not commonly encountered except for vibration-sensitive structures very close to large vibration sources.

The average ground velocity of the vibratory motion generally quantifies vibration caused by transit projects and construction activities such as blasting, pile driving, and heavy construction equipment. Such vibration is commonly described as a "vibration decibel level" (VdB) (Federal Transit Administration 2006). Vibration levels in the United States are commonly measured as VdB relative to a reference velocity of 1 microinch (μ inch) per second to assess the potential for human annoyance. Table 3.10-2 summarizes the typical groundborne vibration levels and average human response to vibration that may be anticipated when a person is at rest in quiet surroundings. If the person is engaged in any type of physical activity, vibration tolerance increases considerably. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does its daily frequency of occurrence. Generally, as the duration and frequency of occurrence increase, the potential for adverse human response increases.

Table 3.10-2. Typical Levels of Groundborne Vibration

Velocity Vibration Level (VdB)	Typical Sources	Human or Structural Response
50	Typical background vibration	None; below typical threshold of perception
65	Bus or truck on public road, 50 feet away	Approximate threshold of human perception
80	Railroad train, 50 feet away	Threshold for residential annoyance for occasional events
90	Bulldozer, 50 feet away	Difficulty in reading computer screen
100	Blasting from construction project, 50 feet away	Cosmetic damage to fragile buildings

Source: Federal Transit Administration 2006.

In addition to annoyance/nuisance factors, another major concern associated with construction vibration is the potential for building or structural damage. This assessment is typically made based on PPV, measured in in/sec (Federal Transit Administration 2006). Caltrans identifies the limit for potential cosmetic damage to plaster-walled residences as 0.2 in/sec PPV (California Department of Transportation 2004).

Study Area

The study area for noise and vibration impact is defined as the sensitive land uses in the vicinity of Project construction sites that would be potentially impacted by the elevated noise and vibration levels generated by Project construction activities.

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses typically include residences, hospitals, schools, guest lodgings, libraries and certain types of passive recreational uses, such as parks to be used for reading, conversion, meditation, etc. (Federal Transit Administration 2006).

The study area for noise and vibration analysis is noise-sensitive land uses located adjacent to the Project construction sites. In the study area, noise-sensitive land uses include homes, a school, and the Golf Course. The first row of residential homes are located between 25 and 200 feet from the proposed levee and floodwall along the right bank of the Project in East Palo Alto. The International School of the Peninsula is located 50 feet from the proposed floodwall along the left bank of the Project in Palo Alto. The Golf Course is located adjacent to the proposed levee and floodwall along the right bank of the Project.

Existing Conditions

Ambient noise environment in the Project vicinity was identified based on the land uses present and published studies of noise levels at similar land uses (Federal Transit Administration 2006). Noise sensitive land uses were identified based on site reconnaissance and aerial photo images of the Project vicinity.

Principal noise source in the Project vicinity is local and U.S. 101 traffic, along with occasional lawn care equipment (e.g., lawn mowers, chain saws, leaf blowers, and “weed whackers”), occasional dog barks, fire and police sirens, and aircraft overflights. The noise-sensitive land uses in the study area are within 0.5 mile northeast of U.S. 101, and within 0.5 mile southwest of Palo Alto Airport. Typical background noise levels in suburban residential areas are 50–60 dBA L_{dn}. (Federal Transit Administration 2006).

Impact Analysis

Assessment Methods

Construction of the Project would require the use of heavy equipment that would temporarily increase noise and/or groundborne vibration levels at properties near the work sites. After the Project is constructed, Project maintenance would occur as needed and would require periodic use of smaller equipment. The work would be less extensive and would take place over a shorter period (several hours or days) than Project construction (months). In addition, the maintenance activities for the proposed Project would be similar to the maintenance work for the existing sites. Because the noise environment after Project implementation would not represent a substantial change from the current noise environment, the analysis of noise impacts focused primarily on noise generation during construction of each Project element.

Table 3.10-3 presents typical noise levels for various types of construction equipment. The noise levels listed represent the A-weighted L_{max}, measured at a distance of 50 feet from the construction equipment. The table also lists typical acoustical use factors for the equipment (Federal Transit Administration 2006). The acoustical use factor is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its noisiest condition) during construction operation and is used to estimate L_{eq} values from L_{max} values. For example the L_{eq} value for a piece of equipment that operates at full power 50 percent of the time (acoustical use factor of 50) is 3 dB less than the L_{max} value.

Table 3.10-3. Typical Maximum Noise Emission Levels by Construction Equipment

Equipment	Acoustical Use Factor (%)	Typical Maximum Noise Level (dBA)	
		25 feet from Source	50 feet from Source
Air compressor	40	84	78
Backhoe	40	84	78
Compactor	20	89	83
Concrete mixer truck	40	85	79
Concrete pump truck	20	87	81
Crane	16	87	81
Dump truck	40	82	76
Excavator	40	87	81
Flatbed truck	40	80	74
Grader	40	91	85
Jackhammer	20	95	89
Loader	40	85	79
Pickup truck	40	81	75
Pile driver (impact)	20	107	101
Paver	50	83	77
Slurry trenching machine	50	86	80

Source: Federal Transit Administration 2006.

Table 3.10-4 summarizes typical vibration levels generated by construction equipment (Federal Transit Administration 2006).

Table 3.10-4. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet (in/sec)	Approximate VdB at 25 feet
Pile driver (impact)	0.644-1.518	104-112
Pile driver (sonic)	0.170-0.734	93-105
Large bulldozer	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Source: Federal Transit Administration 2006.

The Project would be constructed in three phases: PG&E electric transmission relocations, Phase One levee construction, and Phase Two floodwalls installation. The Utility Relocation phase would take place for 3 months in late 2012, Phase One Project elements would be constructed in 2013, and Phase Two Project elements would be constructed over a seven-month period in 2014. Onsite construction equipment used for each phase is summarized in Table 3.10-5. On-road vehicle trips that are expected to be generated by each phase are discussed in Section 3.13, *Traffic and Transportation*.

Table 3.10-5. Construction Equipment by Phase

Project Phase	Construction Equipment
PG&E Electric Transmission Relocations	Line Relocation: 1 flatbed truck, 3 pickup trucks, 3 bucket trucks, 3 line trucks, 1 rope truck, 1 tensioner (on a trailer). Tower Relocation: 2 pickup trucks, 1 2-ton tool truck with air compressor, 1 dump truck, 1 70-ton crane, 1 Caterpillar pile driver, 1 backhoe, 1 concrete truck, 1 pump truck. Site and Access Road Preparation: 1 dump truck, 1 grader, 1 pickup truck.
Phase One Levee Construction	3 excavators, 1 backhoe, 2 loaders, 1 jack hammer/concrete pulverizer, 4–6 dump trucks (20 cubic yards), 2 water trucks, 2 concrete trucks, 1 asphalt paver, 1 compactor.
Phase Two Floodwalls Installation	1 excavator, 1 trencher, 1 backhoe, 1 loader, 1 jack hammer/concrete pulverizer, 4–6 dump trucks, 2 water trucks, 2 concrete trucks, 1 asphalt paver, 1 compactor.

Noise generated by the onsite construction equipment was estimated using the FTA sound propagation method for construction noise sources (Federal Transit Administration 2006). Noise levels were calculated assuming continuous operation of the three loudest pieces of equipment for a 1-hour period. In reality, construction activities would likely be intermittent, so actual noise levels could be somewhat lower than the estimated values. On larger work sites, where more than one of the same type of equipment may be used (multiple excavators at sites requiring extensive earthwork, for instance), equipment was assumed to spread out over the site. That is, three excavators are not expected to operate in close proximity to one another; a more likely configuration, reflected in the modeling assumptions, is one excavator, one loader, and one large dump truck.

Noise levels decrease with increasing distance from the noise source; the FTA modeling methodology assumes a geometric attenuation rate of 6 dB per doubling of distance. Additional attenuation resulting from ground absorption is also factored in. However, any shielding effects that may result from local barriers such as topography, fences, vegetation, etc., are not incorporated, so the modeled noise levels represent a conservative or “worst-case” estimation.

Haul traffic would be routed on main arterial roadways, but access to the Project work sites along the right bank would require haul trucks to pass homes. To evaluate noise impacts related to haul traffic, the Federal Highway Administration’s (FHWA’s) Traffic Noise Model (TNM), version 2.5, was used to compare noise levels caused by heavy trucks to background ambient noise.

Like noise, vibration also attenuates with increasing distance, as a complex function of energy transfer into the ground, and the soil conditions through which the vibration is transmitted. Calculations of vibration attenuation followed standard FTA methods (Federal Transit Administration 2006).

Analysis assumed that construction would be limited to daytime hours, from 8 a.m. to 6 p.m., Monday through Friday. Some work could also take place on Saturdays between 9 a.m. and 5 p.m., if this is necessary to expedite the construction process. The arrival and departure of trucks hauling material would be limited to the hours of construction.

Significance Criteria

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Exposure of persons to or generation of noise levels in excess of standards established in a local general plan or noise ordinance, as follows. Because the study area is located in the cities of Palo Alto and East Palo Alto, for the purpose of this CEQA analysis, the more stringent standard was applied.
  - Construction noise level generated by individual piece of equipment exceeding 110 dBA at a distance of 25 feet and at any point outside of the property plane of the Project.
  - Construction noise generated at any time other than hours between 8 a.m. and 6 p.m. on weekdays and between 9 a.m. and 6 p.m. on Saturdays.
- Exposure of persons to or generation of groundborne vibration levels, as follows.
  - In excess of 80 VdB (the FTA “annoyance threshold” for infrequent vibration events).
  - In excess of 0.2 in/sec PPV (the Caltrans threshold for cosmetic damage to plaster-walled residences, per Caltrans 2004).
- Substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.
- Substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project, including the following.
  - Noise creating substantial annoyance or disruption to adjacent land uses.
  - Substantial traffic noise increase (5 dB or more).

Impacts and Mitigation Measures

Impact NV1—Noise Levels in Excess of Applicable Standards

Summary by Project Element: Impact NV1—Noise Levels in Excess of Applicable Standards		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant

Construction

Onsite Construction Noise

Table 3.10-6 shows the estimated maximum noise levels at the distance of 25, 50, 100, and 200 feet from the construction sites for each phase. The estimate assumes the simultaneous operation of three loudest pieces of equipment, as listed in Table 3.10-5, for a 1-hour period. Noise-sensitive land uses are located as close as 25 feet to the construction sites, so the exterior noise levels could be as high as 100 dBA L_{eq} during utility relocations, 90 dBA L_{eq} during Phase One, and 90 dBA L_{eq} during

Phase Two. However, as shown in Table 3.10-4, the construction equipment used for the Project would generate noise at a level below the noise ordinance limit of 110 dBA at a distance of 25 feet. In addition, the construction activities would be limited to daytime hours on weekdays and Saturdays when construction noise is exempt from the noise limit in the noise ordinance. Consequently, the construction noise level would not exceed or violate the noise ordinance. The construction noise impacts would be less than significant, and no mitigation is required.

Table 3.10-6. Estimated Onsite Construction Noise Levels

Project Phase	Distance from Construction Site (feet)	Noise Level L_{eq} (dBA)
PG&E Electric Transmission Relocations	25	100
	50	94
	100	86
	200	78
Phase One Levee Construction	25	90
	50	84
	100	76
	200	68
Phase Two Floodwalls Installation	25	90
	50	84
	100	76
	200	68

On-Road Construction Traffic Noise

There is no city ordinance and regulation that would be applicable to traffic noise generated by construction activities. To evaluate the traffic noise impact, a substantial increase of 5 dBA, which is generally considered to be the threshold of a perceptible change, is used for the assessment.

As described in Section 3.13, *Traffic and Transportation*, the Phase One levee construction would involve earth-moving activities and would generate the greatest amount of truck trips among three phases of the Project (PG&E Utility Relocation, Phase One, and Phase Two). There would be an increase of up to 144 trips per day (96 trucks trips and 48 worker trips) and up to 30 trips in the peak hours (12 truck trips and 18 worker trips) during the peak site grading and excavation period. Truck traffic to and from the construction site would create additional intermittent noise at nearby residences along haul routes. However, the noise impact would be limited to several seconds of elevated noise during each truck pass. Based on the TNM, the construction-generated traffic would temporarily increase the ambient noise at homes adjacent to haul routes by 4 dBA daily (L_{dn}) and during the peak hour (L_{eq}). The noise increase related to construction traffic is thus expected to be less than the “substantial increase” criterion of 5 dB. Noise impacts related to construction traffic are considered less than significant, and no mitigation is required.

Impact NV2—Excessive Groundborne Vibration Levels

Summary by Project Element: Impact NV2—Excessive Groundborne Vibration Levels		
Project Phase	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	Less than Significant

The operation of heavy equipment would generate localized groundborne vibration at buildings adjacent to the construction site, especially during the operation of high-impact equipment, such as pile drivers. Vibration from nonimpact construction activity and truck traffic is typically below the threshold of perception when the activity is more than about 50 feet from the noise-sensitive land uses (Federal Transit Administration 2006). Consequently, for construction activities without the use of high-impact equipment and construction sites are more than 50 feet from the noise-sensitive land uses, groundborne vibration impacts are expected to be less than significant. The same would be true for maintenance activities, which would be similar in nature to existing maintenance and are not expected to use high-impact equipment.

For PG&E utility relocations, the tower installation would require the use of pile driver. The level of vibration generated by pile driving and transmitted to nearby structures would depend on the type of pile driver used and site-specific soil properties. Under "average" soil conditions an impact pile driver is expected to generate a vibration level of 0.644—1.518 in/sec PPV, or 102 VdB at 25 feet from the tower site (Federal Transit Administration 2006). Some existing homes are within 50 feet of the proposed tower locations, and under average soil conditions those homes could be exposed to vibration levels of 0.2 - 0.5 in/sec PPV, or up to about 93 VdB.[11] This exceeds the 0.2 in/sec PPV and 80 VdB thresholds at which vibration may become an annoyance and/or damage plaster-walled residential structures; thus, vibration impacts at homes closest to the tower sites could be significant during the installation of proposed towers. Implementation of mitigation measure~~s~~ NV2.1 ~~and NV2.2~~ would reduce groundborne vibration impacts to a less-than-significant level.

Vibration impact may be significant for the first row of homes located within approximately 25 feet of the construction sites using heavy construction equipment that is not high-impact equipment. These residences could experience vibration levels as high as 87 VdB[12] or 0.35 in/sec PPV, which would exceed both the threshold of annoyance (80 VdB) and the threshold for potential cosmetic damage to plaster-walled residences (0.2 in/sec). Exceedance of either threshold would be a significant impact. Implementation of mitigation measure NV2.1 would reduce groundborne vibration impacts to a less-than-significant level.

[11] The actual vibration level at the nearest homes would depend on the specific soil type at any given location. If the soil is loose and sandy, vibration levels would be lower. If soil includes stiff clay or hardpan, vibration levels could be higher.

[12] This is a conservative estimated based on the FTA 2006 reference level of 87 VdB at 25 feet for a large bulldozer (Table 4.12-4). Actual vibration levels would depend on the equipment used and the soil type at this site and could be lower.

