

DRAFT Mitigated Negative Declaration



Valley Water

SEPTEMBER 2020

Palo Alto Flood Basin Tide Gate Structure Replacement Project

Valley Water Project No. 10394001

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Acronyms and Abbreviations

AB	Assembly Bill
AIA	Airport Influence Area
ALUC	Airport Land Use Commission
BAAQMD	Bay Area Air Quality Management District
Bay	San Francisco Bay
Bay Trail	San Francisco Bay Trail
BCDC	San Francisco Bay Conservation and Development Commission
BMPs	Best Management Practices
CAA	Clean Air Act
Cal/EPA	California Environmental Protection Agency
Cal/OHSA	California Occupational Health and Safety Administration
CalRecycle	California Department of Resources Recycling and Recovery
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CIDH	Cast-in-drilled-hole
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO _{2e}	Carbon Dioxide Equivalents
CRHR	California Register of Historic Places
CWA	Federal Clean Water Act
dBA	Decibels on the A-weighted scale
DNL	Day-Night Average Sound Level
DPM	Diesel Particulate Matter
DSM	Deep soil mixing
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FMMP	Farmland Mapping and Monitoring Program
GHG	Greenhouse Gas
GreenWaste	GreenWaste Recovery, Inc.
Ldn	Day-Night Average Level
L _{eq}	Equivalent Continuous Sound Level
LOS	Level of Service

LRA	Local Responsibility Area
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
MT	metric Tons
NMFS	National Marine Fisheries Service
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NO _x	Nitrogen Oxides
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
PAFB	Palo Alto Flood Basin
PAFD	Palo Alto Fire Department
PAPD	Palo Alto Police Department
PM	Particulate matter
PRC	Public Resources Code
Project	Palo Alto Flood Basin Tide Gate Structure Replacement Project
RCRA	Resource Conservation and Recovery Act
ROG	Reactive Organic Gases
RWQCB	San Francisco Bay Regional Water Quality Control Board
RWQCP	Regional Water Quality Control Plant
SAFER Bay	Strategy to Advance Flood Protection, Ecosystems and Recreation Project
S/CAP	Sustainability and Climate Action Plan (City of Palo Alto)
Scoping Plan	Climate Change Scoping Plan
SFCJPA	San Francisco Creek Joint Powers Authority
SHPO	State Historic Preservation Officer
SSC	Species of Special Concern
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resource Control Board
TAC	Toxic Air Contaminants
TMDL	Total Maximum Daily Limit
US-101	United States Highway 101
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
Valley Water	Santa Clara Valley Water District
VMT	Vehicle Miles Traveled

Key Terminology

Beneficial Impact:

A project impact is considered beneficial if it would result in the enhancement or improvement of an existing physical condition in the environment – no mitigation is required when an impact is determined to be beneficial.

Best Management Practices:

Measures typically derived from standardized Santa Clara Valley Water District (Valley Water) operating procedures. These practices have been identified as methods, activities, procedures, or other management practices for the avoidance or minimization of potential adverse environmental effects. They have been designed for routine incorporation into project designs and represent the “state of the art” impact prevention practices.

Less-than-significant Impact:

This is indicated in the Initial Study checklist where the impact does not reach the standard of significance set for that factor and the project would therefore cause no substantial change in the environment (no mitigation needed).

Less-than-significant Impact with Mitigation:

This is indicated in the Initial Study checklist where the impact is determined to exceed the applicable significance criteria, but for which feasible mitigation measure(s) are available to reduce the impact to a level of less-than-significant.

Mitigation Measures:

Mitigation includes: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

No Impact:

This is indicated in the Initial Study where, based on the environmental setting, the stated environmental factor does not apply to the Project.

Potentially Significant Impact:

This is indicated in the Initial Study where the project impact may cause a substantial adverse change in the environment, but for which (1) no feasible mitigation is available to reduce the impact to a less-than-significant level, or (2) feasible mitigation has been identified but the residual impact remains significant after mitigation is applied.

Significance Criteria:

A set of criteria used by the lead agency to determine whether an impact would be considered significant. Valley Water relied upon the significance criteria set forth in the California Environmental Quality Act (CEQA) Guidelines and criteria based on the regulatory standards of local, State and federal agencies.

Chapter 1 Introduction

Organization of this Document

This document is organized to assist the reader in understanding the potential impacts that the project may have on the environment and to fulfill CEQA (Public Resources Code [PRC] Section 21000 *et seq.*). Chapter 1 indicates the purpose under CEQA, sets forth the public participation process, and summarizes applicable State and federal regulatory requirements. Chapter 2 describes the location and features of the project and Chapter 3 describes the environmental setting. Chapter 4 evaluates the potential impacts through the application of the CEQA Initial Study Checklist questions to project implementation. Chapter 5 lists the contributors, and Chapter 6 supplies the references used in its preparation.

Purpose of the Mitigated Negative Declaration

The Santa Clara Valley Water District (Valley Water), acting as the Lead Agency, prepared a draft Mitigated Negative Declaration (MND) to provide the public, responsible agencies and trustee agencies with information about the potential environmental effects of the Palo Alto Flood Basin Tide Gate Structure Replacement Project (Project).

This MND was prepared consistent with CEQA, the CEQA Guidelines (Title 14, California Code of Regulations [CCR] 15000 *et seq.*), and Valley Water procedures for implementation of CEQA (Environmental Management System - Environmental Planning Q520D01). CEQA requires that public agencies such as Valley Water identify the significant adverse impacts and beneficial environmental effects of their actions. Beneficial impacts should be encouraged and expanded where possible and adverse impacts should be avoided or minimized, or mitigated in cases where avoidance and minimization are not possible.

In addition to acting as the CEQA Lead Agency for its projects; Valley Water's mission includes objectives to conduct its activities in an environmentally sensitive manner as a steward of Santa Clara Valley watersheds. Valley Water strives to preserve the natural qualities, scenic beauty and recreational uses of Santa Clara Valley's waterways by using methods that reflect an ongoing commitment to conserving the environment.

Decision to Prepare a Mitigated Negative Declaration

The Initial Study (Chapter 4) for the Project identifies potentially significant effects on biological resources. Mitigation measures have been proposed for the Project to reduce such effects to less-than-significant levels; and therefore, the proposed Mitigated Negative Declaration is consistent with CEQA Guidelines Section 15070 which indicate that a mitigated negative declaration is appropriate when:

The Project Initial Study identifies potentially significant effects, but:

- a. Revisions to the project plan were made that would avoid, or reduce the effects to a point where clearly no significant effects would occur, and
- b. There is no substantial evidence that the Project, as revised, may have a significant effect on the environment.

Public Review Process

This draft MND will be circulated to local and State agencies, interested organizations, and individuals who may wish to review and provide comments on the description, the proposed mitigation measures or other aspects of the report. The publication will commence the 30-day public review period per CEQA Guidelines Section 15105(b) beginning on **September 14, 2020** and ending on **October 15, 2020**.

Due to the on-going COVID-19 pandemic, physical copies of the draft MND and supporting documents will not be available for public review. However, Valley Water will make electronic copies of the draft MND available for review online at:

- Valley Water website: <https://www.valleywater.org/pafbtidegates>
- State Clearinghouse CEQAnet Web Portal: <https://ceqanet.opr.ca.gov>

Written comments or questions regarding the draft MND should be submitted to the name and address indicated below.

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The proposed MND along with any comments will be considered by Valley Water prior to a decision on the Project.

Interagency Collaboration and Regulatory Review

The CEQA review process is intended to provide both trustee and responsible agencies with an opportunity to provide input into the project. Trustee agencies are State agencies that have authority by law for the protection of natural resources held in trust for the public. CEQA Responsible agencies are those that have some responsibility or authority for carrying out or approving a project; in many instances these public agencies must make a discretionary decision to issue a local permit; provide right-of-way, funding or resources that are critical to the project's proceeding. In this instance the California Department of Fish and Wildlife (CDFW), San Francisco Bay Regional Water Quality Control Board (RWQCB), San Francisco Bay Conservation and Development Commission (BCDC), and the City of Palo Alto are considered responsible agencies for purpose of CEQA. In addition, several federal agencies, including U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS) also have regulatory authority over the Project. Valley Water will work with the CDFW, RWQCB, USACE, BCDC, USFWS, NMFS, and City of Palo Alto to ensure that the Project meets applicable policies and requirements.

This MND is intended to assist State and local agencies to carry out their responsibilities for permit review or approval authority over various aspects of the Project. The Palo Alto Tide Gate Replacement Project would likely require project-specific permitting and/or review as summarized in **Table 1-1** below.

Table 1-1. Summary of Applicable Regulatory Requirements

Agency	Authorization
CDFW	California Fish and Game Code (FGC) Section 1602 Lake and Streambed Alteration Agreement
CDFW	FGC Section 2081 Incidental Take Permit
RWQCB	Clean Water Act (CWA) Section 401 Water Quality Certification
USACE	CWA Section 404 and Section 10 Permit
BCDC	McAteer-Petris Act Administrative (Minor) Permit
USFWS	Federal Endangered Species Act (FESA) Section 7 Consultation
NMFS	FESA Section 7 Consultation
NMFS	Marine Mammals Protection Act (MMPA) Incidental Harassment Authorization or Letter of Authorization

Valley Water hosted interagency site visits on June 10th and June 27th, 2019 to solicit agency feedback on project alternatives, potential project impacts, mitigation, and permitting requirements. Staff representing CDFW, RWQCB, USACE, BCDC, USFWS, NMFS, the City of Palo Alto (including staff representing the Department of Public Works, the Department of Community Services, and the Baylands Nature Preserve), and the Association of Bay Area Governments (representing the San Francisco Bay Trail [Bay Trail]) were in attendance. Feedback received during these meetings was incorporated or considered during development of this MND.

Chapter 2 Project Description

Project Background

The Project is located along the Bay shoreline in the City of Palo Alto, east of the Palo Alto Municipal Airport and Palo Alto Baylands Nature Preserve (**Figure 2-1**). Prior to the construction of the Palo Alto Flood Basin (PAFB, or basin) and tide gate structure, Matadero, Adobe, and Barron Creeks discharged directly into San Francisco Bay (Bay) through Mayfield and Charleston Sloughs. Flooding of the lowlands occurred as floodwaters of these creeks backed up against the Bay during high tides. The flooding was intensified due to ground subsidence, which averaged approximately 6 feet along the Bay shoreline. The levees forming the PAFB and tide gate structure were constructed in 1957 by Valley Water with support from the City of Palo Alto to prevent flooding in the lower creek reaches, and avoid coastal flooding and future loss in the level of service of flood protection (**Figure 2-2**).

The floodwaters stored in the PAFB are released to the Bay through 8 cells with 16 tide gates that comprise the overall tide gate structure. The purpose of the tide gates is to regulate flows through the PAFB such that when the water surface elevation in the basin is higher than the tidal elevation of the Bay, the tidal flap gates are pushed open by water pressure and discharge water from the basin to the Bay. When the water surface elevation in the basin is lower than the Bay, the flap gates are held shut by water pressure from the Bay, to prevent full tidal inundation (muted tidal influence occurs via a single, manually operated sluice gate).

The tide gate is regularly inspected and maintained by Valley Water. In 2011, Valley Water discovered that water was flowing beneath the structure, undermining the function of the tide gates and potentially, its structural stability. Temporary emergency repairs to arrest flow were completed in 2012. While the temporary emergency repairs arrested significant under flow, Valley Water noted that future, permanent improvements would ensure continued function of the tide gate structure and the PAFB. In 2017, Valley Water attempted additional repairs to extend use of the structure; however, construction was suspended due to challenges faced while dewatering the work area and discovery of additional structural damage from aging.

The tide gate structure is currently operating beyond its designed 50-year lifespan, and may not function as designed in the long-term, due to predicted sea-level rise, seismic vulnerabilities, and further aging-related deterioration. Following the attempted repairs in 2017, a structural assessment report recommended that the structure be replaced and added that the structure should continue to function for a couple of years (Mark Thomas 2017). A follow-up structural assessment was performed again in January 2020 and extended the structure's service life for "another couple of years" (Mark Thomas 2020).

In January 2018, Valley Water met with the City of Palo Alto to coordinate ongoing planning efforts along the Bay and to discuss how a tide gate replacement project would fit into existing plans. During the meeting, Valley Water and the City of Palo Alto discussed coordination with other ongoing planning efforts in the vicinity including the San Francisquito Creek Joint Powers Authority's (SFCJPA) Strategy to Advance Flood Protection, Ecosystems and Recreation Project (SAFER Bay Project), the South Bay Salt Pond Restoration Project's (SBSRP) Mountain View Ponds Project (Mountain View Ponds Project), and the USACE's South Bay Shoreline Levee Project

(Shoreline Project). Valley Water coordinated with the City of Palo Alto to prepare an emergency action plan for the PAFB to provide guidance for potential flooding emergencies.

In October 2018, Valley Water met with the City of Palo Alto, City of Mountain View, and SFCJPA to promote interagency coordination during planning, design, and construction of a new tide gate structure. As a result of the meeting, Valley Water learned that the SAFER Bay Project, which could involve shoreline improvements that would preclude the need for tide gate replacement, expects to complete planning in eight years (beyond the expected functionality of the existing tide gate structure) and the Mountain View Ponds Project expects to begin construction in 2021.¹ As of March 2019, the new tide gate structure is included in one of the three SAFER Bay Project's conceptual alternatives to protect the communities of East Palo Alto, Menlo Park, Palo Alto, Mountain View, and surrounding infrastructure (i.e., U.S. Highway 101 [US-101]) from flooding. Given the short-term risk of tide gate structure failure, the interagency group agreed Valley Water should proceed with planning, design, and construction of a new tide gate structure rather than wait for the issue to be addressed by a future project. Valley Water plans to continue coordinating with the SAFER Bay, South Bay Shoreline, and Mountain View Ponds projects to maximize efficiencies of long-term Bay shoreline planning.

¹ The elevation of levees constructed as part of the Mountain View Ponds Project would need to match those constructed as part of this tide gate project.

Figure 2-1. Project Location



Figure 2-2. Palo Alto Flood Basin and Vicinity



Project Objectives

The objective of the Project is to maintain flood protection in the communities surrounding the PAFB and along the US-101 corridor. Specifically, the Project seeks to:

- Prevent failure of the existing tide gate structure, which would result in increased risk of tidal and fluvial flooding.
- Upsize the tide gate structure to function with 2 feet of future sea-level rise.
- Maintain or improve the level of flood protection for Matadero, Adobe, and Barron Creeks, including during construction and operation.

Project Description

The Project would involve construction of a new 132-foot-wide tide gate structure slightly inboard (upstream) and southeast of the existing 113-foot-wide deteriorating tide gate structure, removal of the existing tide gate structure and levee, and construction of a new levee that ties into the new tide gate structure. Construction of the Project would occur in two phases, based largely on the dewatering approach:

- **Phase 1:** Installation of the first dewatering system and construction of the new tide gate structure, new east levee approach (including ground improvements), removal of the existing levee in front of the new structure, and removal of the first dewatering system.
- **Phase 2:** Installation of the second dewatering system and construction of the west levee approach (including ground improvements), removal of the existing tide gate structure, and removal of the second dewatering system.

The Project site limits would include the area of construction (new tide gate structure and levee), demolition (existing tide gate structure and levee), and two staging areas. The work footprint would total approximately 8.9 acres in the vicinity of the tide gate structure replacement work, and an additional 3.9 acres of existing access road would be improved to allow for adequate equipment access, as described below. An overview of the Project is included in **Figure 2-3** and plan and profile drawings of the new tide gate structure are included in **Figure 2-4**.

Site Mobilization, Staging, and Access

Initial mobilization would include closing the Adobe Creek Loop Trail, which occurs along the top of the existing levee and tide gate structure. The trail would be closed approximately 0.2 mile to the west and 2.1 miles to the east of the existing tide gate structure (total of 2.3 miles) during the construction work window (September 1 to January 31) annually; outside of the construction work window, the trail would be closed closer to the tide gate structure, approximately 300 feet to the west and 2,300 feet east of the structure (total of 0.5 miles), aside from the nine-month period between the trail resurfacing work and the start of Phase 1 when the entire trail would be open (**Figures 2-5 and 2-7**). Pedestrian and bicycle access to the trail would be restricted by installing a chain link fence, swing gates, and signage. This portion of trail would be closed for a total of 42 months, including 39 consecutive months beginning in Phase 1. A detour route along the south side of the PAFB would be marked with signs to direct pedestrians and cyclists around the closed section of the Adobe Creek Loop Trail.

After the trail has been closed, the existing road/trail would be resurfaced along the entire 2.5 miles of trail length to allow for adequate vehicle and equipment access. The limits of resurfacing

would extend from the trail junction 0.2 mile west of the existing tide gate to the trail junction 2.1 miles east of the tide gate near the Coast Casey Pump Station, covering a total area of approximately 3.9 acres. The levee access road surface improvements would involve placing geogrid or geotextile fabric across the existing 14-foot wide road surface and then adding an approximately 8-inch thick layer of gravel on top of the fabric. The gravel would be delivered to the site with haul trucks and motor graders would smooth the gravel to the finished grade. While the average thickness would be approximately 8 inches, some areas may be thicker to fill existing holes and dips to create a smooth finished surface. The work would be limited to the existing dirt/gravel levee road/trail and would not extend into any undeveloped areas.

Two staging areas would be established to support construction activities (**Figure 2-6**). The first staging area (Staging Area 1) would be approximately 0.4 acre and located just west of the existing tide gate in a previously disturbed area northwest of the Adobe Creek Trail. The second staging area (Staging Area 2) would be approximately 6.2 acres and would be located starting approximately 260 feet east of the existing tide gate structure and extending an additional approximately 2,100 feet, extending into an area where a borrow ditch is circled by the levee (creating a large turnaround area). The second staging area would utilize temporary shoring installed on the basin side slope of the levee (outside of any waters or wetlands) and temporary fill placed to create a level staging area extending up to 30 feet from the basin-side edge of the levee trail to the shoring. The staging areas and access roads between the staging areas and the active work areas would require compacted gravel to be added on top of the existing earthen path in order to accommodate construction vehicles and wet working conditions. The staging areas would be enclosed with chain link fence. Staging areas would occur in uplands, on barren ground, or on the existing levee trail only.

Construction vehicle and equipment access would occur from both directions along the levee (Adobe Creek Trail), including from Embarcadero Road to the west (0.6 mile to work area) and from San Antonio Road to the south and east (approximately 2.2 miles to work area).

Dewatering

Prior to the start of work, the work area would be dewatered to facilitate construction and demolition. Dewatering would occur in two phases, consistent with the construction phasing described below and depicted in **Figure 2-3**. For each dewatering phase, dewatering would consist of installing steel sheet pile walls around the work area for that phase to exclude water from entering, and pumping water out of the enclosed area, into a holding tank to allow for sediment settlement, then into either the Bay or PAFB to facilitate a dry work area. Sheet piles would be pressed into place with an excavator or pressed into place with a Giken system. Sheet piles would extend to a depth of approximately 60 feet. After Phase 1 work is completed, the sheet piles would be removed and the sheet piles for Phase 2 would be installed. The dewatered area would total approximately 4.6 acres, including 2.3 acres during Phase 1 and 2.3 acres during Phase 2.

Construction of the New Tide Gate Structure

Construction of the new tide gate structure would be phased to maintain operation of the existing tide gate structure until the new structure is installed and operational. The new tide gate structure would be similar to the existing tide gate structure and would consist of concrete bays housing aluminum flap gates; however, the new tide gate structure would be 132 feet long with a 24-foot wide deck and include nine 10-foot by 10-foot cells, as opposed to the existing tide gate structure which is 113 feet long with a 14-foot wide deck and has eight cells with 16 5-foot by 5-foot

openings. In addition, the new tide gates would utilize side-hinges for increased hydraulic efficiency compared to the existing top-hinged tide gates. The new tide gate structure would increase the hydraulic conveyance capacity between the PAFB and Bay in order to accommodate future sea-level rise and be compatible with other projects currently in planning (i.e., Preliminary Feasibility Study for South San Francisco Bay Shoreline Economic Areas 1 – 10 Final Evaluation Report, SAFER Bay Project Public Draft Feasibility Report). The Preliminary Feasibility Study for South San Francisco Bay Shoreline Economic Areas 1 – 10 Final Evaluation Report projects approximately 2 feet of sea-level rise within 25 to 30 years, depending on the estimate model² (Valley Water 2017).

Phase 1

Following site mobilization and dewatering of the Phase 1 area, Phase 1 work would begin with clearing and grubbing of the levee surface east of the existing tide gate structure. A working platform would be created with fill and compacted gravel to accommodate construction equipment for installation of the new reinforced concrete pile foundation to support the new structure. The foundation would consist of approximately 60, 36-inch diameter cast-in-drilled-hole (CIDH) reinforced concrete piles. The anticipated typical CIDH pile construction would be carried out as follows:

1. A drill rig and crane would drill each 36-inch diameter CIDH pile hole individually with use of a temporary steel casing to prevent caving of surrounding native soil.
2. Water in the drilled hole would be displaced by pouring a bentonite slurry mix into the hole. The water would be pumped to a holding tank for filtration before discharge to the Bay or basin.
3. Steel reinforcement would then be lowered into the CIDH pile hole with a crane.
4. Concrete would then be piped to the bottom of the CIDH pile hole. As the concrete fills the CIDH pile hole, the bentonite slurry is displaced upward and collected at the top of the hole. The temporary steel casing is slowly removed as the concrete is placed.
5. Plastic inspection pipes would then be installed within the CIDH steel reinforcement and used to test the concrete for any anomalies. Any anomalies would be repaired (if needed), and the inspection pipes would be filled with grout.

Following installation of the CIDH piles, a sheet pile cut-off wall would be installed on both the Bay side and basin side of the new tide gate structure, and sheet pile wingwalls would be installed on all four corners of the structure. Next, the reinforced concrete pile caps and slab would be constructed, followed by the reinforced concrete walls and deck. The completed reinforced concrete tide gate structure would have nine 10-foot by 10-foot cells with eight 10-foot by 10-foot side-hinged tide gates, and one cell utilizing a motor-driven 10-foot by 10-foot sluice gate. A rip-rap apron (15 feet wide and 6 feet deep) would occur on both the Bay and basin sides along the 132-foot length of the proposed tide gate structure; the existing rip-rap apron is 14 feet wide and 4 feet deep along the 113-foot length of the structure. Additional rip-rap (approximately 6 feet deep) would be placed along the outside face of the tide gate structure wingwalls, and extend approximately 30 feet beyond the end of the wingwalls.

A portion of the existing levee would be excavated and removed prior to constructing the new levee east of the new tide gate structure. Ground improvements would be implemented within the

² Refer to Table 5 from the Final Evaluation Report, available online at:
https://www.valleywater.org/sites/default/files/E7_Final_Evaluation_Report_022117.pdf

footprint of the new levee to mitigate against anticipated excessive ground settlement. The ground improvements would utilize the Deep-Soil-Mix (DSM) method, which consists of a multi-auger drill rig that mixes the native in situ soil locally with a cement milk to increase the strength properties of the existing soil. A cement silo, water tank, and mixer would be setup on site to supply the cement milk to the multi-auger drill rig. The installed DSM cement milk would be mixed into the native in situ material and would not leach into the surrounding waters. The DSM material becomes hard once cured. Following the ground improvements, the foundation of the new levee east of the new tide gate structure would be constructed by importing engineered fill material with dump trucks and compacting. The levee slopes would be 3:1 and the top width of the levee would be approximately 24 feet wide. A maintenance road would be added to the top of the levee and would be composed of Class II aggregate base. The levee fill material and construction method would follow USACE standards such that the completed levee would meet Federal Emergency Management Agency (FEMA) certification requirements.

A pilot channel³ measuring approximately 200-feet long with a varying width of 132-feet wide at the outlet of the proposed tide gate structure and tapering to 60-feet wide at the end would be excavated in the native material to facilitate outward flow from the new tide gate structure to the existing channel.

Similar to the existing tide gate structure, corrosion resistant metallic trash racks would be installed within each concrete bay on the Bay and basin side of the new tide gate structure and an approximately 140-foot long debris boom would be installed up to approximately 75 feet upstream of the new structure within the basin. The debris boom would be attached to the tide gate structure's sheet pile wingwalls at the ends and a CIDH pile about midway to anchor the shape of the boom.

Approximate quantities of materials used in construction of the new tide gate are included in **Table 2-1**.

³ A pilot channel redirects or diverts a flow of water by creating a clear passage for the water to follow.

Table 2-1. Import Materials

Item	Quantity ¹	Units	Construction Activity
Class 2 aggregate base	6,500	Cubic yards	Levee trail resurfacing
Steel sheet pile shoring	1,600	Square yards	Dewatering
Concrete piles	1,000	Cubic yards	Tide gate
Reinforced concrete	1,400	Cubic yards	Tide gate
Steel gates	9	Each	Tide gate
Rock rip-rap	2,000	Cubic yards	Tide gate
Chain link fence	350	Linear feet	Tide gate, staging
Debris fenders	1	Each	Tide gate
Electrical motor and vault	1	Each	Tide gate
SCADA system	1	Each	Tide gate
Ground improvements ²	12,000	Cubic yards	Levee
Levee fill	48,000	Cubic yards	Levee

¹ Quantities listed are estimates.

²Ground improvements involve deep soil mixing, in which a drill rig mixes the in situ native soil with a cement milk without extracting any soil, thereby strengthening the substrate underlying the levee.

Phase 2

Phase 2 would begin with installation of a second sheet pile dewatering system that would be installed around the original tide gate to isolate the structure, while simultaneously removing the first sheet pile dewatering system. The Phase 2 dewatering system would be installed such that flows between the PAFB and Bay would be confined to the new tide gate structure, thereby allowing the new tide gate structure to begin operation as designed, while the original tide gate structure is removed. The original reinforced concrete tide gate structure would be removed by cutting the structure into pieces with concrete saws. The cut pieces will be removed by cranes and loaded onto trucks for off-site disposal. The existing concrete invert slab would remain in place and all remaining components would be disposed of. With the removal of the existing tide gate structure, the embankment immediately west of the structure would be regraded to slope back at an approximately 3:1 slope to create a smooth transition between the Bay-side levee and basin-side levee. The timber piles upstream and downstream of the existing tide gate structure would be cut 2 feet below the ground surface and disposed off-site. Approximate quantities of materials to be hauled off site for disposal are summarized in **Table 2-2**.

Table 2-2. Disposal Materials

Item	Quantity	Units	Exported or Reused	Source
Steel sheet pile shoring	188	Square yards	Reused	Existing tide gate
Timber piles	63	Each	Exported	Existing tide gate
Reinforced concrete	538	Cubic yards	Exported	Existing tide gate
Steel gates	16	Each	Exported	Existing tide gate
Rock rip-rap	519	Cubic yards	Reused	Existing tide gate, levee
Chain link fence	216	Linear feet	Exported	Existing tide gate
Debris fenders	1	Each	Exported	Existing tide gate
Electrical motor and vault	1	Each	Exported	Existing tide gate
SCADA system	1	Each	Exported	Existing tide gate
Clear and grubbing	1.6	Acres	Exported	Levee
Levee excavation	44,000	Cubic yards	Exported	Levee

Excavated soils generated in either Phase 1 or Phase 2 would be tested and then removed from the site and transported to the SBSPRP’s ponds in Alviso (Pond A8) or Mountain View for use in restoration efforts. However, if the soil does not meet reuse testing standards, the material will likely be taken to the Newby Island Landfill in Milpitas. Excavated soils include soils generated during pile drilling, excavation of the pilot channel, excavation of the existing levee, and other native soils generated during construction. Prior to transporting excavated soils to any SBSPRP ponds, testing and handling of the soil must comply with the RWQCB’s Master Quality Assurance Project Plan for Don Edwards San Francisco Bay National Wildlife Refuge (USFWS & H.T. Harvey Associates 2018). Valley Water or its contractor would be required to submit a Soil Handling Plan to the RWQCB for approval prior to transporting the material to the SBSPRP ponds. If approved, acceptable material would be transported to one or more of the ponds, stockpiled, and protected per the Soil Handling Plan. Any soil that does not meet the acceptance criteria for use at the ponds would be disposed of at the Newby Island Landfill.

Similar to the new levee east of the new tide gate structure, the new levee west of the new structure would require ground improvements utilizing the DSM method (described above) to reduce anticipated ground settlement. This portion of levee and underlying ground improvements would be constructed in the same manner as the levee east of the new tide gate structure described under Phase 1 above.

After the levee is constructed to the specified grade and the dewatering system is removed, a debris barrier (or boom) would be installed on the basin side of the new tide gate, connecting to the adjacent levees in a manner similar to the boom around the existing structure. The levee slope would be revegetated, as appropriate. Educational signage would be installed along the Adobe Creek Loop Trail near the new tide gate to inform visitors about the area’s natural features (i.e., endangered species).

Figure 2-3. Project Overview

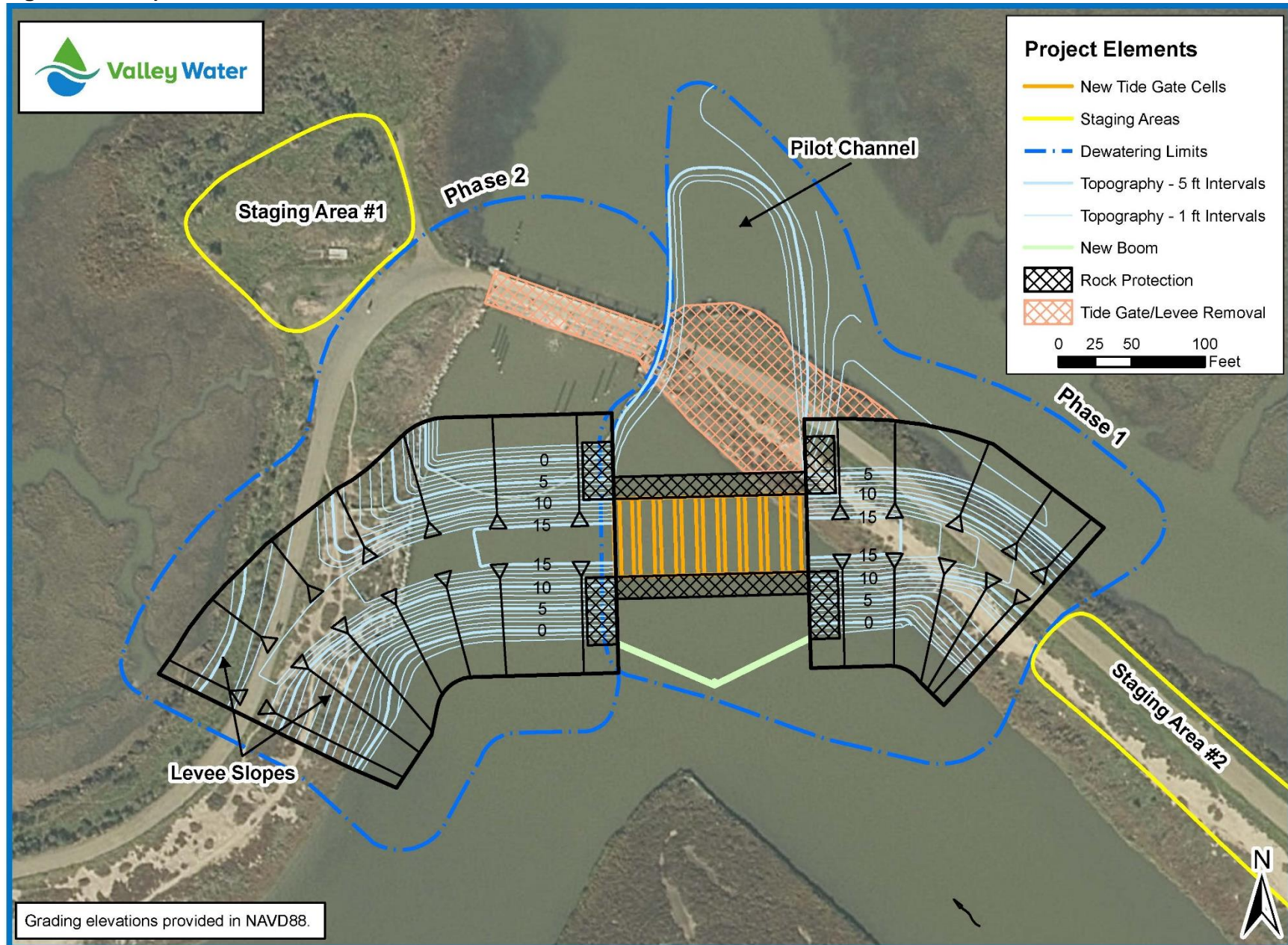


Figure 2-4. Plan and Profile of New Tide Gate Structure

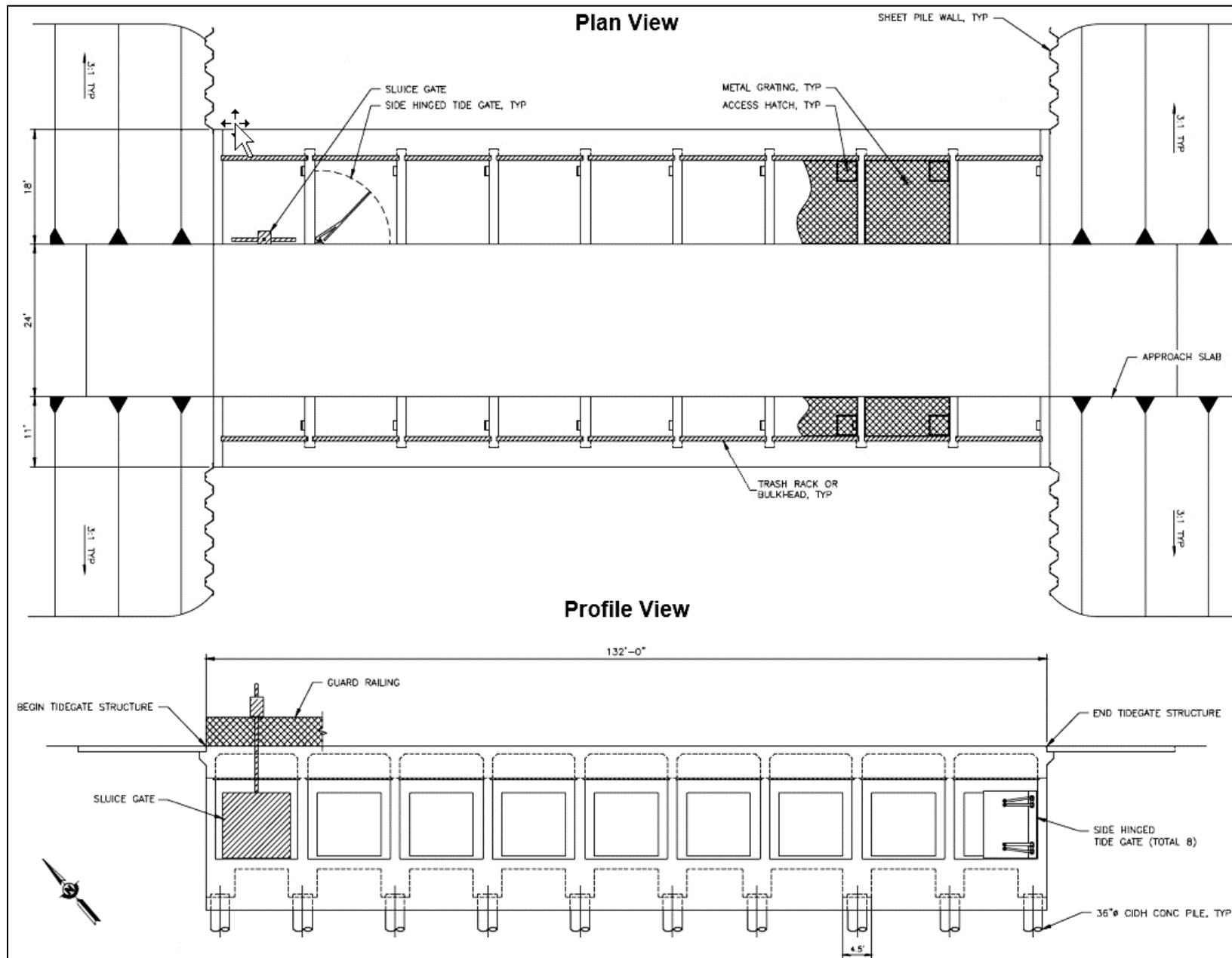


Figure 2-5. Trail Closure

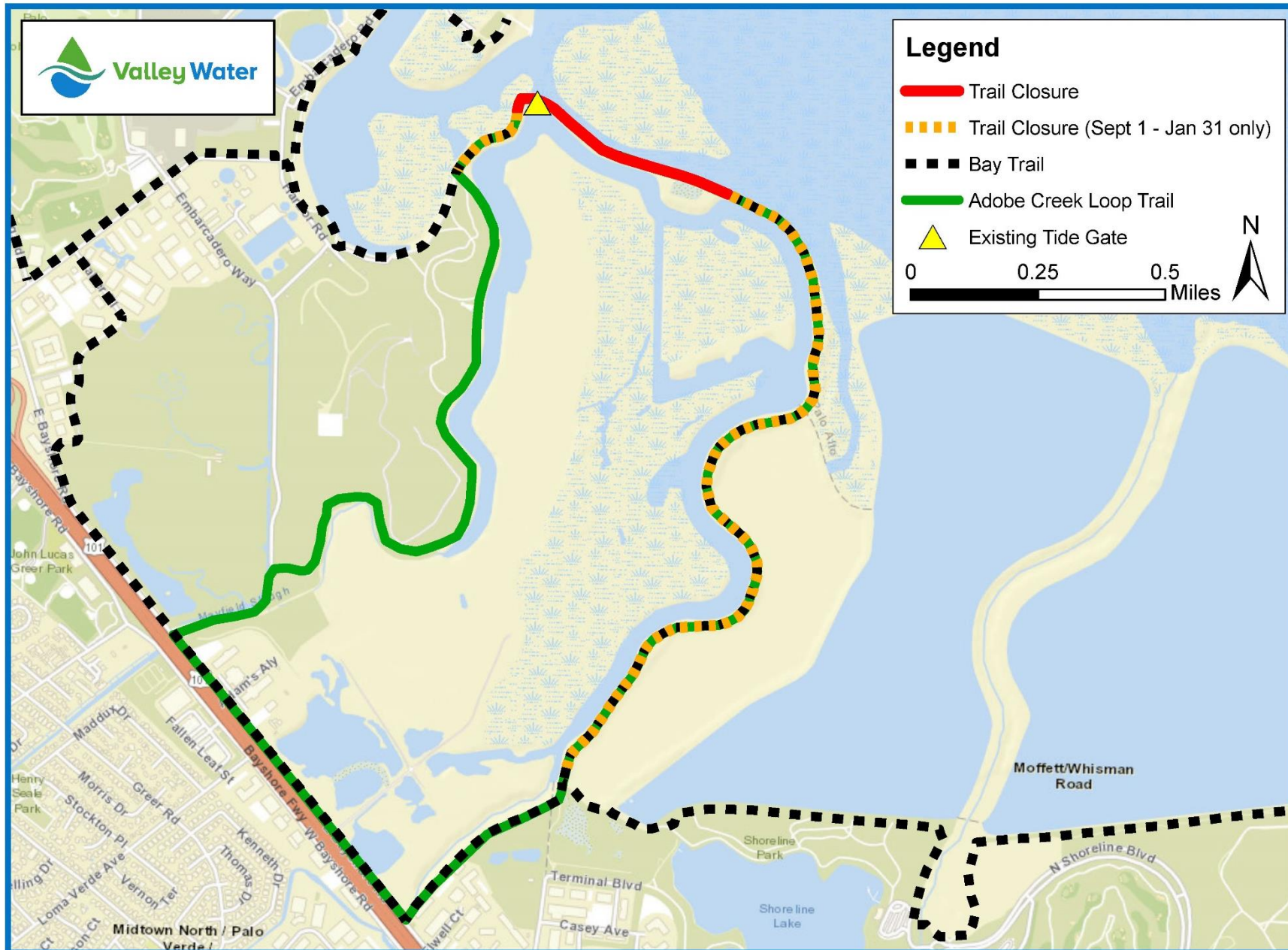
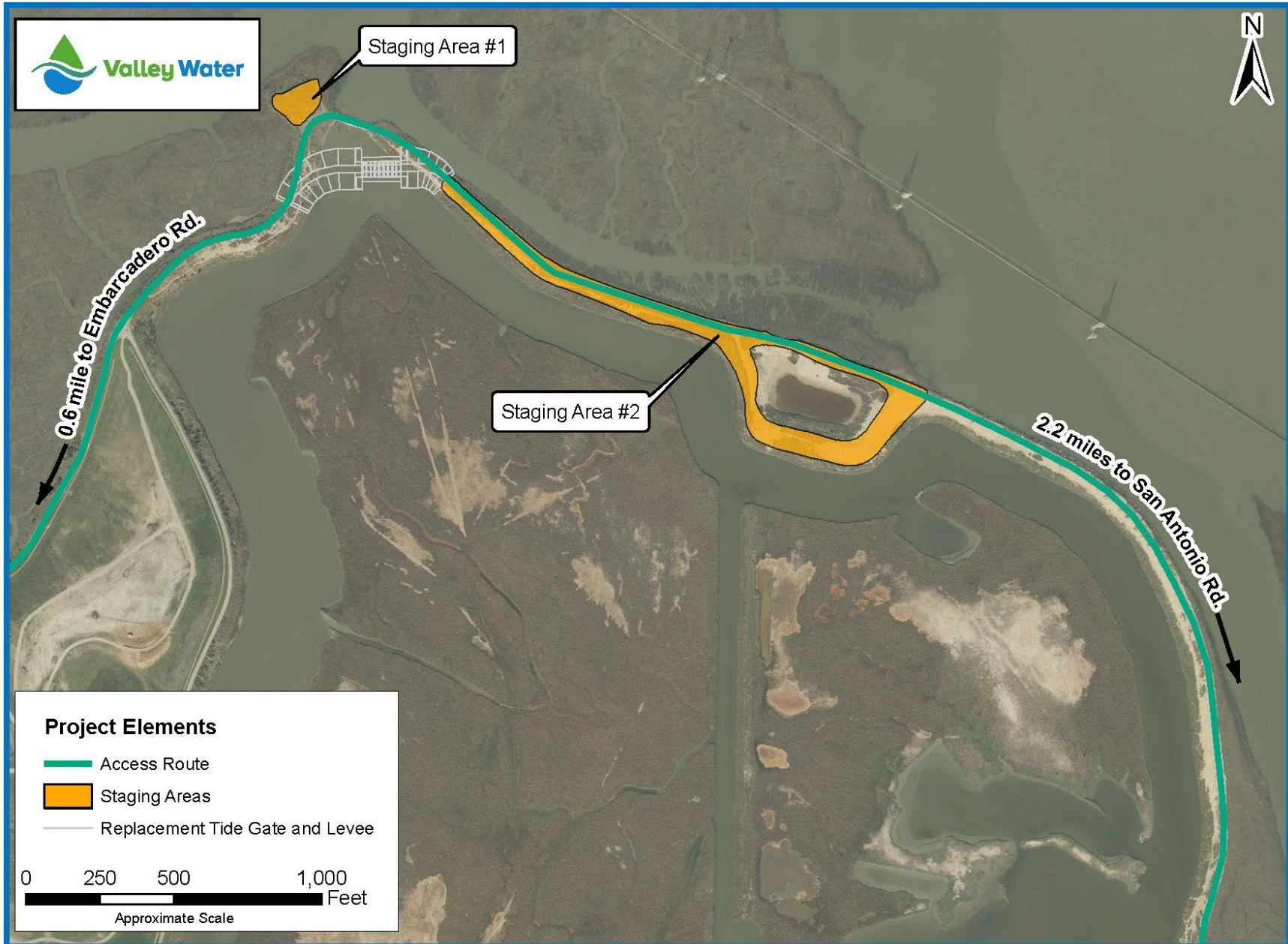


Figure 2-6. Staging and Access



Workers and Equipment

Approximately 15 workers are anticipated to be present during all phases of construction. **Table 2-3** includes equipment that is anticipated to be utilized during construction.

Table 2-3. List of Equipment and Estimated Operation

Name of Equipment	Equipment Purpose	Hours/Day	Total Days
Crane	Installing CIDH piles and sheet piles	8	280
Drill rig	Drilling CIDH piles and Ground Improvements	8	30
Sheet piling machine	Installing temporary sheet piling	8	44
Pumps	Dewatering	24	280
Trucks (flatbed)	Materials delivery	4	280
Generators	Power source	8	280
Concrete trucks	Materials delivery	8	140
Concrete hopper and pump	Pumping concrete into a tremie pipe	8	140
Excavator or backhoe loader	Levee/bay mud excavation	8	140
Compactors	Installation of subgrade fill	8	21
Cement silo, water tank, mixer	To supply DSM cement milk to the drill rig	8	10
Concrete saw	Demolition of existing concrete structure	8	56
Pneumatic power tools	General construction	8	56
Air compressors	Power blasting to clean rebar and concrete	4	280
Dump trucks	Export and import of soils	8	140
Water trucks	Dust control	3	140

Operations and Maintenance

Standard testing for materials strength (i.e., concrete) and performance testing of the tide gate would be performed by the construction contractor prior to operation. Eight of the nine tide gate cells would be opened or closed by the opposing hydrostatic forces of the water surface level in the PAFB and tide level of the Bay. The remaining tide gate, a sluice gate, would be mechanically driven and operated by Supervisory Control and Data Acquisition data or by the City of Palo Alto. The sluice gate on the existing structure must be opened and closed manually by an operator physically at the sluice gate. The new sluice gate would be improved such that it can also be operated remotely from the City's Regional Water Quality Control Plant (RWQCP). Should the new sluice gate require repairs, any of the passive tide gates can be manually opened to provide the function of the sluice gate during the time of repairs. The new sluice gate would allow water to flow both directions between the PAFB and Bay to allow for muted tidal influence in the PAFB, maintaining the existing operational condition. In case of a power outage, the new sluice gate would include connection for a generator, and support for fully manual gate operation. In addition, the passive tide gates would have the ability to be manually hoisted if needed for maintenance.

Maintenance of the new tide gate structure and levees would occur less frequently than or similar to the existing conditions. Regular maintenance inspections would continue to be performed by

Valley Water and the City of Palo Alto maintenance staff following construction of the Project. Maintenance of the tide gate structure typically involves clearing of debris from the trash racks, debris boom, or removal of debris that gets stuck in the tide gates. Following construction of the Project, maintenance activities are anticipated to be easier, safer, and faster with reduced risk from current practice. The trash racks and debris boom could be cleaned by a small boat in the water, with mechanical tools, or by crane. The trash racks could be lifted out with a crane and temporarily replaced with a solid bulkhead panel if needed to dewater the concrete bay for maintenance on the tide gates, sluice gate, or the concrete structure.

Construction Phasing and Schedule

Work would be restricted to occur from September 1 through January 31 to avoid and minimize impacts on biological resources. Construction is expected to require four or five work seasons including an initial shorter season to perform trail surface improvements in 2021, followed by four years of construction to replace the tide gate structure in 2022/2023, 2023/2024, 2024/2025 and a shorter final work season in Fall 2025. Due to the limited work period and potential weather-related delays expected during the construction season, work would take place Monday through Saturday⁴ from 7:00 AM to 6:00 PM, though work would be limited to civil twilight hours to avoid use of lighting on the Project site.

As described above, work would occur in two phases to maintain tide gate operation throughout construction. Phase 1 would involve dewatering and installation of the new tide gate structure inboard and southeast of existing tide gate structure and construction of the new levee east of the new structure. Once the new tide gate structure is operational, Phase 2 would commence with dewatering of the area around the existing tide gate structure, removal of the existing structure, and installation of a new levee west of the new tide gate structure. **Figure 2-7** depicts the anticipated construction sequence by month, year, and phase.

⁴ The City of Palo Alto Noise Ordinance permits work to begin at 8:00 AM on weekdays and 9:00 AM on Saturdays. Valley Water plans to seek an exception to the Noise Ordinance to start work at 7:00 AM on all work days, per direction from City staff. Valley Water would undertake construction according to these proposed work hours only if approved by the City.

Figure 2-7. Anticipated Project Schedule and Phasing

Phase/Activity	2021				2022					2023					2024					2025																						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
Phase 0 - Trail Surface Improvements																																										
Road Surface Improvements																																										
Phase 1 - New Tide Gate Construction																																										
Site Mobilization																																										
Dewatering Phase 1																																										
Levee Excavation																																										
CIDH Pile Foundation																																										
New Tide Gate Structure																																										
Ground Improvements																																										
New Levee (East Approach)																																										
Construct Outlet Channel																																										
Install Rip-Rap																																										
Site Winterization																																										
Phase 2 - New Levee and Demolition of Existing Structure																																										
Site Mobilization																																										
Dewatering Phase 2																																										
Ground Improvements																																										
New Levee (West Approach)																																										
Finish Trail Surface																																										
Remove Existing Tide Gate																																										
Remove Dewatering System																																										
Winterization/Restoration																																										
Trail Closure Schedule																																										
Entire Trail Open																																										
Trail Closed (0.5 mile)																																										
Trail Closed (2.3 mile)																																										

Best Management Practices

Best Management Practices (BMPs) are practices that prevent, avoid, or minimize potentially adverse effects associated with construction and other activities. Project BMPs are included in **Table 2-4**. Additional environmental measures developed to mitigate specific impacts associated with Project implementation and not avoidable through standard construction BMPs are identified in Chapter 4 of this MND.

All BMPs would be incorporated into the Project construction documents (plans and specifications) so contractors employed on the Project would be contractually required to adhere to them.

Table 2-4. Best Management Practices

Air Quality	
<p>AQ-1</p> <p>Use Dust Control Measures</p>	<p>The following Bay Area Air Quality Management District (BAAQMD) Dust Control Measures will be implemented:</p> <ol style="list-style-type: none"> 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day; 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered; 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited; 4. Water used to wash the various exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, etc.) will not be allowed to enter waterways; 5. All vehicle speeds on unpaved roads shall be limited to 15 mph; 6. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used; 7. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations), and this requirement shall be clearly communicated to construction workers (such as verbiage in contracts and clear signage at all access points). Idling shall also remain consistent with the City of Palo Alto Idling Ordinance (see Chapter 10.62 of the City Municipal Code), which requires idling not exceed 3 minutes on public property unless specific circumstances are met; 8. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications, and all equipment shall be checked by a certified visible emissions evaluator; 9. Correct tire inflation shall be maintained in accordance with manufacturer's specifications on wheeled equipment and vehicles to prevent excessive rolling resistance; and, 10. Post a publicly visible sign with a telephone number and contact person at the lead agency to address dust complaints; any complaints shall be responded to and take corrective action within 48 hours. In addition, a BAAQMD telephone number with any applicable regulations will be included.

<p>AQ-2</p> <p>Avoid Stockpiling Odorous Materials</p>	<p>Materials with decaying organic material, or other potentially odorous materials, will be handled in a manner that avoids impacting residential areas and other sensitive receptors, including:</p> <ol style="list-style-type: none"> 1. Avoid stockpiling potentially odorous materials within 1,000 feet of residential areas or other odor sensitive land uses; and 2. Odorous stockpiles will be disposed of at an appropriate landfill.
<p>AQ-3</p> <p>Reduce Construction-related NO_x Emissions</p>	<p>Nitrogen oxide (NO_x) construction mitigation measures recommended by BAAQMD will be implemented, including the following:</p> <ul style="list-style-type: none"> • Minimize idling time either by shutting equipment off when not in use or by reducing the time of idling to 5 minutes [required by 13 CCR Sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site. • Maintain all construction equipment in proper working condition in accordance with manufacturer’s specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. • Provide a plan for approval by Valley Water demonstrating that the construction contractors’ heavy-duty off-road vehicles (50 horsepower or more) to be used in Project construction, including owned, leased, and subcontractor vehicles, will achieve a Project-wide fleet-average 20 percent NO_x reduction and 45 percent particulate reduction compared to the most recent California Air Resources Board fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. • Ensure that emissions from Valley Water’s construction contractors’ off-road diesel-powered equipment used on the Project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) will be repaired immediately. • A visual survey of all in-operation equipment will be made at least weekly.

Biological Resources

<p>BI-1</p> <p>Remove Temporary Fill</p>	<p>Temporary fill materials, such as for work pads or dewatering, will be removed upon finishing the work or as appropriate. The work area will be re-contoured to match pre-construction conditions to the extent possible.</p>
<p>BI-2</p> <p>Avoid Impacts to Nesting Migratory Birds</p>	<p>Nesting birds are protected by State and federal laws. Valley Water will protect nesting birds and their nests from abandonment, loss, damage, or destruction. Nesting bird surveys will be performed by a qualified biologist during the bird nesting season (January 15 to September 1) prior to any activity that could result in the abandonment, loss, damage, or destruction of birds, bird nests, or nesting migratory birds. If a lapse in Project-related work of 15 days or longer occurs, another survey would be conducted. Inactive bird nests may be removed with the exception of raptor nests. Birds, nests with eggs, or nests with hatchlings will be left undisturbed.</p>

<p>BI-3 Avoid Impacts to Nesting Migratory Birds from Pending Construction</p>	<p>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.</p>
<p>BI-4 Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes</p>	<p>Whenever native species are prescribed for installation the following steps will be taken by a qualified biologist or vegetation specialist:</p> <ol style="list-style-type: none"> 1. Evaluate whether the plant species currently grows wild in Santa Clara County; and, 2. If so, the qualified biologist or vegetation specialist will determine if any need to be local natives, i.e. grown from propagules collected in the same or adjacent watershed, and as close to the Project site as feasible. <p>Also, consult a qualified biologist or vegetation specialist to determine which seeding option is ecologically appropriate and effective, specifically:</p> <ol style="list-style-type: none"> 1. For areas that are disturbed, an erosion control seed mix may be used consistent with the <i>Valley Water Guidelines and Standards for Land Use Near Streams, Design Guide 5, 'Temporary Erosion Control Options.'</i> 2. 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 local native species. If a gravel has been used to prevent soil compaction, this material may be left in place [if ecologically appropriate] instead of seeding. 3. Seed selection shall be ecologically appropriate as determined by a qualified biologist, per <i>Guidelines and Standards for Land Use Near Streams, Design Guide 2: Use of Local Native Species.</i>
<p>BI-5 Avoid Animal Entry and Entrapment</p>	<p>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. 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.</p> <p>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:</p> <ol style="list-style-type: none"> 1. Hole to 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 one hour; or 2. 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; or 3. 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.
<p>BI-6</p>	<p>Remove trash daily from the worksite to avoid attracting potential predators to the site.</p>

Minimize Predator-Attraction	
BI-7 Avoid Relocating Mitten Crabs	<p>Sediment potentially containing Chinese Mitten Crabs will not be transported between San Francisco Bay Watersheds and Monterey Bay Watersheds, specifically:</p> <ol style="list-style-type: none"> 1. Sediment removed from the San Francisco Bay watersheds will not be transported south of Coyote Creek Golf Drive in south San Jose, and the intersection of McKean and Casa Loma Roads; and, 2. Earth moving equipment used in the San Francisco Bay watershed will be cleaned before being moved to, and used in, the Pajaro Watershed.
BI-8 Minimize Spread of Invasive Plants	<p>The spread of invasive nonnative plant species and plant pathogens will be avoided or minimized by implementing the following measures:</p> <ol style="list-style-type: none"> 1. Construction equipment will arrive at the Project clean and free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species. 2. Any imported fill material, soil amendments, gravel, etc., required for construction activities that will be placed within the upper 12 inches of the ground surface will be free of vegetation and plant material. 3. Certified weed-free imported erosion control materials (or rice straw in upland areas) will be used exclusively.

Cultural Resources

CU-1 Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Remains	<p>If historical or unique archaeological artifacts, or tribal cultural resources, are accidentally discovered during construction, work in affected areas will be restricted or stopped until proper protocols are met. Work at the location of the find will halt immediately within 100 feet of the find. A “no work” zone shall be established utilizing appropriate flagging to delineate the boundary of this zone. A Consulting Archaeologist will visit the discovery site as soon as practicable for identification and evaluation pursuant to PRC Section 21083.2 and CCR Section 15126.4. 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 PRC Section 21083.2 and Section 15126.4 of the CEQA Guidelines. If a tribal cultural resource cannot be avoided, the Action Plan will include notification of the appropriate Native American tribe, and consultation with the tribe regarding acceptable recovery options.</p> <p>If burial finds are accidentally discovered during construction, work in affected areas 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, and the field crew supervisor shall take immediate steps to secure and protect such remains from vandalism during periods when work crews are absent. No further excavation or disturbance within 100 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.</p>
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Hazards and Hazardous Materials

HM-1 Prepare a Soil Management Plan	<p>Prior to grading and excavation, Valley Water will retain a qualified professional to prepare a Soil Management Plan. The Soil Management Plan will address the concerns associated with releases of contaminated soil within and adjacent to the Project area. The Plan will include specifications for procedures to manage affected</p>
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	<p>soil during construction and shall include engineering controls to minimize human exposure to potential contaminants.</p> <p>During construction activities, Valley Water or its contractor shall employ engineering controls and BMPs to minimize human exposure to potential contaminants and potential negative effects from an accidental release to groundwater and soils. Engineering controls and construction BMPs shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Contractor employees working on-site shall be certified in OSHA’s 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training program. • Contractor shall monitor the area around the construction site for fugitive vapor emissions with appropriate field screening instrumentation. • Contractor shall water/mist soil as it is being excavated and loaded onto trucks. • Contractor shall place any stockpiled soil in areas that are shielded from prevailing winds. • Contractor shall cover the bottom of excavated areas with sheeting when work is not being performed.
<p>HM-2 Restrict Vehicle and Equipment Cleaning to Appropriate Locations</p>	<p>Vehicles and equipment may be washed only at approved areas. No washing of vehicles or equipment will occur in the Project area.</p>
<p>HM-3 Ensure Proper Vehicle and Equipment Fueling and Maintenance</p>	<p>No fueling or servicing will be done in a waterway or immediate flood plain, unless equipment stationed in these locations is not readily relocated (i.e., pumps, generators).</p> <ol style="list-style-type: none"> 1. For stationary equipment that must be fueled or serviced on site, containment will be provided in such a manner that any accidental spill will not be able to come in direct contact with soil, surface water, or the storm drainage system. 2. All fueling or servicing done at the site will provide containment to the degree that any spill will be unable to enter any waterway or damage riparian vegetation. 3. All vehicles and equipment will be kept clean. Excessive build-up of oil and grease will be prevented. 4. All equipment used in the Bay or flood basin will be inspected for leaks each day prior to initiation of work. Maintenance, repairs, or other necessary actions will be taken to prevent or repair leaks, prior to use. 5. 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 waterway or flood plain.
<p>HM-4 Ensure Proper Hazardous Materials Management</p>	<p>Measures will be implemented to ensure that hazardous materials are properly handled, and the quality of water resources is protected by all reasonable means.</p> <ol style="list-style-type: none"> 1. Prior to entering the work site, all field personnel will know how to respond when toxic materials are discovered. 2. Contact of chemicals with precipitation will be minimized by storing chemicals in watertight containers with appropriate secondary containment to prevent any spillage or leakage. 3. Petroleum products, chemicals, cement, fuels, lubricants, and non-storm drainage water or water contaminated with the aforementioned materials will not contact soil and not be allowed to enter surface waters or the storm drainage system.

	<ol style="list-style-type: none"> 4. All toxic materials, including waste disposal containers, will be covered when they are not in use, and located as far away as possible from a direct connection to the storm drainage system or surface water. 5. Quantities of toxic materials, such as equipment fuels and lubricants, will be stored with secondary containment that is capable of containing 110 percent of the primary container(s). 6. The discharge of any hazardous or non-hazardous waste as defined in Division 2, Subdivision 1, Chapter 2 of the California Code of Regulations will be conducted in accordance with applicable State and federal regulations. 7. In the event of any hazardous material emergencies or spills, personnel will call the Chemical Emergencies/Spills Hotline at 1-800-510-5151.
<p>HM-5 Utilize Spill Prevention Measures</p>	<p>Prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water following these measures:</p> <ol style="list-style-type: none"> 1. Field personnel will be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills; 2. Equipment and materials for cleanup of spills will be available on site, and spills and leaks will be cleaned up immediately and disposed of according to applicable regulatory requirements; 3. Field personnel will ensure that hazardous materials are properly handled and natural resources are protected by all reasonable means; 4. Spill prevention kits will always be in close proximity when using hazardous materials (e.g., at crew trucks and other logical locations), and all field personnel will be advised of these locations; and, 5. The work site will be routinely inspected to verify that spill prevention and response measures are properly implemented and maintained.
<p>HM-6 Incorporate Fire Prevention Measures</p>	<ol style="list-style-type: none"> 1. All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors. 2. During the high fire danger period (April 1–December 1), work crews will have appropriate fire suppression equipment available at the work site. 3. An extinguisher shall be available at the project site at all times when welding or other repair activities that can generate sparks (such as metal grinding) is occurring. 4. Smoking shall be prohibited except in designated staging areas and at least 20 feet from any combustible chemicals or vegetation.
<p>Hydrology and Water Quality</p>	
<p>WQ-1 Limit Impact of Pump and Generator Operation and Maintenance</p>	<p>Pumps and generators will be maintained and operated in a manner that minimizes impacts to water quality and aquatic species.</p> <ol style="list-style-type: none"> 1. Pumps and generators will be maintained according to manufacturers' specifications to regulate flows to prevent dry-back or washout conditions. 2. Pumps will be operated and monitored to prevent low water conditions, which could pump muddy bottom water, or high-water conditions, which creates ponding. 3. Pump intakes will be screened to prevent uptake of fish and other vertebrates. Pumps will be screened according to NMFS criteria. 4. Sufficient back-up pumps and generators will be on site to replace defective or damaged pumps and generators.

<p>WQ-2 Limit Impacts from Staging and Stockpiling Materials</p>	<ol style="list-style-type: none"> 1. To protect on site vegetation and water quality, staging areas should occur on access roads, surface streets, or other disturbed areas that are already compacted and only support ruderal vegetation. Similarly, all equipment and materials (e.g., road rock and spoils) will be contained within the existing access roads or other pre-determined staging areas. 2. Building materials and other Project-related materials, including chemicals and sediment, will not be stockpiled or stored where they could spill into water bodies. 3. No runoff from the staging areas may be allowed to enter water ways without being subjected to adequate filtration (e.g., vegetated buffer, swale, hay wattles or bales, silt screens). 4. The discharge of decant water to water ways from any on site temporary sediment stockpile or storage areas is prohibited. 5. During the wet season, no stockpiled soils will remain exposed, unless surrounded by properly installed and maintained silt fencing or other means of erosion control. During the dry season; exposed, dry stockpiles will be watered, enclosed, covered, or sprayed with non-toxic soil stabilizers.
<p>WQ-3 Limit Impact of Concrete Near Waterways</p>	<p>Concrete that has not been cured is alkaline and can increase the pH of the water; fresh concrete will be isolated until it no longer poses a threat to water quality.</p> <p>Poured concrete will be excluded from the wetted channel for a period of four weeks after it is poured. During that time, the poured concrete will be kept moist, and runoff from the wet concrete will not be allowed to enter waterways. Commercial sealants (e.g., Deep Seal, Elasto-Deck Reservoir Grade) may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If a sealant is used, water will be excluded from the site until the sealant is dry.</p> <p>An area outside of the channel and floodplain will be designated to clean out concrete transit vehicles.</p>
<p>WQ-4 Isolate Work in Tidal Areas with Use of Cofferdam</p>	<p>For work in tidal areas, it is preferable to isolate one side of the channel with a cofferdam and allow flows to continue on the other side of the creek. If downstream flows cannot be diverted around the project site, the creek waters will be transmitted around the site through cofferdam bypass pipes. By isolating the work area from tidal flows, water quality impacts are minimized.</p> <ol style="list-style-type: none"> 1. Installation of coffer dams will begin at low tide. 2. Waters discharged through tidal coffer dam bypass pipes or from pumping will not exceed 10 percent in areas where natural turbidity is greater than 50 NTU over the background levels of the tidal waters into which they are discharged. Cofferdams and bypass pipes will be removed as soon as possible. Flows will be restored at a reduced velocity to minimize erosion, turbidity, or harm to habitat.
<p>WQ-5 Use Seeding for Erosion Control, Weed Suppression, and Site Improvement</p>	<p>Disturbed areas shall be seeded with native seed as soon as is appropriate after activities are complete. An erosion control seed mix will be applied to exposed soils down to the ordinary high-water mark of the flood basin and the mean high higher tide line on the Bay side of the work area.</p> <p>The seed mix should consist of California native species suitable to the area.</p>
<p>WQ-6 Maintain Clean Conditions at Work Sites</p>	<p>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 on a daily basis. Personnel will not sweep, grade, or flush surplus materials, rubbish, debris, or dust into storm drains or waterways.</p>

	<p>Materials or equipment left on the site overnight will be stored as inconspicuously as possible and will be neatly arranged. Any materials and equipment left on the site overnight will be stored to avoid erosion, leaks, or other potential impacts to water quality</p> <p>Upon completion of work, all building materials, debris, unused materials, concrete forms, and other construction-related materials will be removed from the work site.</p>
<p>WQ-7 Manage Drilling Materials</p>	<p>All materials or waters generated during drilling, CIDH pile construction, or levee ground improvements will be safely handled, properly managed, and disposed of according to all applicable federal, State, and local statutes regulating such. In no case will these materials and/or waters be allowed to enter, or potentially enter waterways. Such materials/waters must not be allowed to move off the property where the work is being completed.</p>
<p>WQ-8 Protect Groundwater from Contaminants via Drilling</p>	<p>Any substances or materials that may degrade groundwater quality will not be allowed to enter any boring. Lubricants used on drill bits, drill pipe, or tremie pipe will not be comprised of oily or greasy substances or other materials that may degrade groundwater quality.</p> <p>Well openings or entrances will be sealed or secured in such a way as to prevent the introduction of contaminants.</p>
<p>WQ-9 Prevent Water Pollution</p>	<p>Oily, greasy, or sediment laden substances or other material that originate from the Project 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.</p> <p>The 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:</p> <ol style="list-style-type: none"> 1. Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases will not exceed 5 percent; and 2. Where natural turbidity is greater than 50 NTU, increases will not exceed 10 percent. 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. Natural watercourse turbidity measurements will be made in the receiving water at least 100 feet from discharge site. Natural watercourse turbidity measurements will be made prior to initiation of Project discharges, preferably at least 2 days prior to commencement of work.
<p>WQ-10 Prevent Stormwater Pollution</p>	<p>To prevent stormwater pollution, the applicable measures from the following list will be implemented:</p> <ol style="list-style-type: none"> 1. Soils exposed due to Project 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. Areas below the ordinary high-water mark of the flood basin and below the mean high tide line of the Bay are exempt from this BMP. 2. The preference for erosion control fabrics will be to consist of natural fibers; however, steeper slopes and areas that are highly erodible may require more structured erosion control methods. No non-porous fabric will be used as part of a permanent erosion control approach. Plastic sheeting may be used to temporarily protect a slope from runoff, but only if there are no indications that special-status species would be impacted by the application. 3. Erosion control measures will be installed according to manufacturer's specifications.

	<p>4. To prevent stormwater pollution, the appropriate measures from, but not limited to, the following list will be implemented:</p> <ul style="list-style-type: none"> • Silt Fences • Straw Bale Barriers • Brush or Rock Filters • Storm Drain Inlet Protection • Sediment Traps or Sediment Basins • Erosion Control Blankets and/or Mats • Soil Stabilization (i.e. tackified straw with seed, jute or geotextile blankets, etc.) • Straw mulch. <p>5. All temporary construction-related erosion control methods shall be removed at the completion of the Project (e.g. silt fences).</p>
<p>WQ-11 Manage Sanitary and Septic Waste</p>	<p>Temporary sanitary facilities will be located in compliance with California Division of Occupational Safety and Health (Cal/OSHA) regulation 8 California Code of Regulations 1526. All temporary sanitary facilities will be located where overflow or spillage will not enter a watercourse directly (overbank) or indirectly (through a storm drain).</p>
<p>Traffic and Transportation</p>	
<p>TR-1 Incorporate Public Safety Measures</p>	<p>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.</p>

Project Design Development Process

The PAFB and adjacent Baylands provide suitable habitat for, and support known populations of, sensitive fish and wildlife species, and construction of the tide gate structure will occur within the jurisdiction of numerous State, federal, and local resource protection agencies. Given the sensitive nature of the Project area, Valley Water undertook a thorough and iterative design process to ensure that construction and operations would minimize or avoid impacts to biological resources. Several design options were considered in this process, as well as an option to continue current operations of the tide gate with no improvements. The design options evaluated are described briefly below and shown in **Figure 2-8**.

Option A – Retain Existing Tide Gate

Under the option where the existing tide gate would not be replaced, Valley Water would continue routine maintenance of the tide gate structure consistent with current practice. For the immediately foreseeable future, the tide gate structure would remain in its present condition but would be subject to continued deterioration and eventual failure. If the tide gate failed, the communities surrounding Adobe, Barron, and Matadero Creeks would be subject to a greater risk of flooding. Hydraulic performance of bridges at East Bayshore Road, US-101, and West Bayshore Road would also be compromised. The PAFB would experience increased tidal action and the basin could revert to tidal salt marsh habitat. The interior island currently provides nesting and overwintering habitat for some species of shorebirds and potentially habitat for the salt marsh harvest mouse, particularly at the northern end, which is more saline. This island would be

inundated more frequently, which could reduce or remove existing nesting and overwintering habitat.

In 2011, Valley Water discovered that water was flowing beneath the structure and completed emergency repairs to arrest flow in 2012. While the temporary emergency repairs arrested significant under flow, Valley Water staff determined that additional permanent improvements would be required to avoid future loss in the level of service of flood protection. Following the attempted repairs in 2017, structural assessment conducted in 2017 and 2020 recommended that the structure be replaced and added that the structure should continue to function for “another couple of years” (Mark Thomas 2020). In addition to the tide gate operating beyond its designed 50-year lifespan, the tide gate is subject to future loss of function due to sea-level rise.

If the existing, deteriorated tide gate were to be retained, the future SFCJPA’s SAFER Bay and/or the USACE’s Shoreline Project would need to address the increased flood risks associated with failure of the tide gate structure. As described above, these projects are early in the planning process and their construction is not anticipated to be completed within the expected remaining functional lifespan of the existing tide gate structure. Therefore, it was determined that the tide gate structure must be replaced to maintain current levels of flood protection, as well as address future sea level rise. An Emergency Action Plan has been prepared in case the existing structure fails during the planning, design, or construction phase of the replacement Project.

Option B: Replace Tide Gate Structure in Current Location

Replacement of the tide gate in-kind in its current location was considered as a means of avoiding and minimizing impacts on the environment. Emergency repairs in 2011 involved pumping a concrete slurry underneath the structure to arrest underflow. While the concrete slurry was successful in temporarily repairing the structure, it has contributed to uncertainty in the constructability of a replacement structure in its present location, specifically with respect to the installation of sheet pile walls (for both dewatering and the tide gate structure itself), drilling of CIDH piles, and ground settlement. Furthermore, control of flows into and out of the PAFB would need to be maintained during construction, requiring installation of a temporary tide gate structure. The temporary tide gate structure or a larger pump station would need to be constructed on the levee to the east of the existing structure, maintaining the same flow capacity of the existing structure throughout construction. The footprint of the temporary tide gate structure or temporary pump station would be of similar size/capacity to the existing tide gate structure. These dual structures would slow the pace of construction activities, requiring up to 6 years to complete the work. The temporary tide gate structure would be removed once the new tide gate structure is operational, and the area would be restored to levee. This methodology would greatly complicate the construction process, lengthen the construction duration, introduce flood protection risks, and increase costs, while not providing material reduction in environmental impacts. For these reasons, this option was rejected.

Option C: Replace Tide Gate Structure Adjacent to Existing Tide Gate on Levee

This option would involve replacing the tide gate adjacent to the east side of the existing tide gate. While this option would provide many of the same benefits as the proposed Project, replacing the tide gate in this location would require excavation of a large pilot channel adjacent to Hooks Island to connect the flow from the new tide gate structure to the existing tidal channel. Furthermore, relocating the tide gate structure to this location could cause erosion and loss of the sensitive salt marsh habitat on Hooks Island near the existing structure, as flood flows from the new structure

would be directed towards the island. This flow realignment could also cause migration of the existing channel such that the channel migrates away from the boat dock/launch at the Palo Alto Sailing Station. Due to these risks, this option was rejected.

Option D: Relocate Tide Gate Structure to Charleston Slough

This option would involve relocating the tide gate structure along the same PAFB levee but approximately 0.5 mile southeast of the existing structure in the northeast corner of the basin along Charleston Slough. Moving the tide gate structure to this location would change the hydraulics of the PAFB and surrounding areas. The existing ground elevation on both sides of the levee would need to be lowered by excavating or dredging in order to facilitate flows through the new tide gate structure. This option may also have negative impacts to the boat dock/launch at the Palo Alto Sailing Station. Furthermore, power and fiber optic lines would need to be installed within the existing levee and extended to this location. This option raises new concerns without offering any meaningful benefits compared to the Project. For these reasons, this option was rejected.

Option E: Construct Floodwalls

Rather than replacing the tide gate to provide flood protection on Adobe, Barron, and Matadero Creeks, existing floodwalls and levees could be raised, or additional floodwalls and levees could be constructed to protect adjacent communities from flooding. This would involve allowing the tide gate structure to fail and likely eventually removing the structure and allowing unregulated tidal action into the PAFB (thereby removing its flood storage capacity). This would result in restoration of the PAFB to tidal salt marsh and provide the opportunity to create a transition zone for tidal marsh to migrate in response to sea level rise. However, in order to maintain or enhance current levels of flood protection, floodwalls would be constructed or raised along each creek more than 1 mile upstream of US-101. Bridges at Matadero Creek and Adobe Creek would also require retrofitting to prevent coastal flooding and ring levees would be needed to protect the City of Palo Alto Municipal Service Center. In addition, coastal flooding in combination with high flow from the creeks would overtop the US-101 bridge deck and create back flooding. The Matadero Creek Pump Station and Coast Casey Pump Station would also require upgrades due to greater pumping requirements.

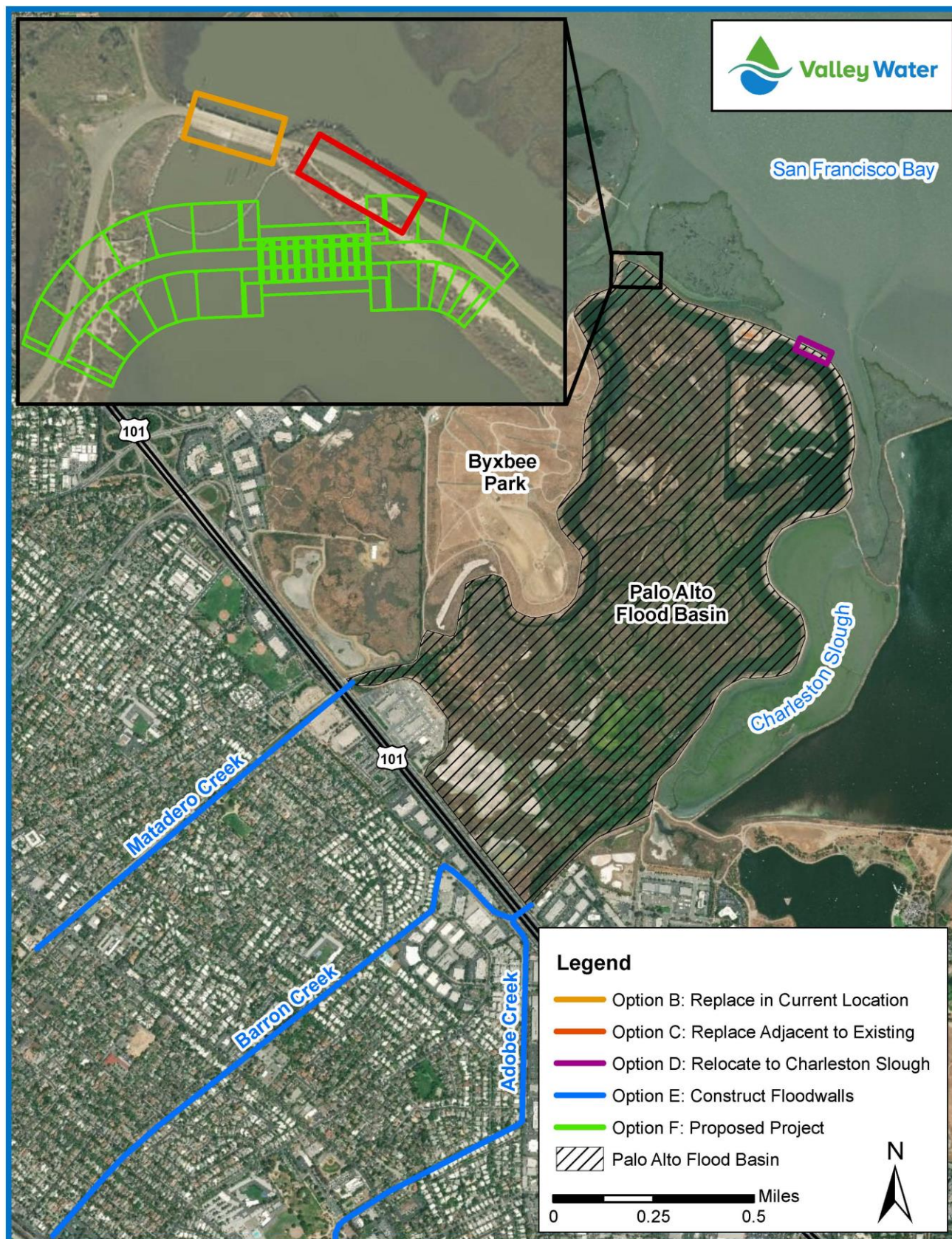
Construction of the floodwalls, levees, and other improvements would potentially result in significant impacts on aesthetics, biological resources (riparian habitat), noise, recreation, traffic, and other resources. Due to a lack of available land, land would also need to be acquired to construct the new floodwalls. The planning, environmental review, and permitting of such an action would likely extend well beyond the anticipated remaining functional lifespan of the tide gate structure, and temporary solutions to address this gap may be needed. The island on the interior of the PAFB would also be subject to increased periods of inundation by daily tide cycles. This option would be substantially more costly and with greater environmental impacts, while also having the potential of becoming obsolete if and when the SAFER Bay or Shoreline Projects are constructed. For these reasons, this option was rejected.