Mitigation Measure NV2.1 Conduct Construction Vibration Monitoring and Implement Vibration Control Approach(es)

During periods of construction, SFCJPA will retain a qualified acoustical consultant or engineering firm to conduct vibration monitoring at homes or occupied vibration-sensitive buildings located within 100 feet of pile driving locations and 25 feet of construction sites using other nonimpact equipment. If at any point the measured PPV is in excess of 0.2 in/sec, construction activity will cease and alternative methods of construction and excavation will be considered to prevent possible exposure of vibration-sensitive buildings and structures to levels of 0.2 in/sec PPV or higher. Prior to construction activity, and assuming the property owner gives permission, a preconstruction survey will be conducted that documents any existing cracks or structural damage at vibration-sensitive receptors by means of color photography or video. Additionally, a designated complaint coordinator will be responsible for handling and responding to any complaints received during such periods of construction. SFCJPA will also implement a reporting program will be required that documents complaints received, actions taken and the effectiveness of these actions in resolving disputes.

Impact NV3—Substantial Permanent Increase in Ambient Noise

Summary by Project Element: Impact NV3—Substantial Permanent Increase in Ambient Noise		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	No Impact	Less than Significant

Construction noise would be temporary and would not result in permanent increase in ambient noise; therefore, construction noise impact is discussed in detail in Impacts NV1 and NV4.

Maintenance would generate recurring short-term increases in noise throughout the Project lifespan. As discussed in Impact NV1 above, the equipment used for maintenance work—and the resulting noise levels—would be similar to the existing condition. The work would be much less extensive than Project construction and would require less equipment (in particular, less heavy equipment). Therefore, maintenance activities are expected to have a less-than-significant impact on long-term ambient noise levels.

Impact NV4—Substantial Temporary Increase in Ambient Noise

Summary by Project Element: Impact NV4—Substantial Temporary Increase in Ambient Noise		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	No Impact

The results in Table 3.10-6 indicate that construction activities could result in substantial short-term noise increases at noise-sensitive land uses that could rise to the level of a significant impact. Impacts would be reduced to a less-than-significant level by implementation of Mitigation Measures NV4.1, NV4.2, NV4.3, and NV4.4.

Mitigation Measure NV4.1—Provide Advance Notification of Construction Schedule and 24-Hour Hotline to Residents

SFCJPA will provide advance written notification of the proposed construction activities to all residences and other noise- and air quality–sensitive uses within 750 feet of the construction site. Notification will include a brief overview of the proposed Project and its purpose, as well as the proposed construction activities and schedule. It will also include the name and contact information of SFCJPA's project manager or another SFCJPA representative or designee responsible for ensuring that reasonable measures are implemented to address the problem (the construction noise and air quality disturbance coordinator; see Mitigation Measure NV4.3).

Mitigation Measure NV4.2—Implement Work Site Noise Control Measures

To reduce noise impacts, SFCJPA will require all contractors to adhere to the following measures. SFCJPA will be responsible for ensuring implementation.

- All construction equipment will be equipped with manufacturer's standard noise control devices or with equally effective replacement devices consistent with manufacturer specifications.
- Stationary noise-generating equipment will be located as far as possible from sensitive receptors, and, if feasible, will be shielded by placement of other equipment or construction materials storage.
- Contractors will be required to use ambient-sensitive backup alarms.

Mitigation Measure NV4.3—Designate a Noise and Air Quality Disturbance Coordinator to Address Resident Concerns

SFCJPA will designate a representative to act as construction noise and air quality disturbance coordinator, responsible for resolving construction noise and air quality concerns. The disturbance coordinator's name and contact information will be included in the preconstruction notices sent to area residents (see Mitigation Measure NV4.1). She or he will be available during regular business hours to monitor and respond to concerns; if construction hours are extended, the disturbance coordinator will also be available during the extended hours. In the event an air quality or noise complaint is received, she or he will be responsible for determining the cause of the complaint and ensuring that all reasonable measures are implemented to address the problem.

Mitigation Measure NV4.4—Install Temporary Noise Barriers

As described in Mitigation Measures NV1.1, NV1.2, and NV1.3, SFCJPA will notify noise-sensitive land uses near the site of upcoming activity before construction begins, will require construction-site noise reduction measures, and will provide a 24-hour complaint hotline. If a resident or school employee submits a complaint about construction noise and SFCJPA is unable to reduce noise levels to below the significance threshold (exceeding 110 dBA at a distance of 25 feet) through other means, SFCJPA will install temporary noise barriers to reduce noise levels below the applicable construction noise standard. Barriers will be installed as promptly as possible, and work responsible for the disturbance will be suspended or modified until barriers have been installed. SFCJPA will include a construction bid item to provide noise barriers onsite and install noise barriers immediately in response to noise or dust concerns from the community. The following minimum criteria will be required of the contractor.

- The barrier will be 10 feet tall. It will surround the work area to block the line of sight for all diesel-powered equipment on the ground, as viewed from any private residence or any building.
- The barrier will be constructed of heavyweight plywood (5/8 inch thick) or other material providing a Sound Transmission Classification of at least 25 dBA. (Note that 5/8 inch is sufficiently thick to provide optimal noise buffering; increasing the thickness of the barrier above 5/8 inch would not provide a noticeable improvement in noise reduction.)
- The barrier will be constructed with no gaps or holes that would allow noise to transmit through the barrier.
- To minimize reflection of noise toward workers at the construction site, the surface of the barrier facing the workers will be covered with a sound-absorbing material meeting a Noise Reduction Coefficient of at least 0.70.

3.11 Public Services

This section provides environmental analysis of the Project's impacts on public services. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from construction and implementation of the Project, and describes mitigation to minimize the level of impact, if necessary. Impacts related to parks and recreation are discussed in Section 3.12, *Recreation,* of the EIR.

Environmental Setting

Study Area

The study area for this public services analysis is the Project site and the jurisdiction of each of the Project's service providers. The left bank of the Project site is located in the city of Palo Alto. Service providers to Palo Alto include the Palo Alto Police Department, the Palo Alto Fire Department, and the Palo Alto Unified School District (PAUSD). The right bank of the Project site is located in the city of East Palo Alto. Service providers to East Palo Alto include the Menlo Park Fire Protection District, the East Palo Alto Police Department, the Ravenswood City School District (RCSD) and the Sequoia Union High School District (SUHSD). Each of these providers serves the Project site.

Regulatory Setting

The City of Palo Alto 1998 Comprehensive Plan (City of Palo Alto 1998) and the City of East Palo Alto 1999 General Plan (City of East Palo Alto 1999) contain policies related to the provision of public services.

Existing Conditions

Fire Protection

Palo Alto. The Palo Alto Fire Department (PAFD) provides fire protection services to the City of Palo Alto and areas on the east side of the Project site. The PAFD service area comprises 50 square miles from Skyline Boulevard in the Palo Alto foothills to the Palo Alto Baylands. PAFD staffs seven full-time fire stations located throughout the city. An eighth station in the foothills is operated during summer months when fire danger is high. The nearest fire station to the Project site is Fire Station 4, located at 799 Embarcadero Road, approximately 1 mile southwest of the Project site. PAFD has mutual aid agreements with Menlo Park, Mountain View, Los Altos, and Woodside. (City of Palo Alto n.d.a)

East Palo Alto. The Menlo Park Fire Protection District (MPFPD) provides fire protection services to the City of East Palo Alto and areas on the west of the Project site. The MPFPD service area comprises 30 square miles and covers the communities of Atherton, Menlo Park, East Palo Alto, and some of the unincorporated areas of San Mateo County. MPFPD staffs five fire stations in Menlo Park, one fire station in Atherton, and one fire station in East Palo Alto. The nearest station to the Project site is Fire Station 2, located at 2290 University Avenue in East Palo Alto, approximately 1.25 miles northwest of the Project site (Menlo Park Fire Protection District 2008).

Police Services

Palo Alto. The Palo Alto Police Department (PAPD) provides police service to the City of Palo Alto and the east side of the Project site. PAPD responds to approximately 60,000 service calls each year and has approximately 169 employees. The Palo Alto Police Department is located at 275 Forest Avenue, approximately 2 miles southwest of the Project site (City of Palo Alto n.d.c).

East Palo Alto. The East Palo Alto Police Department (EPAPD) provides polices service to the City of East Palo Alto and the west side of the Project site. EPAPD operates from its headquarters at 141 Demeter Avenue, located approximately 1 mile north of the Project site. It is divided into four beats with one police officer patrolling each beat. The left bank of the Project site, from O'Conner Street to East Bayshore Road, is located in Beat 3 (City of East Palo Alto 2012).

Schools

Palo Alto. The City of Palo Alto, including the area to the east of the Project site, is served by the PAUSD. PAUSD serves approximately 11,000 students and consists of twelve elementary schools (grades K-5), three middle schools (grades 6-8), and two high schools (grades 9- 12). The closest PAUSD school to the Project site is the Duveneck Elementary School, located at 705 Alester Avenue, approximately 0.4 mile southwest of the Project site (Palo Alto Unified School District 2010).

East Palo Alto. The City of East Palo Alto, including the area to the west of the Project site, is served by two school districts: the RCSD for grades K through 8 and SUHSD for grades 9 through 12 (Ravenswood City School District 2012, Sequoia Union High School District 2010).

RCSD serves the communities of East Palo Alto and East Menlo Park and has its headquarters in East Palo Alto. RCSD consists of six elementary schools (K-5 or K-8), three middle schools, and one charter high school. The nearest RCSD school to the Project site is the Ronald McNair Academy located at 2033 Pulgas Avenue in East Palo Alto, approximately 0.5 mile northwest of the Project site (Ravenswood City School District 2012).

SUHSD serves approximately 8,200 students from the communities of Atherton, Belmont, East Palo Alto, Menlo Park, Portola Valley, Redwood City, Redwood Shores, San Carlos, and Woodside. SUHSD consists of four high schools; the nearest SUHSD school to the Project site is the Menlo-Atherton High School, located at 555 Middlefield Road, approximately 3 miles northwest of the Project site (Sequoia Union High School District 2010).

Libraries & Other Facilities

Palo Alto. The City of Palo Alto's public library system comprises six libraries. The closest Palo Alto library to the Project site is the Main Library, located at 1213 Newell Road, approximately 1 mile southwest of the Project site (City of Palo Alto n.d.b.).

In addition to fire protection services, police services, schools, parks, and libraries, the City of Palo Alto provides child cares services (through the Palo Alto Community Child Care organization), senior services (through the Senior Coordinating Council of the Palo Alto Area), services for people with disabilities (through the City's Community Services Department), and cultural arts (through the City's Arts and Culture Division) (City of Palo Alto 1998).

East Palo Alto. East Palo Alto is part of the San Mateo County Library (SMCL) network. SMCL has 12 branches including the East Palo Alto Library which is located at 2415 University Avenue, approximately 1.5 miles northwest of the Project site (San Mateo County Library n.d.).

Impact Analysis

Methods and Significance Criteria

Impacts on public services were analyzed based on a review of the service providers' websites, the City of Palo Alto Comprehensive Plan, and the City of East Palo Alto General Plan.

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
    - Fire protection.
    - Police protection.
    - Schools.
    - Other public facilities.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact PS1—Adversely Affect Fire Protection Services or Require the Provision of New or Physically Altered Fire Protection Facilities.

Summary by Project Element: Impact PS1—The Project Would Not Adversely Affect Fire Protection Services or Require the Provision of New or Physically Altered Governmental Facilities.		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant~~Beneficial~~

Construction

Project construction would last approximately 2 years. It is unlikely that construction activities would materially increase the need for emergency fire protection during this time. Existing fire services are expected to be adequate and capable of ensuring safety during Project construction. Site plans would be subject to review by the Cities of Palo Alto and East Palo Alto, the Palo Alto Fire Department, and the Menlo Park Fire Protection District. Therefore, construction-period impacts on fire protection services would be less than significant. No mitigation is required.

Operation and Maintenance

As described above, the Project site is currently served by the Palo Alto Fire Department and the Menlo Park Fire Protection District. Because the Project is designed to increase the stream flow of the San Francisquito Creek through the construction of floodwalls and the relocation of levees and would not adversely affect access to any populated areas, the Project would not alter the fire protection service providers' ability to serve the Project site. Furthermore, the Project would include construction of an access and maintenance road on each bank, on the inland side of floodwalls. The access roads would be approximately 10 to 16 feet wide and would be surfaced with aggregate base and asphalt concrete. These roads would allow vehicles to access the levees for maintenance and repair and could also be used by emergency vehicles, if necessary. Additionally, Project site plans would be reviewed by all fire protection service providers in the Project area to ensure usability and access. Therefore, implementation of the Project would result in less-than-significant impacts on fire protection services. No mitigation is required.

Impact PS2—Adversely Affect Police Services or Require the Provision of New or Physically Altered Police Facilities.

Summary by Project Element: Impact PS2—The Project Would Not Adversely Affect Police Services and Would Not Require the Provision of New or Physically Altered Governmental Facilities.		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	~~Beneficial~~Less than Significant

Construction

Project construction would last approximately 2 years. Similar to the discussion under Impact PS1, it is unlikely that construction activities would increase the need for police services during this time. Existing police services are expected to be adequate and capable of ensuring safety during Project construction. Site plans would be subject to review by the Cities of Palo Alto and East Palo Alto, the Palo Alto Police Department, and the East Palo Alto Police Department. Therefore, construction-period impacts on police services would be less than significant. No mitigation is required.

Operation and Maintenance

The Project site is currently served by the Palo Alto Police Department and the East Palo Alto Police Department. Implementation of the Project would not alter the police service providers' ability to serve the Project site. Because the Project is designed to increase the stream flow of the San Francisquito Creek through the construction of floodwalls and the relocation of levees and would not adversely affect access to any populated areas, the Project would not alter the police service's ability to serve the Project site. Furthermore, as described above, the Project would include the construction of an access and maintenance road on each bank. These roads would allow vehicles to access the levees for maintenance and repair and could be utilized by emergency vehicles, if necessary. Therefore, implementation of the Project would result in a less-than-significant impact for police services. No mitigation is required.

Impact PS3—Adversely Affect Schools or Require the Provision of New or Physically Altered School Facilities.

Summary by Project Element: Impact PS3—The Project Would Not Adversely Affect Schools and Would Not Require the Provision of New or Physically Altered School Facilities.		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	No Impact	No Impact

The Project is designed to increase the stream flow in San Francisquito Creek from the downstream face of East Bayshore Road to the San Francisco Bay and does not include residential development. The need for school services is generally associated with increases in residential populations since households may contain school-aged children. Because the Project would result in neither a population increase nor a corresponding increase in school-aged children, there would be no impact on school facilities. No mitigation is required.

Impact PS4—Adversely Affect Other Public Facilities or Require the Provision of New or Physically Altered Governmental Facilities.

Summary by Project Element: Impact PS4—The Project Would Not Adversely Affect Other Public Facilities and Would Not Require the Provision of New or Physically Altered Governmental Facilities.		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	No Impact	No Impact

The Project would not affect the demand for any other public services. There would be no impact. <u>No mitigation is required.</u>

3.12 Recreation

Environmental Setting

This section provides environmental analysis of the proposed Project's impacts on recreation. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from construction and implementation of the Project, and describes mitigation to minimize the level of impact.

Regulatory Context

Public recreation facilities in the Project vicinity are provided by the County and area cities, consistent with their land use planning policies, and the Baylands Master Plan. For more information, see Appendix B.

Study Area

The study area for this analysis is the Palo Alto Baylands Nature Preserve, within which the Project site is located. Figure 3.12-1 shows the location of the recreational facilities in the Project vicinity.

Existing Conditions

Regional

The Bay Trail

In 1989, the Association of Bay Area Governments (ABAG) adopted the Bay Trail Plan to develop a planned recreation corridor (the Bay Trail) that, when complete, will encircle San Francisco and San Pablo bays with a continuous 500-mile network of bicycling and hiking trails.