Option F (Current Design) – Construct New Tide Gate Slightly Southeast of Existing Structure

Considering the construction feasibility and environmental impacts associated with Options A through E above, Option F was selected as the proposed Project. As described in the *Project Description*, this option would construct a new tide gate upstream and slightly southeast of the

existing tide gate in the interior of the PAFB. This option would involve two phases of construction—the first to install the new tide gate and the second to remove the existing tide gate. The new tide gate would be of similar size to the existing tide gate and would accommodate up to 2 feet of sea-level rise. This option allows for the existing tide gate to continue to function during construction of the new tide gate, preventing impacts associated with installation of a temporary tide gate and lengthening of the construction schedule. This option includes the installation of a smaller pilot channel than under Option C, and the tide gate structure is angled towards the existing channel, avoiding potential risks of erosion on Hooks Island (**Appendix E**; AECOM 2020). This option would not require additional floodwalls, levees (other than the realigned levee adjacent to the new tide gate structure), or pump station upgrades. Additionally, because this option relocates the tide gate minimally into the PAFB, this option could result in the formation of about 0.7 acres of additional Bay habitat. Once completed, this option would preserve the existing conditions of the Adobe Creek Loop Trail and provide necessary improvements to flood protection and public safety.

Figure 2-8. Overview of Options Evaluated



Chapter 3 Environmental Setting

Project Location

The PAFB tide gate structure serves as the outlet to the Bay for the PAFB. The Project area is located along the Bay shoreline in the City of Palo Alto, east of the Palo Alto Municipal Airport and Byxbee Park (**Figures 2-1 and 2-2** in Chapter 2). The Project area is located within the Baylands Nature Preserve on property owned by the City of Palo Alto, but for which Valley Water has an easement to construct and maintain flood control structures and levees. The Project area is bordered by the Bay to the north, west, and east, and the PAFB to the south.

Surrounding Land Uses

Surrounding land uses primarily include conservation areas, parkland, and recreational space. The Baylands Nature Preserve, Byxbee Park (located 0.2 mile southwest) and associated trails, the Palo Alto Airport, and the Baylands Golf Links (formerly known as the Palo Alto Golf Course) make up the open space and recreational space near the Project area. The Palo Alto RWQCP is located about 0.5 miles east of the Project area. The Palo Alto Airport, the tenth busiest airport in California, is approximately 0.5 miles west of the tide gate structure. The Baylands Sailing Station, a small dock and boat launch, is located approximately 0.15 mile north of the Project area. Charleston Slough and Shoreline Lake Park occur 0.6 and 0.16 miles east of the Project area, respectively. US-101 and commercial/residential development occur south of the PAFB.

The City of Palo Alto Comprehensive Plan's land use map designates the areas surrounding the Project site as public conservation, public park, major institution/special facility, open space/controlled development, research/ office park, and service commercial (City of Palo Alto 2017a).

Physical Environment

The Project area consists of the existing levee and tide gate, as well as the portion of the Adobe Creek Loop Trail (a part of the Bay Trail) that runs across the levee (**Figure 3-1**). Along wider portions of the levee immediately west and approximately 0.3 miles east are unvegetated areas (bare ground). The levee and tide gate create a barrier between the PAFB and the Bay.

The PAFB is approximately 600 acres and collects discharges from Adobe, Barron, and Matadero Creeks. These creeks originate in the foothills of the Santa Cruz Mountains and generally flow northeastward into Bay through the PAFB. The total tributary drainage area of the PAFB is approximately 32 square miles. As the creeks flow in well-defined and constricted channels of the valley floor, they pass through highly urbanized areas in the City of Palo Alto, and the Towns of Los Altos and Los Altos Hills, thereby furnishing outfalls for the municipal storm drains systems.

The existing tide gate structure was constructed by Valley Water in 1957. The area's first levees were constructed in the mid-1930s in a cooperative effort between San Mateo County and the Santa Clara County Flood Control and Water Conservation District to provide flood protection (City of Palo Alto 2008). The levees are no longer at their 1958 "As-Built" elevations due to land subsidence, settlement, and erosion. The existing levees are not certified by FEMA.

The approximately 600-acre PAFB supports relatively undisturbed wetlands, which provide habitat for several species of fish, birds, and mammals. The area that comprises the PAFB was historically tidal marsh, but with installation of the tide gate and levees, is now muted tidal wetland that has largely been cut off from daily tidal influence . The approximately 36-acre island north of the tide gate (Hooks Island) and land southwest of the tide gate (west of Mayfield Slough across the Adobe Creek Loop Trail) is undisturbed tidal salt marsh, and subject to tidal action (part of the Baylands Nature Preserve).

Figure 3-1. Photo of Existing Tide Gate and Levee



Chapter 4

Environmental Evaluation

In accordance with CEQA, the following Initial Study Checklist is an analysis of the Project’s potential environmental effects to determine whether an Environmental Impact Report is needed. Answers to the checklist questions provide factual evidence and Valley Water rationale for determinations of the potential significance of impacts resulting from the Project.

The Initial Study checklist shows that the Project may have potentially significant effects on biological resources. Mitigation measures have been proposed for the Project to reduce potential effects to less than significant levels; therefore, the proposed MND is consistent with CEQA Guidelines Section 15070.

Environmental Checklist Form

1. Project Title:	Palo Alto Flood Basin Tide Gate Structure Replacement
2. Lead Agency Name and Address:	Santa Clara Valley Water District 5750 Almaden Expressway San Jose CA 95118
3. Contact Person and Phone Number:	Alex Hunt (408) 630-3007
4. Project Location:	Northern end of the Palo Alto Flood Basin (northeast of Byxbee Park), Palo Alto, CA 94303
5. Project Sponsor’s Name and Address:	Santa Clara Valley Water District 5750 Almaden Expressway San Jose, CA 95118
6. General Plan Designation:	Public Conservation Land (City of Palo Alto 2017a)
7. Zoning:	Public Facilities (City of Palo Alto 2013)
8. Description of the Project:	The Project would involve construction of a new 132-foot-wide tide gate structure slightly upstream and southeast of the existing 113-foot-wide deteriorating structure, and construction of a new levee connecting to the new tide gate structure.
9. Surrounding Land Uses and Setting:	Surrounding land uses include public parks and open space, the RWQCP, a small regional airport, and commercial and office space.
10. Other public agencies whose approval is required:	<ul style="list-style-type: none"> ○ RWQCB – Section 401 Water Quality Certification ○ USACE – Section 404 Individual Permit ○ BCDC – Administrative (Minor) Permit ○ USFWS –Section 7 Consultation ○ NMFS – Section 7 Consultation and MMPA IHA ○ CDFW – Streambed Alteration Agreement and Incidental Take Permit ○ City of Palo Alto – Encroachment Permit and Noise Exception Permit
11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1?	No California Native American tribes culturally affiliated with the project area have requested consultation pursuant to PRC Section 21080.3.1.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- | | | |
|----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Energy |
| <input type="checkbox"/> Geology and Soils | <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards and Hazardous Materials |
| <input type="checkbox"/> Hydrology and Water Quality | <input type="checkbox"/> Land Use and Planning | <input type="checkbox"/> Mineral Resources |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Population and Housing | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation / Traffic | <input type="checkbox"/> Tribal Cultural Resources |
| <input type="checkbox"/> Utilities and Service Systems | <input type="checkbox"/> Wildfire | <input type="checkbox"/> Mandatory Findings of Significance |

Determination:

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	<input type="checkbox"/>
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	<input checked="" type="checkbox"/>
I find that the proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.	<input type="checkbox"/>
I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	<input type="checkbox"/>
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	<input type="checkbox"/>



Signature

9/14/2020

Date

Alex Hunt
 Associate Environmental Planner
 Valley Water

Aesthetics

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

Regulatory Setting

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 Santa Clara County General Plan, Palo Alto Comprehensive Plan, Palo Alto Baylands Nature Preserve Design Guidelines, and the Palo Alto Baylands Master Plan contain language requiring the preservation of aesthetic/visual resources values, as summarized in **Table 4-1**. The Palo Alto Comprehensive Plan describes the aesthetic value of the Baylands area in general, stating that “views of the Baylands provide a strong connection to the marine environment and the East Bay hills” and that “they represent an important facet of the look and feel of Palo Alto” (City of Palo Alto 2017a). In addition, the Baylands Master Plan includes Design Guidelines that 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 4-1. County and City Policies Related to Aesthetics

Document	Policy
<p>Santa Clara County General Plan (1994)</p>	<p>C-RC-1: Natural and heritage resources shall be protected and conserved for their ecological, functional, economic, aesthetic, and recreational values.</p> <p>C-RC-27: Habitat types and biodiversity within Santa Clara County and the region should be maintained and enhanced for their ecological, functional, aesthetic, and recreational importance.</p> <p>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.</p> <p>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.</p>
<p>Palo Alto Comprehensive Plan (2017)</p>	<p>Policy L-3: Guide development to respect views of the foothills and East Bay hills from public streets in the developed portions 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.</p> <p>Map L-4. Community Design Features. This map identifies major view corridors within the Baylands and scenic routes in Palo Alto.</p>
<p>Palo Alto Baylands Nature Preserve Design Guidelines (2005)</p>	<p>The Baylands Nature Preserve Design Guidelines provides design guidelines for site features, such as fences, signs, paving, and other features. The Design Guidelines are intended to provide a consistent approach to design, placement, and construction of common landscape elements that respects the landscape character, establishes a distinctive identity, and sets a standard of quality within the Baylands. The Baylands Design Guidelines are intended to help implement the Baylands Master Plan and the Baylands-related policies and programs in the Palo Alto Comprehensive Plan. Therefore, the Design Guidelines should be used in conjunction with these policy documents. In addition, public and private projects in the Baylands that include any new construction, installation, or changes to existing landscaping, plants, paving, signs, other site features and furnishings, or the exterior of buildings and structures are subject to Site and Design review. (PAMC Section 18.82)</p>
<p>City of Palo Alto Baylands Master Plan (2008)</p>	<p>The <i>Baylands Master Plan</i> 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.</p> <p>The following is a list of applicable policies.</p> <ul style="list-style-type: none"> • Overall Environmental Quality Policy No. 3: Expand bicycle and pedestrian activities while reducing vehicle traffic in the Baylands as far as possible. • Overall Environmental Quality Policy No. 4: Restrict storage and parking of vehicles in the Baylands.

Document	Policy
	<ul style="list-style-type: none"> • Overall Environmental Quality Policy No. 5: Keep marshes open to the Bay along the entire shoreline. • Overall Environmental Quality Policy No. 11: Eliminate telephone and electric wires and poles from the Baylands by using radio communications or running utilities underground. • Overall Environmental Quality Policy No. 13: Follow guidelines established in the <i>Site Assessment and Design Guidelines, Palo Alto Baylands Nature Preserve</i> published in 2005.

Sources: County of Santa Clara 1994, City of Palo Alto 2017a, City of Palo Alto 2005; City of Palo Alto 2008

Existing Conditions

The Project area is centered on the existing tide gate structure and levee that separate the PAFB from the Bay. The existing tide gate structure sits at the northern end of the PAFB and is approximately 113 feet long, 14 feet wide, and 12 feet tall. The PAFB’s water elevation is typically maintained at 0.6 feet below mean sea level to maintain flood capacity and basin levees extend to approximately 11 feet NAVD88⁵. The top of the existing tide gate structure has an approximate elevation of 10.4 feet NAVD88 (9.1 NGVD29⁴).

The Adobe Creek Loop Trail (a portion of the Bay Trail) provides pedestrian and bicycle access over the tide gate structure and along the levee. The City of Palo Alto’s Comprehensive Plan identifies the Baylands Nature Preserve, of which the Project area is a part, as a location with “major view corridors” (City of Palo Alto 2017a). Views from the Adobe Creek Loop Trail include the Bay to the north and east, the Dumbarton Bridge to the north, the Diablo Range to the north and east, and the Santa Cruz Mountains to the south and west.

Views of the Project area are accessible from elevated portions of Byxbee Park to the south, certain segments of the Adobe Creek Loop Trail, the Baylands Sailing Station, and nearby portions of the San Francisco Bay Water Trail. The tide gate structure and levees themselves do not provide aesthetic value, other than within the context of the larger PAFB, Baylands Nature Preserve, and Bay in general.

The nearest scenic highway to the Project area is Interstate 280 (I-280), located approximately 5.5 miles to the southwest (Santa Clara County 2008). The Project area is not visible from I-280 or any other scenic highways.

Discussion

a) Would the Project have a substantial adverse effect on a scenic vista?

The City of Palo Alto’s Comprehensive Plan identifies the Baylands Nature Preserve, of which the Project area is a part, as a site of “major view corridors” (City of Palo Alto 2017a). The Project would not significantly alter access to, or the character and quality of, these view corridors.

During construction, access to the Project area via the Adobe Creek Loop Trail would be restricted, rendering limited views from the Project area temporarily unavailable. An approximately 0.5-mile section of the trail would be closed for up to 3.5 years, extending approximately 0.05-mile (300 feet) west/south of the tide gate and 0.4-mile east. During the

⁵ North American Vertical Datum of 1988.

⁴ National Geodetic Vertical Datum of 1929.

construction work window (September 1 to January 31), the trail would be closed approximately 0.2 mile to the west and 2.1 miles to the east of the existing tide gate structure. However, trail users and other visitors to the area would be able to access comparable views from adjacent portions of the Adobe Creek Loop Trail and surrounding areas. Following construction, the trail would be re-opened and views of scenic vistas from the Project area and access routes would be fully restored.

Views of scenic vistas from nearby areas would not be significantly altered by construction of the Project. During construction, there would be equipment and workers present in the Project area. While some equipment would be up to approximately 70 feet tall (i.e., drill rigs and cranes) during the limited construction window, the temporary presence of this equipment and other construction activity would not significantly degrade the quality of the scenic vista. Construction trucks and equipment utilizing the Adobe Creek Loop Trail for access to the Project area could also impact on views of scenic vistas, both for trail users and the general public enjoying views of Baylands Nature Preserve. However, the aesthetic impacts from trucks and equipment on these trails would be limited to the up to 21 total months of construction, spread across 5 years.

Once complete, the new structure would have an elevation of 11.6 feet above mean sea level NGVD29 (15.2 NAVD88), approximately 4.8 feet higher than the existing structure. While the new tide gate structure would also be approximately 22 feet wider and be located slightly upstream and to the east of the existing structure, views of scenic vistas would remain unobstructed following completion of the Project. Views of surrounding areas from the Project area would remain the same or, due to the 2.1-foot increase in the tide gate's elevation, negligibly improve as a result of the Project. The impact on scenic vistas would be **less than significant**.

b) Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The Project area is not located near a State-designated scenic highway. The nearest eligible scenic State highway is I-280, located approximately 5.5 miles from the Project area, and the Project area is not visible from this highway. No rock outcroppings or historic buildings are located on site or in the immediate vicinity of the Project area. Therefore, **no impact** would occur.

c) Would the Project, in nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

The Project is located on public parkland, at the interface of extensive suburban development on the San Francisco Peninsula and the Bay. Local guidelines pertaining to aesthetics are set forth in the Palo Alto Baylands Nature Preserve Design Guidelines and the City of Palo Alto Baylands Master Plan. The Project would be consistent with these guidelines, including maintaining the open, spacious, and horizontal essential character of the area. The Project would have minor temporary impacts on the landscape quality of the area during the up to 21 months of construction (spread across 5 years) from the presence of equipment and construction activity; however, comparable views would be publicly accessible from other parts of the Adobe Creek Loop Trail and the Baylands Nature Preserve throughout construction. Following construction, the tide gate structure would be relocated slightly upstream and to the east of its present location and be 22 feet wider and 2.1 feet taller.

Therefore, the site's current aesthetic character would be maintained. Due to the temporary nature of construction-related impacts and the minimal differences in the pre-Project and post-Project condition of the site, the impact would be **less than significant**.

d) Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Construction activities would occur during daytime (civil twilight) hours only and additional light sources would not be necessary during construction. The Project does not include the installation of any structures that would create additional light or glare upon Project completion. **No impact** would occur.

Agriculture and Forestry Resources

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation (CDC) as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board (CARB).

Regulatory Setting

Farmland Mapping and Monitoring Program

The CDC maintains the Farmland Mapping and Monitoring Program (FMMP), which is the only statewide agricultural land use inventory conducted on a regular basis to monitor changes in agricultural use. Farmlands are divided into the following categories based on their suitability for agriculture: prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, grazing land, and other lands. Additional categories used in the FMMP mapping system include urban and built-up lands, and lands committed to non-agricultural use.

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965, also known as the Williamson Act, is the State's principal agricultural land protection program. The Williamson Act provides a property tax

incentive for the voluntary enrollment of agricultural and open space lands in contracts between local government and landowners. The contract, which lasts a minimum of 10 years, restricts the land to agricultural and open space uses and compatible uses defined in State law and local ordinances.

Existing Conditions

The Project area is located in the City of Palo Alto, northeast of US-101 on the Bay shoreline. The Project area is comprised of the existing tide gate structure, levees, Bay waters, and the PAFB, all within the Baylands Nature Preserve. There is no agricultural land on or adjacent to the Project area. The map of Santa Clara County's Important Farmland compiled by the FMMP categorizes the Project area as "other land" and is not recognized as farmland (CDC 2016a). Similarly, the Project area does not qualify as a forest resource.

Discussion

a) Would the Project convert prime farmland, unique farmland, or farmland of statewide importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No prime farmland, unique farmland, or farmland of statewide importance is located in the Project area. Therefore, no conversion of prime farmland, unique farmland, or farmland of statewide importance to other uses would occur from Project implementation. There would be **no impact**.

b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The Project area is located on public parkland that is not a part of any Williamson Act contract (CDC 2016b). As a tidally influenced area with no agricultural potential, the Project would not result in farmland conversion, conflict with a Williamson Act contract, or conflict with existing agricultural zoning. **No impact** would occur.

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

The Project area is located on a narrow levee and tide gate structure at the margin of the PAFB and Bay. No forest land as defined in PRC Section 12220(g), or timberland as zoned by Government Code Section 51104(g) is located in the Project area. Therefore, **no impact** would occur.

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

No forest land is located in the Project area or within its immediate vicinity. Therefore, there would be no conversion of forest land to non-forest use as a result of the Project. **No impact** would occur.

e) Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use?

See discussions under "a" and "c" above. **No impact** would occur.

Air Quality

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of applicable air quality plans?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Regulatory Setting

The U.S. Environmental Protection Agency (EPA) and CARB regulate direct emissions from motor vehicles. The Bay Area Air Quality Management District (BAAQMD) is the regional agency primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as monitoring ambient pollutant concentrations.

Federal Clean Air Act

The federal Clean Air Act (CAA) of 1970 authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The CAA Amendments of 1990 changed deadlines for attaining national standards as well as the remedial actions required of areas of the nation that exceed the standards. Under the CAA, State and local agencies in areas that exceed the national standards are required to develop State Implementation Plans to demonstrate how they will achieve the national standards by specified dates.

California Clean Air Act

In 1988, the California Clean Air Act (CCAA) required that all air districts in the State endeavor to achieve and maintain California Ambient Air Quality Standards for carbon monoxide, ozone, sulfur dioxide and nitrogen dioxide by the earliest practical date. The CCAA provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality standards. Generally, the State standards for these pollutants are more stringent than the national standards.

Bay Area Air Quality Management District

In June 2010, the BAAQMD adopted significance thresholds for agencies to use to assist with environmental review of projects under CEQA. These thresholds were designed to establish the level at which the BAAQMD believed air pollutant emissions would cause significant impacts under CEQA. A decision by the California Supreme Court in late 2015 confirmed that local agencies may rely on BAAQMD’s thresholds when analyzing project impacts on air quality.

As outlined in the current BAAQMD Air Quality Guidelines (BAAQMD 2017), the first step in determining the significance of construction-related criteria air pollutants and precursors is to compare the attributes of a project with the applicable screening criteria listed in Chapter 3 of the Air Quality Guidelines. If all of the screening criteria are met by a proposed project, then the lead agency would not need to perform a detailed air quality assessment of its project’s air pollutant emissions, and the lead agency may conclude that the project would not result in a significant impact to air quality.

This preliminary screening provides the lead agency with a conservative indication of whether the project would result in the generation of construction-related criteria air pollutants and/or precursors that exceed the thresholds of significance for construction-related criteria air pollutants and precursors, as shown in **Table 4-2**.

Table 4-2. Thresholds of Significance for Construction-Related Criteria Air Pollutants/Precursors

Pollutant/Precursor	Daily Average Emissions (lbs/day)
ROG	54
NO _x	54
PM ₁₀	82*
PM _{2.5}	54*

Notes:

* Applies to construction exhaust emissions only.

NO_x = oxides of nitrogen

PM_{2.5} = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less.

PM₁₀ = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less

ROG = reactive organic gases

Source: BAAQMD 2017

Existing Conditions

The Project area is located within the San Francisco Bay Air Basin, which is under the jurisdiction of the BAAQMD. Regional and local air quality in the basin is impacted by topography, dominant airflows, atmospheric inversions, location, and season.

Both the State and federal government have established health-based Ambient Air Quality Standards for six criteria air pollutants including carbon monoxide (CO), ozone, nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead, and suspended particulate matter (PM). These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Reactive organic gases (ROG) are formed from combustion of fuels and evaporation of organic solvents. ROGs are an ozone precursor and a prime component of the photochemical reaction that forms ozone. NO_x (compounds of NO₂), a reddish-brown gas, and nitric oxide (NO), a colorless and odorless gas, are formed from fuel combustion under high temperature or pressure. NO_x is a primary component of the photochemical smog reaction. Fine suspended PM with an aerodynamic diameter of 2.5 microns or less is referred to as PM_{2.5}; PM with coarse particles that are larger than 2.5 microns but smaller than 10 microns is referred to as PM₁₀.

Toxic air contaminants (TACs) are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A wide range of sources from industrial plants to motor vehicles emit TACs. TACs are generally regulated through State and local risk management programs designed to eliminate, avoid, or minimize the risk of adverse health effects from exposure to TACs. One TAC of concern for the Project is diesel particulate matter (DPM). TACs are regulated by CARB with various airborne toxic control measures, which are aimed at minimizing the risk of exposure.

Sensitive Receptors

Those who are considered sensitive to air pollution include children, the elderly, and persons with pre-existing respiratory or cardiovascular illness. Therefore, sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. The nearest sensitive receptors to the Project area include multiple multi-family residential developments, located approximately 1 mile west of the Project area; multiple schools (including the Emerson School, the International School of the Peninsula, Fusion Academy, Hope Technology School, and the Girls' Middle School), all located between 1 and 1.5 miles of the Project area; and the East Palo Alto Senior Center, located approximately 2.4 miles northwest of the Project area.

Attainment Status

CARB is required to designate areas of the State as attainment, nonattainment, or unclassified for all State standards. An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An unclassified designation signifies that data does not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The EPA also designates areas as attainment, nonattainment, or classified. The San Francisco Bay Area is classified as non-attainment under the State and federal 8-hour ozone standard; non-attainment for both the annual arithmetic mean and the 24-hour standard for coarse PM (PM_{10}) standard under the State standard; and non-attainment for fine particulate matter ($PM_{2.5}$) under the annual arithmetic mean under the State standard and non-attainment under the federal 24-hour standard.

The Project area is located in a nonattainment area for the State and federal 8-hour ozone standard; both the annual arithmetic mean and the 24-hour standard for PM_{10} under the State standard; and for $PM_{2.5}$ under the annual arithmetic mean under the State standard and non-attainment under the federal 24-hour standard.

Discussion

This air quality impact analysis considers construction-related impacts to air quality associated with the Project against the BAAQMD thresholds of significance. Equipment, trucks, worker vehicles, and ground-disturbing activities associated with Project construction would generate temporary emissions of criteria air pollutants and precursors. As operation of the new tide gate structure would remain consistent with current practices, no increase in operational emissions is anticipated.

a) Would the Project conflict with or obstruct implementation of applicable air quality plans?

The most recently adopted BAAQMD air quality plan is the Spare the Air – Cool the Climate 2017 Clean Air Plan (2017 Plan). The 2017 Plan focuses on two closely related goals: protecting impacted communities and promoting social equity, and protecting the climate. Consistency with the 2017 Plan can be determined if a project does the following: 1) supports the goals of the 2017 Plan; 2) includes applicable control measures from the 2017 Plan; and 3) would not disrupt or hinder implementation of any control measures from the 2017 Plan. Project consistency with the mobile source measures, land use and local impact measures, and energy measures is described below:

- *Mobile Source and Transportation Control Measures.* The BAAQMD identifies control measures as part of the 2017 Plan to reduce ozone precursor emissions from stationary, area, mobile, and transportation sources. The Transportation Control Measures are designed to reduce emissions from motor vehicles by reducing vehicle trips and vehicle miles traveled (VMT) in addition to vehicle idling and traffic congestion. The Project would replace a deteriorating tide gate structure with a minimally expanded structure that is safer and better suited to the area's long-term flood protection needs. There would be no increase in VMT as a result of this Project, as the Project would not generate additional vehicle trips aside from construction-related trips. Therefore, the Project would not conflict with the transportation and mobile source control measures from the 2017 Plan.
- *Land Use and Local Impacts Measures.* The 2017 Plan includes Land Use and Local Impacts Measures to achieve the following: promote mixed-use, compact development to reduce motor vehicle travel and emissions; and ensure that planned growth is focused in a way that protects people from exposure to air pollution from stationary and mobile sources of emissions. The Project would not conflict with the Land Use and Local Impacts Measures identified in the 2017 Plan as the Project does not modify land use or induce growth.
- *Energy and Climate Measures.* The 2017 Plan also includes Energy and Climate Measures, which are designed to reduce ambient concentrations of criteria pollutants and reduce emissions of carbon dioxide (CO₂). Implementation of these measures is intended to promote energy conservation and efficiency in buildings, promote renewable forms of energy production, reduce the "urban heat island" effect by increasing reflectivity of roofs and parking lots, and promote the planting of trees with low volatile organic compound (VOC) emissions to reduce biogenic emissions, lower air temperatures, provide shade, and absorb air pollutants. The energy measures of the 2017 Plan are not applicable to the Project, as the Project would not include the construction of any buildings or parking lots.

As discussed above, implementation of the Project would not disrupt or hinder implementation of the applicable measures outlined in the 2017 Plan, including Mobile Source and Transportation Control Measures, Land Use and Local Impacts Measures, and Energy and Climate Measures. Therefore, there would be **no impact**.

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard?

Construction Emissions

Project construction would result in tailpipe emissions from construction vehicles and equipment, as well as fugitive dust generated by ground-disturbing activities. During site preparation, levee removal, existing tide gate structure demolition, construction of the new tide gate structure, and levee reconstruction, short-term degradation of air quality may occur due to the release of particulate emissions generated by construction activities. In addition to dust-related PM₁₀ emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, NO_x, ROG_s, and some soot particulate (PM_{2.5} and PM₁₀) in exhaust emissions. If construction temporarily increased traffic in the vicinity of the Project area, CO and other emissions from traffic would increase slightly. These emissions would be temporary and limited to the immediate area surrounding construction activities. Valley Water would implement BMP AQ-1 (*Use Dust Control Measures*) and AQ-3 (*Reduce Construction-related NO_x Emissions*) during construction to reduce these short-term air quality impacts. These BMPs (listed in **Table 2-4**) are consistent with the BAAQMD’s BMPs for minimizing construction-related emissions.

Construction emissions were calculated using the California Emissions Estimator Model (CalEEMod; Version 2016.3.2) to document the anticipated emissions (**Appendix A**). Estimated maximum daily construction emission without BMPs implemented are summarized in **Table 4-3**. As shown in **Table 4-3**, Project construction would not generate maximum daily emissions exceeding the significance thresholds in any year of construction even without considering the BMPs. Implementation of the BMP AQ-1 and BMP AQ-3 would further reduce the emissions. As a result, potential impacts associated with construction emissions would be **less than significant**.

Table 4-3. Construction Emissions without BMPs Incorporated by Calendar Year

Calendar Year	Construction Emissions (pounds/day)						
	ROG _s ^a	NO _x ^a	CO	PM ₁₀ Fugitive Dust	PM ₁₀ Exhaust	PM _{2.5} Fugitive Dust	PM _{2.5} Exhaust
2021	1.2	12.8	0.02	6.1	0.6	1.6	0.5
2022	1.7	17.2	0.03	3.9	0.8	1.6	0.7
2023	1.2	13.5	0.03	2.8	0.6	1.0	0.6
2024	1.5	14.4	0.03	3.9	0.6	1.6	0.6
2025	0.3	2.7	0.01	1.3	0.1	0.3	0.1
Significance Thresholds	54	54	N/A^b	BMPs	82	BMPs	54
Exceed Thresholds?	No	No	-	-	No	-	No

^a ROG_s and NO_x are ozone precursors.

^b The BAAQMD does not establish significance thresholds for CO emissions during construction.

Operational Emissions

Operational emissions impacts are long-term air emission impacts associated with area sources and mobile sources involving any change related to the Project. Once construction is complete, operation of the tide gates and general maintenance in the area would be

unchanged from existing practice. Maintenance activities would occur less frequently or similar to the existing conditions, given the new structure would replace an aging structure in frequent need of maintenance. Furthermore, given the new tide gate structure would be able to be controlled electronically from the office via the SCADA system, fewer vehicle trips would be required to manually open and close the sluice gate (current operational practice). Therefore, the Project is not expected to result in the generation of additional operational emissions beyond the current baseline. There would be **no impact** from operational emissions.

Localized Carbon Monoxide

As described above, the Project would not generate additional vehicle trips over existing conditions for maintenance once the Project is operational. In addition, the Project would not conflict with the Santa Clara Valley Transportation Authority's Congestion Management Plan or other agency plans with oversee localized CO emissions. Therefore, the Project would not result in localized CO concentrations that exceed State or federal standards, and the impact would be **less than significant**.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to DPM and substantial pollutant concentrations are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to DPM. Exposure from diesel exhaust associated with construction activity could contribute to both cancer and chronic non-cancer health risks.

During construction, various diesel-powered vehicles and equipment would be used. In 1998, CARB identified PM from diesel-fueled engines as a TAC. CARB has completed a risk management process that identifies potential cancer risks for a range of activities using diesel-fueled engines. High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (e.g., distribution centers and truck stops) were identified as having the highest associated risk.

Health risks from TACs are a function of both concentration and duration of exposure. Unlike the above types of sources, construction diesel emissions are temporary, affecting an area for a limited period of time, whereas health risks are based on a 70-year risk duration. Additionally, construction-related emissions sources are mobile and transient in nature and are limited to the Project area. The nearest sensitive receptors to the Project area include multiple multi-family residential developments, located approximately 1 mile west of the Project area; multiple schools (including the Emerson School, the International School of the Peninsula, Fusion Academy, Hope Technology School, and the Girls' Middle School), all located between 1 and 1.5 miles of the Project area; and the East Palo Alto Senior Center, located approximately 2.4 miles northwest of the Project area.

The Project would be phased over a period of five construction seasons spanning September through January for a total of up to 21 months. The construction period is considered short relative to the 70-year health risk exposure analysis period, especially given the proximity to sensitive receptors and the short period for which receptors would be exposed to emissions. In addition, as shown in **Table 4-3**, Project construction PM₁₀ exhaust emissions (the primary source of construction TAC emissions) would not exceed 0.8 pounds per day in any given

year, which is well below the BAAQMD's threshold for PM₁₀ exhaust emissions of 84 pounds per day. Therefore, impacts to sensitive receptors from DPM and TACs would be **less than significant**.

d) Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Odors are generally regarded as an annoyance rather than a health hazard and the ability to detect odors varies considerably and is considered subjective. During construction, limited odors may occur from equipment exhaust or spoils generated during construction. These odors are expected to be minor and short-term. Trail users are the most likely receptor of such odors, but are not considered to be sensitive receptors due to the fact that they are mobile and do not permanently occupy the Project vicinity. During construction, trail users would also be restricted from the Project area by trail closures located approximately 0.6 mile west and 2.2 miles east of the earthmoving and tide gate structure construction activities. In addition, BMP AQ-2 (*Avoid Stockpiling Odorous Materials*) would require that odorous materials are handled in a manner that avoids impacting the surrounding receptors. Once operational, the Project does not include any activities that would generate objectionable odors. Therefore, the Project would not create objectionable odors affecting a substantial number of people and the impact would be **less than significant**.

Biological Resources

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

An evaluation of potential impacts to biological resources within the Project area is based on a Biological Site Assessment prepared by the Valley Water, Environmental Mitigation and Monitoring Unit in September 2020 to evaluate potential impacts to sensitive biological resources associated with the Project (**Appendix B**). An Aquatic Resources Delineation Report was prepared by Huffman-Broadway Group, Inc. (**Appendix C**).

Regulatory Setting

Biological resources in the Project area are protected by numerous federal and State regulations, including the Federal Endangered Species Act (FESA), Migratory Bird Treaty Act, Marine Mammal Protection Act (MMPA), Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Clean Water Act (CWA), California Endangered Species Act (CESA), and California Native Plant Protection Act (CNPPA).

Federal

Endangered Species Act

FESA (16 U.S. Government Code (USC) Section 1531 et seq.) protects fish and wildlife species that are listed as threatened or endangered and their habitats. Endangered refers to species, subspecies, or distinct population segments that are in danger of extinction in all or a significant portion of their range. Threatened refers to species, subspecies, or distinct population segments that are considered likely to become endangered in the future. FESA is administered by the USFWS for terrestrial and freshwater species and by NMFS for marine species and anadromous fishes. FESA prohibits “take” of any fish or wildlife species listed by the federal government as endangered or threatened.

Section 7 of the FESA requires federal agencies to consult with the USFWS and/or NMFS, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat. Section 9 prohibits the take of any plant, fish, or wildlife species listed under FESA as endangered, unless otherwise authorized by federal regulations. Section 10 establishes a process by which private parties can obtain permission for incidental take permits for unintended take that may occur during projects.

Critical habitat, as defined in FESA Section 3, is the specific area within the geographic area occupied by a species, at the time it is listed in accordance with the FESA, that supports biological features that are essential to the conservation of the species, and may require special management considerations or protection. Critical habitat may also include specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Migratory Bird Treaty Act

The MBTA (16 USC Section 703–712 et seq.) enacted the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union, and authorizes the U.S. Secretary of the Interior to protect and regulate take of migratory birds. The MBTA is administered by USFWS. It establishes seasons and bag limits for hunted species, and renders taking, possession, import, export, transport, sale, purchase, and barter of migratory birds, their occupied nests, and their eggs illegal except where authorized under the terms of a valid federal permit. Activities for which permits may be issued include scientific collecting; falconry and raptor propagation; “special purposes,” which include rehabilitation, education, migratory game bird propagation, and miscellaneous other activities; control of depredating birds; taxidermy; and waterfowl sale and disposal. More than 800 species of birds are protected under the MBTA. Specific definitions of “migratory bird” are discussed in each of the international treaties; in general, however, species protected under the MBTA are those that migrate to complete different stages of their life history or to take advantage of different habitat opportunities during different seasons.

Marine Mammal Protection Act

The MMPA (Title 16, USC, Sections 1361–1421h), adopted in 1972, makes it unlawful to take or import any marine mammals and/or their products. An incidental harassment permit may be issued by NMFS to cover activities with negligible effects on species for up to 1 year. The MMPA includes two levels of harassment. Level A harassment is defined as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal in the wild. Level B harassment is defined as harassment having potential to disturb marine mammals by causing disruption of

behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Act establishes a management system for national marine and estuarine fishery resources. This legislation requires that all federal agencies consult with NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect Essential Fish Habitat (EFH). EFH is defined as “waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The legislation states that migratory routes to and from anadromous fish spawning grounds are considered EFH. The phrase adversely affect refers to the creation of any effect that reduces the quality or quantity of EFH. Federal activities that occur outside of an EFH, but may nonetheless have an effect on EFH waters and substrate, must also be considered in the consultation process.

Under the Magnuson-Stevens Act, effects on habitat managed under the Pacific Salmon Fishery Management Plan must also be considered. The Magnuson-Stevens Act states that consultation regarding EFH should be consolidated, where appropriate, with the interagency consultation, coordination, and environmental review procedures required by other federal statutes, such as the National Environmental Policy Act, Fish and Wildlife Coordination Act, CWA, and ESA. EFH consultation requirements can be satisfied through concurrent environmental compliance if the lead agency provides NMFS with timely notification of actions that may adversely affect EFH and the notification meets requirements for EFH assessments.

Clean Water Act

The CWA (33 USC 1251 et seq.) is the primary federal law protecting the quality of the nation’s surface waters, including wetlands. Under Section 404, the USACE and EPA regulate the discharge of dredged and fill materials into the waters of the United States. Project sponsors must obtain a permit from USACE for discharges of dredged or fill materials into jurisdictional waters over which USACE determines that it will exert jurisdiction.

The USACE issues two types of permits under Section 404: general permits (either nationwide permits or regional permits) and standard permits (either letters of permission or individual permits). General permits are issued by the USACE to streamline the Section 404 process for nationwide, statewide, or regional activities that have minimal direct or cumulative environmental impacts on the aquatic environment. Standard permits are issued for activities that do not qualify for a general permit (i.e., that may have more than a minimal adverse environmental impact).

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act authorizes USACE to regulate the construction of any structure or work in, over, or under; excavation of material from; or deposition of material into navigable waters of the United States, including tidal waters. Navigable waters of the United States are defined as those waters subject to the ebb and flow of the tide shoreward to the mean high water mark or those that are currently used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A Letter of Permission or permit from USACE is required prior to any work being completed within navigable waters.

State

California Endangered Species Act

CESA protects wildlife and plants listed as threatened and endangered by the California Fish and Game Commission, as well as species identified as candidates for such listing. It is administered

by CDFW. CESA requires State agencies to conserve threatened and endangered species and thus restricts all persons from taking listed species except under certain circumstances. CESA defines take as any action or attempt to “hunt, pursue, catch, capture, or kill.” Under certain circumstances, CDFW may authorize limited take, except for species designated as fully protected (see discussion of fully protected species under *California Fish and Game Code* below). The requirements for an application for an incidental take permit under CESA are described in Section 2081 of the FGC and in final adopted regulations for implementing Sections 2080 and 2081.

California Species of Special Concern

A Species of Special Concern (SSC) is a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- is extirpated from the State or, in the case of birds, is extirpated in its primary season or breeding role;
- is listed as federally, but not State, threatened or endangered;
- meets the State definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (nonscyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

CDFW uses the administrative designation of SSC to achieve conservation and recovery of these animals before they meet the CESA criteria for listing. This administrative designation carries no formal legal status; however, the following analysis also considers Project impacts to designated SSC.

California Fish and Game Code

The California Fish and Game Code provides protection from take for a variety of species, separate from and in addition to the protection afforded under CESA. The Code defines take as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Species identified in the Code as fully protected may not be taken except for scientific research. Fully protected species are listed in various sections of the Code. For instance, fully protected birds in general are protected under Section 3511, nesting birds under Sections 3503.5 and 3513, and eggs and nests of all birds under Section 3503. Birds of prey are addressed under Section 3503.5. All other birds that occur naturally in California and are not resident game birds, migratory game birds, or fully protected birds are considered non-game birds and are protected under Section 3800. Section 3515 lists protected fish species and Section 5050 lists protected amphibians and reptiles. Section 4700 identifies fully protected mammals.

FGC Section 1602 requires an entity to notify CDFW before commencing an activity that will: 1) substantially divert or obstruct the natural flow, or substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or 2) deposit or dispose of debris, waste or other material where it may pass into any river, stream, or lake.

California Native Plant Protection Act

The CNPPA (Sections 1900 and 1913) requires all State agencies to utilize their authority to carry out programs to conserve endangered and rare native plants. It gives CDFW the power to designate native plants as endangered or rare and to protect endangered and rare plants from take.