The Bay Trail will connect the shoreline of all nine Bay Area counties, link 47 cities, and cross the major toll bridges in the region. To date, approximately 310 miles of the alignment, more than 60 percent of the Bay Trail's ultimate length, have been completed (Association of Bay Area Governments 1999).

In the Project vicinity, the Bay Trail Runs along Geng Road from Embarcadero Road to San Francisquito Creek. From there, the Bay Trail runs along the left bank of the Project site to Friendship Bridge and continues north adjacent to East Palo Alto residences and the Palo Alto Baylands Nature Preserve. The portion of the Bay Trail that runs along the Creek is less than 1 mile long. There are three access points to the Bay Trail along the Project site: Geng Road, east of the Palo Alto Airport in Palo Alto, and the O'Connor Pump Station and Friendship Bridge in East Palo Alto.

City of Palo Alto

The City of Palo Alto has more than 4,500 acres of parkland, including 28 neighborhood parks and four preserves. Recreational facilities near the Project area are described in detail below.

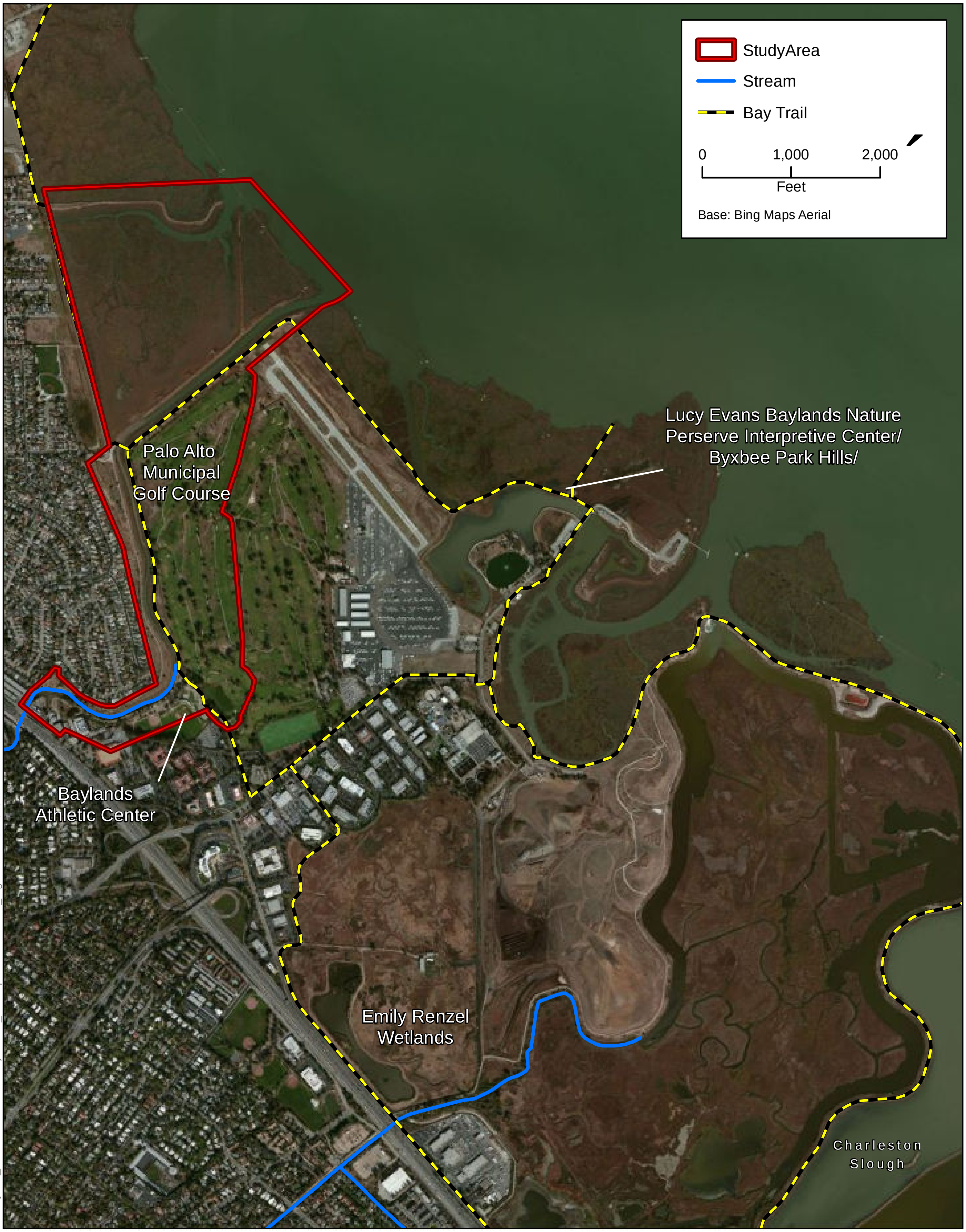


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Figure 3.12-1
Recreational Facilities in the Project Vicinity

Palo Alto Baylands Nature Preserve

The Project site is located within the Palo Alto Baylands Nature Preserve (the Baylands). Bounded by Mountain View and East Palo Alto, the 1,940-acre Baylands is the largest tract of undisturbed marshland remaining in the San Francisco Bay. The Baylands include 15 miles of multi-use trails that provide access to tidal and fresh water habitats. Facilities within the Baylands Preserve include the Lucy Evans Baylands Nature Preserve Interpretive Center, Byxbee Park Hills, wildlife observation platforms and benches, Emily Renzel Wetlands, Baylands Athletic Center, and picnic and barbeque facilities (City of Palo Alto, n.d.). The Baylands Athletic Center is located adjacent to the Project site. The Baylands Athletic Center is a 6-acre facility with lighted softball/baseball fields.

Palo Alto Municipal Golf Course

The Golf Course is located at 1875 Embarcadero Road in Palo Alto, California. The Golf Course borders the left bank of the lower reach of the San Francisquito Creek from the Palo Alto Airport to Friendship Bridge, and the left bank of the middle reach from Friendship Bridge to Geng Road. The par-72 Golf Course is a Professional Golfers' Association (PGA)-regulation[13] 18-hole course that measures more than 6,800 yards. In 2012, a round of golf cost Palo Alto residents $47 and $49 for non-residents.

City of East Palo Alto

According to the BAMP, East Palo Alto has a severe shortage of park and recreation land. Using the Quimby Act (California Government Code 66477 [a][4]) standard (3 acres per 1,000 residents), East Palo Alto should have a total of 88 acres of parkland. East Palo Alto currently owns and operates four parks, totaling approximately 16 acres. East Palo Alto has a parkland shortfall of approximately 72.5 acres, indicating a need for more parks, open space, and recreational opportunities (City of East Palo Alto Redevelopment Agency 2007).

Impact Analysis

Methods and Significance Criteria

Assessments of recreation impacts were based on professional judgment, in consideration of standard land use and recreation planning practices. Analysis included consideration of temporary impacts during construction as well as long-term impacts.

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Need for new parks or recreational facilities or for expansion of existing facilities.
- Increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of facilities would occur or be accelerated.
- Substantially reduced access to existing recreational facilities; substantial reduction in availability of existing recreational facilities or uses.

[13] A PGA-regulation golf course is defined as any nine-hole or 18-hole golf course that includes a variety of par three, par four and par five holes, and is of traditional length and par; a nine-hole facility must be at least 2,600 yards in length and at least par 33, and an 18-hole facility at least 5,200 yards in length and at least par 66.

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact REC1—Result in the Need for Development of New Parks or Recreational Facilities, the Need for the Expansion of Existing Facilities, or the Increased Use of Existing Parks or Other Recreational Facilities, thereby Resulting in Substantial Physical Deterioration

Summary by Project Element: Impact REC1—The Project Would Not Result in the Need for Development of New Parks or Recreational Facilities, the Need for the Expansion of Existing Facilities, or the Increased Use of Existing Parks or Other Recreational Facilities, thereby Resulting in Substantial Physical Deterioration		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Less than Significant

Construction

Pacific Gas and Electric Utility Relocations

As described in the Existing Conditions, there are three access points to the Bay Trail along the Project Site. During the PG&E gas and electric utility relocations, the Geng Road access point to the Bay Trail would be temporarily closed. Closure would occur only during construction hours and would last no more than 10 days. PG&E would work in coordination with SFCJPA to provide signage at least 1 week prior to the anticipated closure at each of the three Bay Trail access points. Access to the Bay Trail from the other two access points, O'Connor Pump Station and east of the Palo Alto Airport, would remain open for the duration of the utility relocations. PG&E utility relocation would not result in permanent or full closure of the Bay Trail. As a result, impacts on the Bay Trail resulting from utility relocations during construction would be considered less than significant. <u>No mitigation is required.</u>

Levee, Floodwall, and Marshplain Construction

During Project construction of the levees, floodwalls, and marshplains, the Project would temporarily close approximately 1 mile, or 0.3 percent, of the 310-mile-long Bay Trail along the left bank of the Project site, as well as the three access point to the Bay Trail located along the Project site. The majority of the regional Bay Trail would remain open for public use during Project construction, providing ample recreation opportunities for users. Furthermore, this impact would be temporary, occurring only during construction, and access to the Bay Trail in the Project vicinity would be available through other entry points during construction.

During Project construction of the levees, floodwalls, and marshplains, access to the Bay Trail would be temporarily restricted along the Project site. Pedestrians and bicyclists using the trail would be detoured around the Project site for a period of up to 5 months during construction. All detours necessary during construction would be marked by signage at least 4 weeks in advance of the detour being implemented and appropriate safety precautions (such as flaggers and safety staff directing the public to the detour) would be used when construction equipment is active.

Access to all other recreational facilities in the Project vicinity (e.g., the Lucy Evans Baylands Nature Preserve Interpretive Center, Byxbee Park Hills, wildlife observation platforms and benches, Emily Renzel Wetlands, Baylands Athletic Center, and picnic and barbeque facilities) would remain open throughout construction. Construction impacts related to access to recreational facilities would be temporary, and there would be sufficient recreational facilities available in the Project vicinity aside from the length of the Bay Trail that would be closed during construction.

Temporary disturbance due to construction activities in the vicinity of the Baylands Athletic Center could be significant in that noise and dust caused be construction and construction traffic would temporarily degrade conditions at the park as to render the park unusable. Potential impacts would be lessened with the implementation of environmental commitments for dust control and traffic and fully mitigated through the implementation of mitigation measures NV4.1 - NV4.4 and TT1, which manage noise and traffic flow in the Project vicinity. This impact would be considered less than significant. No mitigation is required.

Operation and Maintenance

As described in introduction to Chapter 3 under *Topics Not Covered in Detail in this EIR*, the Project would not introduce residential development into the Project area and therefore would not directly generate an increase in population that could affect local or regional parkland and recreational facilities.

The proposed Project would construct a boardwalk extending from the abutment on the left side of Friendship Bridge, across the marshplain, to the relocated levee on the left bank. The boardwalk would be the same width as that of Friendship Bridge and would function as an extension of Friendship Bridge. The elevation of the low mark on the boardwalk would be set above the highest anticipated flood elevation, with the lowest point of the bridge a minimum of 5 feet above the marshplain terrace beneath it. The boardwalk would be designed in accordance with the Bay Trail Design Guidelines and the Baylands Design Guidelines. Upon completion, the boardwalk would ensure continuity of the Bay Trail along the Project site and would provide connection from Palo Alto to East Palo Alto.

The Project would also rebuild to existing or better conditions the access road along the levee crown that serves as the Bay Trail for recreationists.

Following construction of the Project, recreational facilities would be restored and improved. Recreational users would be able to access the facilities in full. The Project would not result in impacts related to increased use or accelerated physical degradation of other area facilities. This impact would be considered less than significant. No mitigation is required.

Impact REC2—Result in Reduced Availability of Existing Recreational Facilities or Uses

Summary by Project Element: Impact REC2—Reduced Availability of Existing Recreational Facilities or Uses		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	Significant and Unavoidable

The Project would relocate the levee on the left bank of San Francisquito Creek inland from its existing location, thereby widening the Creek and cutting through a portion of the Golf Course. To accommodate the new levee footprint and maintain playability of the course, holes 12 through 15 (which are adjacent to the Creek) and certain holes among the remaining fourteen holes would need to be reconfigured on a timetable to be determined by the City of Palo Alto. The total area of the Golf Course to be permanently incorporated into the Project is 7.4 acres.

Construction

Construction activities would permanently impact Holes 12 through 15. In order to widen the Creek and protect against future flood flows, the Project would permanently relocate the levee on the left bank of the Creek inland from its existing location. During construction, the City of Palo Alto may continue to operate the remaining 14 holes of the Golf Course or switch to a 9-hole format during construction. Golf Course patrons could use nearby municipal and public golf courses that are open to the public. There are 16 public or municipal golf courses within a 20-mile driving distance from the Golf Course that would be available for golfers during construction (Table 3.12-1). Of the 16 nearby golf courses, seven are PGA-regulation 18-hole courses, ranging in fees from approximately $30 to $65 per round; these fees are similar to those of the Golf Course.

Table 3.12-1. Golf Courses in the Project Vicinity

Golf Course	Driving Miles from Palo Alto Golf Course	Number of Holes	Par	Cost for Non-Residents ($)
Shoreline Golf Course*	4.5	18	72	54
Sunnyvale Golf Couse*	8.7	18	70	48
Emerald Hills Golf Course	11.7	9	27	16
Santa Clara Golf & Tennis Club*	11.3	18	72	30–64
Sunken Gardens Golf Course	11.1	9	58	19
Blackberry Farm	14.2	9	29	19
Deep Cliff Golf Course	13.1	18	60	38
Fremont Park Golf	18.3	9	32	20
Pruneridge Golf	15.4	9	31	22
Mariners Point Golf	16.4	9	27	16
Mission Hills of Hayward Golf Course	17.9	9	30	20
Summitpointe Golf Club*	17.7	18	72	42–65
San Jose Municipal Golf Course*	16.8	18	72	24–51
Poplar Creek Golf Course*	16.1	18	70	53
Rancho Del Pueblo Golf Course	18.4	9	28	15
Spring Valley Golf Course*	18.1	18	70	55

Notes: * indicates a PGA-regulation course

Source: City of Mountain View 2012; City of Sunnyvale 2010; Emerald Hills Lodge and Golf Course, Santa Clara Golf and Tennis Club 2011; Cupertino 2012; Deep Cliff Golf Course 2012; Fremont Park Golf Center; Golf Santa Clara; Mariners Point Golf; Hayward Area Recreation and Park District; Summitpointe Golf Club 2011; San Jose Muni; Poplar Creek Golf Course; Rancho del Pueblo Golf Course; Spring Valley Golf Course.

During the final phase of Project construction after the levee structure is complete, the Project would return the Golf Course–facing levee to a condition as good as or better than its present condition. Vegetation that is cleared for construction would be replanted to the extent possible using native vegetation that is visually consistent with the site and has been approved by the City of Palo Alto. All equipment, dirt, and debris from construction would be removed from the site. The staging area would be cleared and returned to preconstruction-period conditions.

If the City of Palo Alto chooses to keep the course open during Project construction, SFCJPA will work with the City to ensure safe access to the remaining areas of the Golf Course. This impact is considered less than significant and no mitigation is required.

Operation

Approximately 7.4 acres of the Golf Course would remain dedicated parkland, but would be permanently converted from Golf Course use to open space as part of the Project. However, it is feasible to reconfigure the Golf Course design in order to maintain or improve the Golf Course's PGA rating and its playability. Mitigation Measure REC-1 would require SFCJPA to provide monetary compensation to the City of Palo Alto to offset the costs of reconfiguring the Golf Course to maintain its PGA regulation status. At this time, it is unknown how the City of Palo Alto would reconfigure the Golf Course. SFCJPA has retained a certified golf course architect to determine the necessary adjustments and the reconfiguration costs in order to reduce impacts on the Golf Course related to Project construction.

Implementation of Mitigation Measure REC-1 would reduce permanent impacts on the Golf Course to a less-than-significant level. However, because the implementation of this mitigation measure is outside the lead agency's jurisdiction, a significant and unavoidable impact on the Golf Course is assumed. The lead agency is committed to fulfilling the conditions described in Mitigation Measure REC-1.

Mitigation Measure REC-1—Compensate the City of Palo Alto for the Conversion of 7.4 Acres of the Palo Alto Municipal Golf Course to Accommodate Project Features

In order to replace permanently affected holes at the Golf Course, compensate the City of Palo Alto an amount equivalent to the cost of replacing golf holes 12 through 15 within the Project footprint, and the relocation of other holes accommodate the new holes 12 through 15, so that the Golf Course can remain a PGA-regulation 18-hole course.

To ensure this mitigation measure will be implemented, SFCJPA and City of Palo Alto will enter into a Memorandum of Understanding no later than 30 days prior to the initiation of construction that will require SFCJPA to fund improvements at the Golf Course. SFCJPA and the City of Palo Alto will mutually agree on the amount and timing of the deposit, which will be determined by the results of site evaluation and preliminary design conducted by a certified golf course architect. Money will be used exclusively for mitigation of impacts on the Golf Course that are related to the Project.

3.13 Traffic and Transportation

Environmental Setting

Regulatory Context

Traffic and transportation planning in the Project area is guided by California Government Code §65300, which requires each local government to include a circulation element as part of its general plan. The primary area potentially affected by Project traffic (referred to in this EIR as the *transportation study area* or *study area*) includes roadways under the jurisdiction of the Cities of Palo Alto and East Palo Alto, and Caltrans.

The quality of service provided by a roadway or intersection is typically measured in terms of three parameters.

- **Volume-to-capacity ratio (V/C):** The number of vehicles that travel on a transportation facility divided by the vehicular capacity of that facility (the number of vehicles the facility was designed to convey).
- **Delay:** The additional travel time experienced by a vehicle or traveler because of inability to travel at optimal speed and/or stops due to congestion or traffic control.
- **Level of service (LOS):** A scale used to determine the operating quality of a roadway segment or intersection based on V/C or average delay experienced by vehicles on the facility. The levels range from A to F, with LOS A representing free traffic flow and LOS F representing severe traffic congestion.

The adopted roadway LOS standards for the Project area are as follows.

- **Congestion Management Program (CMP) Roadway System:** VTA is responsible for maintaining the performance and standards of the CMP roadway system in the Santa Clara County. City/County Association of Governments of San Mateo County (C/CAG) is responsible for maintaining the performance and standards of the CMP roadway system in the San Mateo County. VTA and C/CAG strive to maintain LOS E operations on all CMP-monitored facilities, unless the segment was operating at LOS F in 1991 (the date when the CMP was adopted), in which case the LOS standard is LOS F. (Santa Clara Valley Transportation Authority 2009 and C/CAG 2011)
- **City of East Palo Alto:** LOS is calculated from average daily traffic (ADT) volumes. The performance criterion for evaluating roadway volumes to capacities is LOS D (City of East Palo Alto 1999).
- **City of Palo Alto:** The City follows the CMP standards adopted by Santa Clara County (Santa Clara County Transportation Authority 2003). The City's LOS standard is LOS D for intersections during peak travel periods.

Freeway ramp operations are analyzed based on a V/C ratio evaluation. The ramp capacities were obtained from the Highway Capacity Manual (Transportation Research Board 2000) and consider the free-flow speed and the number of lanes on the ramp.

For intersection operations, Table 3.13-1 shows the average intersection delay and typical driving conditions for each LOS as defined by the HCM methodology.

Table 3.13-1. Intersection Average Delay and Traffic Flow Conditions for LOS Designations

	Average Delay (seconds per vehicle)		
LOS	**Stop-Controlled Intersection**	**Signalized Intersection**	**Traffic Flow Conditions**
A	≤10.0	0–10.0	Free-flow operations; vehicles unimpeded in ability to maneuver in traffic stream
B	10.1–15.0	10.1–20.0	Reasonable free-flow conditions; only slightly restricted ability to maneuver
C	15.1–25.0	20.1–35.0	Flows still near free-flow speed but noticeably restricted ability to maneuver
D	25.1–35.0	35.1–55.0	Speeds begin to decline; maneuverability limited and queues begin to form
E	35.1–50.0	55.1–80.0	Operation at capacity of roadway; maneuverability extremely limited and queues form with any disruption
F	>50	>80	Failure conditions indicating breakdowns in vehicular flow with long queues forming at breakdown points

Source: Transportation Research Board 2000

Study Area

The study area for transportation includes the Project site (as illustrated on Figure 2-1) as well as the following construction haul routes, also identified on Figure 2-3:

- U.S. 101 entrance and exit ramps to and from Embarcadero Road.
- Embarcadero Road between U.S. 101 and Geng Road.
- Geng Road.
- East Bayshore Road between Embarcadero Road and Pulgas Avenue.
- Pulgas Avenue between East Bayshore Road and O'Connor Street.
- O'Connor Street east of Pulgas Avenue.
- Camelia Drive, Jasmine Way, Daphne Way and Verbena Road.

Existing Conditions

Roadway System

Regional access to the Project site is provided via U.S. 101. Local circulation within the transportation study area is provided by a variety of roadways. These facilities are described below.

- **U.S. 101:** U.S. 101 (Bayshore Freeway) is a north/south freeway that extends from San Francisco through San Mateo and Santa Clara counties. In the study area, U.S. 101 is eight lanes wide, including two HOV lanes (one in each direction). A full-access interchange at Embarcadero

Road provides access from U.S. 101 to the Project site. U.S. 101 is part of the CMP roadway system in the study area (Santa Clara Valley Transit Authority 2009).

- **Embarcadero Road:** Embarcadero Road is an east/west four-lane divided arterial. Within the study area, Embarcadero Road primarily serves industrial and recreational uses. It provides access to Palo Alto Airport, the Golf Course, Baylands Athletic Center, and the Baylands Nature Interpretive Center. This section of Embarcadero Road had an ADT volume of 10,300 vehicles in 1999 (City of East Palo Alto 1999).
- **East Bayshore Road:** East Bayshore Road is a two-lane frontage road located immediately north of U.S. 101. Within the study area, East Bayshore Road primarily serves residential and industrial uses. It also provides access to the International School of the Peninsula. This section of East Bayshore Road had an ADT volume of 12,200 vehicles in 1999 (City of East Palo Alto 1999).
- **Pulgas Avenue:** Pulgas Avenue is a north/south two-lane undivided collector street that begins at East Bayshore Road. It primarily serves residential uses.
- **Residential Streets:** O'Connor Street, Camelia Drive, Jasmine Way, Daphne Way, and Verbena Road are two-lane residential streets serving residential areas east of Pulgas Avenue.

Existing Level of Service

Freeway Sections

The CMP Monitoring Report for Santa Clara County (Santa Clara Valley Transit Authority 2009) provides information on exiting level of service on the sections of U.S. 101 immediately south of the study area. Table 3.13-2 summarizes the information provided in these reports.

Table 3.13-2. Existing U.S. 101 Level of Service

From	To	Peak Hour	Mixed LOS[a]	HOV LOS[b]
Embarcadero Road	Oregon Expressway	AM	E	D
Oregon Expressway	San Antonio Road	AM	D	D
San Antonio Road	Oregon Expressway	AM	E	D
Oregon Expressway	Embarcadero Road	AM	D	D
Embarcadero Road	Oregon Expressway	PM	F	E
Oregon Expressway	San Antonio Road	PM	F	E
San Antonio Road	Oregon Expressway	PM	F	D
Oregon Expressway	Embarcadero Road	PM	D	D

[a] Level of service on mixed lanes.
[b] Level of service on HOV lane.
Source: Santa Clara Valley Transportation Authority 2009.

According to the CMP Monitoring Report from San Mateo County (C/CAG 2011), the section of U.S. 101 between the Santa Clara County line and Whipple Avenue operates at LOS F during one or both of the AM and PM peak hours.

The U.S. 101 section operates at LOS F in the study area during the peak hours, which exceed the CMP LOS standard of LOS E. However, it has a CMP LOS standard of LOS F because this U.S. 101 section was operating at LOS F in 1991.

Freeway Ramps

Existing ramp counts (Average Daily Traffic) were obtained from Caltrans (Caltrans 2010a). Peak hour ramp volumes were assumed to represent 10 percent of daily volumes. The existing LOS during weekday peak hours of traffic is summarized in Table 3.13-3. All ramps within the study area currently operate at LOS A.

Table 3.13-3. Existing Freeway Ramp Capacity Analysis

Ramp	Type	Capacity[a]	Volume[b]	V/C	LOS
U.S. 101/Embarcadero Road—Southbound Off-Ramp	Loop	1,800	190	0.11	A
U.S. 101/Embarcadero Road—Southbound On-Ramp	Loop	1,800	435	0.24	A
U.S. 101/Embarcadero Road—Northbound Off-Ramp	Diagonal	2,000	580	0.29	A
U.S. 101/Embarcadero Road—Northbound On-Ramp	Diagonal	2,000	195	0.10	A

[a] Peak hour ramp capacities (vehicles per hour) based on Highway Capacity Manual (Transportation Research Board 2000).

[b] Peak hour ramp volumes (vehicles per hour) based on 2010 counts from Caltrans (Caltrans 2010a)

Signalized Intersections

Two intersections located within the study area are signalized: Embarcadero Road/East Bayshore Road; and East Bayshore Road/Pulgas Avenue. These intersections have been studied as part of a recent study (City of East Palo Alto 2012a) based on turning movement collected on October 22, 2009. The results of the intersection level of service analysis are summarized in Table 3.13-4. Both intersections currently operate at an acceptable LOS.

Table 3.13-4. Existing Intersection Level of Service

Intersection	Peak Hour	Average Delay[a]	LOS[b]
East Bayshore Road and Embarcadero Road	AM	35.7	D
	PM	36.8	D
East Bayshore Road and Pulgas Avenue	AM	19.0	B
	PM	16.1	B

[a] Average control delay (seconds per vehicle) including all movements

[b] Level of service (based on average delay)

Source: City of East Palo Alto 2012a

Transit

Transit service in the study area is provided by the San Mateo County Transit District (SamTrans) and the City of Palo Alto. Bus services are described below.

- **SamTrans Line 280:** The 280 line provides service between the Stanford Shopping Center in Palo Alto and Purdue/Fordham in East Palo Alto (San Mateo County Transit District 2012). Within the study area, the line operates on East Bayshore Road, Pulgas Avenue, Camellia Drive, Wisteria Drive, and O'Connor Street. The line operates on weekdays (45-minute headways during commute hours, and 1-hour headways outside of commute hours), and on weekends (1-hour headways between 8am and 6pm).
- **East Palo Alto Community Shuttle (Weekdays/Weekends):** The East Palo Alto Community Shuttle provides free transit service throughout East Palo Alto on approximately 1-hour headways during weekday commute hours. The schedule is coordinated with the Caltrain schedule. Within the study area, the Community Shuttle operates on East Bayshore Road and Pulgas Avenue.
- **East Palo Alto Senior Shuttle Service (Monday & Thursday Service):** The East Palo Alto Senior Shuttle service operating on Mondays and Thursday uses Embarcadero Road and East Bayshore Road (East Palo Alto 2012b).
- **City of Palo Alto Embarcadero Shuttle Service:** The City of Palo Alto's Embarcadero Shuttle is free and open to everyone. It runs approximately every 15 minutes, Monday through Friday from the Palo Alto Caltrain station to the Embarcadero/Baylands during commute hours and is coordinated with the Caltrain schedule (City of East Palo Alto 2012a). It serves employers in the Embarcadero/Baylands area, residents in the Embarcadero Road corridor, and students at Palo Alto High School. Within the study area, the Embarcadero Shuttle operates on Embarcadero Road with stops immediately east of Geng Road.

Bicycle and Pedestrian Facilities

Bicycle facilities in the study area are divided into three classes, as follows.

- *Bike Paths (Class I)* are paved facilities designated for bicycle use that are physically separated from roadways by spaces or physical barrier.
- *Bike Lanes (Class II)* are lanes on the outside edge of roadways reserved for the exclusive use of bicycles.
- *Bike Routes (Class III)* are roadways recommended for bicycle use and often connected to bike lanes and bike paths.

Existing bicycle facilities in the study area are presented in Table 3.13-5.

Table 3.13-5. Bicycle Facilities in Study Area

Location	Bicycle Facility Classification
Left bank between International School and Baylands Athletic Center	Gravel Bike Path
Left bank north of the Baylands Athletic Center to Friendship bridge	Paved Bike Path
Friendship Bridge	Paved Bike Path
Left bank east of Friendship Bridge	Gravel Bike Path

Location	Bicycle Facility Classification
Right bank between Verbena Drive and Friendship Bridge	Gravel Bike Path
Geng Road between Embarcadero Road and the Baylands Athletic Center	Paved Bike Path
Embarcadero Road north of U.S. 101 ramps	Paved Bike Lane
Source: Stanford University 2009.	

Pedestrian facilities in the study area consist of the trails listed in Table 3.13-5 as well as sidewalks and crosswalks along the streets in the residential neighborhoods and commercial areas. Sidewalks and crosswalks are found on at least one side of all roadways within the study area.

Impact Analysis

Methods and Significance Criteria

The Project proposes to construct separate Project elements that would intermittently generate substantial volumes of traffic for materials deliveries and construction employee access. Once the Project is constructed, maintenance and operations needs would be limited; traffic generation would be well within the capacity of the local roadway system and would not differ materially from current maintenance traffic levels. Therefore, analysis of traffic impacts focused on the Project construction phase.

Analysis used estimated construction traffic generation (expressed as maximum trips per day) to develop a qualitative evaluation of short-term impacts on the local and regional roadways in the Project vicinity.

For the purposes of this analysis, an impact was considered to be significant and require mitigation if it would result in any of the following.

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- Conflict with an applicable CMP, including, but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
- A substantial increase in hazards or risk of accident for vehicular or nonmotorized traffic, due to a design feature (e.g., sharp curves or dangerous intersections) or the introduction of incompatible uses (e.g., slow-moving vehicles).
- Inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or that otherwise decrease the performance or safety of such facilities.

Construction Traffic Generation

The Project would be constructed in three phases. The Utility Relocation phase would take place for 4 months in late 2012; the Phase One Project ~~components~~elements would be constructed in 2013 over approximately 10 months; and the Phase Two Project ~~components~~elements would be constructed for 7 months in 2014. Construction activities would take place from 8:00 AM to 6:00 PM on weekdays, and from 9:00 AM to 5:00 PM on Saturdays.

Utility Relocation

The PG&E transmission towers and wood poles on the right and left banks would be relocated to accommodate the Project. No excavation and soil hauling is expected for this phase. Only a few daily delivery trucks and worker commute vehicles are expected for the phase. Site access to the construction sites would be provided via O'Connor Street, Jasmine Way, and Geng Road.

Phase One

Approximately 190,800 cubic yards of fill would need to be imported to the Project site during Phase One levee modification and channel widening activities described in Chapter 2, *Project Description*. Approximately 20 percent (21,800 cubic yards) of the excavated soil would be hauled off the site. Assuming the use of standard 20-cy trucks, the infill and off haul activities during Phase One would generate a total of 10,630 truck round-trips in a year. Assuming that the excavation and fill activities would occur within 10 months (22 working days per month), it would generate an average of 48 truck round-trips per day or 96 one-way truck trips per day. It is anticipated that the haul trucks would be in and out of the excavation and fill sites within normal work hours (8 hours), resulting in an average of 12 one-way truck trips per hour assuming a uniform distribution throughout the day.