Regional

San Francisco Bay Conservation and Development Commission Bay Plan

BCDC has permit authority over development of the Bay and the shoreline pursuant to the McAteer-Petris Act (California Government Code Section 66000 et seq.). The McAteer-Petris Act requires the BCDC to prepare a “comprehensive and enforceable plan for the conservation of the water of the San Francisco Bay and the development of its shoreline.” The Act was later amended to give the San Francisco Bay Plan the force of law.

BCDC has jurisdiction over all filling, dredging, and changes to uses in the Bay; regulates new development within 100 feet of the shoreline that is subject to tidal action to ensure that maximum public access to the Bay is provided; and ensures that the limited amount of shoreline that is suitable for regional high-priority, water-oriented uses is reserved for such purposes.

Local

City of Palo Alto Comprehensive Plan

The Natural Environment Element of the City of Palo Alto Comprehensive Plan (City of Palo Alto 2017a) includes policies related to biological resources (**Table 4-4**).

Table 4-4. Palo Alto Comprehensive Plan Policies Related to Biological Resources

Policy No.	Policy Description
N-1.1	Preserve, protect and enhance public and private open space and ecosystems of Palo Alto from the foothills to the baylands. Respect the role that natural and landscaped areas within the urbanized part of the city play in a resilient ecological continuum.
N-1.4	Protect special-status species and plant communities, including those listed by State and federal agencies and recognized organizations from the impacts of development and incompatible activities
N-1.5	Preserve and protect the Bay, marshlands, salt ponds, sloughs, creeks, and other natural water or wetland areas as open space, functioning habitats, and elements of a larger, interconnected wildlife corridor, consistent with the Baylands Master Plan.
N-1.7	Carefully manage access and recreational use of environmentally sensitive areas, including the baylands, foothills and riparian corridors, in order to protect habitats and wildlife from the impacts of humans and domesticated animals.
N-3.8	Work with Valley Water, San Francisquito Creek Joint Powers Authority, and other relevant regional and non-governmental agencies to enhance riparian corridors, provide compatible low-impact recreation and ensure adequate flood control.

Palo Alto Baylands Master Plan

The Palo Alto Baylands Master Plan (City of Palo Alto 2008) includes policies to encourage preservation and enhancement of the Baylands’ environmental quality. Policies related to biological resources are summarized below in **Table 4-5**.

Table 4-5. Palo Alto Baylands Master Plan Policies Relevant to Biological Resources

Resource	Policies
Environmental Quality	Keep marshes open to the Bay along the entire shoreline. Control access to environmentally sensitive habitat. Restore the diversity of plants and animals to disturbed upland sites. Ensure there is sufficient native food and cover for wildlife. Allow access to the flood basin only in certain seasons to protect the waterfowl and shorebird refuge area.
Natural Environment	Prohibit access to Hooks Island.
Access and Circulation	Restrict recreational access to the flood basin to preserve and enhance flood basin wildlife and vegetation.
Flood Protection	Do not allow new levee construction to intrude on any marsh or wetlands without appropriate mitigation.

Existing Conditions

The biological study area (study area) includes the work area (i.e., new and existing tide gates and levee, and dewatering limits), staging areas, and a 100-foot buffer around the work and staging areas. Indirect impacts on special-status species may occur beyond the limits of the study area (i.e., noise disturbance to birds), as considered in the impact analysis. The study area is approximately 25.5 acres. Conditions occurring in the study area include: a maintained and functioning levee and pedestrian path along the shoreline; undeveloped interior managed/muted-tidal waters and open space areas; the existing tide gate structure; and undeveloped tidal waters seaward of the levee. The existing tide gate structure is located along the levee and hydrologically connects the Bay to the PAFB on the inboard side of the levee.

Information on land cover types, vegetation, and habitat conditions in the study area were obtained during pedestrian reconnaissance-level surveys conducted by Valley Water and Huffman-Broadway Group, Inc. biologists. Valley Water Associate Biologist Jennifer Watson, B.S., and Senior Biologist Clayton Leal, M.S., conducted field surveys at the Project site on July 12, 2018 and May 7, 2019. Assistant Biologist Sarah Gidre, B.S., also assisted with the survey on May 7. Senior Biologist Zooey Diggory, M.S., conducted a vegetation survey on July 18, 2018. Associate Biologist Laura Garrison, M.S., and Assistant Biologist Josh Weinik, M.S., conducted a rare plant survey on May 23, 2019. Mr. Weinik conducted an additional rare plant survey on July 18, 2019. A field wetland delineation was conducted by the Huffman-Broadway Group on April 25, 2019. The purpose of these surveys was to determine the presence of and potential impacts to biological resources within the study area. These surveys documented the physical habitat characteristics, assessed the potential for occurrence of special-status species, and determined the potential impacts to sensitive habitats in the study area.

Land cover types were determined using high resolution aerial imagery, topographic survey data, direct observations through ground truthing, and collection of soil, vegetation, and hydrology field data. Land cover types were mapped on aerial photographs and digitally using a hand-held Trimble Geo XH Global Positioning System (GPS) unit with sub-meter accuracy. Wetlands within the study area were inspected in the field using USACE’s three parameter criteria as specified in

the USACE Wetlands Delineation Manual (Environmental Laboratory 1987) and the Interim Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (USACE 2008). Land cover shapefiles and spatial data were converted into graphics via ArcGIS 10 software.

Land Cover Types

For the purposes of this analysis, land cover types are defined as the dominant character of the land surface as determined by vegetation, water, or human uses. Land cover types and common wildlife associations within the study area are described below and depicted in **Figures 4-1 and 4-2**.

Estuarine Intertidal Emergent Wetland

Estuarine intertidal emergent wetlands in the study area total approximately 4.3 acres. This habitat occurs in a relatively narrow band on the outboard side (Bay side) of the levee, on Hooks Island, and west of the tide gate, extending from the mean high water line (MHWL) to the high tide line (HTL) and subject to the daily ebb and flow of the tides. The estuarine intertidal emergent wetlands in the study area are dominated by pickleweed (*Salicornia pacifica*), alkali heath (*Frankenia salina*), coastal salt grass (*Distichlis spicata*), gumplant (*Grindelia stricta*), and California cordgrass (*Spartina foliosa*).

Intertidal emergent wetlands can support populations of the federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*) and California Ridgway's rail (*Rallus obsoletus obsoletus*). Other species potentially present include Alameda song sparrow (*Melospiza melodia pusillula*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), black rail (*Laterallus jamaicensis*), Virginia rail (*Rallus limicola*), sora (*Porzana carolina*), salt marsh common yellowthroat (*Geothlypis trichas sinuosa*), and yellow rail (*Coturnicops noveboracensis*), among others.

Estuarine Intertidal Unconsolidated Shore

Estuarine intertidal unconsolidated shore in the study area totals approximately 3.8 acres. This habitat occurs on the outboard side of the levee and is best characterized as open waters of the Bay. This habitat is typically flooded during high tides and at low tide may still contain some surface water or consist of unvegetated or sparsely vegetated mudflats.

The open waters of the Bay provide habitat for more than 100 species of fish and roughly 120 waterbird species, which may be seen foraging at high or low tide. Marine mammals including species of seals, sea lions, otters, dolphins, and whales can also occur in the Bay. Examples include the California sea lion (*Zalophus californianus*), harbor porpoise (*Phocoena phocoena*), southern sea otter (*Enhydra lutris*), gray whale (*Eschrichtius robustus*), and humpback whale (*Megaptera novaeangliae*). California sea lions enter the Central Bay seasonally, and harbor porpoises are known to be present in the Central Bay. Other marine mammals, such as whales, enter the Bay very sporadically and are unlikely to occur in the South Bay. The most abundant marine mammal in the Bay is the Pacific harbor seal (*Phoca vitulina richardsi*), and this is the only species that commonly occurs in the South Bay. The Pacific harbor seal is also the only marine mammal that is known to be a permanent resident of the Bay. Though most marine mammals occurring in the Bay are not special-status species, all marine mammals are protected under the MMPA.

Palustrine Emergent Wetland

Palustrine emergent wetlands in the study area total approximately 1.3 acres and occur in two locations: the island on the interior of the PAFB and a borrow ditch on the levee.

The palustrine emergent wetland on the island on the interior of the PAFB is subject to muted tidal action, controlled by the sluice gate managed by the City of Palo Alto. This habitat is dominated by pickleweed, alkali heath, and coastal salt grass.

The palustrine emergent wetland on the levee is a borrow ditch, located south of the levee road approximately 0.3 mile east of the existing tide gate structure. The area around the borrow ditch is mostly barren, with some ruderal vegetation on the side slopes and pickleweed at the edge of the water. The borrow ditch was holding water during the time of biological survey and wetland delineation in May 2019.

Muted tidal habitat can provide foraging and roosting habitat for shorebirds, particularly at high tide when intertidal mudflats are unavailable. The interior of the PAFB provides nesting, roosting, and foraging habitat for several species of waterfowl, shorebirds, and mammals, as well as wintering grounds for migratory waterfowl and shorebird species. Species which may occur here include Forster's tern (*Sterna forsteri*), gulls (*Larus* spp.), barn swallow (*Hirundo rustica*), black phoebe (*Sayornis nigricans*), common raven (*Corvus corax*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus hudsonius*), red-tailed hawk (*Buteo jamaicensis*), and black skimmer (*Rynchops niger*). Species such as American avocet (*Recurvirostra americana*), black-necked stilt (*Himantopus mexicanus*), long-billed curlew (*Numenius americanus*), and least sandpiper (*Calidris minutilla*) can be found foraging along the water's edge. Salt marsh harvest mice may also use this habitat.

Palustrine Unconsolidated Bottom

Palustrine unconsolidated bottom habitat in the study area totals approximately 5.8 acres and occurs inboard of the levee, best characterized as open waters of the PAFB subject to muted tidal action controlled by the existing tide gates. This habitat extends to the ordinary high-water mark (OHWM) of the PAFB; it is typically flooded year-round and devoid of vegetation.

Species such as American coot (*Fulica americana*), mallard (*Anas platyrhynchos*), gadwall (*Mareca strepera*), ruddy duck (*Oxyura jamaicensis*), northern shoveler (*Spatula clypeata*), snowy egret (*Egretta thula*), great egret (*Ardea alba*), grebes (*Aechmophorus* spp.), and muskrat (*Ondatra zibethicus*) may utilize the waters of the PAFB. Native fish species known to occur in Adobe, Barron, and Matadero Creeks include California roach (*Lavinia symmetricus*), Sacramento sucker (*Catostomus occidentalis occidentalis*), three-spined stickleback (*Gasterosteus aculeatus*), and prickly sculpin (*Cottus asper*). While fish sampling data from the PAFB is not available, a fish die-off was reported in November 2002 where five bat rays, two leopard sharks, and approximately 100 non-native striped bass were collected from near the tide gates up to about one mile upstream on both Adobe and Matadero Creeks (Hughes 2002).

Upland

Upland habitat in the study area totals approximately 7.1 acres and primarily occurs on the levee slopes upland from the HTL (Bay side) and OHWM (PAFB side) and at the staging areas. The habitat is dominated by ruderal and non-native invasive species higher on the slopes, transitioning to a mix of native and non-native halophytes closer to the water's edge. The topographic relief on the levee is generally at a 2:1 to 3:1 slope.

Dominant ruderal species present include rip-gut brome (*Bromus diandrus*), wild oat (*Avena fatua*), wild radish (*Raphanus sativus*), Italian ryegrass (*Festuca perennis*), soft brome (*Bromus hordeaceus*), and broadleaved perennial pepperweed (*Lepidium latifolium*), all of which are non-native and invasive species. Other non-native and invasive species present, primarily along the southern bank of levee, include mustards (*Brassica* spp.), Italian thistle (*Carduus pycnocephalus*), and rattlesnake grass (*Briza maxima*). Native creeping wild rye (*Elymus triticoides*) is also present. Non-native halophytes located closer to the water's edge include iceplant (*Carpobrotus edulis*), New Zealand spinach (*Tetragonia tetragonioides*), and small-flowered ice plant (*Mesembryanthemum nodiflorum*). Native halophytes include salt marsh dodder (*Cuscuta salina*), pickleweed, gumplant, and cordgrass. Common reed (*Phragmites australis*) is also present and can be invasive; however, uncertainties related to taxonomy make it unclear which strains may be non-native in California. Native upland species including elderberry (*Sambucus* sp.), sagebrush (*Artemisia* sp.), and coyote brush (*Baccharis pilularis*) occur around the edges of Staging Area 1.

Ruderal upland areas generally provide low-quality wildlife habitat and primarily support species adapted to human presence such as black-tailed jackrabbit (*Lepus californicus*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), western fence lizard (*Sceloporus occidentalis*), Pacific gopher snake (*Pituophis catenifer*), deer mouse (*Peromyscus maniculatus*), and white-crowned sparrow (*Zonotrichia leucophrys*). This area also provides important foraging habitat for many raptors, such as white-tailed kite, that rely on grassland habitat to hunt for prey.

Barren Ground

Barren ground in the study area totals approximately 3.1 acres and primarily consists of the dirt/gravel levee road, side trails on the levee slopes, and areas devoid of vegetation on the levee and staging areas. No small mammal burrows were observed in the study area.

Hardscape

Hardscape in the study area totals approximately 0.1 acre and is limited to the existing concrete tide gate structure, which also serves as a trail along the top of the levee. Rip-rap aprons are present underwater along the tide gate but were categorized as aquatic habitats for the purposes of this analysis.

Figure 4-1. Habitats in the Western Portion of the Study Area

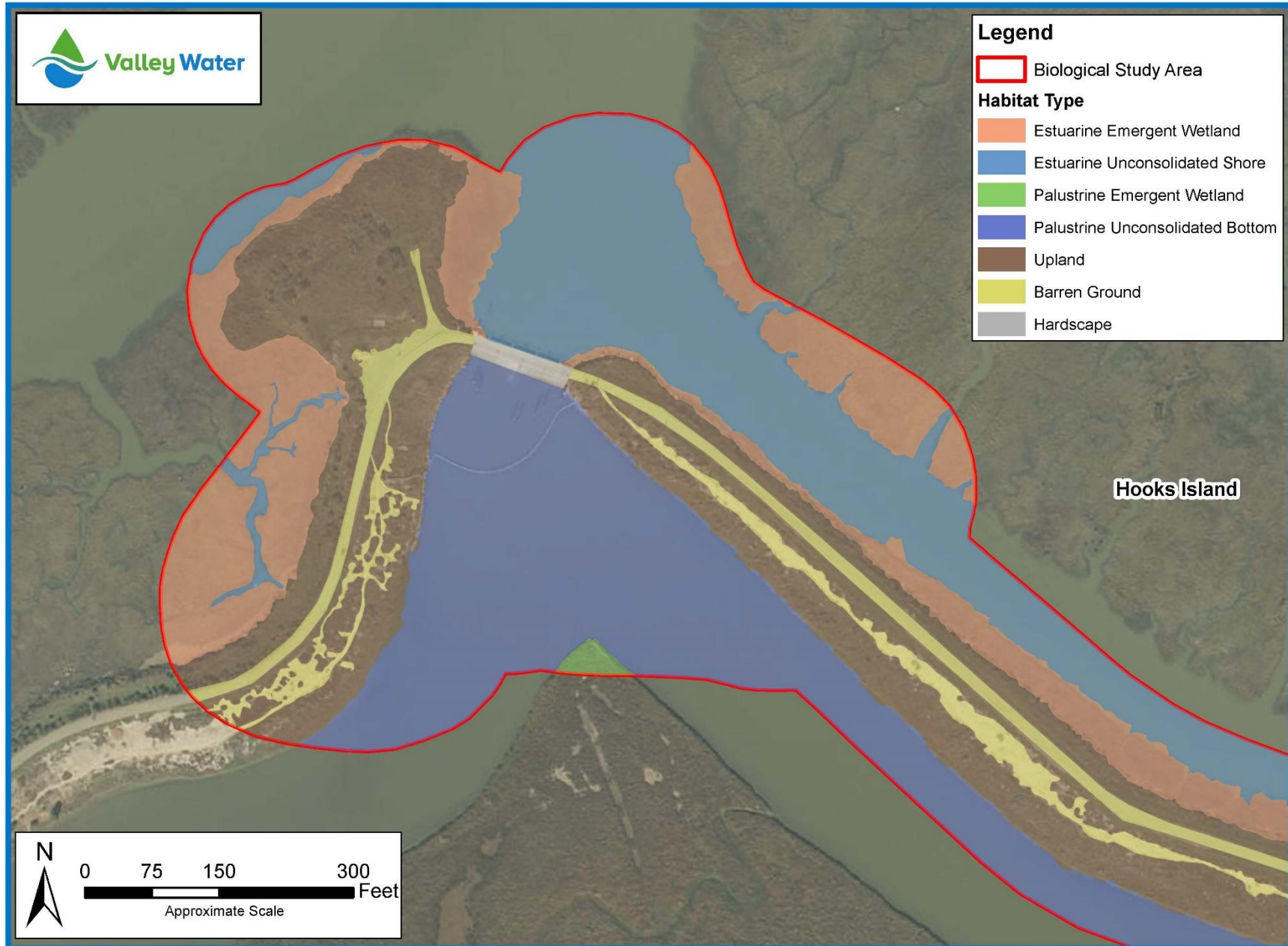
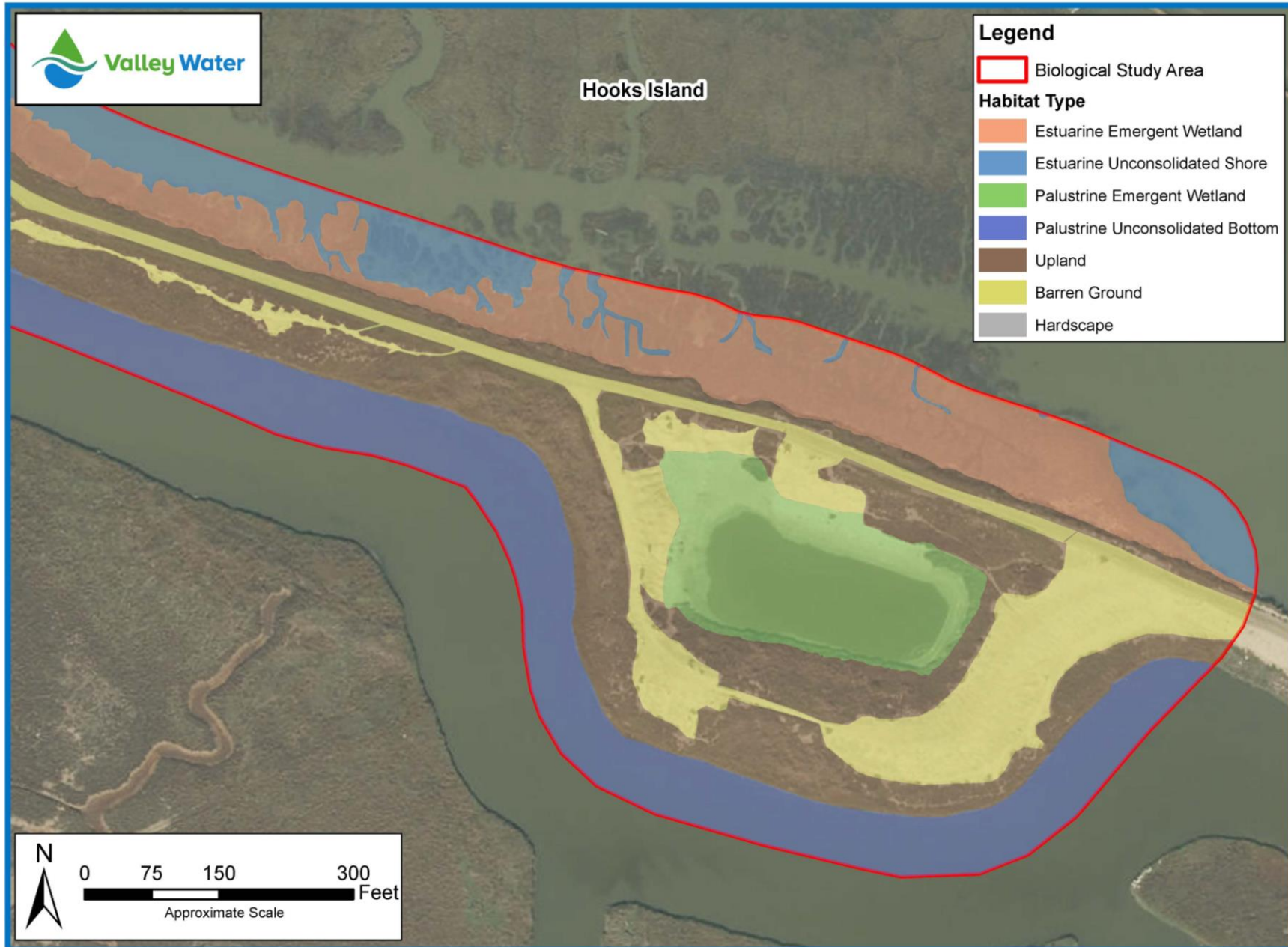


Figure 4-2. Habitats in the Eastern Portion of Study Area



Special-Status Species

For the purposes of this analysis, special-status species are defined as follows:

- Species listed or proposed for listing as threatened or endangered under FESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals]) and various notices in the Federal Register (FR) (proposed species).
- Species that are candidates for possible future listing as threatened or endangered under FESA (61 FR 40 7596–7613).
- Species listed or proposed for listing as threatened or endangered under CESA (14 CCR Section 670.5).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380).
- Plants listed as rare or endangered under the CNPPA (FGC Section 1900 et seq.).
- Plants assigned to one of the following California Rare Plant Ranks (CRPR) by the California Native Plant Society (CNPS) and collaborators.
 - 1A – Presumed extirpated in California and either rare or extinct elsewhere.
 - 1B – Rare, threatened, or endangered in California and elsewhere.
 - 2A – Presumed extirpated in California, but more common elsewhere.
 - 2B – Rare, threatened, or endangered in California, but more common elsewhere.
- Animal species, subspecies, or distinct populations designated as SSC by the CDFW, as identified in its “Special Animals List.”
- Animals designated as Fully Protected species in California (FGC Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Bat species designated as high or medium priority by the Western Bat Working Group. The Western Bat Working Group is a partner in the Coalition of North American Bat Working Groups.

To identify special-status plant and animal species potentially occurring in the study area, Valley Water biologists consulted the following sources:

- CDFW. 2019a. California Natural Diversity Database (CNDDDB). Biogeographic Data Branch, Sacramento, CA. Accessed on: April 26, 2019.
- CNPS. 2019. Rare Plant Program: Inventory of Rare and Endangered Plants within the 7.5-minute U.S. Geologic Survey Quadrangles (surrounding nine quadrangles). 7th edition, version 8-03. Accessed on: April 23, 2019. Available at: <http://www.rareplants.cnps.org/>
- USFWS. 2019. Information, Planning, and Consultation System: List of Federally Endangered and Threatened Species that may Occur in Your Proposed Project Location, and/or may be Affected by Your Proposed Project. Sacramento USFWS. Accessed on: April 23, 2019. Available at: <https://ecos.fws.gov/ipac/>.

Special-Status Plants

Based on a review of the above sources, Valley Water compiled a list of eight special-status plant species with the potential to occur within the study area (**Table 4-6**). **Figure 4-3** depicts CNDDDB occurrences of special-status plants and sensitive habitats within 2 miles of the Project area. Due

to a lack of suitable habitat, only five of the eight special-status plant species identified have potential to occur in the study area.

Although special-status plants were not anticipated to be present in the study area based on CNDDDB records and limited suitable habitat, rare plant surveys were conducted by Valley Water botanists on May 23 and July 18, 2019, covering the blooming periods for all special-status plants with the potential to occur, to determine if any special-status plants were present in the study area, and if so, to identify measures to avoid impacts.

The first survey was conducted on May 23, 2019, during the recorded blooming period for alkali milk-vetch (*Astragalus tener*), hairless popcorn flower (*Plagiobothrys glaber*), and saline clover (*Trifolium hydrophilum*), when these species would have been identifiable. None of these species were observed at the time of the survey.

The second survey was conducted on July 18, 2019, during the recorded blooming period for Point Reyes salty bird's beak (*Chloropyron maritimum ssp. palustre*), California seablite (*Suaeda californica*), Hoover's button celery (*Eryngium aristulatum var. hooveri*), Congdon's tarplant (*Centromadia parryi ssp. congdonii*), and San Joaquin spearscale (*Atriplex joaquiniana*), when these species would have been identifiable. None of these species were identified at the time of the survey.

While limited areas of habitat capable of supporting special-status plants occurs in the study area (as described in **Table 4-6**), surveys indicate these species are not present.

Figure 4-3. CNDDDB Plant Occurrences within 2 Miles of Project Area

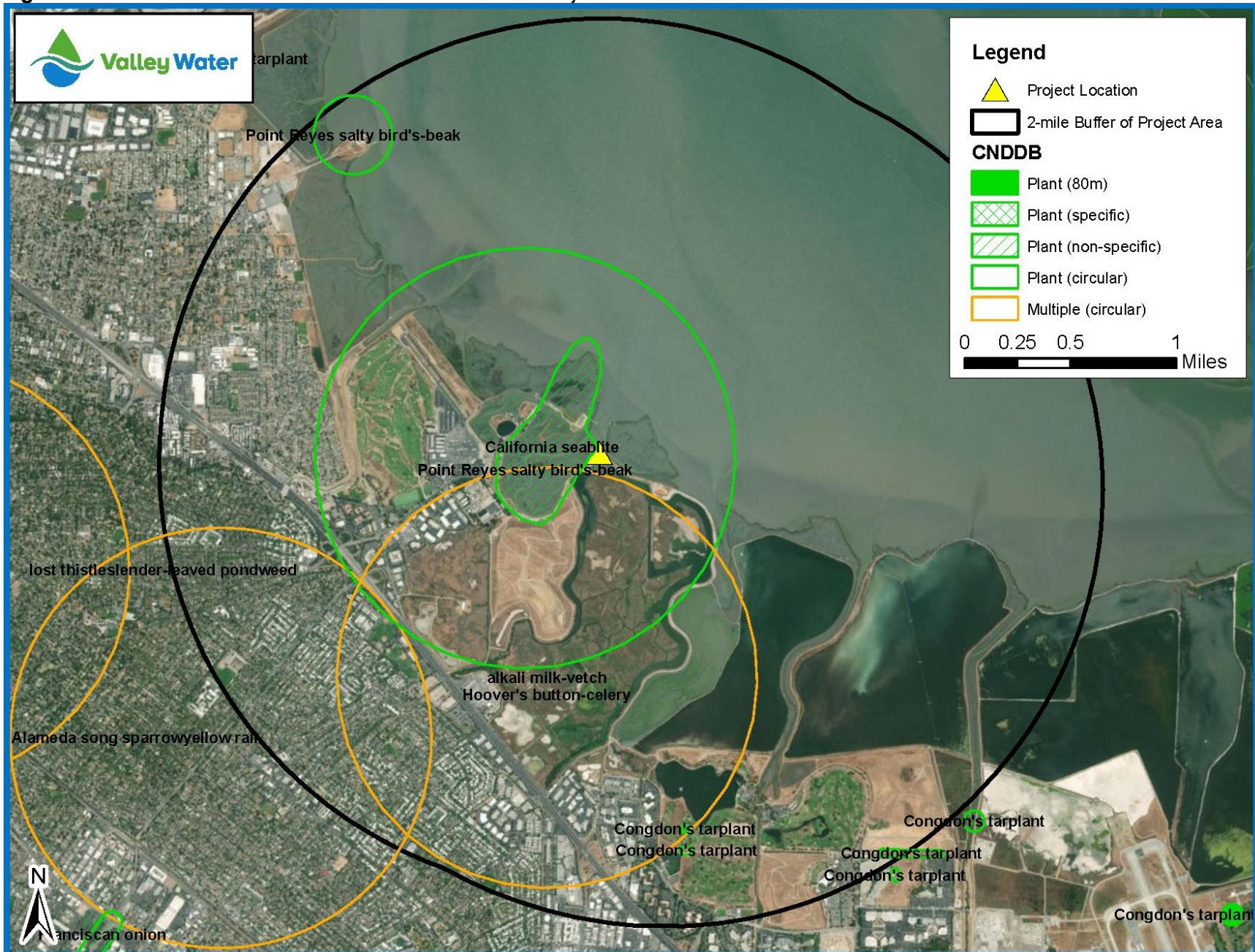


Table 4-6. Special-Status Plants with Potential to Occur in the Study Area

Common Name Scientific Name	Status^a Federal/ State/CNPS	General Habitat Description	Habitat Present/ Absent	Identified during Rare Plant Surveys?	Rationale^b
Alkali milk vetch <i>Astragalus tener</i> var. <i>tener</i>	–/–/1B.2	Alkaline flats and vernal moist meadows at elevations <60m. Blooms March-June.	Absent	No	Considered possibly extirpated. Historic record near a salt marsh along Mayfield Slough from 1905, but Mayfield Slough is now lined with concrete. In 2002, no plants were present and it was determined the habitat was probably too wet to support the species (CNDDB 2019). A rare plant survey conducted in May 2019 determined no suitable microhabitat was present in the Project Area.
California seablite <i>Suaeda californica</i>	FE/–/1B.1	Wetlands and at the margins of coastal salt marsh at elevations <5m. Blooms July-October.	Present	No	Low potential to occur in tidal wetland habitat. One record exists of the species occurring near Mayfield Slough in the PAFB (1906) and one on the salt flats near Palo Alto Yacht Harbor (1971); however, the USFWS 2010 five-year review states the site is likely extirpated. Some potentially suitable salt marsh habitat was present on the northern bank of levee.
Congdon's tarplant <i>Centromadia parryi</i> ssp. <i>Congdonii</i>	–/–/1B.1	Grasslands, swales, floodplains, and disturbed sites in wetlands and non-wetlands at elevations <300m. Blooms period June-October.	Present	No	Low potential to occur in grasslands and disturbed sites. The most recent records of the species occurrence in the area are near Shoreline Amphitheatre and the Golf Club at Moffett Field (2013). The species could occur in some upland areas near Staging Area 1.
Hairless popcorn-flower <i>Plagiobothrys glaber</i>	–/–/1A	Wet, saline, and alkaline soils in valleys and coastal marshes at elevations <100m. Blooms April-May.	Absent	No	The species is presumed to be extinct. A rare plant survey determined no suitable microhabitat was present in the Project area.
Hoover's button celery <i>Eryngium aristulatum</i> var. <i>hooveri</i>	–/–/1B.1	Vernal pools, seasonal wetlands, and occasionally alkaline soils at elevations <50m. Blooms in July.	Present	No	No vernal pools or seasonal wetlands are present in the Project area. There is one record in the PAFB and one near the Palo Alto Airport, both from the 1900s. A small amount of potential alkali flat habitat was present on the margin of the borrow ditch adjacent to Staging Area 2, but no special-status species were observed there and the area is regularly disturbed, making it unlikely that a rare species would be able to persist there.

Common Name Scientific Name	Status ^a Federal/ State/CNPS	General Habitat Description	Habitat Present/ Absent	Identified during Rare Plant Surveys?	Rationale ^b
Point Reyes salty bird's-beak <i>Chloropyron maritimum</i> ssp. <i>Palustre</i>	-/-/1B.2	Coastal salt marsh at elevations <10 meters. Blooms May-October.	Present	No	Low potential to occur in tidal wetland habitat, but the species is considered possibly extirpated. One record exists in the PAFB from 1903. Some potentially suitable salt marsh habitat was present on the northern bank of levee.
Saline clover <i>Trifolium hydrophilum</i>	-/-/1B.2	Open alkali or saline areas, such as wet meadows, wet swale, alkali sink or alkali flat at elevations <300m. Blooms April-June.	Present	No	Five records exist in Santa Clara County: one record from Alviso in 1892; two records from downtown San Jose from 1903; one east of Las Animas Creek from 1892; and one from the southeast boundary of the county in 1998. Suitable open alkali flat or wet meadow areas are present in the Project area. A small amount of alkali flat habitat was present on the margin of the borrow ditch adjacent to Staging Area 2, but no special-status species were observed and the area is regularly disturbed, making it unlikely that a rare species would be able to persist there.
San Joaquin spearscale <i>Extriplex joaquinana</i>	-/-/1B.2	Alkaline soils in meadows; more common in non- wetlands than wetlands. Blooms April-September.	Present	No	Low potential to occur in uplands in the Project area. Two records exist in Santa Clara County, both from 1896: one from Gilroy Valley and one at Soap Lake near San Felipe. It is possible the species could occur in some upland areas near Staging Area 1.

^a Status explanation:

- = no listing.

FE = listed as endangered under FESA.

CNPS California Rare Plant Rank:

1A = List 1A species: plants presumed extirpated in California and either rare or extinct elsewhere.

1B = List 1B species: plants rare, threatened, or endangered in California and elsewhere.

CNPS Code Extensions:

0.1 = seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat).

0.2 = fairly endangered in California (20-80 percent of occurrences threatened).

^b Rationale includes review of California Natural Diversity Database records.

Special-Status Fish and Wildlife

Based on a review of the above sources, Valley Water compiled a list of 48 special-status fish and wildlife species with potential to occur in the study area (**Table 4-7**). **Figure 4-4** depicts CNDDDB occurrences of special-status fish and wildlife within 2 miles of the Project area. Due to a lack of suitable habitat or timing of Project activities in relation to when a species might occur in the study area, 36 of the 48 special-status wildlife species have potential to occur in the study area during the time work would be occurring.

Wildlife

Twenty-eight (28) special-status bird species have the potential to occur in the study area as foragers, but the study area only provides potential nesting habitat for seven species including Alameda song sparrow (*Melospiza melodia pusillula*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), California black rail (*Laterallus jamaicensis coturniculus*), California Ridgway's rail (*Rallus obsoletus*), loggerhead shrike (*Lanius ludovicianus*), black skimmer (*Rynchops niger*), northern harrier (*Circus hudsonius*), salt marsh common yellowthroat (*Geothlypis trichas sinuosa*), and short-eared owl (*Asio flammeus*). Except for loggerhead shrike, nesting habitat is not within the Project footprint and occurs on Hooks Island or other larger patches of salt marsh habitat. The narrow band of salt marsh along the existing levee is not expected to support nesting habitat for special-status birds. Loggerhead shrikes could nest in upland shrubs near Staging Area 1.

Salt marsh harvest mouse (*Reithrodontomys raviventris*) could also occur in the study area on Hooks Island or the island on the interior of the PAFB, though both these areas are not within the Project footprint. Western red bats (*Lasiurus blossevillii*), hoary bats (*Lasiurus cinereus*), and silver-haired bats (*Lasionycteris noctivagans*) could also occur in the study area as nocturnal foragers, but roosting habitat (i.e., mature trees) is absent. Because bats would only occur in the study area during the night outside of working hours, potential impacts on bats are not evaluated further in this analysis.

Marine Mammals

Pacific harbor seals, California sea lions, harbor porpoise, and gray whales can all occur in the South Bay. None of these species are federally or State listed, but they are protected under the MMPA, which outlaws hunting, killing, capturing, or harassing marine mammals.

Pacific harbor seals remain close to shore in subtidal and intertidal zones. In addition, they often venture into bays and estuaries and swim up coastal rivers. They feed on herring, flounder, anchovy, codfish, and sculpin in shallow waters and are present throughout the year. Breeding in California occurs from February to May, with pupping occurring between mid-March and May. The closest pupping areas in the Bay include Newark Slough (3.4 miles north), Mowry Slough (3.5 miles northeast), and in smaller numbers at Bair Island (7.5 miles northwest). Bay waters in the study area could be used by harbor seals for feeding, though harbor seals are rarely observed in this area.

California sea lions occur in the Bay throughout the year, but the largest numbers are found during the winter herring run (December through February). The numbers decline to a few individuals by June or July. Sea lions rarely breed in Northern California; instead, breeding occurs from south of San Luis Obispo County to Baja California. Most pups are born in June or July. Sea lions are opportunistic feeders and eat squid, octopus, herring, rockfish, mackerel, and small sharks. Bay waters in the study area could be used by sea lions for feeding, though sea lions are rarely observed in this area.

Harbor porpoises returned to the Bay in 2008 after being absent for nearly 60 years. They are present throughout the year and observed regularly at Raccoon Strait and near Angel, Alcatraz and Treasure Islands in the Central Bay. They swim under the Golden Gate Bridge during the high tide and feed on herring, anchovy, jacksmelt, rockfish, and squid. Harbor porpoises calve in early summer, followed by breeding. Gestation lasts 10 to 11 months. Bay waters in the study area could be used by porpoises as a feeding area, though none have been observed here and habitat suitability is limited by shallow waters.

Gray whales have been sighted in the Bay. Observations are typically off the California coast between December and March, during their southward winter migration to Baja California where calves are born in lagoons and bays from early January to mid-February. Northerly migration to the Bering and Chukchi Seas begins in mid-February, primarily between March and June. Gray whales could enter the Bay during these migration times but are very rarely found in the South Bay and are not expected to occur in the study area due to shallow water depths.

Fish

Special-status fish species with the potential to occur in the study area during work include longfin smelt (*Spirinchus thaleichthys*), the Central California Coast steelhead DPS (*Oncorhynchus mykiss*), Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*), Pacific lamprey (*Entosphenus tridentatus*), green sturgeon (*Acipenser medirostris*), and white sturgeon (*Acipenser transmontanus*). All of these species could forage in the Bay, though the likelihood of presence in the study area is low. None of these species are known or expected to breed in the study area. Habitat for special-status fish is limited to estuarine intertidal unconsolidated shore habitat, which in the Project area is open waters of the Bay. Special-status fish are not expected to occur in the PAFB given the lower salinity, lower dissolved oxygen content, and the partial barrier to fish movement from the tide gate. Any special-status fish found in the PAFB would be considered strays.

The San Francisco Bay Estuary is designated as critical habitat for the green sturgeon southern DPS. Tidally influenced areas of the Bay to the extreme high-water mark are designated as critical habitat for the Central California Coast steelhead DPS. Approximately 4.0 acres of green sturgeon critical habitat (estuary) and 6.8 acres of steelhead critical habitat occur in the study area.

EFH is also present in the study area for West Coast Salmon (which includes all West Coast salmon species and stocks), Pacific groundfish, coastal pelagic species, and finfish. The geographic extent of freshwater EFH for salmon is identified as all water bodies currently or historically occupied by EFH-managed salmon, including aquatic areas above all artificial barriers that are not specifically excluded. Estuarine and marine areas extending from the extreme high tide line in nearshore and tidal submerged environments are also covered under EFH. All aquatic habitats in the study area, except for the borrow ditch, are within West Coast Salmon EFH. EFH for Pacific Coast groundfish includes all waters and substrate in areas with a depth less than 3,500 meters shoreward to the mean higher high water level or the upriver extent of saltwater intrusion (upstream and landward to where ocean-derived salts measure less than 0.5 parts per thousand [ppt] during the period of average annual low flow), which in the study area includes all aquatic habitats other than the borrow ditch. Habitat Areas of Particular Concern (HAPC) are subsets of EFH that are rare, stressed by development, provide important ecological functions for federally managed species, or are especially vulnerable to anthropogenic degradation. HAPCs do not carry specific habitat protections, but they can focus habitat conservation efforts because they represent high priority areas for conservation, management, or research. The Bay is designated as estuary HAPC.