All access to the right bank would be from the O'Connor Street, Jasmine Way, and Verbena Drive access points. The left bank would be accessed from Geng Road. Haul truck routes are illustrated on Figure 2-3. Chapter 2 (Project Description) includes detailed description for haul routes associated with staging areas and site access points.

In addition to haul truck trips, it is anticipated that a maximum of 24 construction workers per day would be on site during Phase One construction activities, generating a total of 48 daily one-way trips (assuming no carpooling). It is anticipated that 75 percent of the workers would come and leave the Project site during the AM and PM peak hours, resulting in an average of 18 one-way trips per hour during the AM and PM peak hours. Construction workers would access the Project site by the haul routes and access points previously described. The three construction staging areas located at the ends of O'Connor Street, Jasmine Way, and Geng Road would include parking for construction workers.

Phase Two

Phase Two would include floodwall installation and construction of upstream access roads behind the floodwalls on right and left banks. Floodwalls would be installed with sheet piles. It is anticipated that an average of one truck per day to bring in required sheet piles. Minimal excavation and soil hauling is expected for this phase. Therefore, only few daily delivery trucks are expected to deliver required materials for floodwall installation and construction of upstream access roads.

All access to the right bank would be from the Jasmine Way and Verbena Drive access points. The left bank would be accessed from Geng Road and the Palo Alto Pump Station (off East Bayshore Road). Haul truck routes are illustrated on Figure 2-3. Chapter 2 (Project Description) includes detailed description for haul routes associated with staging areas and site access points.

In addition to haul truck trips, it is anticipated that a maximum of 24 construction workers per day would be on site during Phase Two construction activities, generating a total of 48 daily one-way trips (assuming no carpooling). Construction workers would access the Project site by the haul routes and access points previously described. The three construction staging areas located at the ends of Jasmine Way, Verbena Drive, and Geng Road would include parking for construction workers.

Impacts and Mitigation Measures

Impact TT1—Potential to Conflict with an Applicable Plan, Ordinance or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System

Summary by Project Element: Impact TT1—Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system		
Project Component	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	No Impact

Implementation of the Project would require hauling of construction equipment/materials and transporting construction workers to and from the Project area along major highways and over local surface streets. Many of the construction-generated trips would involve slow-moving trucks, which would further affect highway traffic. Construction-generated traffic would temporarily increase the daily and peak hour traffic along specified routes including residential streets; however, traffic levels on haul route roads would return to normal levels once construction is completed.

With the addition of the construction-generated traffic, the maximum increase in traffic along any of the segments would mostly occur in Phase One, resulting in an maximum increase of 144 trips per day (96 trucks trips and 48 worker trips) and approximately 30 trips in the peak hours (12 truck trips and 18 worker trips).

Traffic condition on Project access roads within the study area are operating within the associated LOS standards during the peak hour. It is anticipated that the increase of 30 trips per hour would not cause the operation of these roadway segments to exceed the LOS standards. Therefore, the impact would be less than significant. No mitigation is required.

Impact TT2—Potential to Conflict with an Applicable Congestion Management Program

Summary by Project Element: Impact TT2—Conflict with an applicable congestion management program		
Project Component	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	No Impact

Segments of U.S. 101 in the study area operate at LOS F during the peak hours, which exceed CMP LOS standard of LOS E. However, most of these segments have a CMP LOS standard of LOS F because they were operating at LOS F in 1991. Based on the traffic LOS threshold defined by the CMP, for segments that operate at LOS F, the added vehicle trips by the Project should not be more than 1 percent of the freeway capacity (Santa Clara Valley Transportation Authority 2009).

As discussed in Impact TT1 above, the maximum daily trips generated by the Project construction would be approximately 144 trips, which is less than the 1 percent of daily traffic volume on U.S. 101 (189,000 vehicles per day at Santa Clara-San Mateo County Line) in the study area (California Department of Transportation 2010b). Therefore, the Project is not expected to significantly degrade the operation of regional highways or to conflict with any applicable CMP. No mitigation is required.

Impact TT3—Potential to Create Traffic Safety Hazards

Summary by Project Element: Impact TT3—Traffic Safety Hazards		
Project Component	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	No Impact

For all Project ~~components~~elements, the presence of large, slow-moving construction-related vehicles and equipment among the general-purpose traffic on roadways in the study area could result in safety hazards. Safety concerns arise due to the use of residential streets to access all construction areas. On the left bank, heavy construction traffic would travel on East Bayshore Road and Geng Road in close proximity to sites regularly accessed by parents and children including the International School of the Peninsula and the Baylands Athletic Center. On the right bank, heavy construction traffic would travel on East Bayshore Road and Pulgas Avenue that are regularly accessed by parents and children of schools on Pulgas Avenue including Brentwood Academy, James Flood Magnet School, and Edison McNair Academy. To address the potential for safety hazards related to construction traffic, SFCJPA would implement Mitigation Measure TT1 (Traffic Control Plan) below. The traffic control plan specified in Mitigation Measure TT1 would be developed with input from school, park, and community stakeholders, ensuring that all safety needs are identified and addressed. With the implementation of this measure, impacts related to traffic safety are expected to be less than significant.

Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan

SFCJPA will develop a site-specific traffic control plan to minimize the effects of construction traffic on surrounding areas and roadways. The plan will be prepared with oversight by a licensed traffic engineer, and with input from school, park and community stakeholders to ensure that all concerns are appropriately addressed. The plan will be subject to review and approval by the Cities of Palo Alto and East Palo Alto. The SFCJPA would also coordinate, as necessary, with Caltrans, for traffic controls and measures affecting Caltrans facilities. The SFCJPA will be responsible for ensuring that the plan is effectively implemented.

The traffic control plan will include, at a minimum, information regarding working hours, allowable and restricted streets, allowable times for lane closures, emergency vehicle access, detours, and access to private and public properties. All construction traffic control plans will contain the following general requirements:

- Restrict work site access to the roadways indicated on the traffic control plan.
- Prohibit access via residential streets unless expressly approved by the City with jurisdiction.
- Maintain two-way traffic flow on arterial roadways accessing active work to accommodate construction of Project facilities, or unless otherwise allowed by the City with jurisdiction.
- Provide 72-hour advance notification if access to driveways or private roads will be affected. Limit effects on driveway and private roadway access to working hours and ensure that access to driveways and private roads is uninterrupted during non-work hours. If necessary, use steel plates, temporary backfill, or another accepted measure to provide access.
- Provide clearly marked pedestrian detours to address any sidewalk or pedestrian walkway closures.
- Provide clearly marked bicycle detours to address bicycle route closure or if bicyclist safety would be otherwise compromised.
- Provide crossing guards and/or flagpersons as needed to avoid traffic conflicts and ensure pedestrian and bicyclist safety.
- Use nonskid traffic plates over open trenches to minimize hazards.
- Locate all stationary equipment as far away as possible from areas used by vehicles, bicyclists, and pedestrians.
- Notify and consult with emergency service providers, and provide emergency access by whatever means necessary to expedite and facilitate the passage of emergency vehicles. Ensure clear emergency access to all existing buildings and facilities at all times.
- Trucks will be queued only in areas and at times allowed by the City with jurisdiction.
- Provide adequate parking for construction vehicles, equipment, and workers within the designated staging areas throughout the construction period. If inadequate space for parking is available at a given work site, provide an off-site staging area at another suitable location, and coordinate the daily transport of construction vehicles, equipment, and personnel to and from the work site as needed.
- Fences, barriers, lights, flagging, guards, and signs will be installed as determined appropriate by the public agency having jurisdiction to give adequate warning to the public of the construction and of any dangerous condition to be encountered as a result thereof.

Impact TT4—Potential to Obstruct Emergency Access

Summary by Project Element: Impact TT4—Emergency Access		
Project Component	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	No Impact

At all Project work areas, construction would have the potential to affect emergency vehicle access. Construction-related traffic could also delay or obstruct the movement of emergency vehicles on local area roadways. However, the site-specific traffic control plan required under Mitigation Measure TT1 would include provisions to ensure unrestricted access and passage for emergency vehicles. With the implementation of Mitigation Measure TT1, impacts on emergency access are expected to be less than significant.

Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan

This measure is described in detail above.

Impact TT5—Potential to Conflict with Alternative Transportation

Summary by Project Element: Impact TT5—Alternative Transportation		
Project Component	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant with Mitigation	No Impact

Construction of the proposed Project would require closure of existing pedestrian and bicycle trails located on both sides of the Project portion of the Creek and Friendship Bridge. In addition, the support transit and/or bikeways on the designated truck routes of the Project could be interrupted by slow moving trucks. The impact on the alternative transportation would be temporary but significant. Mitigation Measure TT1 provides specifics for maintaining safe, efficient passage for transit, bicyclists and pedestrians. With Mitigation Measure TT1 in place, impacts related to conflicts with alternative transportation as a result of construction activities are expected to be less than significant.

Mitigation Measure TT1—Require a Site-Specific Traffic Control Plan

This measure is described in detail above.

After construction is completed, the trails would be replaced by access and maintenance roads along the proposed levee and floodwalls on both sides of the Creek. These new access roads would be generally 16 feet wide and would be used as a public trail. Therefore, no long-term impacts are expected on pedestrian and bicycle circulation.

3.14 Utilities and Service Systems

This section provides environmental analysis of the proposed Project's impacts on utilities and service systems. The section summarizes the regulatory environment and discusses the environmental setting, provides the criteria used for determining impacts, discusses the impact mechanism and level of impact resulting from construction and implementation of the proposed Project, and describes mitigation to minimize the level of impact.

Environmental Setting

Regulatory Setting

The City of Palo Alto 1998 Comprehensive Plan and the City of East Palo Alto 1999 General Plan contain policies related to utilities and service systems. For additional information on these policies, see Appendix B of this EIR.

Study Area

The study area for this utilities and service systems analysis is the Project site and the jurisdiction of each of the Project's service providers.

Existing Conditions

Water

Palo Alto. The City of Palo Alto is a member of the Bay Area Water Supply and Conservation Agency (BAWSCA). Through BAWSCA, the City obtains its entire supply of potable water from the San Francisco Public Utilities Commission's (SFPUC) supply. Approximately 6 percent of the City's water supply is recycled water and used for non-potable purposes such as irrigation (City of Palo Alto 2011).

East Palo Alto. The City of East Palo Alto obtains all of its water from the SFPUC supply. The City's managed water system draws all of its domestic water supply through three turnouts off the SFPUC Bay Division Pipeline 1 and 2. The City of East Palo Alto also owns and operates one groundwater well named the Gloria Bay Well. The groundwater well is used for non-potable purposes (e.g., street cleaning and construction) (City of East Palo Alto 2011).

Wastewater

Palo Alto. The City of Palo Alto's wastewater is treated at the Palo Alto Regional Water Quality Control Plant (RWQCP) located at 2501 Embarcadero Way in Palo Alto (City of Palo Alto n.d.). The RWQCP is owned by the City of Palo Alto and operated by the City of Palo Alto for the communities of Los Altos, Los Altos Hills, Mountain View, Palo Alto, Stanford University, and the East Palo Alto Sanitary District (EPASD). Wastewater from these communities is treated by the RWQCP prior to discharge to the Bay.

East Palo Alto. The City's wastewater is treated at the Palo Alto RWQCP (City of Palo Alto n.d.d). East Palo Alto's sanitary collection systems are operated and maintained by the East Palo Alto

Sanitary District (East Palo Alto Sanitary District n.d.). The EPASD serves the East Palo Alto, a portion of Menlo Park, and an associated area in southeastern San Mateo County. The EPASD has a pipeline that delivers wastewater from East Palo Alto under San Francisquito Creek in the Project area to the Palo Alto RWQCP.

Stormwater

Palo Alto. The Palo Alto Department of Public Works Storm Drain Management Program is responsible for the approval, construction, and maintenance of the storm drain system in Palo Alto. There are four primary watersheds within the City of Palo Alto: San Francisquito, Matadero, Barron, and Adobe. Within these watersheds, stormwater flows directly to creeks and the San Francisco Bay without treatment. The Storm Drain Management Program maintains 107 miles of underground pipelines, 2,750 catch basins, 800 manholes, and 6 pump stations (City of Palo Alto n.d.e).

East Palo Alto. Stormwater in East Palo Alto drains into two major drainage systems: the Runnymede Storm Drain System and the O'Connor Storm Drain System. The O'Connor Pump Station receives stormwater from throughout the city and an at-grade canal which runs along the eastern city limit. The O'Connor Pump Station distributes stormwater through outfalls into San Francisquito Creek (City of East Palo Alto 2012).

Gas and Electricity

Palo Alto. Natural gas is purchased on the wholesale market through contracts with several suppliers and delivered to Palo Alto through PG&E's electric and gas transmission pipeline networks. Palo Alto operates its own electric power and gas distribution networks. Electric and gas services in the City of Palo Alto are provided by the Palo Alto Electric Utility and Palo Alto Gas Utility, respectively (City of Palo Alto n.d.f.).

East Palo Alto. Gas and electric services in the City of East Palo Alto are provided by PG&E.

Solid Waste

Palo Alto. GreenWaste Recovery, Inc. is the solid waste collector for the City of Palo Alto. The majority of its solid waste is transported to the Sunnyvale Materials Recovery and Transfer Station (SMaRT). Recyclable materials and yard trimmings are recovered, processed and sold. Remaining materials are transferred to Kirby Canyon Landfill in San Jose. The Kirby Canyon Landfill has a maximum permitted capacity of over 75 million cubic yards and has approximately 85 percent remaining capacity (CalRecycle n.d.).

East Palo Alto. East Palo Alto is a member of the South Bay Waste Management Authority (SBWMA), a joint powers authority with twelve member agencies (the cities of Belmont, Burlingame, East Palo Alto, Foster City, Menlo Park, Redwood City, San Carlos, and San Mateo, the towns of Atherton and Hillsborough, the County of San Mateo and the West Bay Sanitary District) in San Mateo. The Shoreway Environmental Center in San Carlos serves as a regional solid waste and recycling facility for the receipt, handling and transfer of refuse, recyclables and organic materials. Materials are consolidated and loaded into large transfer trailers for shipment off the site to the Ox Mountain Landfill and to recycling facilities for construction and demolition waste, and organic materials (South Bay Waste Management Authority 2012).

Impact Analysis

Methods and Significance Criteria

Impacts on utilities and services systems were analyzed based on the service providers' websites and the 2010 Urban Water Management Plan for the City of Palo Alto and for the City of East Palo Alto.

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following.

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- 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.
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed.
- Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's expected demand in addition to the provider's existing commitments.
- Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs.
- Comply with federal, state, and local statutes and regulations related to solid waste?

Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

Impacts and Mitigation Measures

Impact UT1—Adversely Affect Water Supply, Water Treatment Facilities, Wastewater Treatment Facilities, Storm Drainage Facilities, or Gas or Electric Service

Summary by Project Element: Impact UT1—The Proposed Project would not have an adverse effect on water supply, water treatment facilities, wastewater treatment facilities, storm drainage facilities, or gas or electric service.		
Project Element	**Construction Impact Level**	**Operation and Maintenance Impact Level**
All Project elements	Less than Significant	No Impact

Construction

Construction would require the occasional use of water for mixing concrete, washing equipment and vehicles, dust control, and other activities. The amount of water used during construction on a daily basis would be minimal. Construction water would not be treated by wastewater treatment facilities. Therefore, construction impacts would be less than significant.

The Project would include relocation of two sanitary sewer line manholes, storm drains, and outfalls; and relocation and removal of several PG&E electric poles and electric towers. Service providers would relocate the wastewater, stormwater, and electric facilities without interrupting service. The Project would also include installation of a new 24-inch gas transmission line. The new transmission line would be put in place and operational before the existing gas transmission line is decommissioned. Therefore, there would be no service disruptions. Impacts on water supply, water treatment facilities, wastewater treatment facilities, storm drain facilities and gas or electric facilities would be less than significant. No mitigation is required.

Operation

The Project is designed to increase channel capacity for creek flows in San Francisquito Creek and would not lead to a land use that would require additional water supply or wastewater treatment for its operation. Therefore, it would not require new or expanded water entitlements, result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, or exceed wastewater treatment requirements or wastewater treatment capacity of the RWQCP.

The Project would ensure that San Francisquito Creek can safely convey stormwater delivered to it by the existing storm drain system and, to that end, the Project is being designed to integrate with existing infrastructure. Therefore, there would be no impact on water supply or water and wastewater treatment facilities.

Impact UT2—Adversely Affect Landfill Capacities

Summary by Project Element: Impact UT2—The Proposed Project would not adversely affect landfill capacities. It would comply with Federal, State, and local statutes and regulations related to solid waste.

Project Element	Construction Impact Level	Operation and Maintenance Impact Level
All Project elements	Less than Significant	No Impact

Because the Project would increase channel capacity and would not generate solid waste during its operation, the following discussion is limited to construction effects.

As described in Chapter 2, *Project Description*, approximately 108,500 cubic yards of fill would be excavated from the Project site. At least 20 percent of this fill would be hauled off the site. It is anticipated that the remainder of the removed fill would be placed within the adjacent Golf Course for use in reconfiguration of the Golf Course (a separate project). Any removed fill that cannot be utilized in the Golf Course reconfiguration Project would be hauled off the site.

All non-recyclable, non-hazardous waste (if any) from the Project site would be transferred from the SMaRT Station to the Kirby Canyon Landfill for disposal. The Kirby Canyon Landfill is operated by Waste Management, Inc., with a lease expiration date of December 31, 2034. According to CalRecycle (n.d.), the Kilby Canyon Landfill has approximately 84 percent remaining capacity (over 63 million cy). The landfill has enough capacity for any non-recyclable, non-hazardous wastes generated by

Project construction. Therefore, any non-recyclable waste generated from Project construction diverted to the Kirby Canyon landfill would not adversely affect the landfill.

Chapter 4
Cumulative Impacts

4.1 CEQA Requirements

CEQA requires lead agencies to evaluate a proposed undertaking's potential to contribute to cumulative impacts in the project or program area. *Cumulative impacts* refers to the combined effect of "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Sec. 15355). As defined by the state, cumulative impacts reflect

> the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. (CEQA Guidelines Sec. 15355[b])

There are two categories of cumulative impacts: those that represent the additive effect of repeated activities taking place as part of a single proposed undertaking and those that represent the combined effect of activities taking place under more than one proposed undertaking.

CEQA requires that an EIR analyze a proposed undertaking's contribution to a cumulative impact when the existing cumulative impact is significant, and the project's individual contribution to that impact would be *cumulatively considerable*, meaning that it is considerable (significant) when viewed in connection with the effects of other past, current, and probable future projects (CEQA Guidelines Sec. 15130[a], 15065[c]). This ensures that EIRs fully analyze project effects that are less than significant on an incremental (project-specific) scale but may be considerable in combination with the related effects of other projects. It also serves to focus EIR analysis only on those cumulative impacts to which a proposed undertaking has the potential to make an important contribution.

4.2 Approach and Scope

This analysis identifies existing and foreseeable cumulative impacts in the Project area, based on the current general plans for East Palo Alto and Palo Alto, other reasonably foreseeable projects occurring in the Project vicinity. Analysis focused on the Project's potential to contribute to impacts representing the combined outcome of activities occurring under more than one undertaking. This is because the Project would require very limited, short-term, and intermittent maintenance once it is constructed; Project maintenance would be similar in nature and scope to activities already taking place currently and would not expand substantially on the maintenance activities. Therefore, over the long-term, the Project is not expected to create new significant cumulative impacts of the additive effects type.

Cumulative impacts were analyzed based on professional judgment in light of current standards of care specific to each resource topic. Consistent with the State's CEQA Guidelines, analysis focused on aspects of significant regional cumulative impacts to which the proposed Project has the potential to contribute, cumulative effects that are not significant, and those to which the proposed Project would not contribute, are not discussed or analyzed in detail.

The first step in analyzing cumulative effects for the Project was to identify, for each resource analyzed in this EIR, whether a regional cumulative effect exists independent of the Project. The need to analyze additive effects under the Project was then assessed. Table 4-1 summarizes this process and shows the types of analyses needed for the Project potential contribution to cumulative impacts, by resource topic.

Table 4-1. Summary of Need for Cumulative Impacts Analysis

Resource	Is There an Existing Cumulative Impact?	Project Contribution and Need for Analysis in This Document
Aesthetics	None identified. Although the aesthetic character of the region continues to evolve as a result of ongoing development (primarily infill and redevelopment in already urbanized areas, with new development along the valley's growing edges), San Mateo and Santa Clara Counties and the cities within the counties have general plan policies in place to address and preserve visual quality.	No analysis required.
Air Quality	Yes. The San Francisco Bay Area Air Basin is a nonattainment area for the federal 8-hour ozone standard, the state 1-hour ozone standard, and the state PM10 and PM2.5 standards.	As discussed in Section 3.2 *Air Quality*, construction of the proposed Project would temporarily increase emissions of ozone precursors and particulate matter. Analysis of cumulative air quality impacts is required
Biological Resources	Yes. The Bay Area and California's other expanding urban centersare subject to significant cumulative impacts related to loss and degradation of natural habitat through urban expansion. In addition, significant cumulative impacts on individual plant and wildlife species are considered to exist where species have been identified as qualifying for federal or state special status. This applies to a number of plant and wildlife species that are known to occur or may occur in the Project corridor area, listed in the tables in Chapter 5, *Biological Resources*.	As discussed in Section 3.3, *Biological Resources*, construction of the proposed Project has the potential to result in significant impacts on several special-status species. However, the SFCJPA has adopted a comprehensive suite of mitigation measures that are expected to reduce the Project's impacts on biological resources to the extent feasible; residual impacts, if any, are not expected to be cumulatively considerable. No further analysis is required. Project would result in a net gain of marsh habitat.

Resource	Is There an Existing Cumulative Impact?	Project Contribution and Need for Analysis in This Document
Cultural Resources	Yes. Throughout California, the Native American cultural legacy, including culturally important sites and traditional cultural practices, has been substantially affected by land management practices and urbanization over the past century and a half. The region, with its long history of human occupation, is no exception, and a significant cumulative impact is considered to exist with regard to loss of cultural resources.	As discussed in Section 3.4, *Cultural and Paleontological Resources*, the Project alignment is considered moderately to highly sensitive for cultural resources. Although the Project area does not include any known archaeological resources, there is nonetheless some potential that previously unknown buried cultural resources could be present and/or that some of the bridges in the Project area may qualify as significant historical resources. Damage or disturbance to archaeological or historical resources could rise to the level of a significant impact. However, SFCJPA has committed to mitigation consistent with all applicable federal and state regulations for the protection of cultural resources. As a result, the Project's potential to contribute to regional loss of cultural resources would be extremely limited and is evaluated as less than cumulatively considerable. No further analysis is required.
Geology and Soils	Yes. *(1)* Development in the region has resulted in progressive loss and unavailability of topsoil resources, representing a significant cumulative impact. *(2)* In the Project area, as in many other parts of California, extensive development in a seismically active region has put people and structures at risk from earthquake effects. This also represents a significant cumulative impact.	*(1)* As discussed in Section 3.5, *Geology, Soils, and Seismicity*, some of the Project elements would have the potential to result in substantial loss of topsoil. However, the SCFJPA has committed to mitigation requiring topsoil to be stockpiled onsite and reused in site finishing and revegetation. With this measure in place, impacts would be substantially reduced; any residual impact is considered less than cumulatively considerable. No further analysis of this topic is required. *(2)* The proposed Project would not include structures for human occupancy, and all Project facilities would be built to meet or exceed current building code requirements. The Project would not make a cumulatively considerable contribution to seismic risk exposure in the region. No further analysis of this topic is required.

Resource	Is There an Existing Cumulative Impact?	Project Contribution and Need for Analysis in This Document
Hazards and Hazardous Materials	Yes. The Project corridor traverses an area containing multiple sites with known hazardous materials contamination. This existing contamination represents a significant cumulative impact.	As discussed in Section 3.7, *Hazardous Materials and Public Health*, the proposed Project would incorporate mitigation consistent with all applicable federal and state regulations related to hazardous materials. Therefore, the Project is not expected to have significant effects related to creation of new areas of contamination or exposure of workers or the public to existing contamination and would not make a cumulatively considerable contribution to the existing cumulative impact. No further analysis is required.
Hydrology and Water Resources	San Francisquito Creek is listed by the State Water Resources Control Board under the 303(d) list as impaired for Diazinon, sedimentation/siltation, and trash. This represents a potentially significant cumulative impact.	The Project is not expected to increase Diazinon, sedimentation/siltation, and trash loads along the Creek. The Project is anticipated to remove existing sedimentation and thus would not make a cumulatively considerable contribution to the existing cumulative impact. No further analysis is required.
	The California Department of Transportation (Caltrans) is currently planning to construct a bridge at Hwy 101/ Bayshore Road located at the upstream limit of the Project study. The future construction of the bridge structure could have potentially significant cumulative impact upon the design water surface elevation downstream.	Caltrans is currently updating the bridge geometry per the planned design. The revised model would be used to refine the Project design so as to accommodate projected increases in flows as a result of the Caltrans bridge facility. Therefore, the Project is not expected to have significant effects related to an increased flood risk as a result of the future Caltrans bridge and would not make a cumulatively considerable contribution to the existing cumulative impact. No further analysis is required.
	Although the Project would provide increased flood protection for residents living within the Study Area, it would not remove them from the 100-year flood zone. Several reasonably foreseeable projects are proposed for upstream areas of the Creek that, combined, would ultimately provide a larger combined flood control benefit. It is the intention that, with the completion of these other projects along with the Project the residential areas surrounding the Creek would ultimately be removed from the 100-year flood zone designation.	The Project would provide the flood protection necessary to allow for ultimate removal the residential areas surrounding the Creek from the 100-year flood zone designation when combined with other reasonably foreseeable projects that are proposed for upstream areas of the Creek.
Land Use	None identified.	No analysis required.
Noise	None identified.	No analysis required.

Resource	Is There an Existing Cumulative Impact?	Project Contribution and Need for Analysis in This Document
Public Services	None identified.	No analysis required.
Recreation	None identified.	No analysis required.
Transportation and Traffic	Yes. Palo Alto and East Palo Alto general plans identify several locations where traffic conditions are known or predicted to exceed the applicable LOS standard. U.S. 101 from San Antonio Road to Embarcadero Road and the intersection of East Bayshore Road and Pulgas Avenue exceed the standard of LOS D. Given the heavy commute traffic prevalent on the Project area's principal routes, other areas of significant congestion may also exist.	As discussed in Section 3.13, *Traffic and Transportation*, the Project would result in short-term increase in construction-related traffic on local streets in the Project area. Once the Project is constructed, maintenance needs would be very limited; traffic generation would be well within the capacity of the local roadway system and would not differ materially from current maintenance traffic levels. Therefore, the Project's contribution to cumulative traffic impacts is expected to be less than cumulatively considerable. No further analysis is required.
Utilities	None identified.	No analysis required.

The following sections provide the detailed cumulative impacts analyses for air quality identified as necessary in Table 4-1~~: air quality, climate change, and transportation and traffic~~.

4.3 Proposed Project's Potential Contribution to Cumulative Impacts

Air Quality (criteria pollutants)

The BAAQMD has established emissions thresholds which it believes a project's individual operational criteria pollutant emissions would be cumulatively considerable. Therefore, it considers the project-level criteria pollutant thresholds to address both project-level and cumulative impacts (Bay Area Air Quality Management District 2011). As discussed in Impact AQ2 and AQ3, the project's construction emissions were estimated to exceed the BAAQMD daily emission threshold for NO_X, PM2.5, and cumulative DPM cancer risk. With the implementation of Mitigation Measures AQ2.1 through AQ2.3 above and Mitigation Measures NV1.1 and NV1.3, NO_X emissions would still exceed BAAQMD's threshold. Therefore, the ~~project~~Project's construction activities on cumulative air quality impact are expected to be significant and unavoidable.

Chapter 5
Other CEQA-Required Sections

This chapter includes the following discussions required by CEQA:

- Significant and unavoidable environmental impacts.
- Significant irreversible environmental changes.
- Growth-inducing impacts.

5.1 Significant and Unavoidable Environmental Impacts

Section 15126.2 (b) of the State CEQA Guidelines requires that an EIR describe any significant impacts, including those that can be mitigated but not reduced to a less-than-significant level. Furthermore, where there are impacts are significant and unavoidable, their implications and the reasons why the project is being proposed, notwithstanding their effect, should also be described.

Discussed below are the significant and unavoidable impacts resulting from Project implementation, mitigation measures that would be required but would not reduce this impact to a less-than-significant level, and, for those impacts for which no feasible mitigation or alternatives exist, the reason that no mitigation or alternatives are proposed.

Air Quality

As discussed in Impact AQ2and AQ3 in Section 3.2, Air Quality, the Project's construction emissions were estimated to exceed the BAAQMD daily emission threshold for NO_X, PM2.5, and cumulative DPM cancer risk. With the implementation of Mitigation Measures AQ2.1 through AQ2.3 above and Mitigation Measures NV1.1 and NV1.3, NO_X emissions would still exceed BAAQMD's threshold. Therefore, the Project's construction project level activities and cumulative air quality impacts are expected to be significant and unavoidable. SFCJPA's judgment is that the flood control benefits to residents in East Palo Alto and Palo Alto outweighs the temporary significant and unavoidable NO_X emissions during Project construction.

Recreation

As discussed in Section 3.12, Recreation, implementation of the proposed mitigation measure REC-1 would reduce permanent impacts on the Golf Course to a less-than-significant level. However, because implementation of the mitigation measure is outside the lead agency's jurisdiction and fulfillment cannot be guaranteed, a significant and unavoidable impact on the Golf Course is assumed. The lead agency is committed to fulfilling the conditions described in Mitigation Measure REC-1. SFCJPA's judgment is that the flood control benefits to residents in East Palo Alto and Palo Alto outweighs the significant and unavoidable impact on the Golf Course.

5.2 Significant Irreversible Environmental Changes

Section 15126.2(c) of the State CEQA Guidelines requires that an EIR consider any significant irreversible environmental changes that would be caused by the Project should it be implemented. Section 15126.2(c) reads as follows.

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

A project would result in significant irreversible environmental changes if:

- The primary and secondary impacts would generally commit future generations to similar uses.
- The project would involve a large commitment of nonrenewable resources.
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project.
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

The environmental effects of the proposed Project are analyzed in detail in the resource sections of Chapter 3 of this Final EIR.