Figure 4-4. CNDDDB Fish and Wildlife Occurrences within 2 Miles of Project Area

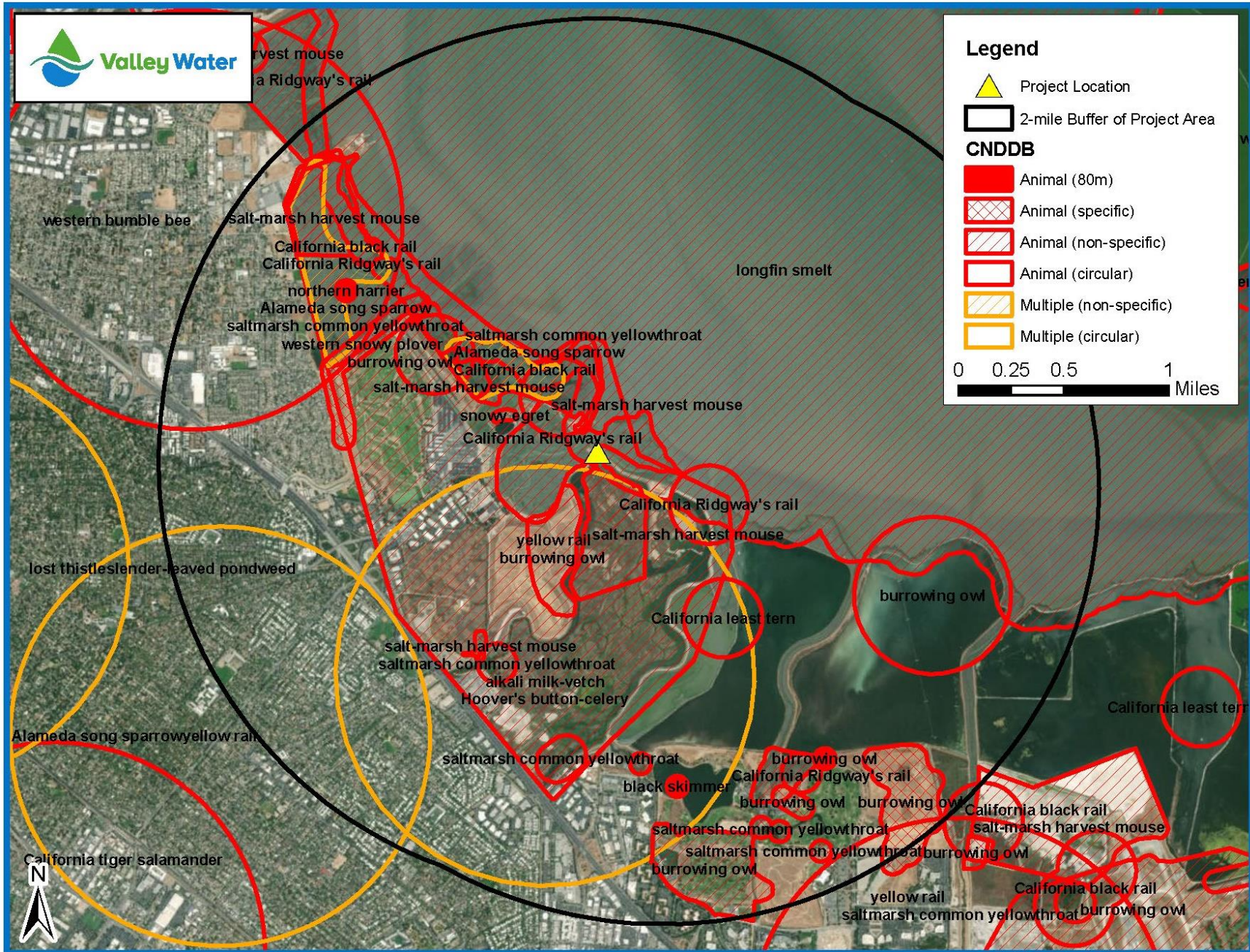


Table 4-7. Special-Status Animal Species with Potential to Occur in the Study Area during Work

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
Invertebrates				
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT/--	Open grasslands with serpentine soil outcrops and host plants. Serpentine plants (<i>Plantago erecta</i> and/or <i>Castilleja exserta</i> or <i>C. densiflora</i>) serve as larval host plants.	Absent	None. No suitable habitat (serpentine soils or host plants) in the study area.
San Bruno elfin butterfly <i>Callophrys mossii bayensis</i>	FE/--	Rocky outcrops and cliffs in coastal scrub habitat within the fog belt on steep north-facing slopes with low sunlight. Broadleaf stonecrop (<i>Sedum spathulifolium</i>) serves as the larval host plant	Absent	None. No suitable habitat (rocky outcrops or cliffs in coastal scrub) in the study area. The larval host plant was not observed in the study area during biological surveys.
Western bumble bee <i>Bombus occidentalis</i>	-/SCE/-	Grasslands and meadows with adequate nectar and pollen sources from February through late November and undisturbed nest and overwintering sites. Nest primarily in underground cavities and in open west-southwest slopes bordered by trees; may nest above ground in logs. Generalist forager. Little is known about overwintering sites, but probably are in friable soil or under plant litter or debris (CDFW 2019b).	Absent	None: Populations have declined sharply since the 1990s and the species is no longer present across much of its historic range. It is now largely restricted to high elevation meadows in the Sierra Nevada and a few scattered locations along the California coast (CDFW 2019b). Lack of burrows and slopes bordered by trees in the study area limit suitability of the site for the species.
Crustaceans				
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE/--	Typically found in large, clay-bottomed, turbid vernal pools with cold fresh water.	Absent	None: There is no critical or suitable habitat in the study area, and there are no known populations in Santa Clara County.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE/--	Restricted to ephemeral freshwater habitats such as alkaline pools, clay flats, vernal lakes, pools, swales, and other seasonal wetlands (USFWS 2007).	Absent	None: There is no critical or suitable habitat in the study area, and the species is not known to occur in Santa Clara County.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
Fish				
California Central Coast steelhead <i>Oncorhynchus mykiss</i>	FT/--	Riverine, estuarine, and marine habitats. Anadromous fish which requires perennial streams, estuaries, and marine systems where it is possible to migrate from riverine spawning habitats to marine foraging areas. Require cool, well-oxygenated streams with suitable spawning gravel and habitat complexity in the form of cover, deep pools, riffles, and runs.	Present	Low. Upstream adult migration usually occurs from December through May. Juvenile outmigration occurs December through June. However, Matadero, Adobe, and Barron Creeks are not known to support steelhead runs, and therefore the species is not expected to occur in proximity of or in the PAFB. Small numbers may migrate through the Bay between riverine spawning and marine foraging habitats. Tidally influenced areas of Bay are designated as critical habitat for the species
Central Valley fall-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	--/SSC	Riverine, estuarine, and marine habitats. Anadromous fish which requires perennial streams, estuaries, and marine systems to migrate from riverine spawning habitats to marine foraging areas. Require cool, well-oxygenated streams with suitable spawning gravel and habitat complexity in the form of cover, deep pools, riffles, and runs.	Present	Low. Migration in Santa Clara County is flow-based, and upstream adult migration usually occurs from September through December. Juvenile outmigration occurs December through June. The species is not known to occur in Matadero, Adobe, or Barron Creek upstream of the Project area, but low numbers may occur in the Bay during migration. The San Francisco Bay is designated as EFH for all life stages of Chinook salmon.
Delta smelt <i>Hypomesus transpacificus</i>	FT/SE/--	Open water bays and tidal river channels and sloughs with various degrees of salinity. Typically spawn in freshwater sloughs and shallow edge waters.	Absent	None. Endemic to the upper San Francisco Estuary, primarily the Sacramento-San Joaquin Delta and Suisun Bay. The species congregates in the Sacramento River and Suisun Bay, and spawns in channels and sloughs of the Delta. No historical occurrences of the species are known for Santa Clara County, which is outside of the species' range.
Green sturgeon <i>Acipenser medirostris</i>	FT/--SSC	Riverine, estuarine, and marine habitats. Anadromous fish that spends most of its life in nearshore marine waters to mature in saltwater, and returns to freshwater to spawn in deep, fast water. The Sacramento River is the southern extent of spawning for the southern DPS. Larvae develop in freshwater, moving to estuaries early in their first year and remaining for approximately three years before migrating to the ocean. Sub-adults remain in the Estuary at depths generally less than 10 meters from spring through fall (Kelly et al 2007). Bottom-feeders that eat invertebrates.	Present	Low. Adults are primarily marine, while sub-adults or non-spawning adults may spend more time in estuaries foraging and growing. Adults or sub-adults typically enter the Bay between mid-February and early May and migrate quickly up the Sacramento River. The species is uncommon in the San Francisco Estuary, and rare in the South Bay. Low numbers have been reported near the Dumbarton Bridge from CDFW trawl surveys, and the species has been captured in recent years in Alviso Slough and the downstream end of Coyote Creek (UC Davis 2017). Suitable foraging habitat may be present in the Study Area, and low numbers may transition through the Bay. All tidally influenced areas of San Francisco Bay, up to the elevation of mean higher high water, are designated as critical habitat for the southern DPS of green sturgeon.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
Longfin smelt <i>Spirinchus thaleichthys</i>	FC/ST/SS C	Riverine, estuarine, and marine habitats. Anadromous fish typically found in open water away from shorelines and in-water structures. Prefer deep- to mid-water habitat and rarely occur in temperatures over 22°C. Adults prefer salinity between 15 and 30 ppt, while larvae have a lower tolerance to salinity, presumably less than 6 ppt, averaging 2 ppt. Spawn in freshwater with sandy or gravel substrate from January through March.	Present	Low. The species is primarily a pelagic open water species, but adult distribution may extend to the South Bay in wet winters and spring, with the greatest concentrations in San Pablo Bay, Suisun Bay, and the West Delta. The Bay is the southern extent of the species' range, but distribution varies annually with numbers being lower in drought years and higher in wet years (Moyle 2002). In the Lower South Bay, the species has been documented east of the PAFB tide gate in Alviso and Artesian Sloughs, the restored Island Ponds, and the downstream end of Coyote Creek (Hobbs 2019). While adults may be present in the Bay in wet winters, due to the shallow water and presence of the tide gate structure in the study area, the habitat would likely not be preferred by the species.
Pacific lamprey <i>Entosphenus tridentatus</i>	-/-/SSC	Riverine, estuarine, and marine habitats. Anadromous fish requiring habitats where it is possible to migrate from riverine spawning habitats to marine areas. Adults migrate upstream from late fall to spring to spawn in low gradient, gravel-bottomed streams. The estuarine and nearshore habitat requirements for macrophthalmia (juveniles) are unknown.	Present	Low. In Santa Clara County, historical freshwater records support presence of the species in only Coyote Creek and the Guadalupe River, and they probably did not occupy most smaller streams entering the Bay. Due to lack of historical or recent records and passage barriers upstream, habitat in the creeks upstream of the study area are likely unsuitable for the species. However, small numbers may be present in the Bay during migration between riverine and marine habitats.
White sturgeon <i>Acipenser transmontanus</i>	-/-/SSC	Riverine, estuarine, and marine habitats. Anadromous fish typically found in estuaries of large rivers, in deep waters with soft bottoms. May move to intertidal areas at high tide to feed. Return to freshwater to spawn from February through May in riffles or pools with rocky and gravel substrate in water temperatures of 8 to 19°C..	Present	Moderate. Most abundant in Suisun and San Pablo Bays and the West Delta, but also found in the Central and South Bays. Adults are primarily estuarine. The species is locally common in the open waters of the San Francisco Estuary and most abundant in brackish waters. In California, spawning populations are only known to occur in the Sacramento-San Joaquin River system.
Amphibians				
California red-legged frog <i>Rana draytonii</i>	FT/-/SSC	Aquatic breeding areas adjacent to upland dispersal habitats with suitable microhabitat (rodent burrows, crevices, fallen logs, etc.) for cover. Breeding sites include pools and backwaters within streams, ponds, and marshes with both open water and emergent vegetation.	Absent	None. The lack of suitable microhabitat, freshwater breeding areas, and presence of predatory fish in the study area limits suitability of the site for the species, which has a low tolerance for salinity.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
California tiger salamander <i>Ambystoma californiense</i>	FT/ST/-	Live mostly underground in small mammal burrows, emerging in the rainy season to breed. Restricted to vernal pools and temporary freshwater ponds for breeding in grassland, oak savannah, or edges of mixed woodland habitat containing well-maintained burrows.	Absent	None. The lack of active burrowing rodents and temporary freshwater pools in the study area limits suitability of the site for the species.
Reptiles				
Western pond turtle <i>Emys marmorata</i>	-/-/SSC	Permanent to nearly permanent freshwater ponds, lakes, rivers, creeks, wetlands, and marshes with suitable basking habitat and aquatic vegetation in woodland, forest, or grassland habitats. Prefer slow-moving water with deep pools and woody debris, rocks, vegetation mats, or exposed banks for basking. Use terrestrial upland sites for refuge during droughts, floods, and for nesting.	Absent	None. While considered a freshwater turtle, populations of the species may inhabit brackish water tidal sloughs, which may be a result of drought-induced isolation and local adaptation. A small, isolated population was observed approximately 5.5 km southeast of the study Area along the Bay Trail near the Sunnyvale Water Pollution Control Plant in 2012, where the primary water source is surface runoff and groundwater infiltration. There are no known occurrences of the species within 2 km of the study area. Due to elevated salinity in the Project area (greater than 10 ppt) and lack of known occurrences (and therefore no locally adapted population), suitability of the site is limited.
Birds				
Alameda song sparrow <i>Melospiza melodia pusillula</i>	-/-/SSC	Prefer tidally influenced habitats. Forage on open ground, including paths through pickleweed created by small mammal movement or tidal action. Nest in tall salt marsh vegetation, primarily marsh gumplant and cordgrass adjacent to tidal sloughs, and bulrush in brackish marshes.	Present (nesting and foraging)	High. There are recent observations of the species in the Palo Alto Baylands and suitable nesting and foraging habitat is present in study area.
American white pelican <i>Pelecanus erythrorhynchos</i>	-/-/SSC	Shallow wetlands in the Bay Area where they can forage for fish in waters less than 3 feet deep. May roost on sandspits in coastal estuaries or utilize levees in managed wetlands.	Present (foraging), Absent (nesting)	High. The species regularly occurs at Soap Pond, approximately 1 mile southeast of the study area along the Adobe Creek Trail, and was observed at Soap Pond during the July site visit. The species may be present year-round, with numbers peaking from July to October at the South Bay salt ponds and decreasing in the winter. The species is not known to breed in Santa Clara County, but may be present as a forager.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
American peregrine falcon <i>Falco peregrinus anatum</i>	–/–/FP	Open areas near water. May nest on remote cliffs, tall buildings in urban areas, bridges, or transmission towers. Perch or fly over salt ponds to forage mainly for birds such as ducks, shorebirds, passerines, or occasionally small mammals.	Present (foraging), Absent (nesting)	Moderate. Typically rare to uncommon in the Bay Area with numbers increasing from August to April, and are more common in the winter around estuaries, marshes, and coastal shores. The species is an irregular breeder in the county. Foraging habitat is present in the PAFB.
Bald eagle <i>Haliaeetus leucocephalus</i>	–/SE/FP	Large bodies of water with abundant fish and waterfowl prey adjacent to snags or other structures for perching. Nest in tall trees or structures near permanent water sources.	Present (foraging), Absent (nesting)	Moderate. The species been considered a rare winter visitor to Santa Clara County; however, the Bay provides suitable foraging habitat. A pair has nested at Curtner Elementary School in Milpitas, approximately 10 miles east of the study area, in recent years.
Bank swallow <i>Riparia riparia</i>	–/ST/–	Low areas along rivers, streams, coasts, and reservoirs. Nest in colonies in burrows in steep sand, earthen, or gravel banks. May forage over any habitat type, but prefers marshes, meadows, and water.	Present (foraging), Absent (nesting)	None. There have been no nesting records in the county since the early 1930s, but the species could occur in the study area as a very rare migrant from April to September, outside the proposed work period.
Barrow's goldeneye <i>Bucephala islandica</i>	–/–/SSC	Open rivers, lakes, and bays. Nest in tree cavities near water. Dive for aquatic invertebrates, and occasionally small fish or vegetation.	Present (foraging), Absent (nesting)	Low. The species is not known to breed in Santa Clara County, but could occur as a rare winter visitor from November through March.
Black skimmer <i>Rynchops niger</i>	–/–/SSC	Open sandy or gravel bars with sparse vegetation or wrack at coastal beaches, estuaries, or salt marsh habitat. Nest is a scrape on the ground, often adjacent to Forster's tern colonies. Feed on small fish and crustaceans.	Present (nesting and foraging)	Moderate. The species is an uncommon resident first observed in the South Bay in the 1970s, where the species has nested since 1994. Known nesting sites include the PAFB and salt ponds in Alviso, Moffet Field, and Ravenswood. While rare in the county, in recent years the species has been observed at salt pond SF2, Shoreline Lake, and Charleston Slough.
Bryant's savannah sparrow <i>Passerculus sandwichensis alaudinus</i>	–/–/SSC	Pickleweed-dominant habitat and adjacent grasses in salt marshes and open grasslands lacking tree cover. May nest in vegetation such as pickleweed, grasses on the ground, or low in shrubs.	Present (nesting and foraging)	High. Suitable habitat is present to support the species, and the species was observed in the study area during the site visit in July and February.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
Burrowing owl <i>Athene cunicularia</i>	-/-SSC	Nest and roost in open grasslands with short vegetation and ruderal habitats with unobstructed views, suitable foraging habitat, and burrows, typically those made by California ground squirrels. Forage over grasslands for invertebrates and small vertebrates such as lizards, birds, or mammals such as mice, voles, and shrews.	Present (foraging), Absent (nesting)	Moderate. The species has been observed in Byxbee Park (less than 1 mile southwest) and Shoreline Park (approximately 2 miles southeast), and nesting east of the Embarcadero Way access road (approximately 0.2 mile southwest of the tide gate) from 1998 to 2003, and one wintering adult was observed here in 2008. The study area lacks suitable burrows for nest sites, and at the time of the site visit in May vegetation along the levee at Embarcadero Way was overgrown, making the habitat unsuitable for BUOW nesting. Overwintering burrowing owls may occur south of the access road.
California black rail <i>Laterallus jamaicensis coturniculus</i>	-/ST/FP	Saltwater or brackish tidal marshes dominated by pickleweed, often with saltgrass, alkali bulrush, or cattails. Adjacent vegetated upland habitat is required for escape cover from predators during high tides. Nests are built in mature marsh plants above the high tide line.	Present (nesting and foraging)	Moderate. It is unlikely they nest regularly in the South Bay, as levees have reduced the availability of upland transition habitat required by the species, but can occur as a rare winter visitor. An individual was detected in March 2008 just east of the Palo Alto airport in the Palo Alto Baylands Reserve. The species was also detected at Shoreline Park in 2014 and Moffett Airfield in 2011 and 2012. In August 2015, two adults were observed brooding chicks at Alviso Slough and Alviso Marina County Park, approximately 7 miles southeast of the study area.
California brown pelican <i>Pelecanus occidentalis californicus</i>	-/-FP	Found along the coast, coastal estuaries, and bays. Forage by diving for fish and roost on beaches, rocks, pilings or other anthropogenic structures. Nest on small islands.	Present (foraging), Absent (nesting)	Moderate. The species tends to be rare in the South Bay; however, suitable foraging habitat may be available in the Bay. The species is not known to breed in Santa Clara County.
California least tern <i>Sternula antillarum browni</i>	FE/SE/FP	Coastal areas, beaches, bays, estuaries, lagoons, lakes, and rivers. Nest in scrapes on sandy or gravel areas lacking vegetation near water. Forage for fish over water.	Present (foraging), Absent (nesting)	Low. The species may forage over managed salt ponds or the open Bay. The species was reported as using Charleston Slough as a post-breeding foraging area in July 1987, but no more recent records are available. The species is rare in the county, but present in the Bay Area from April through August. It could occur as a vagrant from October through November. It is not known to breed in the county.
California Ridgway's rail <i>Rallus obsoletus obsoletus</i>	FE/SE/FP	Salt marshes, tidal and brackish marshes, and wetland areas with tidal sloughs and access to mudflats or shallow waters with abundant invertebrates for foraging, and adjacent to high marsh for refugia during high tides. Occur in cordgrass-pickleweed dominant habitats, often with gumplant and saltgrass. Nest in the lower areas of marshes in dense vegetation such as cordgrass, pickleweed, and gumplant.	Present (nesting and foraging)	High. The species is a resident known to occur in the marshes of the Palo Alto Baylands. It has been documented west of the tide gate structure in the Baylands Nature Preserve, Hooks Island to the north, the downstream end of Charleston Slough to the east, and the Laumeister and Faber Tracts. Valley Water biologists have observed the species in the immediate vicinity of the study area (ex., Hooks Island, 2011), in the channel north of the Byxbee Park parking lot (2019), and Faber Marsh (2019). There are known CNDDDB occurrences within 1 km of the study area.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
Common loon <i>Gavia immer</i>	-/-/SSC	Freshwater lakes and reservoirs, coastal estuaries, lagoons, bays, harbors, and river mouths. Prefer calm waters with abundant forage fish. Nest in protected areas on lakeshores close to the bank with easy access from water.	Present (foraging), Absent (nesting)	Low. While somewhat common in the Central Bay, the species is uncommon in the South Bay. The species could occur as a rare migrant or vagrant in the fall or spring. The species is not known to breed in Santa Clara County.
Golden eagle <i>Aquila chrysaetos</i>	-/-/FP	Open or mountainous areas away from human disturbance. Nest primarily on cliff edges, and also tall trees. Hunt mammals from perches and may also take birds or carrion.	Present (foraging), Absent (nesting)	Low. Breeding records occur in the foothills of Santa Clara County, but the species is not known to nest in the study area as nesting habitat is absent. The species may occur in the area as a transient.
Grasshopper sparrow <i>Ammodramus savannarum</i>	-/-/SSC	Open grasslands, fields, and pastures with little to no scrub cover and some bare ground. Nest on the ground in depressions at the base of grass tufts.	Present (foraging), Absent (nesting)	Low. While the subspecies <i>A. s. perpallidus</i> is a regular breeder in grasslands of low-lying foothills in Santa Clara County, they are rare in September and October and only likely to occur as a vagrant from November to March.
Loggerhead shrike <i>Lanius ludovicianus</i>	-/-/SSC	Open habitats with scattered shrubs and trees, or open areas around salt marshes. Nest in clumps of dense trees or shrubs near open foraging areas and hunt small mammals, birds, insects, and lizards from low perches.	Present (nesting and foraging)	Moderate. The species is known to nest along the salt evaporation ponds in northern Santa Clara County, with numbers increasing from September to March. The species could nest in shrubs near Staging Area 1.
Northern harrier <i>Circus cyaneus</i>	-/-/SSC	Open grasslands, wetlands, and salt marshes dominated by pickleweed, or brackish marsh dominated by bulrush. Nest on the ground in tall vegetation, such as grass or cattails, in freshwater marshes, or wet meadows.	Present (nesting and foraging)	High. While considered uncommon in the county in the summer, the species is known to nest in undeveloped grasslands and marshes along the edge of the South Bay, and numbers peak in the Bay area in the winter. Potential nesting habitat is present at Hooks Island or inside the PAFB.
Purple martin <i>Progne subis</i>	-/-/SSC	Open habitats near lakes or ponds with large decaying trees. Forage over open areas such as meadows, grasslands, or lakes. Nest in tree cavities, often high on ridges, in areas with abundant insect prey.	Present (foraging), Absent (nesting)	Low. The species is a rare but regular breeder in the Santa Cruz Mountains of Santa Clara County, and breeding birds are typically present here from mid-March to the end of August. The species is considered a rare migrant elsewhere in the County and typically only present from April to May and August to September. Suitable nesting trees are absent from the study area.
Redhead <i>Aythya americana</i>	-/-/SSC	Freshwater ponds and lakes, or where river mouths enter bays, or saltwater wetlands. Forage in tidal channels or ponds for submerged aquatic plants and invertebrates. Nest in cattails or bulrushes on or near water.	Present (foraging), Absent (nesting)	Low. The species is an irregular breeder in Santa Clara County, but may occur in the winter as a rare visitor in the South Bay. There are confirmed nesting records from the mid-1970s and early 1980s in the PAFB, as well as observations from Charleston Slough. No evidence of breeding has been reported since 1984 and it is unclear what factors are required for successful breeding in the South Bay.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
Salt marsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	–/–/SSC	Brackish or freshwater marshes and wetlands. Nest in dense herbaceous vegetation or shrubs such as bulrush, cattails, willows, coyote brush, or poison hemlock.	Present (nesting and foraging)	High. The species is considered common in South Bay salt marshes and is more common in the winter. There are records for the species breeding in Palo Alto, with most occurring in brackish or freshwater marshes at the edge of the South Bay. Potential for nesting exists in shrubs near Staging Area 1, dense ruderal vegetation along access roads, or in <i>Spartina</i> .
Short-eared owl <i>Asio flammeus</i>	–/–/SSC	Open grasslands and marshes with abundant small mammal prey. Roost on the ground in weedy habitat or grass. Associated with California voles.	Present (nesting and foraging)	Low. The species was documented nesting in the PAFB in the early 1970s and was observed in the Palo Alto Baylands in the 1980s. Now considered a rare to uncommon winter visitor and numbers appear to be declining. Breeding is most regular in northeastern California and Suisun Marsh, and irregular elsewhere. There are no CNDDDB records of the species in Santa Clara County; however, the species could be present as a forager in the PAFB, and there is low potential for nesting in weedy or grass habitats in the PAFB.
Tricolored blackbird <i>Agelaius tricolor</i>	– /SCE/SSC	Freshwater marshes and agricultural lands. Forage on seeds and invertebrates in grasslands and farmlands. Nest near freshwater marshes with dense emergent vegetation such as cattails, tules, willow, blackberry, thistles, or wild rose.	Present (foraging), Absent (nesting)	Low. The species is absent or occurs as a nonbreeder in most of Santa Clara County except for a few small, scattered colonies. The nearest CNDDDB occurrence is approximately 7 miles southeast of the study area at the San Jose-Santa Clara County Waste Facility outfall and was last recorded active in 1993. No individuals were observed during the 1994 or 1995 surveys. A lack of suitable nesting and foraging habitat in the study area limits site suitability for the species. Low potential to occur as a nonbreeding transient.
Vaux's swift <i>Chaetura vauxi</i>	–/–/SSC	Douglas fir, redwood, or other coniferous, usually old-growth, forests along the California Coast from Del Norte to Santa Cruz counties. Known to breed in Marin, San Mateo, Santa Cruz, and Santa Clara Counties. May nest in large hollow trees or chimneys. Feed on flying insects over meadows, forests, or water edges.	Present (foraging), Absent (nesting)	Low. The species is most common in the coastal redwood zone in the northwestern portion of California; it is considered a vagrant in Santa Clara County from November to January, and uncommon from April to September. Largely considered a migrant, including in Palo Alto, though small numbers may breed in a limited portion of the Santa Cruz Mountains. All known Santa Clara County breeders nest in residential chimneys. The study area lacks suitable nesting habitat, but the species could occur as a forager.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT-/SSC	Sandy beaches on marine and estuarine shores. Nest is a scrape on the ground, typically next to driftwood or other debris in a fairly barren landscape, in Bay managed salt ponds, dried out ponds, or levees with suitable substrate. Forage near water on terrestrial, freshwater, brackish, or marine invertebrates.	Present (foraging), Absent (nesting)	Moderate. Approximately 250 adults breed at the salt ponds around Bay, mostly in the South Bay-Hayward area, and the species is more common in the Bay area in the winter. While suitable nesting substrate is not available in the study area, the species may occur nearby in managed salt ponds. There is potential for the species to occur as a forager in the study area.
White-tailed kite <i>Elanus leucurus</i>	-/-FP	Coastal and valley lowlands. Forage in open grasslands, meadows, agricultural, and marsh habitats with abundant small mammal prey. Nest high in isolated trees such as sycamore, willow, oak, eucalyptus, or walnut (3-50 m tall) or forest edges near foraging habitat.	Present (foraging), Absent (nesting)	High. This species is a year-round resident known to nest along the South Bay and in the foothills. Moderate-sized shrubs (ex., coyote brush) could provide structure for nesting, but the height of available vegetation in the study area and adjacency to the Adobe Creek Trail limit nesting suitability for the species. Foraging habitat is present in the surrounding marshes and interior PAFB.
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i>	-/-SSC	Wetlands, marshes, ponds, and rivers. Nest in freshwater marshes with dense vegetation such as reeds, bulrushes, and cattails. Forage in open habitats such as fields.	Present (foraging), Absent (nesting)	None. Historically the species bred regularly in freshwater marshes of the Santa Clara Valley floor; however, there have been no records of breeding in the county since most of these marshes were drained for agriculture in the early 20 th century. The species is not known to breed in the county, and could occur only as a rare spring migrant (~April-May) outside the proposed work window.
Yellow rail <i>Coturnicops noveboracensis</i>	-/-SSC	Shallow freshwater or brackish emergent wetlands, marshes, or wet meadows with dense vegetation, often dominated by sedges or grasses. May occur in coastal tidal salt marshes with dense stands of <i>Spartina</i> in the winter. Require sedge marshes or meadows with moist soil or shallow standing water for breeding. Nest is a shallow cup of sedges and grasses on damp soil or shallow water under a canopy of dead plants for cover.	Present (foraging), Absent (nesting)	Low. occurs as a very local breeder in the northeastern interior of California and as a winter visitor (early Oct to mid-Apr) on the coast and in the Suisun Marsh region. The species is considered rare in the county. One individual was captured in the vicinity of Palo Alto Baylands in January 1988 and 1993. There was a CNDDB report of an individual foraging and calling in California fuchsia plantings in a parking lot at Don Edwards National Wildlife Refuge, approximately 7 miles southeast of the PAFB, in October 2013. The species is unlikely to be present as a breeder due to lack of suitable habitat, but may occur as a rare winter visitor.
Mammals				
Hoary bat <i>Lasiurus cinereus</i>	-/-WBWG	Forest habitats with access to trees for cover and open areas or habitat edges for feeding. Hang singly in tree foliage by day; usually 7-20' above ground in tree with leafed canopy above and open below. Undergo long-distance migrations.	Present (foraging), Absent (roosting)	Low. The species is present in the county in the winter. They may forage over the Bay at night, but the study area lacks suitable roosting habitat for the species. Due to lack of suitable roosting habitat in the study area and nocturnal behavior of the species they are not expected to be present when work would be occurring.

Common Name Scientific Name	Status ^a Federal/ State/ Other	General Habitat Description	Habitat Present/ Absent	Potential for Occurrence in Study Area during Work ^b
Salt marsh harvest mouse <i>Reithrodontomys raviventris raviventris</i>	FE/SE/FP	Restricted to tidal and brackish marsh habitats of the Bay and its tributaries; may occur in diked and muted marshes. Dense pickleweed for cover and food, and other salt and brackish marsh vegetation such as saltgrass and alkali bulrush, and adjacent grasslands where there is suitable cover to avoid predation during high tides is considered preferred habitat.	Present	High. There are four CNDDDB occurrences of the species within 2 km of the study area between 1975 and the 1990s. There are trapping records from the Palo Alto Baylands adjacent to and north/northwest of the tide gate from that same timeframe, and a population is known at the Emily Renzel Marsh less than 1 mile south of the study area. Suitable habitat is present in the study area along the levee toe and in surrounding marshlands.
Salt marsh wandering shrew <i>Sorex vagrans halicoetes</i>	-/-/SSC	Pickleweed-dominant tidal salt marshes with dense, low-lying vegetation, continuously moist soils, and abundant driftwood. Occur on the ecotone between tidal marsh and upland vegetation. Nests typically on the ground under or in driftwood along the higher tide line, or off the ground in <i>Salicornia</i> . Restricted to salt marshes in San Francisco Bay.	Present	Low. Populations of the species may be very low, and they occur in low densities. The species was captured at Don Edwards NWR in 2006 and at Triangle Marsh in the 1980s. Captures have occurred in tidal and diked marshes; however, it is likely tidal marsh habitat is preferred due to increased prey availability. Limited suitable habitat may be available along the edges of the South Bay; however, populations have not been known at the PAFB and abundant driftwood was not observed at the time of the site visits, indicating limited site suitability for the species.
Western red bat <i>Lasiurus blossevillii</i>	-/-/SSC	Forages in riparian woodland habitats, forest-edge, orchards and agricultural lands, and around urban/residential areas. Generally roosts independently in tree and shrub foliage. Tend to be associated with mature trees.	Present (foraging), Absent (roosting)	Low. The species is known to winter and may forage in the Bay but is generally a solitary rooster and not known to breed in the county. The species may occur as a nocturnal forager or transient in the study area, but the site lacks suitable roosting habitat for the species. Due to lack of suitable roosting habitat in the study area and nocturnal behavior of the species, they are not expected to be present when work would be occurring.

Notes:

^a Status Codes

- no listing.
- FE listed as endangered under FESA.
- FT listed as threatened under FESA.
- SE listed as endangered under CESA.
- ST listed as threatened under CESA.
- SCE candidate for state endangered listing under CESA.
- SSC listed as a Species of Special Concern by the State of California.
- FP California fully protected species.
- WBWG Western Bat Working Group Listed Species

^b Rationale includes review of California Natural Diversity Database records

Wildlife Movement

Wildlife movement corridors, often termed “habitat linkages” or simply “corridors” refer to any space (usually linear in shape) that improves the ability of organisms to move among patches of their habitat (Hilty et al. 2006). Often, corridors describe areas between habitat patches that have been separated or fragmented by topography, changes in vegetation, or other natural or human disturbances or land use changes such as roads that wildlife cannot or prefer not to cross. The fragmentation of natural habitat creates isolated “islands” of vegetation that may not provide sufficient area or resources to accommodate sustainable populations for a number of species, thus adversely affecting both genetic and species diversity.

Wildlife corridors somewhat mitigate the adverse effects of habitat fragmentation by (1) allowing animals to move between remaining habitat patches to replenish depleted populations and increase the available gene pool; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fire or disease) will result in population or species extinction; and (3) serving as travel paths for individual animals moving throughout their home range in search of food, water, mates, and other needs, such as dispersing juveniles in search of new home ranges.

The study area currently provides habitat linkages and wildlife corridors between patches of salt marsh (i.e., from salt marsh located west of the study area to salt marsh on Hooks Island) and aquatic habitats (i.e., movement along the Bay margin). However, the Project area itself is low quality habitat which primarily consists of a wide strip of barren ground bordered by ruderal species and experiences moderate to high levels of human visitation. There is a narrow strip of pickleweed-dominant habitat at the bottom of the outboard levee. The lack of development within the Palo Alto Baylands provides species with a variety of pathways to seek habitat patches for foraging, cover, or mating in this area. Movement between the in-water habitats of the PAFB and Bay are limited by the existing tide gate structure and trash rack, which separate the PAFB from the Bay and may form a partial (temporal) physical barrier to movement of large fish between the Bay and the basin (i.e., when the gates are closed), unless the sluice gate is open. At times one or two tide gates are left partially open to allow limited tidal flow into the basin; however, fish passage may still be reduced at these times due to high velocity flows and/or the width of the gate opening. The tide gates are managed to minimize tidal inundation of the basin, resulting in predominantly freshwater conditions in the basin. The tide gate limits tidal circulation in the PAFB, and as a result Mayfield Slough contains stagnant water during most of the year and is characterized by extensive growth and decomposition of algae and vegetation. Because the PAFB has lower salinity and dissolved oxygen than the Bay, suitability of this habitat is limited for many marine species.

Migration is the seasonal or periodic movement of individuals from one area to another, typically over long distances. Migration typically occurs in response to seasonal changes in abundance or distribution of food sources or available breeding habitat. Examples of migratory species include many songbirds and waterbirds (e.g., ducks and shorebirds), whales, and some species of bats. Salt marsh endemic species routinely migrate within salt marsh habitat to seek food items, high marsh refugia during high tides, and nesting habitat. For example, in tidal wetlands salt marsh harvest mice experience tidal flooding twice a day, and may climb vertically where dense, tall vegetation is available, or otherwise move up horizontally into adjacent upland habitat to escape high tides. Diked wetlands, such as the PAFB, are managed at more stable water elevations, which may reduce habitat suitability for some endemic tidal marsh species as well as these types of movements. Green sturgeon, Central California coast steelhead, and longfin smelt are anadromous species known to migrate through the Bay between freshwater spawning habitat and

marine habitats where they can feed and grow. However, these species would be unlikely to migrate upstream into the PAFB and tributary creeks as the channels are highly modified and spawning habitat is absent for these species.

The abundance and distribution of avian species also varies widely with the tides as water depth, salinity, and vegetation change. Tidal marsh species have adapted to these changing conditions. For example, Ridgway’s rail feed on benthic fauna in tidal channels at low tide, while black rails are restricted to mid- and high marsh where they feed at the water surface. Many tidal marsh birds must strategically place their nests so that they will not be so low as to be flooded at high tide, but not so high as to increase risk of predation. Open water, wetland, and mudflat habitats provide foraging and loafing habitat for many waterbird species, for which the San Francisco Estuary is a major migratory stopover and wintering site. Numerous migratory songbirds and raptors are also routinely present within the study area.

Discussion

a) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Construction of the Project would permanently and temporarily impact land cover types, resulting in a post-Project reconfiguration of habitats in the Project area (**Table 4-8** and **Figure 4-5**). These habitat conversions could directly and indirectly impact special-status species depending on each species habitat preferences, as described in the preceding sections. The Project would result in a net loss of 0.09 acre of estuarine intertidal emergent wetland (salt marsh) and 0.97 acre of palustrine unconsolidated bottom (open waters of the PAFB), but an increase of 1.06 acres of estuarine intertidal unconsolidated shore (open waters of the Bay). Impacts to waters of the United States/State are described under biological checklist item c) and impacts of habitat conversion on special-status species are described for each species below.