The proposed Project would require the use of nonrenewable resources such as metal and aggregate resources for physical construction ~~components~~elements. Furthermore, fossil fuels would be consumed during construction and operation activities. Fossil fuels in the form of diesel oil and gasoline would be used for construction equipment and vehicles. During operations, diesel oil and gasoline would be used by passenger vehicles. Electrical energy (in part derived from fossil fuel generation) and natural gas would also be consumed during construction. The consumptive use of these energy resources would be irretrievable and their loss irreversible. Construction use of fossil fuels is limited to the construction period. Operational direct and indirect use of fossil fuels would be consistent with baseline conditions.

As previously discussed, the Project would result in significant irreversible changes due to the use of raw materials and fossil fuels during construction and operation. While many of these impacts can be avoided, lessened, or mitigated, some of these impacts are irreversible consequences of development, which are described in greater detail in the resource sections of Chapter 3 of this Final EIR.

5.3 Growth-Inducing Impacts

Section 15126.2(d) of the State CEQA Guidelines requires that an EIR discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Furthermore, Section 15126.2(d) states:

> Included in this are projects which would remove obstacles to population growth. Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic 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.

Analysis of Direct Growth-Inducing Impacts

As discussed in Chapters 1 and 2, the Project focuses exclusively on reducing flood risks to communities along the reach of San Francisquito Creek downstream of East Bayshore Road. It would not develop new housing, and Project construction would draw on the large work force already available in the Bay Area and surrounding area; worker demand would not be large enough to drive substantial relocation to the South Bay. Thus, the Project would not directly induce or result in population growth. In addition, the Project was proposed to support and provide improved flood protection for land uses already existing and planned under the Palo Alto and East Palo Alto General Plans; the Project would not alter the existing mosaic of land uses, and thus would not induce population growth indirectly by increasing development density or adding new employment centers. Finally, because lands along the Project reach and greater watershed are already developed despite the existing insufficient level of flood protection, the Project would not remove an obstacle to growth by providing improved flood protection. The Project would have no impact related to inducement of population growth.

The Project is expected to provide some level of long-term benefit for local economies by increasing flood security for residents and businesses and reducing the number of homes required to carry flood insurance to obtain mortgage financing. However, the Project's role should be viewed as protecting economic growth rather than driving it. Thus, although the Project would have a long-term beneficial impact on local economies, it would have no impact related to inducement of economic growth.

Chapter 6
Alternatives

CEQA requires that a EIR evaluate a "reasonable range" of alternatives to a proposed project. An EIR is not required to consider every conceivable alternative to a project; rather, consideration should focus on alternatives that appear to be feasible, would meet the project objectives, and would avoid or substantially lessen at least one of the proposed project's significant environmental effects. In addition, although the No Project Alternative is not the baseline for determining whether impacts related to the proposed activities would be significant,[14] an EIR must evaluate the impacts of the No Project Alternative to allow decision makers to compare the impacts of approving the project to the impacts of not approving it.

EIRs are required to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project or program (State CEQA Guidelines Section 15126.6[a], [d], [f]). This requirement enables the lead agency to identify the *environmentally superior alternative*—that is, the alternative that would least affect the environment while still accomplishing project objectives. If the No Project Alternative is identified as environmentally superior but would not meet project objectives, the lead agency must also identify the environmentally superior alternative that would implement the project (CEQA Guidelines Section 15126.6[e]).

This chapter provides the following:

- An overview of the alternatives development process for the entire watershed and the Project reach, including brief descriptions of approaches that were eliminated from further consideration, along with the reasons for their dismissal.
- Descriptions of the alternatives to the Project, including the No Project Alternative.

6.1 Alternatives Development Process

Since its formation in 1999, SFCJPA has pursued projects that would reduce flood risk for the entire watershed floodplain. In 2003 and 2005, watershed-wide solutions were reviewed with the USACE under a Continuing Authorities Program (CAP) 205 Project. This process resulted in two documents that evaluated and advanced alternatives that reduced flood risk within the overall watershed and in the Project reach:

- Report on Project Research and Scenarios for the U.S. Army Corps of Engineers Continuing Authority Program 205 (San Francisquito Creek Joint Powers Authority May 2003).
- San Francisquito Creek Flood Damage Reduction & Ecosystem Restoration General Investigations Program 905(b) Analysis Reconnaissance Study (U.S. Army Corps of Engineers March 2005).

[14] The *baseline* for impact analysis is defined as environmental conditions at the time the NOP was published.

Ultimately, both studies determined that capacity improvements must be implemented in the Project area in order to accommodate future upstream improvements intended to provide watershed wide flood protection benefits.

Continuing Authorities Program 205 Project Alternatives

As described in the SFCJPA report on the CAP 205 Project (San Francisquito Creek Joint Powers Authority 2003), the following alternatives were proposed for fluvial flooding within the Project area:

Widen Culvert at U.S. 101. Widening the culvert at U.S. 101 would consist of constructing an additional culvert barrel either to the north or south of the existing barrels. At the same location, the surface opening between U.S. 101 and West Bayshore Road would be closed. Under current conditions, widening the culverts alone would not decrease flooding. Covering the opening would allow pressure flow in the culverts, thus increasing the culvert capacity and stopping the flooding caused by overflow from this opening.

Raise Levees or Construct Floodwalls. Under this alternative, some levees downstream of U.S. 101 would be raised in some areas, and/or floodwalls would be constructed in other areas.

Construct Overflow to Open Space. Overflow would be diverted to two different locations downstream of U.S. 101: in the marshland area just east of the East Palo Alto residential area, and in the southwest portion of the Golf Course.

Widen Channel. Channel widening under this alternative would consist of widening the channel to the limits of the East Palo Alto residential development and constructing new levees. The channel would also be widened on the opposite side, and the new levees would be constructed on what now constitutes Golf Course land.

Construct Secondary Channel in Golf Course. Under this alternative, a secondary (parallel) channel would be constructed in the Golf Course as a means of increasing flow capacity for the reach.

Because Caltrans has since advanced a project that would widen the culvert at U.S. 101 as part of the replacement and upgrade of U.S. 101 and the East/West Bayshore frontage roads, the **Widen Culvert at U.S. 101 Alternative** is not considered further. The other alternatives were carried forward by SFCJPA for analysis in the development of the Project, either as stand-alone alternatives or as elements of blended alternatives.

San Francisquito Creek Flood Reduction Alternatives Analysis

SFCJPA had an Alternatives Analysis prepared to advance and evaluate the CAP 205 Project alternatives' ability to reduce out-of-bank flooding in the Project area (Philip Williams & Associates, Ltd. 2009). Project alternatives from the CAP 205 Project were evaluated against flood management objectives within the infrastructure and habitat constraints of the Project area. In order to contain peak water levels during floods relative to existing conditions, all of the advanced alternatives increased channel conveyance through a combination of the concepts advanced from the CAP 205 Project. The Alternatives evaluated are summarized below.

Alternative 1

Alternative 1 included a reach of flood walls downstream of U.S. 101, lowered terraces in the middle and upper reaches, levee setbacks in the middle reach, and an overflow bypass channel adjacent to Friendship Bridge.

The elevation of the marshplain terraces would intersect the main low-flow channel of the Creek at approximately the MHHW elevation and would extend outward from the channel at this elevation to the toe of the levees. In the middle reach, the levees would extend upward from the channel at a slope of 2:1 (horizontal to vertical). In the upper reach, the levees would extend vertically from the marshplain terrace to the existing levee tops. Vertical floodwalls are required to maximize the flow conveyance in the upper reach.

The height of the levees on the left and right sides of the channel in the upper reach would not be modified under Alternative 1 (or either of the other two alternatives). In the middle reach, the levee heights would not be adjusted, except at locations where the right levee, which is adjacent to homes in East Palo Alto, is found to be lower than the left levee, which is adjacent to the Golf Course. The relative heights of the levees would be adjusted to ensure that during extreme flood events, flooding would occur preferentially into the Golf Course, rather than East Palo Alto.

For Alternative 1, the levees would not be set back in the upper reach, but would be set back from the main channel in the middle reach to increase conveyance area. The distance that the right and left levees are shifted varies from location to location, depending on what is adjacent to the outboard side of the existing levees.

On the right (west) side of the channel, the levee would be shifted to be parallel to the backyard fence line of the homes on Jasmine Way and Camellia Drive in East Palo Alto. The City of East Palo Alto owns the land between these homes and the outboard side of the right levee, which consists of open grassland and fill of unknown origin. The Creek meanders slightly through this reach and at the location where it is farthest from the homeowner's fence line, the levee would be set back by approximately 175 feet to the west. This width is available at the upstream and downstream ends of the middle reach. Near the center of the middle reach, where the existing levee abuts the fence line, the right levee would remain in its current location.

The left levee in the middle reach would be shifted eastward toward the Golf Course. The amount of setback would vary, depending on the distance between the existing levee and the Golf Course greens. The low-lying areas between the existing outboard levee slope and the Golf Course are degraded, non-tidal seasonal wetlands, some of which remain wet from artificial irrigation from the Golf Course. These areas would either be converted to tidal marsh as part of the in-channel marshplain terrace or be converted to upland habitat on the levee. Levee setback distances range from 25 feet in the narrowest location arid 125 feet at the widest location.

The final element of the Alternative 1 design is an overflow bypass terrace running along the left side of the channel at Friendship Bridge. This overflow channel provides a wider flow area by allowing high flows to circumvent the constricted portion of the channel at the bridge. The terrace would be at an elevation of 9.8 feet NAVD, which is slightly less than 3 feet above the proposed marshplain terraces adjacent to the channel and potentially elevated enough to allow for the bypass channel to be incorporated into the existing Golf Course. The terrace would remain dry during normal flow events, but would get activated during fluvial flows higher than approximately a 7-year event (based on Santa Clara Valley Water District 2007) or during tides greater than approximately a 10-year event (Philip Williams & Associates, Ltd. 2006).

Friendship Bridge, its abutment and the high portion of the levee where the bridge connects to the existing levee road would not be modified except for armoring to prevent scour in high flow events. On the outboard side of the bypass terrace, a levee would be constructed at an elevation approximately equal to the existing left levee to protect the main portion of the Golf Course from flooding. This levee would tie into Alternative 1's proposed left levee upstream of Friendship Bridge. A boardwalk, similar to that described for the Project, would be constructed from the new left levee to the remnant portion of the old left levee to maintain access between Palo Alto and East Palo Alto.

Alternative 2

Alternative 2 is similar to Alternative 1, but modified to further reduce peak floodwater levels relative to existing conditions. This alternative includes levee setbacks in the upper reach, increased levee setbacks in the middle reach, and an overflow terrace at a marsh elevation.

To maximize flow conveyance in the upper reach, the channel would be widened to include any available open space on the outboard sides of the left and right levees. This includes the crescent-shaped parcel, owned by the District, on the right bank where Verbena Drive dead ends and a sliver of land that is parallel to Daphne Way near the beginning of the middle reach. On the left bank, the channel would be widened by 30 feet beginning at San Francisquito Creek Pump Station in Palo Alto and ending near the basketball court next to the International School. Downstream of this, the right levee would be shifted back by 50 feet, through the reach adjacent to the post office parking lot and the baseball field overflow parking lot. Similar to Alternative 1, the interior sides of the left and right levees would be vertical and the marshplain terraces in the channel would extend from the low-flow channel to the edge of the floodwalls.

In the middle reach, the right levee alignment for Alternative 2 would be the same as the right levee for Alternative 1. The left levee, however, would extend further east by approximately 45 feet. This may require a minor realignment of one of the holes at the Golf Course. Adjacent to Friendship Bridge, Alternative 2's overflow terrace would have the same footprint and a similar design to Alternative 1's overflow terrace, but would be graded to an elevation equal to the MHHW elevation (7.1 feet NAVD). This would create a continuous tidal marsh beginning in the downstream reach, surrounding Friendship Bridge's right approach, and extending upstream along the Creek's left bank to U.S. 101. The bypass terrace would be inundated during spring tides and most moderate fluvial flow events. Vehicle access would be limited to the levee on the left side of the bypass, but pedestrians would be able to access Friendship Bridge by means of a boardwalk second bridge span over the marshplain bypass terrace. The boardwalk would most likely not survive a large flood event and have to be replaced periodically.

Alternative 3

Alternative 3 includes in-channel marshplain terraces and a large bypass channel extending across the center of the Golf Course. It does not include levee setbacks in either the middle or upper reaches.

Alternative 3 has the same terracing and vertical flood wall alignment as Alternative 1 in the upper reach. In the middle reach, Alternative 3 includes marshplain terraces excavated in the existing channel, but without realigning the existing levee layout. The existing levee crests would not be modified (except at locations where the East Palo Alto levees are lower than the Golf Course levees) and the inboard levee sides would be re-graded to 2:1 slopes.

The primary feature of Alternative 3 is a large bypass channel extending from south to north through the center of the Golf Course. This bypass reach would intersect the existing channel at Station 56 + 04and reconnect with the main channel near the airport runway. During both normal daily flows and fluvial flood events, a portion of upstream flows would be diverted through the bypass channel, thereby significantly reducing water levels in the middle reach.

The bypass reach would be designed with a low- flow channel, floodplain terraces at marshplain elevation, and levees on the right and left sides, with a total width between levees equal to 300 feet. The size of the low-flow channel was designed using empirical hydraulic geometry relationships that were developed for tidal marshes in San Francisco Bay (Williams and Others 2002). The depth and top width of the low-flow channel, calculated from the total marsh area in the bypass reach, would be 6.5 feet and 30 feet, respectively. The low-flow channel is the channel below the marsh elevation of the MHHW elevation and was assumed to be parabolic in shape. Marshplain terraces would extend from the right and left channel banks for a distance of approximately 115 feet on each side, until intersecting with the toes of the levees. Inboard levee sides would be at 2:1 slopes. Levee crests were assumed to be comparable in elevation to the levee crest elevations in the main channel at parallel locations. The outboard levee sides slope very gradually downward at a 2 percent grade to the existing Golf Course elevations so that the levees could be integrated into the Golf Course and would not be too steep for playing. Because the Golf Course is at a fairly low elevation (approximately 4 feet NAVD) relative to the proposed bypass channel levee tops, the overall footprint of these levees are much larger than the existing and proposed main channel levees.

Alternatives Carried Forward for Analysis

The study concluded that Alternative 2 was determined to be the preferred alternative and advanced as the Project. Of the three alternatives evaluated, Alternative 2 provided the greatest reduction in peak water levels for the storm events modeled. Hydraulic modeling of Alternative 2 indicated that it would contain the 100-year design storm within the channel throughout the study reach. Alternative 3 provided similar reductions if the bypass channel was combined with the channel modifications assumed for the upper reach under Alternative 2. Alternative 3 is significantly more costly than either of the other two alternatives, but does still meet the purpose and need. Model results indicated that the 100-year design storm may not be fully contained at U.S. 101 under Alternative 1. Alternative 1 was not advanced for further analysis.

As carried forward, Alternative 2 is the basis of design for the Project. Alternative 3, while significantly more expensive than the proposed Project, meets the purpose and need. Thus, Alternative 3 was advanced as Alternative 1, the only feasible action Alternative that meets the purpose and need.

6.2 Alternatives to the Proposed Project

No Project Alternative

With the No Project Alternative it is assumed that no long-term actions would be taken to provide flood control improvements along San Francisquito Creek. Flood control improvements would consist of emergency fixes to damaged areas, consistent with available funding.

Under existing conditions, San Francisquito Creek does not have adequate capacity to convey the flood event associated with an expected annual probability of 1 percent (the 100-year event) of 9,400 cfs at several locations downstream of El Camino Real (San Francisquito Creek Joint Powers Authority 2009). While none of the bridges across the San Francisquito Creek downstream of El Camino Real can convey the 1 00-year flood event, the most problematic areas affecting Palo Alto and Menlo Park are the bridges at Middlefield Road and Pope-Chaucer Street. The approximate channel capacity at these locations is 6,000 cfs, which is commensurate with the 15-year event. The bridges at these two locations restrict the flow in the channel, inducing flooding in the overbank (U.S. Army Corps of Engineers 2000).

If the 100-year event in San Francisquito Creek is 9,400 cfs, and the Creek capacity upstream of the Project reach is actually 6,000 cfs, the excess (3,400 cfs) is overflowing at various points upstream of the Project reach, and in various directions. Capacity of the West Bayshore Road/U.S. 101 crossing is approximately 4,500 cfs and under high tide conditions, and would cause additional upstream overflow upstream of the ~~project~~Project reach if the 100-year event occurred during a high tide. The Palo Alto area southeast of U.S. 101, including the Baylands Athletic Center, the Golf Course, and the Palo Alto Airport, floods to a depth of approximately 2 feet when the Project reach overflows. During the 50-year event (7,500 cfs) and above, that depth increases to approximately 4 feet (2 additional feet) from upstream channel overflow. Any additional overflow runs in the direction of the U.S. 101/State Route (SR) 84 interchange, causing additional flooding not associated with capacity in the Project reach.

Conditions are expected to remain the same or worsen without efforts to alleviate the flooding along San Francisquito Creek. If modifications are not made to Searsville Reservoir, for example, additional bedload sediments could change conditions in the Project reach. Property damages would continue to occur during significant storm events, and erosion and scour would continue to occur in certain locations. The levees constructed within the Project reach do not contain the 100-year flood event, and the short-term (emergency) fixes that have been placed in the Creek in other reaches do not provide a long-term solution to flooding, hence the continued flooding that has occurred along the entire Creek.

Alternative 3 (Golf Course Bypass)

Alternative 1 includes in-channel marshplain terraces, similar to the Project and a large bypass channel extending across the center of the Golf Course. It does not include levee setbacks in either the middle or upper reaches as set forth in the Project.

Alternative 1 has the same terracing and vertical flood wall alignment as the Project in the upper reach. In the middle reach, Alternative 1 includes marshplain terraces excavated in the existing channel, but without realigning the existing levee layout. The existing levee crests would be rebuilt to meet USACE standards and the inboard levee sides would be re-graded to be at 2:1 slopes.

The differentiating feature of Alternative 1 is a large bypass channel extending from south to north through the center of the Golf Course. This bypass reach would intersect the existing channel just downstream of the Baylands Athletic Center and reconnect with the main channel near the airport runway. During both normal daily flows and fluvial flood events, a portion of upstream flows would be diverted through the bypass channel, therefore significantly reducing water levels in the middle reach and conveying a large percentage of flows away from the residences of East Palo Alto.

The bypass reach would be designed with a low-flow channel, floodplain terraces at marshplain elevation, and levees on the right and left sides, with a total width between levees equal to 300 feet. The size of the low-flow channel would be designed to carry excess flow equivalent to the 10-year event, which cannot be accommodated by the existing channel within the rebuilt levees. The depth and top width of the low-flow channel, calculated from the total marsh area in the bypass reach, would be 6.5 feet and 30 feet, respectively. The low-flow channel is the channel below the marsh MHHW elevation and was assumed to be parabolic in shape. Marshplain terraces would extend from the right and left channel banks for a distance of approximately 115 feet on each side until intersecting with the toes of the levees.

Inboard levee sides would be at 2:1 slopes. Levee crests were assumed to be comparable in elevation to the levee crest elevations in the main channel at parallel locations. The outboard levee sides slope very gradually downward at a 2 percent grade to the existing Golf Course elevations so that the levees could be integrated into the Golf Course and would not be too steep for playing. Because the Golf Course is at a fairly low elevation (approximately 4 feet NAVD) relative to the proposed bypass channel levee tops, the overall footprint of these levees are much larger than the existing and proposed main channel levees.

Maintenance and operations of Alternative 1 would be identical to those of the Project.

6.3 Impacts of Alternatives

Table 6-1 describes and compares the anticipated impacts of Alternative 1 and the No Project Alternative.

Table 6-1. Anticipated Environmental Impacts of Alternative 1 and the No Project Alternative

Resource	Alternative 3 (Golf Course Bypass)	No Project
	Direct bypass channel from Geng Road terminus to edge of Palo Alto Municipal Airport. Allows for existing channel to largely be retained with floodwalls in upper reach. Reduced overflow into Faber Tract Baylands in comparison to the proposed Project.	No flood protection improvements to San Francisquito Creek.
	Approach to Analysis	*Approach to Analysis*
	The key difference between Alternative 1 and the proposed Project is that Alternative 1 would not widen the existing channel, but rather would divert flows across the existing Golf Course and input flow closer to San Francisco Bay, resulting in reduced overflow fluvial inputs into Faber Tract in comparison to the proposed Project. For the most part, impact mechanisms and construction durations would be similar under Alternative 1 to those identified for the proposed Project. Floodwalls would still be necessary upstream of Geng Road, and all levees would still need to be rebuilt to USACE standards. Analysis therefore concentrated on new impacts created by the bypass channel and the effects of moving flood flows away from residences and reduced fluvial flows into Faber Tract.	Under the No Project Alternative, no new flood protection infrastructure would be installed in San Francisquito Creek. For the immediately foreseeable future, the channel would remain in its present condition, and operations and maintenance (i.e., inspections and minimal vegetation management) would be similar to current activities. Over the longer term, properties within the floodplain would continue to be at risk regardless of upstream improvements. The full timing, details, and outcomes of future upstream projects are not foreseeable at this time. Analysis therefore concentrated primarily on the impacts that would be avoided by not constructing new flood protection infrastructure.
Aesthetics	For the most part, aesthetic impacts of the elements included in Alternative 1 would be the same as those identified for the proposed Project. Overall visual impacts would be similar under Alternative 1 to those described for the proposed Project but could be somewhat greater on balance due to the new bypass channel proposed under Alternative 1. Both Alternative 1 and the proposed Project include floodwalls.	The No Project Alternative would not alter the visual characteristics of the Project corridor. If the proposed Project is not implemented, existing infrastructure in the Project corridor would continue to age, becoming less visually intact and eventually requiring repair or replacement under separate project efforts. However, although it is reasonable to project that repairs or replacements may be needed, the timing, details, and visual outcomes of such projects cannot be foreseen at this time.

Resource	Alternative 3 (Golf Course Bypass)	No Project
Air Quality	Air quality impacts would be similar under Alternative 1 to those described for the proposed Project. Both would result in significant NO_X.emissions.	Under the No Project Alternative, no new flood protection infrastructure would be installed in San Francisquito Creek. There would be no new impact on air quality under the No Project Alternative.
Biological Resources	Impacts on biological resources would be similar under Alternative 1 to those identified for the proposed Project. The potential for impacts to mammals and birds that occur in the Faber Tract would be lessened due to the greater fluvial flow being diverted down the bypass channel and overflow into the Faber Tract. Alternative 1 would likely result in greater marsh creation resulting from the new bypass channel. Overall, Alternative 1 would be slightly superior to the proposed Project.	Under the No Project Alternative, no new flood protection infrastructure would be installed in San Francisquito Creek. There would be no new or substantially altered impact on biological resources under the No Project Alternative.
Cultural and Paleontological Resources	Impacts on cultural and paleontological resources would be similar under Alternative 1 to those identified for the proposed Project. Because Alternative 1 would have a similar overall footprint to the proposed Project (with the exception that it would result in a large new bypass channel), all of the areas subject to ground disturbance under Alternative 1 have some level of sensitivity for buried cultural resources. Significant impacts on cultural resources are therefore possible under this alternative and would be mitigated by the same strategy identified for the Project. Because of the overall similarity in footprint and geologic substrate, impacts on paleontological resources under Alternative 1 would be similar to those described for the proposed Project.	Under the No Project Alternative, there would be no immediate ~~project~~Project-related ground disturbance. Over the long-term, repair and/or piecemeal replacement of aging flood protection infrastructure could result in ground disturbance, with some potential to disturb buried cultural and paleontological resources. The extent and severity of disturbance are not foreseeable at this time, but there would likely be some potential for significant impacts on cultural and paleontological resources, although it is unclear whether this potential would increase relative to the current baseline.
Geology and Soils	Impacts related to geology, soils, and geologic hazards would be similar under Alternative 1 to those identified for the proposed Project. Impacts for Alternative 1 would be the same as those described for the proposed Project, and the same mitigation approaches would apply.	Under the No Project Alternative, no new flood protection infrastructure would be installed in San Francisquito Creek. There would be no impact related to geology or soils.
Greenhouse Gases and Climate Change	Greenhouse gas and climate change impacts would be similar under Alternative 1 to those described for the proposed Project.	Under the No Project Alternative, no new flood protection infrastructure would be installed in San Francisquito Creek. There would be no new or substantially altered impact on greenhouse gases or climate

Resource	Alternative 3 (Golf Course Bypass)	No Project
		change.
Hazardous Materials and Public Health	Public health and safety impacts under Alternative 1 would be similar to those described for the proposed Project, and the same mitigation strategies would apply. The principal concerns related to known hazardous materials contamination focus on the floodwall reach upstream of Geng Road. Alternative 1 would entail the same activities in this area as would the proposed Project.	The No Project Alternative would not result in any foreseeable activities expected to release hazardous materials or change public health conditions relative to the current baseline.
Hydrology and Water Quality	Although the ~~project~~Project footprint would differ somewhat, overall impacts related to hydrology and water quality would be similar under Alternative 1 to those described for the proposed Project.	Under the No Project Alternative, no new flood protection infrastructure would be installed in San Francisquito Creek. There would be no new or substantially altered impact on hydrologic function or water quality under the No Project Alternative. Under the No Project Alternative, flood protection would not be improved, and the ~~project~~Project area would not have the capacity to accommodate proposed future improvements.
Land Use	Alternative 1 land use impacts are greater, potentially substantially greater, than overall impacts for the proposed Project. Alternative 1 would involve more significant impacts at the Palo Alto Municipal Golf Course and thus would require substantial evaluation of land use in the vicinity of the ~~project~~Project, including the long term viability of recreation within the designated land use area occupied by the Golf Course.	Under the No Project Alternative, no new flood protection infrastructure would be installed in San Francisquito Creek. There would be no new or substantially altered impact on land uses in the Project Area.
Noise and Vibration	Alternative 1 construction noise impacts are likely to be similar to or slightly greater than impacts for the proposed Project. Alternative 1 would affect impact the same sensitive receptors as the proposed Project. However, the duration of impacts resulting from bypass construction would be longer than under the proposed Project because of the expanded facility footprint.	Over the short-term, there would be no new construction and thus no impact on noise generation under the No Project Alternative. Over the longer term, as existing infrastructure continues to age, more extensive and frequent maintenance, repairs, and/or replacement are likely to be needed, and noise generation would increase. As with traffic, increases could be less than under the proposed Project, until or unless replacement of facilities becomes necessary.

Resource	Alternative 3 (Golf Course Bypass)	No Project
Public Services	Overall impacts related to public services would be very similar under Alternative 1 to those described for the proposed Project.	The No Project Alternative would not place any immediate demands on public services. If the proposed Project is not implemented, existing infrastructure in the Project corridor would continue to age, becoming less viable over time and eventually requiring emergency repair or result in emergencies from future floods that require increased public service response. However, although it is reasonable to project that repairs or emergencies may occur, the timing, details, and visual outcomes of such projects cannot be foreseen at this time.
Recreation	Overall Alternative 1 recreation impacts would be substantially greater than overall impacts for the proposed Project. Alternative 1 would involve more significant construction and requisite mitigation at the Palo Alto Municipal Golf Course. Alternative 1, as with the proposed Project, would result in significant and unavoidable impacts to recreation resulting from impacts to the Golf Course for which replacement would ultimately be the responsibility of another agency. Further, impacts related to construction staging at the Baylands Athletic Center and disruption of that facility's use would likely be increased somewhat due to the larger bypass channel and longer construction window.	The No Project Alternative would have no foreseeable impact on recreational facilities or uses and thus would have reduced recreational impacts in comparison with the proposed Project.
Transportation and Traffic	In general, impacts on traffic and transportation would be similar under Alternative 1 to those described for the proposed Project. Traffic impacts related to construction staging at the Baylands Athletic Center would likely be increased somewhat due to the larger bypass channel and longer construction window.	Over the short-term, the No Project Alternative would have no impact on traffic or transportation because there would be no new construction and thus no construction-related traffic. Over the longer term, as existing infrastructure continues to age, more extensive and frequent maintenance, repairs, and/or replacement are likely to be needed, so traffic related to flood protection operations could increase by comparison with the current baseline condition. Increases could be less than under the proposed

Resource	Alternative 3 (Golf Course Bypass)	No Project
		Project, until replacement of facilities becomes necessary. Future replacement of aging facilities could generate enough construction traffic to result in significant impacts on traffic and transportation, but details are not foreseeable at this time.
Utilities and Service Systems	Although the ~~project~~Project footprint would differ between Alternative 1 and the proposed Project, overall impacts related to utilities and service systems would be similar under Alternative 1 to those described for the proposed Project.	The No Project Alternative would have no foreseeable impact on utilities and service facilities and thus would reduce impacts by comparison with the proposed Project.

6.4 Identification of Environmentally Superior Alternative

Approach

Detailed analysis of the proposed Project's impacts is presented in Chapter 3.Table 6-1 summarizes environmental outcomes expected for Alternative 1 and the No Project Alternative and compares them with those anticipated under the proposed Project. The analysis and comparison in Table 6-1 were used to identify the alternative that would be environmentally superior for each resource considered. Resource-specific results were then integrated to identify the alternative offering the best overall outcome across all resources.

Results

Table 6-1 presents a summary comparison of the proposed Project, Alternative 1, and the No Project Alternative, on a resource-by-resource basis. Based on the comparison in Table 6-1, the No Project Alternative was identified as environmentally superior for most resources because it would not change baseline conditions in the Project corridor. However, it would not satisfy Project goals and objectives and, under the State's CEQA Guidelines (Sec. 15126.6 [e][2]), cannot be identified as environmentally superior.

Of those outcomes resulting from implementation of a project (as opposed to outcomes resulting from the No Project Alternative), impacts on the following resources would be very similar under Alternative 1 and the proposed Project (see Chapter 3 for impact analysis).

- Air quality.
- Geology and soils.
- Greenhouse gases and climate change.
- Hazardous material and public health.
- Hydrology and water quality.

- Public services.

Alternative 1 would be slightly superior with respect to impacts on biological resources.

The proposed Project would be superior with respect to impacts on the following resources.

- Aesthetics.
- Cultural and paleontological resources.
- Land use.
- Noise and vibration.
- Recreation.
- Transportation and traffic.

Specifically, although Alternative 1 would avoid potential impacts associated with the increased inundation of the Faber Tract under the proposed Project, it would increase several key impacts associated with construction and use of a new bypass channel.

In summary, although Alternative 1 would accomplish Project goals and objectives and reduce impacts on several resources, Alternative 1 would result in greater impacts in multiple resource areas and in the severity of the of impacts to those resource areas. Consequently, the proposed Project is identified as environmentally superior.

Chapter 7
Persons Consulted and List of Preparers

An environmental study team led by ICF International under contract to the SFCJPA prepared this Environmental Impact Report. The analyses were coordinated primarily with Kevin Murray, Project Manager at the SFCJPA and Michael Martin and Kristen O'Kane at the District.

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Heather White	Figure Preparation.

Chapter 8
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