Table 4-8. Land Cover Type Conversions within the Project Area

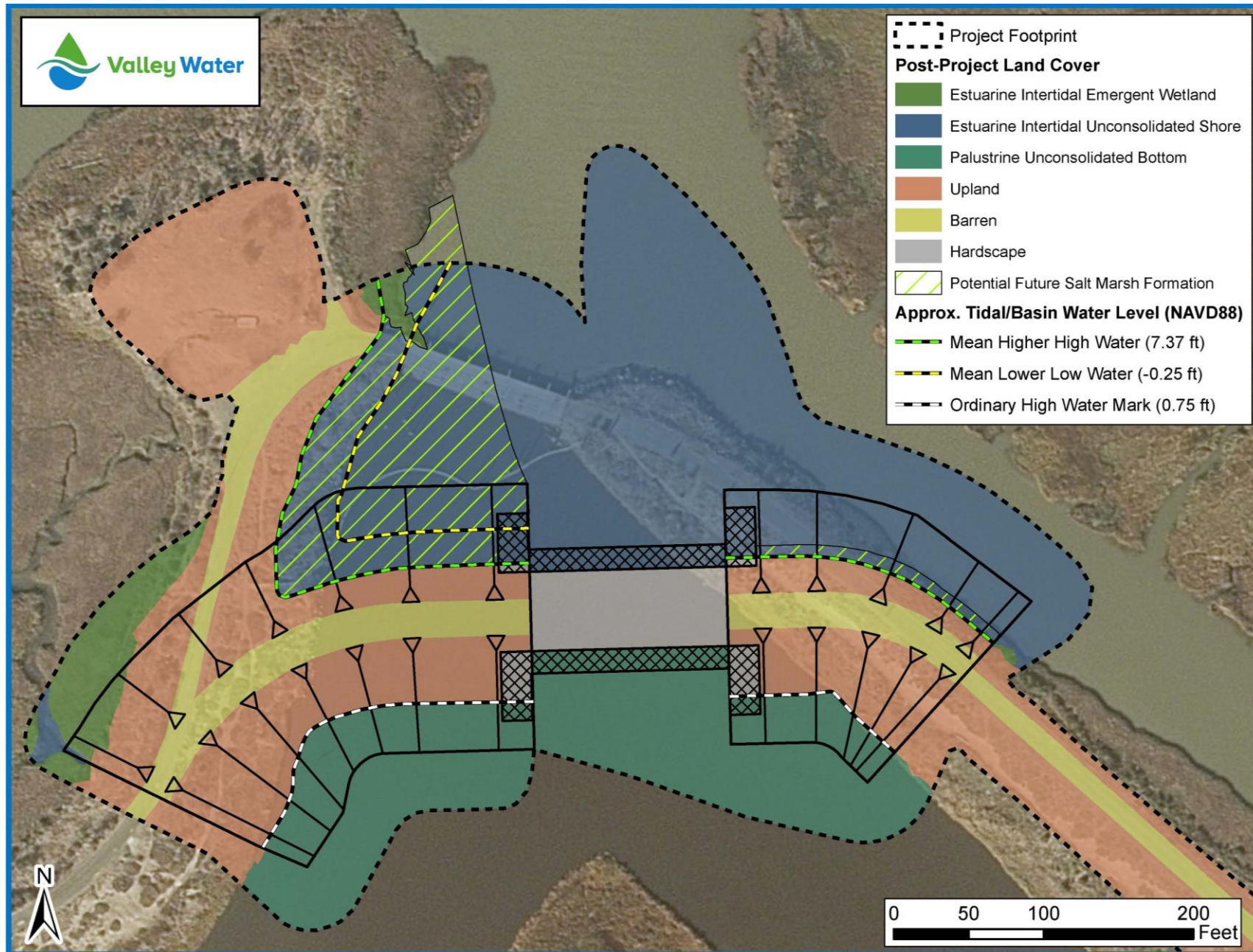
Land Cover Type	Pre-Project Area (acres)	Post-Project Area (acres)	Net Change (acres)
Estuarine Intertidal Emergent Wetland	0.25	0.16 ¹	-0.09 ¹
Estuarine Intertidal Unconsolidated Shore	0.88	1.94	+1.06
Palustrine Unconsolidated Bottom	1.84	0.87	-0.97
Upland	3.39	3.60	+0.21
Barren	2.42	2.07	-0.35
Hardscape	0.06	0.20	+0.14
Total	8.84	8.84	

¹ Note: the amount of post-project area and net change to estuarine intertidal emergent wetland habitat is likely to be underestimated, as it is expected that the area to the west of the new tide gate (between the tide gate and existing levee to the west) will eventually fill in with bay muds and support intertidal emergent wetland. A narrow band of intertidal emergent wetland may also form along the new east levee section. The total amount of tidal wetland formation may be up to 0.55 acre, depending on sediment deposition and vegetation recruitment. Due to the uncertainty in the size and timeline for this wetland formation, these areas are considered to be estuarine intertidal unconsolidated shore in the estimates above.

Construction activities also have the potential to result in direct mortality or injury to special-status wildlife species through crushing by equipment; placement of fill to construct the new levee; entrapment during dewatering; reduction in water quality; disturbance through noise or vibration; and permanent and temporary loss or modification of habitat. Species-specific impact significance determinations are included under each species in the following sections. Impacts on biological resources, and by extension special-status species, would be avoided and minimized through implementation of biological BMPs, described in detail in Table 2-4 in Chapter 2, *Project Description*. These measures include BI-1 (*Remove Temporary Fill*), BI-2 (*Avoid Impacts to Nesting Migratory Birds*), BI-5 (*Avoid Animal Entry and Entrapment*), BI-6 (*Minimize Predator Attraction*), and BI-8 (*Minimize Spread of Invasive Plants*), among others.

Operation and maintenance of the new tide gate structure and levee would remain consistent, if not less intrusive, compared with existing conditions, and therefore would have **no impact** on special-status species. Since the motor-controlled sluice gate would be operated remotely (rather than manually opening and closing the sluice gate under existing practice), there would be less human operation time at the tide gate structure. In addition, isolation of each tide gate during maintenance (if required) would be performed faster than current conditions and there would be less maintenance time associated with maintenance work. Relocation of the tide gate structure is not expected to result in erosion of sensitive salt marsh habitats on Hooks Island (see **Appendix E**), as the new structure was positioned to direct flows towards the existing tidal channel rather than Hooks Island. Therefore, impacts from operations and maintenance would not impact special-status species and operational impacts are not discussed further in this analysis.

Figure 4-5. Post-Project Habitat Types at the New Tide Gate Structure



Special-Status Plants

Special-status plants with habitat in the Project area include saline clover, Point Reyes salty bird's beak, California seablite, Hoover's button celery, Congdon's tarplant, and San Joaquin spearscale. Based on habitat assessments and protocol-level surveys of the Project area, special-status plant species are not anticipated to be present. Valley Water botanists conducted surveys for all special-status plants with the potential to occur in the Project area during the appropriate blooming periods when these species would have been identifiable, and none were observed. In the unlikely event that special-status plants are present (i.e., establish on-site since the time of the last surveys), they could be crushed or removed during ground disturbing activities, and this impact would be potentially significant. **Mitigation Measure (MM) BIO-1** is proposed to address this impact.

MM-BIO-1: Pre-Construction Surveys for Special-Status Plants

A qualified botanist will conduct preconstruction surveys for special-status plant species in the Project area during the appropriate species-specific identification periods and within one year of ground disturbance in any given area (i.e., Phase 1 dewatering limits and Phase 2 dewatering limits). The survey(s) will be in accordance with the appropriate State and federal survey protocols for the special-status species (i.e., time of year for survey). If the survey(s) demonstrate absence of special-status plant species in the Project area, no further actions will be required.

If the botanical surveys reveal the presence of special-status plants in the Project area, Valley Water or its contractor will retain a qualified botanist or restoration ecologist who will prepare a salvage, relocation, or propagation and monitoring plan prior to construction to address monitoring, salvage, relocation, and propagation of special-status plant species. Documentation will include provisions that address the techniques, location, and procedures required for the successful establishment of the plant populations. The plan will include provisions for performance that address survivability requirements, maintenance, monitoring, implementation, and the annual reporting requirements. All directly impacted stands of special-status plants will be documented by a qualified botanist. Documentation will include density and percent cover; key habitat characteristics, including soil type, associated species, hydrology, and topography; and photo documentation of preconstruction conditions.

MM-BIO-1 requires a pre-construction survey for special-status plants, and if any are identified, preparation of a salvage, relocation, or propagation and monitoring plan to ensure there is no direct loss of these species. Therefore, with implementation of mitigation measure **MM-BIO-1**, the impact on special-status plants would be reduced to a **less than significant** level.

California Ridgway's Rail and California Black Rail

Ridgway's rail is a resident known to occur in the study area year-round. The species is expected to occur in habitat surrounding the Project area, such as Hooks Island, but is unlikely to occur in the Project footprint, which provides low quality habitat and increased human disturbance compared to surrounding areas. While not known to nest regularly in the South Bay, California black rail has been observed in the surrounding areas and could occur in the habitat surrounding the Project area (e.g., Hooks Island). Black rail is not known to nest in the study area, so impacts to nesting black rails would be unlikely, but Ridgway's rails are known to nest in marshes surrounding the Project area. To avoid impacts to breeding rails, construction has been scheduled to occur outside both the Ridgway's rail and black rail breeding season, which lasts from February 1 through August 31.

Construction activities would result in permanent and temporary impacts to estuarine intertidal emergent wetland (tidal salt marsh), which is known to support California Ridgway's rail and potentially California black rail. Potential indirect, temporary impacts to non-breeding rails would include construction disruption in and adjacent to rail habitat, which could cause individuals to either avoid or reduce use of the area. Disturbance could also cause rails to flush (leave areas of visual cover), exposing them to increased predation risk. Direct impacts to rails could include injuring individuals through construction activities such as heavy equipment operation, vegetation clearing, construction noise, or light vehicle and foot traffic in rail foraging habitat. Loss of approximately 0.09 acre of salt marsh that could serve as rail foraging (non-breeding) habitat would also occur; however, this permanently lost foraging habitat is limited to a narrow band (approximately 5 feet wide) of marginal habitat occurring along the toe of the levee. This small area of salt marsh is already subject to increased disturbance due to its close proximity to the trail and is intermixed with existing rip-rap near the existing tide gate structure. Given the marginally suitable nature of the impacted rail habitat (small area, narrow band near existing trail, non-breeding, rip-rap intermixed), the impact from habitat loss on rails would be **less than significant**.

Furthermore, temporary chain-link construction fencing (i.e., to prevent trail users from entering the work area) could provide perching locations for raptors, which would be able to more successfully predate on rails and other special-status species. However, removal of the timber piles near the existing tide gate structure would result in a long-term benefit to rails by removing potential perching locations for predators near rail habitat.

Nevertheless, potential impacts to Ridgway's rail and black rail would be considered significant due to the highly sensitive nature of these species and the potential for impacts from construction activities. **MM-BIO-2** through **MM-BIO-5** are proposed to address potential impacts on rails.

MM-BIO-2: Qualified Biologist and Biological Monitoring

A qualified biologist will conduct a survey of appropriate habitat for special-status species within the work area, including all staging and access routes, immediately prior to initiation of construction activities. If individuals are observed within or near the work area, the biologist will remain onsite to monitor for unusual or stressed behavior as a result of Project activities and maintain an appropriate no-disturbance buffer. No work will occur within the buffer until a qualified biologist verifies that the individuals have left the area. If an appropriate buffer cannot be maintained, work shall be stopped immediately and the

individual will be allowed to leave the area of its own volition. If the individual does not leave the area, the qualified biologist will coordinate with USFWS and CDFW on how to proceed with work activities.

A qualified biologist will be present during the installation of environmentally sensitive area (ESA) fencing and will determine on a daily basis which areas need to be monitored during construction activities to avoid harm to special-status species. If a special-status species is found within the ESA fencing during a Project activity that may result in take of a federally or State listed species, work will cease in that area until the individual has left the area of its own volition or been relocated out of the area by a qualified biologist. Relocation will follow all applicable USFWS or CDFW protocols, as appropriate. Work will not resume until the biological monitor has determined that the animal has safely left the work area. The qualified biologist shall have the authority to halt construction if determined necessary to avoid or minimize adverse impacts on special-status species at any point.

MM-BIO-3: Worker Environmental Awareness Training Program

A Worker Environmental Awareness Training Program for construction personnel shall be prepared and provided by a qualified biologist retained by Valley Water or its contractor. All construction personnel shall receive the training prior to working on the Project site. The training program shall provide workers with information on their responsibilities with regard to the special-status species and sensitive habitats in the Project area; a physical description of each special-status species that has potential to occur; each species' habitat and legal protections; photographs to assist in identification of the species; as well as an overview of BMPs and applicable terms and conditions in the Project's permits.

MM-BIO-4: Environmentally Sensitive Area Fencing

ESA fencing shall be identified in the Project plans around sensitive habitats (i.e., wetlands and non-wetland waters, special-status species habitat) not identified to be impacted, as appropriate, in coordination with a qualified biologist. The construction contractor, in coordination with the qualified biologists, shall install the fencing on the Project site prior to construction activities to ensure these areas are avoided. ESA fencing shall be constructed consistent with other fencing requirements (i.e., related to salt marsh harvest mouse). The fencing shall be brightly colored for ease of visibility and maintained in good conditions for the duration of construction activities. A designated individual will inspect and maintain the integrity of the ESA fencing during each working day to ensure there are no holes or rips and the base remains buried.

MM-BIO-5: Install Raptor Perching Deterrents

Any temporary chain-link fencing on the Project site that could provide perching opportunities for avian predators of special-status species will be modified to include perch deterrents along the top of the fencing (i.e., repellent spikes). Perch deterrents will be maintained for the duration of the Project in a condition that deters predator access and raptor perching.

MM-BIO-2 requires a qualified biologist conduct a pre-activity survey for special-status species (including rails) prior to work in sensitive habitats capable of supporting special-status species, and to remain on-site to monitor work in these habitats, when appropriate; **MM-BIO-3** stipulates all construction staff receive an environmental awareness training from a qualified

biologist covering all special-status species, sensitive habitats, BMPs, and applicable permit terms and conditions prior to working at the Project site; **MM-BIO-4** requires ESA fencing be erected around sensitive habitats (i.e., wetlands and non-wetland waters, special-status species habitat) that are not identified to be impacted by the Project, to exclude rails and other species from entering the work area; and **MM-BIO-5** requires installation of raptor perching deterrents on temporary construction fencing. Together, these measures would ensure that construction impacts on Ridgway's rails and black rails would be avoided and minimized to the maximum extent practicable, and the impact would be reduced to a **less than significant** level.

Burrowing Owl

Construction activities would not result in permanent or temporary impacts to burrowing owl habitat, as grasslands with small mammal burrows are absent from the Project area. However, burrowing owls could occur in the grasslands south of the access road (Adobe Creek Loop Trail) coming from the Byxbee Park parking lot. Construction is scheduled to occur during the fall and winter burrowing owl non-breeding season (September 1 through January 31); therefore, construction is not expected to impact nesting burrowing owls. If over-wintering burrowing owls are present in the grasslands south of the access road, burrowing owls could be disturbed by increased noise and traffic from construction vehicles using the access road, thereby discouraging their use of the habitat. Although burrowing owls occurring in this area are likely adapted to a higher baseline level of disturbance from trail use, these impacts are potentially significant. **MM-BIO-6** is proposed to address this impact.

MM-BIO-6: Conduct Preconstruction Surveys for Wintering Burrowing Owl

To avoid impacts to burrowing owl, a pre-construction burrowing owl survey shall be conducted by a qualified biologist no more than seven days prior to the initiation of Project activities occurring within 250 feet of suitable habitat areas. If a wintering burrowing owl is detected onsite, a 250-foot no-disturbance buffer around the active burrow shall be implemented and maintained until work is finished or a qualified biologist confirms the burrow is no longer in use. If work within the no-disturbance buffer cannot be avoided, Valley Water shall coordinate with CDFW to determine the appropriate course of action to ensure wintering burrowing owls are not impacted.

MM-BIO-6 requires Valley Water or its contractor retain a qualified wildlife biologist to survey areas of suitable burrowing owl habitat seven days before the start of construction, establish no-disturbance buffers should over-wintering burrowing owls be identified, and coordinate with CDFW regarding potential avoidance measures if construction vehicle traffic within the buffer cannot be avoided. These measures would ensure Project construction would not disturb burrowing owls such that they abandon or avoid use of occupied habitat. With implementation of **MM-BIO-6**, construction impacts on burrowing owls would be reduced to a **less than significant** level.

Migratory Birds (including special-status species)

Construction activities are not anticipated to result in impacts to birds protected under the MBTA, including special-status species, due to the scheduling of construction from September 1 through January 31, which is largely outside of the bird nesting period (January 15 to September 1). It is worth noting that the transmission line towers, located approximately 700

feet northeast of the Project area and outside the study area, could provide suitable nesting habitat for raptors, including bald eagles. Given construction would already be active when the migratory bird nesting season begins on January 15, birds would either avoid the area for nesting or be undisturbed by the on-going construction activities, precluding any impacts to nesting birds as a result of Project activities. In addition, as described in BMP BI-2 (*Avoid Impacts to Nesting Migratory Birds*), when work is scheduled to occur during the nesting bird season, a focused survey for active nests would be conducted by a qualified biologist prior to the beginning of project-related activities. If a lapse in Project-related work of 15 days or longer occurs during the migratory bird nesting season, another nesting bird-focused survey would be conducted. Birds could use the study area for foraging, but the Project is within the context of the largely undeveloped Baylands Nature Preserve and foraging would not be restricted as a result of Project activities. While birds may avoid the Project area during construction, construction is not expected to result in harassment or mortality of birds, including special-status species. Construction impacts to nesting migratory birds and raptors would be **less than significant** because the Project would avoid disturbance of active nests. No mitigation is required.

Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew

Salt marsh harvest mouse have been documented using the PAFB and surrounding areas, and mice could occur in the Project area. The potential for salt marsh wandering shrew to occur in the Project area is low due to limited suitable habitat, low population numbers, and low densities of the species where they do occur.

Direct impacts to mice or shrews, as well as their nests, could occur during vegetation clearing in suitable habitat and adjacent uplands. Salt marsh harvest mice and wandering shrews could be killed or injured by construction equipment or subjected to increased risk of predation during clearing and grubbing of salt marsh habitat. Individuals could also be subject to increased harm and harassment from noise and vibration. Construction activities would result in permanent loss of approximately 0.09 acre of marginal tidal salt marsh habitat, and temporary impacts to surrounding ruderal uplands, both of which could support salt marsh harvest mouse and to a lesser degree, salt marsh wandering shrew. However, these limited permanent habitat impacts would occur in a narrow band (approximately 5 feet wide) along the toe of the existing levee. This habitat is considered low quality habitat for these species due to its narrow width, limited connections to larger habitat patches, close proximity to the trail, and presence of rip-rap (with low density marsh vegetation) near the existing tide gate. Given the small area and low habitat quality, the impact from loss of habitat on harvest mice would be **less than significant**.

Direct impacts from construction activities (e.g., vegetation clearing and equipment operation in sensitive habitats) that could result in injury or mortality of harvest mice or wandering shrews would be considered potentially significant. To address these impacts, **MM-BIO-7** would be implemented.

MM-BIO-7: Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Protection Measures

Valley Water shall develop and implement avoidance and minimization measures specific to salt marsh harvest mice and salt marsh wandering shrew. Measures shall include, but not limited to, the following:

- Prior to initiation of work within or adjacent to suitable habitat for salt marsh harvest mouse or salt marsh wandering shrew, a qualified biologist shall conduct a preconstruction survey for mice and shrews in areas where disturbance is planned. Surveys shall take place no more than 48 hours before the onset of work in habitats capable of supporting these species.
- A qualified biologist shall survey for salt marsh harvest mice and salt marsh wandering shrew individuals or nests in all areas with suitable habitat prior to removal of vegetation. Once the site is cleared of mice or shrews, the biologist will supervise the hand (i.e., non-mechanized) removal of any vegetation that could support salt marsh harvest mice and wandering shrews (i.e., salt marsh and immediately adjacent uplands) to avoid impacts to these species. Such monitoring will occur for the duration of all clearing work within suitable habitat. Vegetation clearing should begin at the existing tide gate structure and continue away from the structure to encourage any salt marsh harvest mice and wandering shrews in the area to move into suitable habitat outside of the Project area. Vegetation clearing should extend 2 to 3 feet beyond the ESA fence to discourage salt marsh harvest mice and wandering shrews from returning to the Project area. All brush resulting from vegetation clearing will immediately be moved offsite so as not to provide habitat for salt marsh harvest mice and wandering shrews in the Project area.
- Prior to construction, ESA fencing shall be installed by hand along the limits of disturbance to prevent salt marsh harvest mice and wandering shrews from entering the active work area; to protect habitat within the marsh from earthmoving activities or accidental spills; and to exclude workers from the marsh outside of the impact area. A qualified biologist shall be present onsite to monitor for salt marsh harvest mice and wandering shrews during ESA fence installation.
- If individuals are observed in the active work area, all activities in that area shall cease until the qualified biologist determines any individuals have safely left the area. USFWS and CDFW will be notified if work is stopped due to such an observation. Additional avoidance (e.g., allowing individuals to leave of their own volition), protection (e.g., implementation of no-work buffer zones), or relocation measures may be implemented in coordination with USFWS and CDFW, as appropriate. Work may continue away from the observed individual(s) if the qualified biologist determines work can occur without causing harm to the species.

MM-BIO-7 includes avoidance and minimization measures specific to salt marsh harvest mouse and salt marsh wandering shrew including species-specific pre-construction surveys, exclusion fencing suitable for these species, and monitoring requirements during vegetation removal when these species are at the greatest risk of impact. Furthermore, **MM-BIO-2** through **MM-BIO-5** (described above) would be implemented to avoid and/or minimize potential impacts to salt marsh harvest mouse and salt marsh wandering shrew, among other species. These measures would require biological monitoring during ground disturbance by a qualified biologist, a worker environmental awareness training program, ESA fencing, and raptor perch deterrents. With implementation of **MM-BIO-2** through **MM-BIO-5** and **MM-BIO-**

7, impacts on salt marsh harvest mouse and salt marsh wandering shrew would be reduced to a **less than significant** level.

Special-Status Fish

Construction activities have the potential to directly affect the following special-status fish species and their habitat:

- Central California Coast steelhead (federally threatened)
- Chinook salmon, Central Valley fall-run (State species of special concern)
- Green sturgeon (federally threatened; State species of special concern)
- Longfin smelt (State threatened; State species of special concern)
- Pacific lamprey (State species of special concern)
- White sturgeon (State species of special concern)

The Project would result in a post-Project net increase of 0.7 acre of estuarine intertidal unconsolidated shore (open waters of the Bay) habitat for special-status fish species. This habitat conversion would be a beneficial impact for these species in the study area after completion of the Project by creating additional habitat for foraging. However, there would be a temporary loss of a total of approximately 0.47 acre of Bay habitat (phased) during construction. This area would be restored to pre-Project conditions at the completion of construction. Given the small area of foraging habitat temporarily unavailable to special-status fish in the context of the Bay ecosystem, the impact from temporary habitat loss would **be less than significant**.

While the Project would result in a greater post-Project habitat area for special-status fish, the potential for direct impacts on fish during construction exists. Construction activities potentially impacting special-status fish are discussed below.

Underwater Sound from Construction

Underwater sound and acoustic pressure resulting from construction and demolition activities have the potential to affect special-status fish (as well as marine mammals; evaluated below) by causing behavioral avoidance of the Project area and/or injury or mortality of these species. Valley Water evaluated potential acoustic and hydroacoustic impacts on fish and marine mammals, which is included in the In-Water and Airborne Noise Analysis Memorandum (**Appendix D**).

Acoustic criteria intended to protect fish from harm and mortality caused by pile driving activities (which are not proposed by this Project, but are informative of other potential hydroacoustic impacts) were adopted by the California Department of Transportation (Caltrans), the Federal Highway Administration, CDFW, USFWS, and NMFS in 2008. However, these “interim injury criteria” are now routinely used to evaluate the effects of impact pile driving sound on fish. While these criteria do not apply to drilled piles and the DSM method for ground improvements utilized by the Project, which are considered methods for avoiding and minimizing effects on fish, they are instructive of potential impacts to fish from underwater sound. **Table 4-9** summarizes the adopted interim criteria for fish.

Table 4-9. Interim Injury Criteria for Fish

Interim Injury Criteria	Agreement in Principal
Peak	206 dB
Cumulative SEL	187 dB – for fish size of two grams or greater 183 dB – for fish size of less than two grams

dB = decibels; SEL = Sound Exposure Level.

In coordination with hydroacoustic experts, Valley Water made modifications to the Project construction methods to avoid and minimize hydroacoustic impacts on fish and remain below the injury criteria thresholds. The Project was modified to exclude use of pile driving for construction of the new tide gate and levee ground improvements (as originally proposed), instead relying on the use of drilled piles and the DSM method. Additionally, pneumatic hammers (impact hammers) were excluded as a method for demolition of the existing tide gate, requiring the tide gate be cut into pieces with a concrete saw and removed in sections via crane as an alternative. With these modifications in place, the in-water noise analysis concluded that fish were not at risk of injury from Project activities. Therefore, the impact from underwater sound on fish would be **less than significant** and no mitigation measures are proposed.

Fish Stranding during Dewatering

Special-status fish species have a low-to-moderate potential to occur in the Project area (Table 5-7). While unlikely, special-status fish could be present as foragers in the Project area when dewatering activities occur. Fish could become stranded as water is drained from the work area, potentially resulting in direct fish mortality. Dewatering would occur during low tide, when fish would be confined to a smaller area (i.e., the tidal channel downstream of the tide gate), to limit the potential for fish entrapment; however, there is potential for direct mortality of special-status fish during dewatering activities. These impacts are potentially significant. **MM-BIO-8** would be implemented to address impacts from fish stranding during dewatering.

MM-BIO-8: Implement Fish Exclusion and Relocation

A qualified fisheries biologist shall develop a Fish Exclusion or Relocation Plan to exclude and/or relocate fish from the Project area to avoid direct fish mortality from stranding during dewatering. The Fish Exclusion or Relocation Plan shall be reviewed and approved by NMFS and CDFW prior to implementation. The plan shall at a minimum identify methods for fish capture and/or exclusion, temporary holding methods, and appropriate release locations.

MM-BIO-8 requires Valley Water to develop and implement a Fish Exclusion or Relocation Plan in coordination with CDFW and NMFS to avoid fish stranding and mortality during dewatering. The plan would identify methods for fish exclusion, capture, release, and handling, thereby minimizing impacts on fish. With implementation of **MM-BIO-8**, potential impacts to special-status fish from dewatering activities are reduced to a **less than significant** level.

Water Quality Impacts on Fish from Dewatering

After installation of the sheet pile coffer dams that form the dewatering area limits, water may require pumping out of the dewatered area, both initially and to a lesser degree on an on-going basis to control potential seepage and maintain a dry work environment. Cofferdams would be installed during low tides to minimize the total area where fish could be present (some area would be mud flats) and the total amount of water required for pumping. Pump intakes would be screened according to NMFS criteria to prevent uptake of fish and other vertebrates. Water pumped from the Project area would be filtered via a settling tank to minimize turbidity and discharged directly to the Bay or PAFB. Dewatering activities would be undertaken in a manner consistent with BMP WQ-15 (*Prevent Water Pollution*) and in compliance with the Project's permits. Turbidity would not increase such that it could become deleterious to fish and other aquatic life. Removal of the sheet pile coffer dams would occur in a manner that would prevent water from flooding the dewatered area, ensuring fish and aquatic life are safe and there is no increase in turbidity that could be harmful to fish and other aquatic life. Prior to removal of the dewatering system, dewatering pumps can be stopped and the water level within the dewatered area would be allowed to rise. This would prevent sudden discharge of water when the dewatering system is removed. Therefore, water quality impacts on fish during dewatering would be **less than significant**.

Marine Mammals

Underwater sound and acoustic pressure resulting from construction and demolition activities has the potential to indirectly impact marine mammals by causing behavioral avoidance of the Project area, and directly impact these species through physical injury from excessive noise. Valley Water evaluated potential acoustic and hydroacoustic impacts on marine mammals, as detailed in the In-Water and Airborne Noise Analysis Memorandum (**Appendix D**) and summarized in this section.

As described above, marine mammals occurring in the Bay, though not considered special-status species, are protected under the MMPA, and impacts to these mammals due to underwater noise require authorization in the form of an Incidental Harassment Authorization from NMFS. As described above, the study area, and this portion of the Bay in general, has low concentrations of marine mammals given the distance to pupping sites and the open ocean. While many species of marine mammals can be found in the Bay, Pacific harbor seals are the most abundant and only year-round resident pinniped, and the only species typically present in the South Bay.

In 2018, NMFS published criteria for assessing in-water impacts on marine mammals from pile driving and other construction sources (NMFS 2018). These thresholds relate to the onset of permanent hearing threshold shift (PTS) and have frequency weighting functions that are applied to overall measured unweighted sound levels based on the type of activity (e.g., drilling, pile driving) and the potentially affected species.⁶ In-water and in-air acoustic thresholds for behavioral disruption were previously reported on the NMFS Westcoast Region

⁶ Background and details on these criteria are found here: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>

website.⁷ Level A thresholds relate to physical injury to marine mammals (e.g., hearing loss or PTS) and Level B thresholds relate to behavioral disruption (non-injurious). The accumulation period for the cumulative sound exposure level (SEL) is 1 day of activity and the accumulative energy resets each day. **Table 4-10** summarizes the Level A in-water noise thresholds for the various marine mammal hearing groups for non-impulsive sound sources; Level B thresholds for non-impulsive noise are the same across all marine mammal hearing groups at 120 dB_{RMS} (decibels root-mean-squared). **Table 4-11** summarizes the in-air Level A and B thresholds.

Table 4-10. NMFS In-water Level A Acoustic Thresholds (PTS Onset)

Level A Hearing Groups	PTS Onset for Non-Impulsive Sound Sources – Cumulative SEL (dB)
Low-frequency Cetaceans (LF) (<i>baleen whales</i>)	199 dB
Mid-frequency Cetaceans (MF) (<i>dolphins, toothed whales, beaked whales, bottlenose whales</i>)	198 dB
High-frequency Cetaceans (HF) (<i>true porpoises, Kogia, river dolphins, cephalorhynchid, Lagenorhynchous cruciger and australis</i>)	173 dB
Phocid Pinnipeds (PW) (<i>true seals</i>)	201 dB
Otariid Pinnipeds (OW) (<i>sea lions and fur seals</i>)	219 dB

dB = decibels; PTS = permanent hearing threshold shift; SEL = Sound Exposure Level.

Table 4-11. NMFS Current In-Air Level A and Level B Acoustic Thresholds

Criterion	Criterion Definition	Threshold
Level A	PTS (injury) conservatively based on TTS	None established
Level B	Behavioral disruption for harbor seals	90 dB _{RMS}
Level B	Behavioral disruption for non-harbor seal pinnipeds	100 dB _{RMS}

dB_{RMS} = decibels root-mean-squared; PTS = permanent hearing threshold shift; TTS = temporary hearing threshold shift.

Hydroacoustic Impacts

Tables 4-12 and 4-13 summarize the results of the hydroacoustic assessment for marine mammals. **Table 4-12** addresses the hydroacoustic impacts of drilling of the CIDH piles (for tide gate construction) and the DSM method (for levee ground improvements). **Table 4-13** addresses the demolition of the existing gate with concrete saws. **Figure 4-6** depicts the distances to Level A and B thresholds for the worst-case scenarios (depending on activity and marine mammal type). The distances to Level A thresholds for the marine mammals that are most likely to occur in or near the study area (i.e. Pacific harbor seals, a phocid pinniped) are

⁷ See https://www.westcoast.fisheries.noaa.gov/protected_species/marine_mammals/threshold_guidance.html

substantially shorter and occur within the dewatering limits where these species would not be present.

As mentioned in the impact analysis for fish, CIDH piles/DSM and concrete saws were identified for use in construction rather than driven piles and pneumatic hammers, respectively, as a means to reduce hydroacoustic impacts. It should also be noted that no construction activities other than installation of the sheet pile dewatering system (pressed-in piles with silent piling equipment) would occur in-water.

As demonstrated by the tables and figures, construction has no potential to cause physical injury (Level A threshold) to marine mammals. Noise level estimates for the Project were calculated to exceed the Level A threshold up to 264 feet away from the source, though for most marine mammal hearing types this distance would be much shorter. The Level A threshold limits only include a small area on the Bay side of the work area. The Level A threshold limits would primarily occur within the dewatered area during construction (including installation of sheet piles for dewatering), precluding physical injury to marine mammals. The only marine mammal species with Level A thresholds extending beyond the limits of dewatering are high-frequency cetaceans (e.g., harbor porpoises) and low-frequency cetaceans (i.e., baleen whales). Habitat within the Level A threshold limits for these species extends less than 80 feet beyond the limits of dewatering, and these species are not expected to occur in this area due to the shallow waters (which are mudflats at low tides). Therefore, physical injury is not expected to occur to marine mammals as a result of the Project.

Behavioral disruptions (Level B thresholds; 120 dB_{RMS}) have the potential to extend well beyond the Project area, dissipating the further the location is from the Project site. Based on the underwater noise modeling, and not accounting for the higher baseline noise anticipated in the South Bay, marine mammals may experience behavioral harassment at up to approximately 10 miles (52,000 feet) from the Project area during CIDH pile drilling and DSM ground improvements, and approximately 1 mile (5,200 feet) during tide gate demolition. While the noise would not cause injury to marine mammals, it may temporarily affect their behavior, causing them to avoid the area during construction activities that generate in-water noise (i.e., CIDH pile drilling, DSM, and saw-cutting for removal of the existing tide gate). However, baseline underwater noise conditions in the Bay are typically high due to surface waves, marine vessels, and other activity. Caltrans, in its compendium of underwater sound measurements (Caltrans 2015), reported baseline ambient underwater sound levels averaging 133 dB_{RMS} in open water portions of Bay. Therefore, marine mammals in the Bay are adapted to a high baseline level of noise and only minor behavioral disruption is anticipated. As a result, the impact on marine mammals from underwater noise would be **less than significant**.

Table 4-12. Modeled Hydroacoustic Assessment for Impacts from CIDH Piles and DSM on Marine Mammals

Location	Material	Pile Size	Isoleth Distance to Cumulative SEL Marine Mammal Level A Thresholds (feet)					Distance to Level B Threshold for Continuous Sound (feet)
			Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds	
New Tide Gate	CIDH Steel Pile	36-inch diameter	264	15	231	141	10	52,000
New Levee	DSM	n/a	264	15	231	141	10	52,000

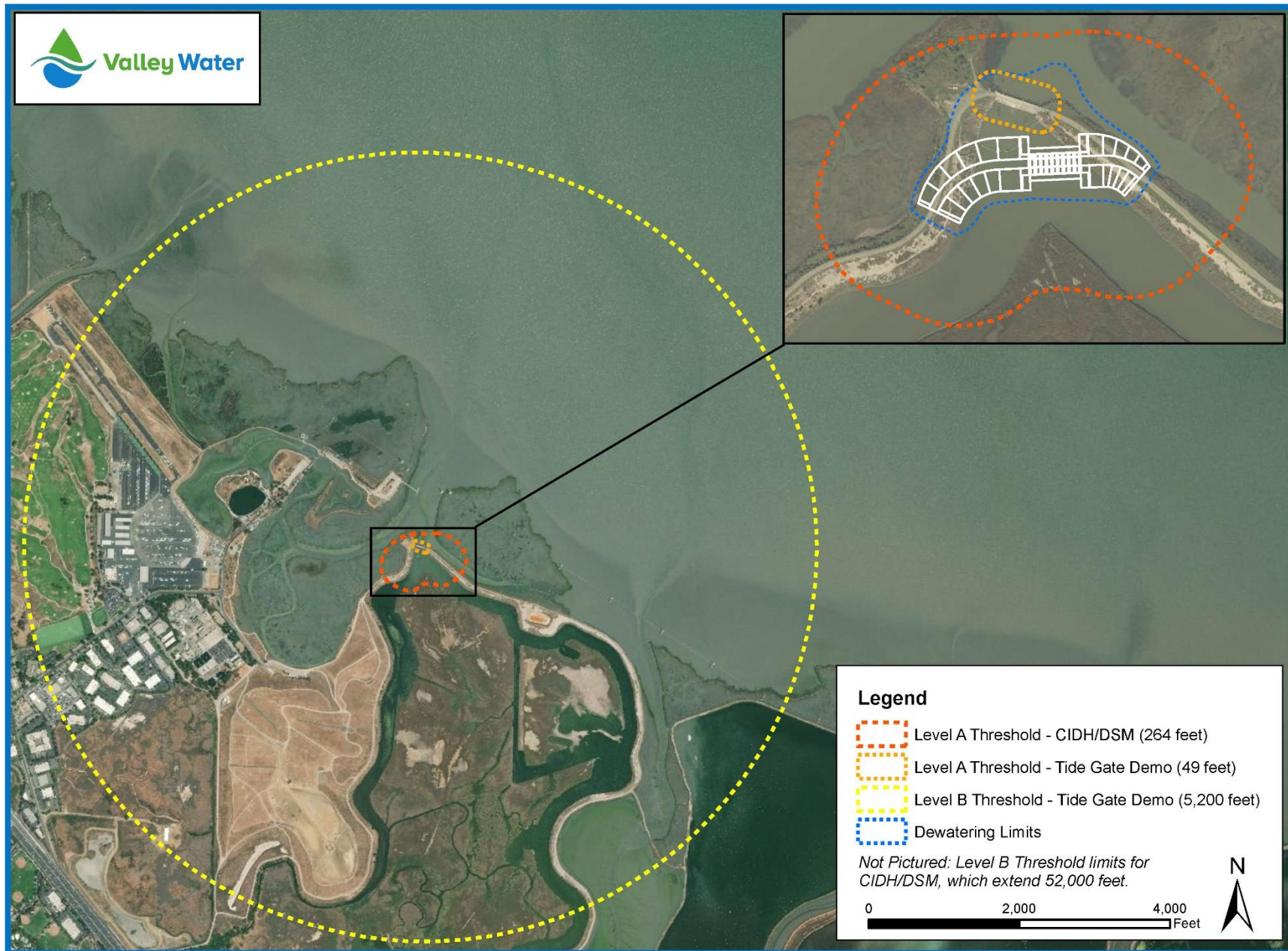
CIDH = cast-in-drilled hole; SEL = Sound Exposure Level.

Table 4-13. Modeled Hydroacoustic Assessment for Impacts from Demolition on Marine Mammals

Location	No. of Concurrent Saw Cutters	Distance to Level A Cumulative SEL for Marine Mammals (feet)					Distance to Level B Threshold for Continuous Sound (feet)
		Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds	
Tide Gate Demo	1	31	2	27	16	1	5,200
Tide Gate Demo	2	49	3	43	26	2	5,200

SEL = Sound Exposure Level.

Figure 4-6. Level A and B Impact Thresholds for Marine Mammals



Airborne Noise Impacts

Table 4-14 summarizes the results of the airborne noise assessment.

Table 4-14. Airborne Noise Assessment for Construction Activity

Activity	Cumulative Sound Level at 50 feet by Activity (dBZ)	Distance to Level B Behavior Criterion (90 dB_{RMS}) for Harbor Seals (feet)	Distance to Level B Behavior Criterion (100 dB_{RMS}) for Non-Harbor Seal Pinnipeds (feet)
Clearing and grubbing	95	89	28
Install dewatering system ¹	70	5	2
Dewater sheet pile system	95	89	28
Excavate existing levee	93	71	22
Install CIDH piles	92	63	20
Pour concrete	95	89	28
Remove sheet piles	93	71	22
Demo existing tide gate	94	75	25
DSM	92	63	20
Import fill	93	71	22

CIDH = cast-in-drilled hole; dB_{RMS} = decibels root-mean-squared; dBZ = unweighted decibels;
¹ Based on source level of 62.3 dBA at 16 meters from Giken for the sheet pile dewatering system. This is equivalent to 63 dBA and 70 dBZ at 50 feet.

Construction activities would generate airborne noise that could potentially result in behavioral disturbance to pinnipeds (e.g., sea lions and harbor seals) which are hauled-out or at the water’s surface. Based on the construction activity type, the furthest distance to any behavioral disruption (Level B threshold) would be 89 feet. These activities would be temporary. As described previously, marine mammals are rarely present in the Project area and no marine mammals would be expected to occur within 89 feet of the work area given the existing habitat, dewatering limits, lack of haul out sites, and baseline activity and disturbance in the area. Therefore, the impact on marine mammals from airborne noise impacts would be **less than significant**.

b) Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No riparian habitat occurs within the study area; therefore, the Project would have **no impact** on riparian habitat.

Wetlands that qualify as sensitive natural communities per the CDFW Natural Communities List (CDFW 2019c) occur within the study area. Wetlands that qualify as sensitive natural communities (identified in parentheses following the land cover type name) within the study area include estuarine intertidal emergent wetland (pickleweed mats, also referred to as northern coastal salt marsh) and palustrine emergent wetland (pickleweed mats). Project effects on these wetlands (as well as non-wetland waters of the United States) are discussed in detail below under item c). As discussed below, **MM-BIO-9** would be implemented to reduce the Project impacts on these types of wetlands to a **less than significant** level.

- c) **Would the Project have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Construction

Estimates of the area of wetlands and non-wetland waters impacted by Project construction, and the net change in post-Project habitats, are included **Table 4-15** below. Refer to **Figure 4-5** above for a depiction of post-Project habitats.

Table 4-15. Impacts on Waters of the United States/State

Habitat Type	Permanent Impact (acres)	Temporary Impact (acres)	Net Change in Waters/Wetland Area Post-Project (acres)
<i>Wetlands</i>			
Estuarine Intertidal Emergent Wetland	0.09	0.16	-0.09 ¹
<i>Subtotal</i>	<i>0.09</i>	<i>0.16</i>	<i>-0.09¹</i>
<i>Non-wetland water</i>			
Estuarine Intertidal Unconsolidated Shore	-	0.88	+1.06 ¹
Palustrine Unconsolidated Bottom	0.97	0.86	-0.97
<i>Subtotal</i>	<i>0.97</i>	<i>1.74</i>	<i>+0.09</i>
Total	1.06	1.90	No change

¹ Note: the amount of post-project area and net change to estuarine intertidal emergent wetland habitat is likely to be underestimated, as it is expected that the area to the west of the new tide gate (between the tide gate and existing levee to the west) will eventually fill in with bay muds and support intertidal emergent wetland. A narrow band of intertidal emergent wetland may also form along the new east levee section. The total amount of tidal wetland formation may be up to 0.55 acre, depending on sediment deposition and vegetation recruitment. Due to the uncertainty in the size and timeline for this wetland formation, these areas are considered to be estuarine intertidal unconsolidated shore in the estimates above.

Permanent impacts to aquatic resources would occur through removal of the existing levee, and placement of fill to construct the new tide gate structure and levee. Temporary impacts would occur through dewatering and grading of substrate to establish the work area. Due to the new configuration of the tide gate and levees, the post-Project area would result in a net increase of approximately 1.06 acres of estuarine intertidal unconsolidated shore (open Bay waters), but a net decrease of approximately 0.97 acre of palustrine unconsolidated bottom (open water of the PAFB). This would result in a net gain of open water habitats, while replacing open waters of the PAFB with tidally influenced Bay waters, which would be considered a beneficial impact, as the Bay supports a host of special-status species that the PAFB does not (i.e., special-status fish, marine mammals). The Project would result in a net loss of approximately 0.09 acre of estuarine intertidal emergent wetland (salt marsh). However, this impacted habitat is of relatively low quality, occurs in a narrow band (approximately 5 feet wide) at the toe of the levee, and is intermixed with rip-rap near the existing tide gate structure.

As discussed in Chapter 2, standard construction BMPs would be implemented to avoid and/or minimize potential impacts to wetlands. Valley Water will also be required to obtain permits from State and federal agencies prior to Project initiation and implement permit conditions and BMPs. Valley Water will obtain the following permits to support this Project and

to minimize potential impacts on the aquatic resources within the Project footprint: USACE Section 404 Permit, RWQCB Water Quality Certification, CDFW Lake and Streambed Alteration Agreement, and State Water Resources Control Board Construction General Permit. A Stormwater Pollution Prevention Plan (SWPPP) would also be prepared. Placement of fill into waters of the United States/State is considered a substantial adverse effect on federally and State protected wetlands as defined by Section 404 of the Clean Water Act and Porter-Cologne Water Quality Control Act (Porter-Cologne Act), and such impacts would be considered significant under CEQA. **MM-BIO-9** would be implemented to address this impact.

MM-BIO-9: Compensate for Impacts to Jurisdictional Wetlands

Valley Water shall develop an aquatic resource mitigation plan, subject to approval by the USACE and RWQCB, which shall ensure no net loss of wetlands from Project impacts. The plan shall detail the amount and type of wetlands that will compensate (through preservation, creation, and/or restoration) for impacts to existing wetlands, and outline the monitoring and success criteria. Once the plan is approved, Valley Water shall implement the aquatic resource compensation measures prior to the completion of Project construction. Valley Water shall be responsible for funding compensatory mitigation, monitoring of the created or restored features per the mitigation plan, and any remedial actions necessary. All conditions that are attached to the State and federal permits shall be implemented as part of the Project. The conditions shall be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance.

Alternatively, Valley Water may also elect to purchase wetland mitigation credits from an agency-approved mitigation bank, such as the San Francisco Bay Wetland Mitigation Bank located in Foster City. If bank credits are used, they shall be purchased prior to the start of construction.

MM-BIO-9 would offset impacts to jurisdictional wetlands through compensatory mitigation. The Project's compensatory mitigation approach would be detailed in an aquatic resources mitigation plan, which would be implemented prior to the completion of construction. The mitigation would compensate for loss of waters of the United States/State through on-site or off-site preservation, creation, and/or restoration of aquatic resources, or through purchase of mitigation credits from an agency-approved mitigation bank, such as the San Francisco Bay Wetland Mitigation Bank located in Foster City. The compensatory mitigation would ensure there would be no net loss of wetlands. Furthermore, **MM-BIO-4** (described above) would require a qualified biologist identify wetland areas abutting the Project area not identified for disturbance and install exclusion fencing or markers prior to construction. With implementation of these measures, construction impacts on waters of the United States/State would be reduced to a **less than significant** level.

Operation

In order to assess any potential post-Project impacts, Valley Water evaluated the potential for erosional impacts from tide gate structure relocation through hydrodynamic modelling (**Appendix E**). Specifically, the analysis evaluated if flood and tidal waters flowing to and from the tide gate could result in erosion of salt marsh habitat on Hooks Island or migration of the existing channel flowing from the tide gate. Generally, the results showed that erosional potential from the new tide gate structure would be similar to what would be anticipated for the existing structure, particularly for normal tide conditions and low flood water discharges. Greater, though still small, differences are observed for the 10-year and 100-year discharges

through the tide gate structure, but are mainly due to the higher discharge rates imposed by the efficiencies of the new structure. Given that these are extreme and infrequent events, with very high velocities both for the existing and proposed tide gate structure configurations, and given that the differences are small, the impacts are likely to be negligible when compared to the existing tide gate structure configuration. Furthermore, due to the flow alignment for the new gate (angled towards the existing channel), it is also possible that the channel from the gate could migrate slightly to the west, further relieving impacts at Hooks Island (**Appendix E**).

Rather than erosion of salt marsh habitat, what is more likely is the new tide gate configuration results in deposition of sediment along the new levee on the west side of the tide gate (as suggested by the modeled water velocities in this area; see **Appendix E**), allowing for eventual formation of up to 0.55 acre of additional salt marsh habitat. While this salt marsh creation would off-set the permanent impacts of the Project, this potential habitat creation is not being considered mitigation due to the uncertainty in the habitat formation and likely delay in formation from time of impact. Therefore, operational impacts on jurisdictional waters would be **less than significant**.

d) Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Project occurs within the Palo Alto Baylands, an expansive nature preserve which provides species with a variety of pathways to seek habitat patches for foraging, prey, cover, or mating. Given the Project's location in the Baylands, work within the relatively small Project area is not anticipated to substantially interfere with fish and wildlife movement. The Project area currently provides limited habitat linkages and wildlife corridors between patches of salt marsh (i.e., from salt marsh located west of the study area to salt marsh on Hooks Island) and aquatic habitats (i.e., movement along the Bay margin). Much of the Project area consists of wide, barren levee roads and a tide gate structure with chain-lined fence on either side and moderate to high pedestrian traffic; this type of landscape would generally be avoided by most wildlife species, such as small mammals, which would be moving through the area.

Although birds move through the Project area, flight movement would not be impeded during construction. Black phoebes and swallows have been known to nest on the existing tide gate structure. However, the new tide gate structure will be installed before the existing structure is removed, and work will not be occurring during the majority of nesting bird season. Movement between the in-water habitats of the PAFB and Bay are currently limited by the existing tide gate structure, and construction in this area would not alter or preclude substantial movement between these environments. Special-status fish (e.g., green sturgeon, Central California coast steelhead, and longfin smelt) are known to migrate through the South Bay between riverine spawning habitats and marine areas. The new tide gate structure will be installed before the existing structure is removed, such that a tide gate will always be functioning, and fish movement will not be reduced from existing conditions. Special-status fish are not known or expected to travel upstream to spawn in the creeks bordering the PAFB. Habitat value for fish is limited in the PAFB and the creeks upstream of the tide gate, and predatory, non-native striped bass (*Morone saxatilis*) are known to occur in the PAFB.

Known wildlife nursery sites are limited to the salt marsh endemic species (e.g., Ridgway's rail and salt-marsh harvest mouse), which breed, nest, and rear young entirely within salt marsh habitat in and surrounding the Bay. Ridgway's rail may nest in salt marsh habitat in the

Baylands Nature Preserve (including on Hooks Island) but are not known or expected to nest in the PAFB. Rails are associated with tidal marsh habitats with unrestricted daily flow and well-developed slough networks. Additionally, no work would occur during rail breeding season. Native songbirds could nest in vegetation along the levee road which would be temporarily unavailable for the duration of the Project. However, this habitat consists of a wide, barren levee road with moderate to high foot traffic that is lined with ruderal vegetation and would be considered marginal compared to surrounding habitats. Work would not occur during the majority of nesting bird season. There are no other known native wildlife nursery sites in the Project area.

Due to the scheduling of construction outside of rail breeding season and the majority of the standard bird breeding season, and the implementation of nesting bird surveys during the standard nesting season, construction activities would not disrupt breeding and rearing of salt marsh endemic bird species (or other bird species). The Project would impact marginal habitats potentially occupied by salt marsh harvest mice and install ESA fencing (MM-BIO-3) to prevent movement of mice into the Project area; however, these areas occur at the edges of mouse habitat in the Project area and would not impede their movement to larger, more desirable habitat patches. Due to the dewatering system, fish would not be able to move into the Project area, but they would be free to move about the Bay and to rearing locations as they currently do. Therefore, the impact on wildlife movement and nursery sites would be **less than significant** during construction and no mitigation measures are proposed.

Following Project construction, there would be no new features that would further impede wildlife movement or use of nursery sites compared to existing conditions. The new tide gate structure would operate consistent with existing use. Therefore, there would be **no impact** to fish or wildlife movement during Project operation.

e) Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

As the Project does not result in new development or expanded recreational opportunities, the Project is consistent with the Natural Environment Element of the City of Palo Alto's Comprehensive Plan (City of Palo Alto 2017a). The Project would not conflict with policies in the Comprehensive Plan relating to the protection of natural resources and endangered species. The Project would also be consistent with the policies in the Palo Alto Baylands Master Plan (City of Palo Alto 2008), including measures requiring any new levee construction that intrudes into wetlands be appropriately mitigated. The City of Palo Alto is in the process of developing the Palo Alto Baylands Comprehensive Conservation Plan (draft released in March 2019) and the Project is consistent with measures included in this draft plan. The Project would not result in removal of any trees and therefore the City's tree ordinance does not apply. There would be **no impact**.

f) Would the Project conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or State habitat conservation plan?

There are no adopted HCPs or NCCPs covering the Project area. As described above, the City of Palo Alto is in the process of developing the Palo Alto Baylands Comprehensive Conservation Plan (draft released in March 2019), and while not formally adopted, the Project does not conflict with the provisions outlined in the draft plan. Therefore, the Project would not conflict with any adopted habitat conservation plans and there would be **no impact**.

Cultural Resources

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Regulatory Setting

Federal

Section 106 of the National Historic Preservation Act

Federal regulations for cultural resources are primarily governed by Section 106 of the National Historic Preservation Act (NHPA) of 1966, which applies to actions taken by federal agencies. The goal of the Section 106 review process is to offer a measure of protection to sites that are determined eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the Federal Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

The Section 106 review process consists of four steps.

1. Initiate the Section 106 process by establishing the undertaking, developing a plan for public involvement, and identifying other consulting parties.
2. Identify historic properties (resources that are eligible for inclusion in the NRHP) by determining the scope of efforts, identifying cultural resources in the area potentially affected by the project, and evaluating resources' eligibility for NRHP inclusion.
3. Assess adverse effects by applying the Section 106 criteria of adverse effect to identified historic properties.
4. Resolve adverse effects by consulting with the State Historic Preservation Officer (SHPO) and other consulting agencies, including the Advisory Council on Historic Preservation (ACHP) if necessary, to develop an agreement that addresses the treatment of historic properties.

The Section 106 review for this Project is anticipated to be initiated by the USACE through the CWA Section 404 permit process. USACE would consult with the SHPO in order to determine and potentially resolve adverse effects on historic properties, if any.

National Register of Historic Places

The NRHP is the nation's master inventory of known historic resources. It is administered by the National Park Service (NPS) in conjunction with the SHPO. The NRHP includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering,

archaeological, or cultural significance at the national, state, or local level. The NRHP criteria and associated definitions are outlined in National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation* (U.S. Department of the Interior, National Park Service 1988). Resources (structures, sites, buildings, districts, and objects) more than 50 years of age can be listed in the NRHP provided they meet the evaluative criteria described below. However, properties less than 50 years of age that are of exceptional importance or are contributors to a district, and that also meet the evaluative criteria, can be included in the NRHP as well.

The NRHP includes four criteria under which a structure, site, building, district, or object can be considered significant for listing in the NRHP.

1. Resources associated with events that have made a significant contribution to the broad patterns of history.
2. Resources associated with the lives of persons significant in our past.
3. Resources that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
4. Resources that have yielded or may likely yield information important in prehistory or history.

When evaluating a resource for potential eligibility for inclusion in the NRHP, one must evaluate and clearly state the significance of that resource to American history, architecture, archaeology, engineering, or culture. A resource can be individually significant if it meets any of the above-stated criteria; only one criterion needs to be met for the eligibility of the resource to be considered.

A resource may be considered eligible for listing on the NRHP if it meets one or more of the above-stated criteria for significance and possesses integrity. Historic properties must retain their integrity to convey their significance. The NRHP recognizes seven aspects or qualities, listed below, that define integrity including location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity, a resource should possess several of the seven aspects. The retention of specific aspects of integrity is essential for a resource to convey its significance.

Resources that meet the criteria and have been determined eligible for the NRHP are protected under Section 106 of the NHPA when a proposed undertaking uses federal funds or requires a federal permit, license, or approval.

State

California Environmental Quality Act

CEQA uses the term *historical resources* to include buildings, sites, structures, objects, or districts, each of which may have historical, pre-historical, architectural, archaeological, cultural, or scientific importance. CEQA states that if implementation of a project would result in significant effects on historical resources, then alternative plans or mitigation measures must be considered; however, only significant historical resources need to be addressed (14 CCR Sections 15064.5 and 15126.4). Therefore, before impacts and mitigation measures can be identified, the significance of historical resources must be determined.

The State CEQA Guidelines define three ways that a property may qualify as a historical resource for the purposes of CEQA review.

1. The resource is listed in or determined eligible for listing in the California Register of Historic Resources (CRHR). Resources determined eligible for listing in the NRHP, established under the NHPA, are automatically considered eligible to the CRHR.
2. The resource is included in a local register of historical resources, as defined in PRC Section 5020.1[k] or identified as significant in a historical resource survey meeting the requirements of Section 5024.1[g] of the PRC, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. The Lead Agency determines the resource to be significant, as supported by substantial evidence in light of the whole record (14 CCR Division 6, Chapter 3, Section 15064.5[a]).

Under CEQA, a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter the physical characteristics that convey the property's historical significance and qualify it for inclusion in the CRHR, the NRHP, or in a local register or survey that meets the requirements of PRC Sections 5020.1[k] and 5024.1[g].

California Register of Historical Resources

All resources listed in or formally determined to be eligible for the NRHP are eligible for the CRHR. The CRHR is a listing of State of California resources that are significant within the context of California's history. The CRHR is a statewide program of similar scope to the NRHP. In addition, properties designated under municipal or county ordinances also are eligible for listing in the CRHR. A historic resource must be significant at the local, state, or national level under one or more of the criteria defined in the 14 CCR Chapter 11.5, Section 4850. Historic resources are broken down into four criteria:

- Criterion 1 (Events): Resources that are associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
- Criterion 2 (Persons): Resources that are associated with the lives of persons important to local, California, or national history.
- Criterion 3 (Design/Construction): Resources that embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of a master, or possess high artistic values.
- Criterion 4 (Archaeological/Source of New Information): Resources or sites that have yielded or have the potential to yield information important to the prehistory or history of the local area, California or the nation.

The CRHR criteria are similar to NRHP criteria and are tied to CEQA because any resource that meets the above criteria is considered a historical resource under CEQA.

Local

City of Palo Alto Comprehensive Plan

According to Policy L-7.1 in Chapter 2, Land Use, of the City of Palo Alto Comprehensive Plan (City of Palo Alto 2017a), the City will encourage public and private upkeep and preservation of resources that have historic merit, including residences listed in the Historic Inventory, the CRHR, and the NRHP. Policy L-7.2 states that if a proposed project would substantially affect the exterior

of a potential historic resource that has not been evaluated for inclusion into the City's Historic Resources Inventory, City staff shall consider whether it is eligible for inclusion in the CRHR or NRHP prior to the issuance of a demolition or alterations permit. Minor exterior improvements that do not affect the architectural integrity of potentially historic buildings shall be exempt from consideration. Policies L-7.15 through L-7.18 relate to archeological resources and call for the protection of archeological resources (Policy L-7.15), coordination with Native American tribes (Policy L-7.16), assessment of the need for archeological surveys on a project-by-project basis (Policy L-7.17), and requirements that projects meet other State and federal laws pertaining to archeological resources (Policy L-7.18).

Existing Conditions

Valley Water contracted Pacific Legacy, Inc. to conduct a cultural resources investigation for the Project area. The purpose of the investigation was "to identify historic properties and/or historical resources that may be adversely affected by ground disturbing activities associated with the Project". The results of this report are included in **Appendix F**. The investigation included a search of archives and records, consultation with the Native American Heritage Commission (NAHC), a pedestrian inventory survey, and an assessment of the tide gate and levee. The results of the cultural resources investigation stated that "the NAHC failed to identify Native resources or areas of concern within the Project area. A pedestrian inventory survey of the Project area revealed no prehistoric or historic period archaeological materials."

Additionally, the cultural resources investigation assessed the potential historic value of the tide gate and levee and found that the existing tide gate and levee structure "does not meet eligibility criteria for listing in the NRHP and/or CRHR and does not comprise a historic property under Section 106 of the NHPA or a historical resource per CEQA" (Pacific Legacy 2019, **Appendix F**).

U.S. Geological Survey (USGS) maps show that around 1900, the entire Baylands Nature Preserve area was salt marsh (City of Palo Alto 2008). Salt marsh habitat extended beyond what is currently US-101 (City of Palo Alto 2008). Historically, this part of the Bay consisted of marshland habitat and would have been typically inundated with water. This makes the Project area unlikely to have been the location of prehistoric occupation. The area could have been used for resource gathering, but it is improbable that this area would have been used for human settlement or burial. The Project area has also been subject to prior dredging, construction (i.e., levees, tide gate, and PAFB), and tidal/flood scour.

Unlike many other portions of the Bay Area's salt marsh habitat, the Project area was not used for commercial salt production in the early and mid-20th century (BCDC 2005). Instead, the City of Palo Alto looked to these marshes as space for development and recreation (City of Palo Alto 2008). The City began acquiring pieces of the marsh beginning in the 1920s.

Valley Water constructed the levee and tide gate in 1957 as one of the County's early flood protection measures. These structures are important to the recent history of the area, as they have provided flood management services since their construction. The physical structures of the levee and tide gate are important to maintaining the integrity of the surrounding areas. Valley Water's plans for the initial structure anticipated that the tide gate would require replacement after approximately 50 years. Upon further assessment of the structure during repairs in 2011, it was confirmed that the current tide gate structure is unlikely to remain functional as sea level rises (Valley Water 2016). Given that the tide gate was designed for replacement within 50 years, the tide gate is by design not intended to be historically important.

This former marshland is home to a long history of conflicting efforts at management, preservation, and restoration. The Bay and Bay shoreline experienced enormous environmental damage for much of the 20th century. In the mid-20th century, residents of Palo Alto found a renewed sense of activism and environmental preservation, ultimately pushing the city to dedicate its parks, which included the City-owned Baylands (City of Palo Alto 2008). Work on the first Palo Alto Baylands Master Plan began in the early 1970s and would eventually play a large role in shaping the preservation and restoration of important natural resources located in the Baylands area. The first version of the Baylands Master Plan, completed in 1978, took steps towards shutting down the landfill that neighbored the park and established recreational space in the park. The initial Baylands Master Plan has since been updated to reflect more modern perspectives and goals, but the overall vision of preserving the park's cultural value for Bay Area residents and visitors has remained.

Discussion

a) Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

As described above, the Project area does not contain any known historic resources. The Project would replace the existing tide gate, which was constructed by the Valley Water in 1957 with a planned 50-year life span. This structure was not built with the intention of becoming a permanent part of the area's landscape and was designed to require replacement in order to remain functional. The cultural resources investigation conducted for the Project area by Pacific Legacy, Inc. (**Appendix F**) indicated that the existing tide gate and levee structure "does not meet eligibility criteria for listing in the NRHP and/or CRHR and does not comprise a historic property under Section 106 of the NHPA or a historical resource per CEQA" (Pacific Legacy 2019). No substantial adverse change to a historic resource would occur and **no impact** is anticipated.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

USGS maps show that around 1900, the area in and surrounding the Project area was located near the confluence of the Bay proper and historic salt marsh habitat (City of Palo Alto 2008). Salt marsh habitat extended inland beyond what is currently US-101 (City of Palo Alto 2008), or approximately 1.3 miles inland from the current tide gate. Access to the Project area would have been limited based on these conditions and archaeological sites are unlikely to be located within the Project area. Additionally, the Project area previously underwent dredging, construction (i.e., tide gate, levee, PAFB), and tidal/flood scour. These activities would have likely obscured or eliminated any limited archeological resources that could have occurred in the Project area.

The Cultural Resources Investigation (**Appendix F**) conducted for the Project area determined that "the Project area of potential effect (APE) is set within former and current marshland, thus it is considered to have very low sensitivity for archaeological or historic period archaeological resources. Although the Native inhabitants of the bayshore frequently accessed tidal marshlands to procure resources, including fish, waterfowl, and salt, frequently inundated areas were not preferred for habitation" (Pacific Legacy 2019).

Based on these conditions, it can be concluded that the Project is unlikely to result in significant adverse effects to archaeological resources. Additionally, implementation of BMP CU-1 (*Accidental Discovery of Archeological Artifacts, Tribal Cultural Resources, or Burial*

Remains) would avoid or minimize any potential impacts to archaeological resources by requiring work to stop if archeological resources are found, establishing a no-work buffer within 100 feet of the find, and following specific protocols for identification and evaluation of the find. Therefore, the impact on archeological resources would be **less than significant**.

c) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Prior to the construction of the existing levee and tide gate, this part of the Bay consisted of marshland habitat. As marshland, this area would have been historically inundated with water and would not have been a likely location of prehistoric occupation. This area would have been used for resource gathering, but it is improbable that this area would have been used for human settlement. The Cultural Resources Investigation (**Appendix F**) conducted for the Project determined that: “the Project area possesses very low sensitivity for buried cultural resources.” While human remains are unlikely to occur in the Project area, Valley Water will implement standard precautionary measures for the accidental discovery of unknown finds consistent with BMP CU-1 (*Accidental Discovery of Archeological Artifacts, Tribal Cultural Resources, or Burial Remains*). In the event human remains or burial sites are discovered, the County Coroner would be immediately notified and no further excavation or disturbance of the site would be allowed within 100 feet unless otherwise authorized by the County Coroner, California NAHC, and/or the County Coordinator of Indian Affairs. Therefore, impacts to human remains would be **less than significant impact**.

Energy

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

In accordance with CEQA and Appendix F, Energy Conservation, of the 2019 CEQA Guidelines, and to assure that energy implications are considered in project decisions, environmental impact reports (EIR) are required to include a discussion of the potential significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines provides a list of energy-related topics to be analyzed in the EIR. In addition, while not described or required as significance thresholds for determining the significance of impacts related to energy, Appendix F provides topics for consideration in the discussion of energy use in an EIR, to the extent the topics are applicable or relevant to the project. While this document is an MND, a discussion of the potential significant energy impacts of the Project are included below.

The City of Palo Alto’s Comprehensive Plan includes energy policies; however, these policies are related to energy procurement and energy efficiency in buildings and new development and are therefore not applicable to the Project.

Existing Conditions

California’s energy system includes electricity, natural gas, and petroleum. According to the California Energy Commission, California’s energy system generates 71 percent of the electricity, 10 percent of the natural gas, and 31 percent of the petroleum consumed or used in the State. The rest of the State’s energy and energy sources are imported, and includes electricity from the Pacific Northwest and the Southwest; natural gas purchases from Canada, the Rocky Mountain states, and the southwest; and petroleum imported from Alaska and foreign sources (CEC 2019a; 2019b; and 2019c).

California has one of the most progressive Renewable Portfolio Standard policies in the country, requiring that all utilities in the State supply 60 percent of their retail electric sales from eligible renewable energy resources by 2030 and putting the State on a path to 100 percent fossil-fuel free electricity by 2045 (California Public Utilities Commission 2019). The City of Palo Alto’s electricity blend has been carbon neutral since 2013 (City of Palo Alto 2017c).

One of the 16 tide gate cells in the existing tide gate structure is controlled by the City of Palo Alto and equipped with an electric motor to allow for water circulation in the PAFB, primarily during summer months. Electricity use at the site is limited to the periodic use of this single cell, as the remaining gates open and close based on water level differences between the PAFB and the Bay.

Discussion

- a) **Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?**

Construction of the Project would require temporary use of fuel for vehicles and equipment, and electrical energy use during construction would be negligible. During Project operation, the new tide gate would not result in an increase in local electricity demand. The existing tide gate structure contains one electrically powered gate, operated periodically by the City of Palo Alto to allow for water circulation in the PAFB, and the Project would maintain this operational condition. As is the case with the existing tide gate structure, the electrically controlled gate would be operated only periodically, primarily in the summer months to improve water circulation in the basin. Furthermore, any energy used to operate the tide gate would be provided by the City of Palo Alto's electricity grid, which has been carbon neutral since 2013. There would be **no impact**.

- b) **Would the Project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?**

The Project would not include the development or demolition of any buildings. Operational energy use would be limited to the periodic operation of one electrically controlled tide gate cell, the same as under existing operation. Energy and energy efficiency/conservation standards or codes, such as the California Building Standards or California Energy Code, are not applicable to the Project. Given the nature of the Project, it would not conflict with or obstruct California's Renewable Portfolio Standard and **no impact** would occur.

Geology and Soils

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Regulatory Setting

Alquist-Priolo Earthquake Fault Zoning Act

California's Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (PRC Section 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the

corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as active, and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones.

Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are “sufficiently active” and “well defined.” A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as referring to approximately the last 11,000 years). A fault is considered well defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment.

Seismic Hazards Mapping Act

Similar to the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. Although the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act (i.e., the State is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped seismic hazard zones).

A primary purpose of the Seismic Hazards Mapping Act is to assist cities and counties in preparing the safety elements of their general plans and encourage land use management policies and regulations that reduce seismic hazards. The intent of this act is to protect the public from the effects of strong ground shaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites within seismic hazard zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans. In addition, the California Geologic Survey’s Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California, provides guidance for evaluating earthquake-related hazards for projects in designated zones with required investigations and recommending mitigation measures, as required by PRC Section 2695(a).

Liquefaction hazards mapping has been conducted for the part of the Bay Area that includes the Project area.

Existing Conditions

Regional Geologic Setting

The San Francisco Bay region is one of the most seismically active areas in North America and is dominated by the San Andreas Fault system. This fault system movement is distributed across a complex system of generally strike-slip right-lateral parallel and sub-parallel faults including San Andreas, San Gregorio, Hayward and Calaveras. A major earthquake at any of these sites could produce a strong ground shaking in the Project area.

Liquefaction

Liquefaction is the transformation of saturated, loose, fine grained sediment to a fluid-like state because of earthquake shaking or other rapid loading. Soils most susceptible to liquefaction are loose to medium dense, saturated sands, silty sands, sandy silts, non-plastic silts and gravels with poor drainage, or those capped by or containing seams of impermeable sediment. According to the liquefaction hazard maps prepared for the USGS, the liquefaction probability in the Project area for a magnitude 7.8 earthquake on the San Andreas Fault would be between 0 and 5 percent (Holzer, T.L., et al., 2008). The Seismic Hazards Zonation Report classifies the Project area and the surrounding land as susceptible to liquefaction due to the area's soil characteristics (Clahan et. al. 2006). The geotechnical investigation report prepared for the Project indicated the presence of potentially liquefiable soil layers between 38 and 45 feet below ground surface with a potential post-liquefaction settlement of up to about 3 inches (Parikh Consultants 2019).

Alquist-Priolo Fault Zone

The Project area is not located within a State-designated Alquist-Priolo Earthquake Fault Zone, where site-specific studies addressing the potential for surface fault rupture are required, and no known active faults traverse the site. The nearest Alquist-Priolo Earthquake Fault Zones are associated with the San Andreas Fault Zone, which is located approximately 8.5 miles west of the Project area. The closest fault to the City of Palo Alto is the San Andreas (CDC 2018).

Seismicity

The Project area and the entire Bay Area is in a seismically active region subject to strong seismic ground shaking. Ground shaking is a general term referring to all aspects of motion of the earth's surface resulting from an earthquake and is normally the major cause of damage in seismic events. The extent of ground-shaking is determined by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions.

Soils

The USGS's National Geologic Map Database shows this part of the Bay as being composed of Holocene Era bay mud deposits (USGS 2000). The soil located at and immediately surrounding the Project area is classified as belonging to the Novato series, which is highly compressible but has low erosion potential (National Resource Conservation Service 2015). The soils within the basin and the soils beyond the opening of the tide gate are typically saturated with water. The site has no existing structures or buildings that are impacted by the compression and expansion of soils. The data in the geotechnical investigation report prepared for the Project indicate approximately 30 feet of young bay mud below the 7 to 8 feet of levee fill material (Parikh Consultants 2019).

Lateral Spreading

Liquefaction-induced lateral spreading has been defined as the lateral displacement of large surficial blocks of soil as a result of liquefaction in a subsurface layer. Lateral spreading refers to more moderate movements of gently sloping ground due to soil liquefaction. Liquefaction-induced lateral spreading occurs on mild slopes of 0.3 to 5 percent underlain by loose sand and shallow water. As stated in the Seismic Hazards Report for the Mountain View quadrangle, "the potential for ground failure resulting from liquefaction-induced lateral spreading of alluvial materials...is not specifically addressed by the earthquake-induced landslide zone or this report" (Clahan et. al. 2006). The geotechnical investigation report prepared for the Project stated "lateral spreading is unlikely at the levee because it appears that the potentially liquefiable soil exists at a depth that is much deeper than the height of the levee embankment."

Paleontological Resources

The geologic formation that underlies the Project area is estuarine organic clay and silty clay (Holocene), representing San Francisco Bay Mud (Dibblee and Minch 2007). Based on a recent report prepared for a highway overcrossing project located near the Project area, no fossils have been recorded in this unit in any literature or records and a low paleontological sensitivity was assigned to the Project area (Paleo Solutions 2017). The University of California Museum of Paleontology database was searched for fossil locations in Santa Clara County and the search did not identify any fossil sites from Holocene formations.

Discussion

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. The location of surface rupture generally can be assumed to be along an active or potentially active major fault trace. The Project area is located outside of the limits of the State Alquist-Priolo Special Studies Zone (CDC 2006a) and approximately 8.5 miles east of the San Andreas Fault. The Adobe Creek Loop Trail, which runs through the Project area, would not be expanded and the pre- and post-construction trail use is expected to be the same. The site has a low risk of seismic rupture due to its distance from the nearest fault lines and in the unlikely occurrence of rupture, the Project would not expose any additional people to potential adverse effects. Therefore, **no impact** would occur.

ii) Strong seismic ground shaking?

Due to the Project's proximity to multiple fault lines, there is an underlying risk of ground shaking from earthquakes. An earthquake along one of the faults within the Bay Area could induce ground shaking in the Project area. The Project would be designed following standard engineering and construction techniques intended to address seismic risks, ensuring that the tide gate structure and levee would remain sufficiently safe during an earthquake. Valley Water conducted a geotechnical investigation that provided site-specific information about underlying substrates in order to design a safe and stable tide gate structure and levee. The Adobe Creek Loop Trail in the Project area would not be expanded and the pre- and post-construction trail use is expected to be the same. Therefore, a **less than significant** impact is anticipated.

iii) Seismic-related ground failure, including liquefaction?

Due to the Project's location along the Bay shoreline, the Project area is located within a Liquefaction Zone (CDC 2006a). The Mountain View Quadrangle's Seismic Hazards Zonation Program states that "liquefaction may occur in water-saturated sediment during moderate to great earthquakes" (Clahan et. al. 2006). Based on the Project area's characteristics (i.e., levee and tide gate structure constructed on top of Bay mud), there is the potential for liquefaction to occur at the site. However, the Project would not expand the use of Adobe Creek Loop Trail or involve the construction of any buildings that would be susceptible to damage from liquefaction. Therefore, there would be no increase in the

number of people who would be exposed to the adverse effects of liquefaction. The new tide gate structure and levee would be designed and constructed according to standard engineering practices that minimize seismic risks. The tide gate structure would be supported by approximately 60 CIDH piles and the new levee would be supported by ground improvements conducted using the DSM method. Therefore, the impact would be **less than significant**.

iv) Landslides?

The topography of the Project area and surrounding land is mostly flat. The Project area is not located within a Landslide Hazard Zone or otherwise susceptible to landslides (CDC 2019). Therefore, there would be **no impact** from landslides.

b) Would this Project result in substantial soil erosion or the loss of topsoil?

During construction, the Project could result in temporary soil erosion on exposed or graded surfaces; however, due to the final configuration of the new tide gate structure and levee, areas that would be temporarily impacted and potentially exposed during construction would be limited to narrow strips on the margin of the work area and the where the levee would be temporarily built up to support a larger staging area at Staging Area 2. BMPs would be employed (i.e., BMPs WQ-4 [*Limit Impacts from Staging and Stockpiling Materials*], WQ-9 [*Use Seeding for Erosion Control, Weed Suppression, and Site Improvement*], and WQ-16 [*Prevent Stormwater Pollution*]) to minimize these effects and the area would be revegetated or stabilized following construction, consistent with the SWPPP.

Once operational, there is potential for erosion to occur along the edge of Hooks Island, located just downstream (Bay side) of the new tide gate, due to the structure's relocation slightly upstream and to the east of its existing location. Valley Water evaluated the potential for erosional impacts from tide gate relocation (**Appendix E**). Specifically, the analysis evaluated if flood and tidal waters flowing to and from the tide gate could result in erosion of Hooks Island or migration of the existing channel flowing from the tide gate.

Generally, the results showed that erosional potential from the new tide gate structure would be similar to what would be anticipated for the existing structure, particularly for normal tide conditions and low flood water discharges. Greater, though still small, differences are observed for the 10-year and 100-year discharges through the tide gate structure but are mainly due to the higher discharge rates imposed by the efficiencies of the new structure. Given that these are extreme and infrequent events, with very high velocities both for the existing and proposed tide gate structure configurations, and given that the differences are small, the impacts are likely to be negligible when compared to the existing tide gate structure configuration. Furthermore, due to the flow alignment for the new gate (angled towards the existing channel), it is also possible that the channel from the gate could migrate slightly to the west, further relieving impacts at Hooks Island. Therefore, operational impacts from soil erosion would be **less than significant**.

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

As explained in sections **a-i)** and **a-iv)**, the Project's location and flat surface makes the possibility of landslide or ground collapse unlikely. While the Project area is located within a liquefaction zone and could be susceptible to subsidence, which is common in marsh environments along the Bay, the risk of these seismic hazards would be minimized by the

Project's use of structurally sound design and construction practices intended to account for such risks. Valley Water conducted a geotechnical investigation that provided site-specific information about underlying substrates in order to develop a safe and stable tide gate structure and levee design. Additionally, the Project does not include the construction of any buildings that would be susceptible to these instability concerns. The impact would be **less than significant**.

- d) **Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?**

Soils in the Project area are classified primarily as being part of Holocene Era bay mud deposits. The soil located at and immediately surrounding the Project area is classified as belonging to the Novato series, which is highly compressible but has low erosion potential (Natural Resource Conservation Service 2015). Although native soils underlying the Project area may have moderate shrink-swell potential, adherence to standard engineering and construction techniques would minimize potential effects of expansive soils on the new tide gate structure and levee. Valley Water conducted a geotechnical investigation that provided site-specific information about underlying substrates in order to determine the appropriate tide gate structure and levee design. The tide gate structure and levee would be designed to withstand shrinking and swelling of the underlying soils. Therefore, the impact would be **less than significant**.

- e) **Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

The Project would not utilize septic tanks or require wastewater disposal systems and would not use a sewer system. Therefore, **no impact** would occur.

- f) **Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

Excavation during Project construction would primarily include excavation of the existing levee fill material, with minimal excavation into underlying native substrates. The geologic formation that underlies the Project area is estuarine organic clay and silty clay (Holocene), representing San Francisco Bay Mud (Dibblee and Minch 2007). Based on a recent report prepared for a highway overcrossing project located near the Project area, no fossils have been recorded in this unit in any literature or records and a low paleontological sensitivity was assigned to the Project area (Paleo Solutions 2017). Additionally, the Project area has been subject to prior dredging, construction, and tidal/flood scour and no paleontological or geologic features have been discovered and documented. There is a low likelihood of encountering paleontological resources or unique geologic features during Project construction. Therefore, the impact would be **less than significant**.

Greenhouse Gas Emissions

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

Assembly Bill 32

The California State Legislature adopted Assembly Bill (AB) 32 in 2006. AB 32 focuses on reducing greenhouse gases (GHGs; carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, CARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan calls for an “ambitious but achievable” reduction in California’s GHG emissions, cutting approximately 30 percent from business as usual emission levels projected for 2020, or about 10 percent from today’s levels.

On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every person in California down to about 10 tons per person by 2020. In October 2010, CARB prepared an updated 2020 forecast to account for the recession and slower forecasted growth. The forecasted inventory without the benefits of adopted regulation is now estimated at 545 million metric tons (MT) of CO₂ equivalents⁸ (CO₂e). Therefore, under the updated forecast, a 21.7 percent reduction from business as usual is required to achieve 1990 levels.

Bay Area Air Quality Management District

The BAAQMD has not adopted significance thresholds for construction related GHG emissions. However, the BAAQMD has included in its CEQA Guidelines stationary and operational-related thresholds for the emission of GHG shown in **Table 4-16**.

⁸ GHG emissions are typically measured in terms of pounds or tons of “CO₂ equivalents” (CO₂e). For example, sulfur hexafluoride is 22,800 times more potent at contributing to global warming than carbon dioxide.

Table 4-16. BAAQMD Greenhouse Gas Thresholds of Significance

Project Type	Construction-Related	Operational-Related ³
Projects other than Stationary Sources ¹	None	Compliance with Qualified GHG Reduction Strategy or 1,100 MT of CO ₂ e/yr. or 4.6 MT of CO ₂ e/SP ² /yr. (residents+employees)
Stationary Sources ¹	None	10,000 MT of CO ₂ e/yr.

Notes:

1. According to the BAAQMD CEQA Guidelines, a stationary source project is one that includes land uses that would accommodate processes and equipment that emits GHG emissions and would require a BAAQMD permit to operate. projects other than stationary sources are land use development projects including residential, commercial, industrial, and public uses that do not require a BAAQMD permit to operate.
2. SP = service population (residents + employees)
3. If annual emissions of operational-related GHGs exceed these levels, the Project would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change.

Source: BAAQMD, CEQA Air Quality Guidelines, May 2017

State and Local Plans

California has one of the most progressive Renewable Portfolio Standard policies in the country, requiring that all utilities in the state supply 60 percent of their retail electric sales from eligible renewable energy resources by 2030 and putting the state on a path to 100 percent fossil-fuel free electricity by 2045 (California Public Utilities Commission 2019). The City of Palo Alto approved its Sustainability and Climate Action Plan (S/CAP) in 2016. This plan sets forth a framework to reduce the detrimental environmental impacts associated with GHG emissions and climate change. In 2017, the City released a Sustainability Implementation Plan to guide the City’s specific sustainability and climate priorities for 2018-2020. Palo Alto’s energy blend has been carbon neutral since 2013 (City of Palo Alto 2017c). The City has a variety of energy efficiency programs and is a leader in sustainability within the Bay Area. The City of Palo Alto’s municipal code includes green building requirements which establishes energy efficiency standards for residential and commercial projects (City of Palo Alto 2019d). These green building requirements do not specifically address construction practices for other types of projects.

Existing Conditions

Global climate change is the observed increase in the average temperature of the Earth’s atmosphere and oceans in recent decades. The Earth’s average near-surface atmospheric temperature rose 0.6 ± 0.2 degrees Celsius (°C) or 1.1 ± 0.4° Fahrenheit (°F) in the 20th century. The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of CO₂ and other GHGs are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect. GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change include:

- CO₂
- Methane

- Nitrous oxide
- Hydrofluorocarbons
- Perfluorocarbons
- Sulfur Hexafluoride

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally occurring GHGs such as CO₂, methane, and nitrous oxide, some gases, like hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

These gases vary considerably in terms of global warming potential, which is a concept developed to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to another gas. The global warming potential is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere (“atmospheric lifetime”). The global warming potential of each gas is measured relative to carbon trapped by one-unit mass of the GHG to the ratio of heat trapped by one-unit mass of CO₂ over a specified time period.

Discussion

a) **Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Project construction would temporarily generate GHG emissions from the use of fossil fuel-powered vehicles and equipment. These emissions would occur only when construction equipment is in operation, or when worker or vendor vehicles are driving to or from the Project area. Methane would also be emitted during the fueling of heavy equipment. Exhaust emissions from construction activities would vary as construction intensity changes. Construction emissions would be limited to the Project’s 21 months of construction, spread across 5 years.

The BAAQMD has not adopted thresholds of significance for construction related GHG emissions in their CEQA Air Quality Guidelines. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction. Based on modeling conducted for the Project, the GHG emissions would be approximately 1,769 MT of CO₂e during the up to 4-year construction period, or an average of 442 MT of CO₂e for each construction year.

Once operational, the Project would not directly generate GHGs in excess of existing conditions. Periodic use of the mechanically driven tide gate cell by the City of Palo Alto (opened and closed to allow for summer water circulation in the PAFB) would result in negligible GHG emissions, as this activity would be rare and the City’s energy blend is largely renewable and completely carbon neutral. The pre- and post-Project operational emissions would be unchanged. Therefore, a **less than significant** impact is anticipated.

b) Would the Project conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The Project would not conflict with any applicable plan, policy, or regulation concerning greenhouse gases. The Project was compared with the AB 32 Scoping Plan in order to determine compliance with any applicable plan, policy, or regulation adopted to reduce emissions of GHGs. The Scoping Plan contains a variety of strategies to reduce the State's emissions. The strategies in AB 32 are not applicable to the Project as the Project includes replacement of an existing tide gate structure and would not result in additional operational emissions. The City of Palo Alto's S/CAP does not set forth any construction-related guidelines for projects that do not involve the construction of buildings. Therefore, the Project would not conflict with the AB 32 Scoping Plan or the City of Palo Alto's S/CAP and there would be **no impact**.

Hazards and Hazardous Materials

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, storage or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

State

Hazardous Waste Management

In California, the Department of Toxic Substances Control (DTSC) administers the federal Resource Conservation and Recovery Act (RCRA) program, as well as additional state-specific requirements for managing hazardous waste in accordance with the California Hazardous Waste Control Law (Section 25100 et seq.). The State criteria for identifying hazardous waste are based on characteristics of toxicity, flammability, reactivity, and corrosiveness. These criteria are broader than the RCRA hazardous waste criteria; therefore, hazardous wastes in California can be identified as either RCRA hazardous waste or non-RCRA hazardous waste.

Hazardous Materials Management

In California, hazardous waste and materials handling are regulated under the Unified Program. The Unified Program consolidates the administrative requirements, permits, inspections, and

enforcement activities for a variety of existing programs, as established by different state agencies. The Unified Program requires that facilities properly manage hazardous materials and disclose information regarding such materials to minimize the risk of a hazardous materials release and improve emergency response actions in the event of a release. The California Environmental Protection Agency (Cal/EPA) oversees the entire program and local government agencies, known as Certified Unified Program Agencies, implement and enforce the elements of the Unified Program.

Hazardous Materials Transportation

The California Highway Patrol, California Department of Transportation, and DTSC are responsible for enforcing federal and State regulations pertaining to the transportation of hazardous materials. If a discharge or spill of hazardous materials occurs during transportation, the transporter is required to take appropriate immediate action to protect human health and the environment (e.g., notify local authorities and contain the spill), and is responsible for the discharge cleanup (22 CCR Section 66260.10 et seq.).

Hazardous Materials Release Sites

In California, the U.S. EPA has granted most enforcement authority of federal hazardous materials regulations to Cal/EPA. Under the authority of Cal/EPA, the State Water Resources Control Board (SWRCB) and DTSC are responsible for overseeing the remediation of contaminated soil and groundwater sites. The provisions of Government Code 65962.5 (also known as the Cortese List) require the SWRCB, DTSC, California Department of Health Services, and California Department of Resources Recycling and Recovery (CalRecycle) to submit information pertaining to sites associated with solid waste disposal, hazardous waste disposal, and hazardous materials releases to Cal/EPA.

Worker Health and Safety

State worker health and safety regulations related to construction activities are enforced by California Occupational Safety and Health Agency (Cal/OSHA). Regulations include requirements for protective clothing, training, and limits on exposure to hazardous materials. Cal/OSHA also enforces occupational health and safety regulations specific to lead and asbestos investigation and abatement: these regulations equal or exceed their federal counterparts. Specific worker safety measures for excavation hazards (e.g., falling or cave-in of the excavation wall) are described in 8 CCR Section 1541.

California Emergency Services Act

The Emergency Services Act supports the State's responsibility to mitigate adverse effects of natural, manmade, or war-caused emergencies that threaten human life, property, and environmental resources of the State. The act aims to protect human health and safety and to preserve the lives and property of the people of the State. The act provides the Office of Emergency Services (OES) with the authority to prescribe powers and duties supportive of the act's goals. In addition, the act authorizes the establishment of local organizations to carry out the provisions through necessary and proper actions.

California has developed an emergency response plan to coordinate emergency services provided by federal, State, and local governments and private agencies. Responding to hazardous materials incidents is one part of this plan. The plan is administered by the California OES, which coordinates the responses of other agencies. County Offices of Emergency Services coordinate response to emergencies in the individual counties in the state. Emergency Response

Team members respond and work with local fire and police agencies, emergency medical providers, California Highway Patrol, CDFW, and the California Department of Transportation.

Regional and Local

Santa Clara County Hazardous Materials Compliance Division

The Santa Clara County Hazardous Materials Compliance Division is the County’s Certified Unified Program Agency, coordinating and enforcing federal, State, and local hazardous materials management and environmental protection programs in the County (Santa Clara County Department of Environmental Health 2016).

Santa Clara County General Plan

The Santa Clara County Safety and Noise chapter of the General Plan (Santa Clara County 1994) addresses hazards and hazardous materials (**Table 4-17**)

Table 4-17. County General Plan Policies Related to Hazards and Hazardous Materials

Policy	Description
Hazardous Materials Strategy #1 Manage Hazardous Materials Safely and Efficiently	C-HS 14. All feasible measures to safely and effectively manage hazardous materials and site hazardous materials treatment facilities should be used, including complying with all federal and State mandates.
Emergency Preparedness and Land Use Strategy #2 Plan for Post-Disaster Recovery	C-HS 22. Ensure that critical emergency services and equipment normally provided by outside agencies will be available in each jurisdiction to the extent possible (i.e., public health, mental health, coroner, fire suppression, etc.).
Aviation Safety Strategy #1 Limit Population Densities and Land Uses within Designated Safety Zones	C-HS 37. Land use plans and development proposals within the “influence boundaries” of affected jurisdictions should be consistent with Airport Land Use Commission (ALUC) land use plans for airport safety.
Aviation Safety Strategy #2 Regulate Structures and Objects Hazardous or Distracting to Air Navigation	C-HS 38. Local jurisdictions should comply with ALUC height restrictions and other regulations intended to ensure operational safety of aircraft and the safety of those occupying nearby buildings.

City of Palo Alto Comprehensive Plan

Chapter 5, Safety, of the City of Palo Alto Comprehensive Plan includes policies relating to public health and safety (City of Palo Alto 2017a). Relevant policies are included in **Table 4-18**.

Table 4-18. Palo Alto Comprehensive Plan Policies Related to Hazards and Hazardous Materials

Policy	Description
S-1.10	Follow the guidelines in the Emergency Operations Plan and continue towards implementing the four phases of Emergency Management: mitigation/prevention, preparedness, response and recovery.
S-2.1	Incorporate the City’s Local Hazard Mitigation and Adaptation Plan, as periodically adopted by the City Council and certified by FEMA, into the Safety Element.
S-3.1	Minimize the use of toxic and hazardous materials in Palo Alto. Promote the use of alternative materials and practices that are environmentally benign.

Policy	Description
S-3.3	Support public health by requiring as part of development review, property owners and private entities to disclose the presence of contaminated soil or groundwater, identify potential health impacts, prevent vapor intrusion and remediate contamination.
S-3.4	Support public agency policies, regulations, legislation and programs that implement Santa Clara County's Hazardous Materials Management Program.

Existing Conditions

Hazardous Materials

The Project area is located within the PAFB, Bay, and on the tide gate and levee that separates the two. Existing activities within the Project area do not include the storage, use, transportation, or disposal of any hazardous materials. Typical operations of the tide gates do not create circumstances where people or the environment are exposed to hazardous materials. The Project area is not on a State listed hazardous materials clean-up site.

According to the DTSC EnviroStor database, the nearest site being monitored is the Gemfire Corporation site which is located approximately 0.75 miles west of the Project area at 2440 Embarcadero Road in Palo Alto (DTSC 2019). The database does not describe the site or specify the potential contamination, and the cleanup status is currently inactive. Additionally, the SWRCB GeoTracker database does not list any hazardous sites in or adjacent to the Project area. The nearest site is the GoPower site (T0608500683) located approximately 0.75 miles west of the Project area at 1890 Embarcadero Road in Palo Alto. The site was a liquid underground storage tank site and has been cleaned-up since 2008 (SWRCB 2019a).

Sensitive Receptors

There are no sensitive receptors located in the Project vicinity. The nearest residential use is multi-family residential developments located approximately 1 mile west of the Project area and the nearest school is the Emerson School, located approximately 1.2 miles southwest of the Project area.

Fire Hazard Severity Zone

The California Department of Forestry and Fire Protection (CalFire) has mapped Very High Fire Hazard Severity Zones in Santa Clara County to help responsible local agencies, such as fire protection districts and fire departments, identify measures to reduce the potential for loss of life, property, and resources from wildland fire. The Project area is located within the Local Responsibility Area and is not considered a very high fire hazard severity zone (CalFire 2008).

Aviation Hazards

The nearest public use airport to the Project area is the Palo Alto Airport, located approximately 0.5 miles west of the Project area. The Project area falls within the Palo Alto Airport's Airport Influence Area (AIA). The Palo Alto Airport's Comprehensive Land Use Plan administered by the Santa Clara County Airport Land Use Commission (ALUC) sets forth guidelines that help determine whether or not projects proposed within the AIA require additional approvals from the ALUC (ALUC 2016). Areas of concern for the ALUC include noise, height, and safety risks posed by any project to occur within the AIA.

Emergency Response and Evacuation

The Project is specifically identified in the Palo Alto Local Hazard Mitigation and Adaptation Plan as an action that will increase local residents' and businesses' protection from natural hazards such as floods (City of Palo Alto 2017b). The City of Palo Alto Fire Department provides emergency response services, including hazardous materials response services, to the Project area.

Discussion

a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, storage or disposal of hazardous materials?

During Project construction, limited quantities of miscellaneous hazardous substances (e.g., petroleum-based fluids, solvents, and lubricants typical of construction projects) would be used and stored at the Project area, presenting the potential for an accidental release during handling and transfer. Such an accidental release could pose a hazard to both construction workers and the environment. However, risks associated with the use of hazardous substances would be limited by Valley Water BMPs, including measures requiring proper management of hazardous materials and spill prevention procedures (i.e., BMPs HM-1, HM-3, HM-4, and HM-5). Valley Water would also be required to obtain a permit under CWA Section 401 from the RWQCB that would reinforce these BMPs and minimize the possibility of risks from hazardous materials. Additionally, preparation and implementation of a site-specific stormwater pollution prevention plan (SWPPP), as described in further detail under *Hydrology and Water Quality*, would be required for the Project. SWPPPs have been widely demonstrated to minimize the potential exposure of construction workers and the environment to hazardous materials. Once completed, the Project would not involve the routine transport, use, storage, or disposal of hazardous materials other than for the occasional minor maintenance work, consistent with operation of the existing tide gates. The impact would be **less than significant**.

b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction and maintenance activities would include the use of limited quantities of ordinary equipment fuels and fluids. These materials would not be used in quantities that would pose a substantial threat to human or environmental health. Consistent with Valley Water BMPs, materials would be used in a manner that minimizes the risk of accidental spills and would be properly stored when not in use. In the unlikely event of a spill, fuels and or other hazardous materials would be controlled and disposed of in accordance with applicable regulations. During operation, hazardous materials may be occasionally utilized for routine Project maintenance but would be used in small amounts that would not pose a threat to the public or environment. The use of hazardous materials during Project operation would be the same or less than as under existing tide gate operation. The impact would be **less than significant**.

c) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?

The nearest school to the Project area is the Emerson School, located approximately 1.2 miles southwest of the Project area. Hazardous or acutely hazardous materials would not be handled within 0.25 miles of this or any other school. **No impact** would occur.

- d) **Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

The nearest hazardous materials sites are located approximately 0.75 miles west of the Project area. There are no sites, including sites compiled pursuant to Government Code Section 65962.5, in the Project area. Therefore, the Project would not create a significant hazard to the public or the environment as a result of location on a hazardous materials site. **No impact** would occur.

- e) **For a Project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**

The Project area is located within the Palo Alto Airport's AIA and governed under the Comprehensive Land Use Plan. The Project area is within the boundaries of the Traffic Pattern Zone, which requires only minimal land use restrictions and poses little threat to safety. The Project would only minimally alter existing land uses on site and risk levels would remain the same as the existing conditions. Therefore, the Project would not result in a safety hazard for people in the Project area and **no impact** would occur.

- f) **Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

During construction, the Project could minimally interfere with emergency access to portions of the Adobe Creek Loop Trail by requiring longer access routes to portions of the trail due to trail closure at the tide gate structure. Adherence to requirements of the Palo Alto Fire Department would ensure adequate response to emergencies and evacuation plans and therefore reduce the potential for interfering with local emergency plans. The Project has been identified in Palo Alto's Local Hazard Adaptation and Mitigation Plan as an action that would increase resilience in the event of natural disasters. Therefore, the impact would be **less than significant**.

- g) **Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?**

The Project is not located in a locally determined Moderate, High, or Very High Fire Hazard Severity Zone, indicating that the probability of a wildfire at the Project area is very low. The Project area is not within a Wildland Urban Interface Zone (CalFire 2008), the primary area of concern regarding wildfires. The Project would not add any structures susceptible to fire to the area, making loss, injury or death involving wildland fires highly unlikely. **No impact** would occur.

Hydrology and Water Quality

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

Regulatory Setting

Federal Clean Water Act

The CWA (33 USC Section 1251 et seq. [1976 & Supp II 1978]) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. CWA sections applicable to the Project are Sections 303, 305, 401, and 404.

Sections 303(d) and 305—Impaired Waters and Total Maximum Daily Loads

The State of California adopts water quality standards to protect beneficial uses of waters of the State as required by Section 303(d) of the CWA and the Porter-Cologne Act. Section 303(d) of the CWA established the total maximum daily load (TMDL) process to guide the application of

State water quality standards. To identify candidate water bodies for TMDL analysis, a list of water quality-impaired segments, referred to as a 303(d) list, is generated by the SWRCB. These stream or river segments are impaired by the presence of pollutants (e.g., sediment, other specific constituents) and are more sensitive to disturbance because of this impairment. CWA Section 305(b) requires States to develop a report assessing Statewide surface water quality. Both CWA requirements are being addressed through the development of a 303(d)/305(b) Integrated Report, which addresses both an update to the 303(d) list and a 305(b) assessment of Statewide water quality. The SWRCB must develop a long-term plan for completing TMDLs within 8 to 13 years from first listing.

Section 401—Water Quality Certification

Section 401 of the CWA requires that an applicant pursuing a federal permit to conduct an activity that may result in a discharge of a pollutant obtain a Water Quality Certification (or waiver). A Water Quality Certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States. In 2019, the SWRCB adopted the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (Procedures; SWRCB 2019b). The Procedures were intended to update and clarify the extent of waters of the State, and establish/update regulatory review requirements. The Procedures consist of four major elements: 1) a wetland definition; 2) a framework for determining if a feature that meets the wetland definition is a water of the State; 3) wetland delineation procedures; and 4) procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities. The Procedures became effective on May 28, 2020. Water Quality Certifications and Waste Discharge Requirements are issued by one of the nine geographically separated Regional Water Quality Control Boards in California. The Project falls within the jurisdiction of the San Francisco Bay RWQCB.

Valley Water would be required to obtain a Water Quality Certification and/or Waste Discharge Requirements for Project construction activities that involve disturbance or placement of dredged or fill material within waters of the United States/State.

Section 402—NPDES Permit Program

CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. Section 402(p) requires permits for discharges of stormwater from industrial/construction and municipal separate storm sewer systems (MS4s). The RWQCB is delegated with the responsibility of protecting the quality of surface and ground waters of the State in the project vicinity.

The NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ as amended by order 2012-0006-DWG) (Construction General Permit) regulates stormwater discharges for construction activities under CWA Section 402. Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the Construction General Permit. The Construction General Permit requires the development and implementation of a SWPPP by a Qualified SWPPP Developer and Qualified SWPPP Practitioner, respectively.

Because the Project would disturb 1 or more acres of soil, Valley Water would be required to obtain coverage under the Construction General Permit. The permit covers construction activities

including clearing, grading, grubbing, and disturbances to the ground (e.g., stockpiling or excavation).

Section 404—Dredge/Fill Permitting

The discharge of dredged or fill material into waters of the United States is subject to permitting specified under Title IV (Permits and Licenses) of the CWA and specifically under Section 404 (Discharges of Dredge or Fill Material) of the CWA. Section 404 of the CWA regulates placement of fill materials into the waters of the United States. Section 404 permits are administered by USACE. Valley Water would be required to obtain a Section 404 permit for Project construction activities that will permanently or temporarily fill water of the United States.

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Act authorizes the State to implement the provisions of the CWA and establishes a regulatory program to protect the water quality and beneficial uses of waters of the State. The Act requires projects that are discharging, or proposing to discharge, wastes that could affect the quality of the State’s waters to file a report of waste discharge with the appropriate Regional Board. The Porter-Cologne Act also requires that SWRCB or RWQCB adopt Basin Plans for the protection of water quality. Basin Plans are updated and reviewed every 3 years and provide the technical basis for determining waste discharge requirements, taking enforcement actions, and evaluating clean water grant proposals.

As noted above, the Project is under the jurisdiction of the San Francisco Bay RWQCB. The RWQCB is responsible for the protection of beneficial uses of water resources in the San Francisco Bay Region. The Basin Plan for the San Francisco Bay Region was last updated in 2018 (RWQCB 2018). The beneficial uses for waters in the Project area are shown in **Table 4-19**.

Table 4-19. Designated Beneficial Uses for Surface Water Bodies within the Project Area

Water Body	Designated Beneficial Uses
South San Francisco Bay	Industrial service supply; commercial and sport fishing; shellfish harvesting; estuarine habitat; fish migration; preservation of rare and endangered species, fish spawning; wildlife habitat; water contact recreation; noncontact water recreation; navigation.
Palo Alto Harbor and Baylands	Estuarine habitat; migration; preservation of rare and endangered species; wildlife habitat; water contact recreation; noncontact water recreation.
Mayfield Slough	Estuarine habitat; migration; preservation of rare and endangered species; wildlife habitat; water contact recreation; noncontact water recreation.

Source: San Francisco Bay Regional Water Quality Control Board 2018.

Existing Conditions

Surface Water

The Project area is located along the Bay shoreline in the City of Palo Alto, east of the Palo Alto Municipal Airport and within the Baylands Nature Preserve. The Project area straddles the Bay and PAFB. The PAFB is approximately 600 acres and collects water from Adobe, Barron, and Matadero Creeks, which are part of the Lower Peninsula Watersheds. These creeks originate in the foothills of the Santa Cruz Mountains and generally flow northeastward into the Bay, through

the PAFB as Mayfield Slough. The total tributary drainage area of the PAFB is approximately 32 square miles. These watersheds are primarily characterized by channelized creeks on the valley floor and more natural streams in the hillsides. As the creeks flow in well-defined and constricted channels of the valley floor, they pass through highly urbanized areas in the City of Palo Alto, and the Towns of Los Altos, and Los Altos Hills, thereby furnishing outfalls for the city storm drain systems. Valley Water does not own or operate reservoirs in the Lower Peninsula.

The PAFB was constructed by raising the existing levees around the area and restricting tidal influence in the sloughs that drain Matadero, Barron, and Adobe Creeks. These creeks were particularly subject to flooding when high flows from upstream storm runoff combined with high tide levels in the sloughs. The tide gate structure was constructed to isolate the PAFB from tidal action, allowing water to flow out of the basin and into the Bay, but preventing Bay water from flowing into the basin during high tides. With the tide gate structure, the water elevation in the PAFB can be kept artificially low in order to provide storage capacity for inflow from the three creeks during storms. In 1977, the tide gate structure was modified to include a two-way gate that allows some Bay water into the basin to improve water circulation and basin habitat functions. The PAFB presently exhibits a muted tidal influence.

The Bay side of the Project area is subject to full tidal action. During low tides, a defined channel can be observed flowing from the tide gate to deeper parts of the Bay (**Figure 4-7**).

Groundwater

California Department of Water Resources Bulletin 118 places the Project in the northwestern corner of Santa Clara Subbasin of the Santa Clara Valley Groundwater Basin. The groundwater subbasin has a total surface area of 153,600 acres, or 240 square miles. The Santa Clara subbasin is bound on the east by the Diablo Mountain Range, the west by the Santa Cruz Mountains, on the north by the San Francisquito Creek, and on the south by the groundwater divide near Morgan Hill (DWR 2018).

Flooding

According to the FEMA Flood Insurance Rate Map, the Project area is located in a Special Flood Hazard Area (FEMA 2009). Specifically, the Project area is in the Tidal Flooding Inundation Zone, which is subject to saltwater inundation from overtopping or failure of the bayfront levees in the event of a one percent (100-year) high tide. Originally, most of this area was tidal marsh and wetlands, but, beginning in the 1930s, levees were built in the baylands to drain the wetlands and allow the development and grazing of this area. Because the levees lack required freeboard (additional height above the estimated high water level) and were not constructed in accordance with current engineering standards, FEMA does not consider these levees to be adequate protection from a high tide event that has a one percent (100-year) probability of occurring. The FEMA Flood Insurance Rate Maps assume that the levees will overtop or fail, and that saltwater will reach 8 feet above sea level in the Tidal Special Flood Hazard Area (City of Palo Alto 2008).

Figure 4-7. Comparison of Aerial Imagery during Low and High tides (Google Earth 2020).



Tide gate during low tide.



Tide gate during high tide.

Discussion

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Activities required to complete the Project include dewatering, clearing and grubbing of the existing levee surface, excavation of the existing levee, and placement of fill to construct the new tide gate structure and levee. Excavation would occur along the new and existing levee and along the pilot channel and would include removal of 44,000 cubic yards of material for off-site disposal. These activities have the potential to expose soils and mobilize sediments that could runoff into the PAFB or the Bay. Additionally, hazardous materials such as fuels, oils, grease, and lubricants from construction equipment could be accidentally released during construction. Accidental discharge of these materials could adversely affect water quality and/or result in violation of water quality standards.

Erosion and sediment control BMPs WQ-1 through WQ-11 as noted in **Table 2-4 (Best Management Practices)** would be implemented to protect water quality. These include BMPs associated with sediment handling, erosion prevention, control of discharges and site management and clean up. In addition, Valley Water would implement BMPs HM-2, HM-3, HM-4, and HM-5, which would prevent or minimize the potential for hazardous materials affecting water quality. Additional information on potential impacts related to hazardous materials is provided in the *Hazards and Hazardous Materials* section of this document.

The NPDES Construction General Permit (Order 2009-009-DWQ) requires construction sites over 1 acre that do not qualify for a waiver to prepare and implement a SWPPP. As the construction would exceed 1 acre of ground disturbance, Valley Water would submit Permit Registration Documents (PRDs) to obtain coverage under the NPDES General Permit prior to commencement of construction activities. PRDs are submitted in the Storm Water Multi-Application Report Tracking System and include the notice of intent (NOI), risk assessment, post-construction calculations, a site map, and the SWPPP. The SWPPP would incorporate BMPs to control sedimentation and runoff. A spill prevention and countermeasure plan would be incorporated into the SWPPP. Through implementation of the above-described BMPs and compliance with the applicable construction and stormwater permit requirements, the Project would not violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality during construction.

Following construction, operation of the tide gates would remain consistent with existing practice, though maintenance is expected to occur in less frequent intervals than present. Operations and maintenance of the new tide gate structure would not increase impacts on water quality above existing operational conditions.

Therefore, impacts on water quality would be **less than significant**.

b) Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

No groundwater supplies would be used or impacted by the Project. Dewatering would occur in area of open water within the PAFB and Bay and would not impact groundwater. Therefore, the Project would have **no impact** on groundwater supplies and would not impede sustainable groundwater management of the basin.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in a substantial erosion or siltation on- or off- site;

During construction, the Project could result in temporary soil erosion on exposed or graded surfaces; however, due to the final configuration of the new tide gate structure and levee, areas that would be temporarily impacted and potentially exposed during construction would be limited to narrow strips on the margin of the work area and where the levee would be temporarily built up to support a larger staging area at Staging Area 2. BMPs would be employed (i.e., BMPs WQ-2 [*Limit Impacts from Staging and Stockpiling Materials*], WQ-5 [*Use Seeding for Erosion Control, Weed Suppression, and Site Improvement*], and WQ-10 [*Prevent Water Pollution*]) to minimize these effects and the area would be revegetated or stabilized following construction, consistent with the SWPPP.

Once operational, there is potential for erosion to occur along the edge of Hooks Island, located just downstream (Bay side) of the new tide gate, due to the structure's relocation slightly upstream and to the east of its existing location. There is also potential for erosion from along the new levee toes adjacent to the structure, but the installation of rip-rap would ensure the levee is protected from erosion. Valley Water evaluated the potential for erosional impacts from tide gate relocation (**Appendix E**). Specifically, the analysis evaluated if flood and tidal waters flowing to and from the tide gate could result in erosion of Hooks Island or migration of the existing channel flowing from the tide gate.

The results demonstrated that erosional potential from the new tide gate structure would be similar to what would be anticipated for the existing structure, particularly for normal tide conditions and low flood water discharges. Greater, though still small, differences are observed for the 10-year and 100-year discharges through the tide gate structure, but are mainly due to the higher discharge rates imposed by the efficiencies of the new structure. Given that these are extreme and infrequent events, with very high velocities both for the existing and proposed tide gate structure configurations, and given that the differences are small, the impacts are likely to be negligible when compared to the existing tide gate structure configuration. Furthermore, due to the flow alignment for the new gate (angled towards the existing channel), it is also possible that the channel from the gate could migrate slightly to the west, further relieving potential erosional impacts on Hooks Island (AECOM 2020)

Rather than erosion on Hooks Island, what is more likely, is the new tide gate configuration results in deposition of sediment along the new levee on the west side of the tide gate (AECOM 2020). This sediment deposition would be considered beneficial, as it could eventually support nature salt marsh creation in an up to 0.3-acre area. Therefore, impacts from erosion or siltation would be **less than significant**.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

The Project would involve replacing the existing structure and part of the levee by constructing a new tide gate structure slightly upstream and to the east of the existing structure, and construction of a new levee adjacent to the new tide gate structure. The new tide gate structure deck, a concrete impervious surface, would be approximately

3,200 square feet. The new tide gate structure replaces the existing structure, which has a 1,600 square foot concrete deck. The Project would also relocate levee fill material from the existing trail and levee (to be removed) to the location of the new levee and trail to support the tide gate structure. Both the existing and proposed levee slopes are vegetated, and the trails are comprised of gravel.

Because the Project would minimally increase the area of impervious surfaces, there would be a minimal increase in the amount of runoff off the new tide gate structure. Runoff from the gravel trails would flow to the vegetated slopes of the levees towards the PAFB and Bay. Runoff from the new tide gate structure deck would sheet flow towards the PAFB or Bay in roughly equal amounts (as occurs on the existing tide gate structure), thereby preventing concentration of flows that could erode or scour the levee. Given this runoff regime, runoff would not occur in an amount that would increase the risk of flooding on- or offsite. Therefore, the impact would be **less than significant**.

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

Similar to existing conditions, runoff from the Project site would flow directly to the PAFB and Bay and would not enter a stormwater drainage system. Therefore, there would be **no impact** on stormwater drainage systems.

The new tide gate structure deck, which would total approximately 3,200 square feet, would sheet flow runoff into the Bay and PAFB in relatively equal amounts. The amount of pollutants that would accumulate on the tide gate structure deck would be negligible, as the structure is primarily used by pedestrians and bicyclists, with only periodic vehicle traffic by Valley Water and City of Palo Alto staff. Thus, runoff from the structure deck would generally be clean and would not risk discharge of pollutants in a substantial amount.

The new levee and levee trail would also discharge runoff into the Bay and basin, in relatively equal amounts. However, this small amount of water would be filtered by the vegetated levee slopes prior to discharge. Therefore, the Project would not discharge additional sources of polluted runoff in a substantial amount and the impact would be **less than significant**.

iv) Impede or redirect flood flows?

The purpose of the Project is to ensure that the tide gate structure and PAFB can continue to function as a flood control facility for Adobe, Barron, and Matadero Creeks. The flood control capacity of the PAFB would be maintained throughout all phases of construction by phasing work in a manner that the existing tide gates would function until the replacement structure is ready for operation.

Once operational, flows exiting the PAFB through the new tide gate structure would be redirected slightly from their existing path. The new tide gate structure has been oriented such that it directs flows to the existing channel, avoiding any substantial changes to drainage patterns.

The new tide gate structure and PAFB would maintain the same level of flood protection for the creeks that flow to the basin. However, the tide gate structure has been sized and designed in a manner that allow it to operate under up to 2 feet of sea-level rise, improving the climate change resilience of the facility.

Therefore, the Project would not impede or redirect flood flows, and the impact would be **less than significant**.

d) Would the Project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?

According to the CDC's Tsunami Inundation Maps (CDC 2009), the Bay portion of the Project area is located in a tsunami inundation zone. The Project area is also in a special flood hazard zone according to FEMA. During Project construction, sheet pile walls would be used to dewater the work area and any limited construction-related pollutants (fuels or solvents used by construction equipment) would be contained within the dewatered area. The dewatering system will be designed to withstand potential water level increases during floods. The amount of pollutants on-site during construction would be negligible in the context of a tsunami, in the rare event a tsunami occurs. Furthermore, the risk of release of pollutants would be limited to the up to 21 months of Project construction. Project BMPs would be employed to ensure the risk of pollutant release is minimized to the maximum extent practicable. Applicable BMPs include HM-4 (*Ensure Proper Hazardous Materials Management*), HM-5 (*Utilize Spill Prevention Measures*), and WQ-9 (*Prevent Water Pollution*). Furthermore, a SWPPP would be developed and the Project would comply with all measures in the Project's permits, including measures intended to prevent release of pollutants.

After construction, the newly constructed tide gate and levee would not create a risk of pollutant release as the tide gate structure does not contain pollutants in substantial amounts. There would be no change from existing conditions relative to the potential release of pollutants. Therefore, the impact would be **less than significant**.

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Project would not conflict with Basin Plan for the San Francisco Bay Region (RWQCB 2018) for beneficial uses identified for waterbodies in the Project area (**Table 4-19**). The Project would not impact groundwater and therefore would not conflict with the groundwater management in the Santa Clara Subbasin (Basin 2-009.02), which is managed by Valley Water as a Groundwater Sustainability Agency under the Sustainable Groundwater Management Act. **No impact** would occur.

Land Use and Planning

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

Federal

Americans with Disabilities Act

The Americans with Disabilities Act of 1990, Title II, covers public entities, including local government and any of its “departments, agencies, or other instrumentalities.” This act requires public entities to follow either the Uniform Federal Accessibility Standards (UFAS) in design standards for new construction and alterations.

State

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 Section 65300).

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. The City of Palo Alto’s general plan, the Comprehensive Plan, is discussed below.

Local

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. 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.

Lands at the Project site are planned and managed according to the City of Palo Alto’s Comprehensive Plan (2017) and the Baylands Master Plan (2008).

City of Palo Alto Comprehensive Plan

Updated in 2017, the Comprehensive Plan provides a vision, policies, and implementation programs guided by several themes: building community and neighborhoods, enhancing community character, reducing reliance on automobiles, meeting housing supply challenges,

protecting and repairing natural features, meeting residential and commercial needs, and providing responsive governance and regional leadership (City of Palo Alto 2017a).

Approximately 55 percent of Palo Alto’s land surface 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 (City of Palo Alto 2017a).

The Comprehensive Plan designates the Project area as Public Conservation Land. Public conservation land is defined as 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 (City of Palo Alto 2017a).

Palo Alto Baylands Master Plan

The Baylands Master Plan policies generally encourage preservation and enhancement of the Baylands’ environmental quality. The policies guide recreation development so as to minimize destruction of wildlife habitat and limit development, vehicle parking areas, and above-ground utility lines. Policies are summarized below in **Table 4-20**.

Table 4-20. Palo Alto Baylands Master Plan Policies 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 the diversity of plants and animals to disturbed upland sites. Allow access to the flood basin only in certain seasons to protect the waterfowl and shorebird refuge area.
Natural Environment	Prohibit access to Hooks Island.
Access and Circulation	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. Restrict recreational access to the flood basin to preserve and enhance flood basin wildlife and vegetation.
Flood Protection	Do not allow new levee construction to intrude on any marsh or wetlands without appropriate mitigation. Continue to monitor the status of the South San Francisco Bay Shoreline Study and the South Bay Salt Pond Restoration Project. Take no position on potential modifications to the Bayfront levees until the South San Francisco Bay Shoreline Study is completed. Any levee modifications should be built to prevent flooding with as low a profile as is possible so that their visual and ecological effects will be reduced.

Existing Conditions

The Project alignment is located along the Bay, on land owned by the City of Palo Alto but for which Valley Water has an easement to maintain and construct flood management structures. The City of Palo Alto's Comprehensive Plan designates the Project area as Public Conservation Land (City of Palo Alto 2017a). The City's Zoning Code assigns the area the designation of Park or Preserve (City of Palo Alto 2013). The existing use of the site as a flood protection structure and recreational trail within a City-owned park is consistent with these designations. The Project area is surrounded by lands managed for the purposes of natural resource protection and recreation. The nearest residential area is located approximately 1.2 miles west of the Project area.

Discussion

a) Would the Project physically divide an established community?

The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community or between a community and an outlying area. While the Baylands Nature Preserve contains trails used by local communities and the Project would temporarily close a portion of the Adobe Creek Loop Trail, this would not alter the ability of the community to access recreational uses in the vicinity of the Project area. No established communities exist within the Project area. **No impact** would occur.

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The Project would not result in a change from the existing land use at the Project area, which is consistent with the land use designation of public conservation land. The Project would result in **no impact**.

Mineral Resources

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

The Surface Mining and Reclamation Act of 1975 (SMR, Sections 2710-2796) provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to ensure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. The Act also encourages the production, conservation, and protection of the State's mineral resources.

The City of Palo Alto's 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 2017a).

Existing Conditions

Minerals are any naturally occurring chemical element or compound, or groups of elements and compounds, formed from inorganic processes and organic substances including, but not limited to, coal, peat and oil-bearing rock, but excluding geothermal resources, natural gas and petroleum. Rock, sand, gravel and earth are also considered minerals by the Department of Conservation when extracted by surface mining operations. The USGS Mineral Resources Data System does not identify any mineral resources in the Project area. According to the results of this database search, the nearest area of mineral significance is located 3.7 miles south of the Project area at the location of former salt production ponds. The PAFB and tide gate were not used for commercial salt production. It is unlikely that the Project area would contain valuable or otherwise important mineral resources.

The Santa Clara County General Plan includes a list of eight active sites of regional or statewide significance (Santa Clara County 1994). All of these sites are quarries, none of which are located in Palo Alto or within the immediate vicinity of the Bay.

Discussion

a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

The Project would primarily involve excavation of existing levee fill material with minimal subsurface excavation. Since the Project area does not contain any mineral resources, the proposed activities would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. Therefore, the Project would have **no impact** on mineral resources.

b) Would the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

The Project does not occur in areas delineated as locally important mineral resource recovery sites in a local general plan, specific plan, or other land use plan within the Project area. Therefore, the Project would have **no impact**.

Noise

Would the Project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive ground borne vibration or ground borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

California Noise Control Act

The California Noise Control Act was enacted in 1973. In preparing its General Plan noise element, a city or county must identify local noise sources and analyze and quantify to the extent practicable current and projected noise levels from various sources, including highways and freeways; passenger and freight railroad operations; ground rapid transit systems; commercial, general, and military aviation and airport operations; and other stationary ground noise sources.

The State of California General Plan Guidelines provide noise compatibility guidelines for land use planning according to the existing community noise level; however, these guidelines offer no information regarding construction noise. The State has also published its Model Community Noise Ordinance, which provides guidance to cities and counties on how to develop a community noise ordinance. These guidelines include recommended limits on construction noise levels. However, these are only guidelines and are not enforceable.

City of Palo Alto Comprehensive Plan

The City of Palo Alto's Comprehensive Plan's Natural Environment Section discusses the City's priorities regarding noise. The Comprehensive Plan also includes information about acceptable noise levels (in terms of the average daily noise level over a 24-hour period, or L_{dn}) for different land use types. The Project area, as part of the "Outdoor Sports and Recreation, Neighborhood Parks, & Playgrounds" category, has a higher acceptable noise level than most other land uses. The normally acceptable L_{dn} for "Outdoor Sports and Recreation, Neighborhood Parks, & Playgrounds" is 67.5 decibels (dB), and the conditionally acceptable L_{dn} is 85 dB. The Project area is not located adjacent to other land uses with more stringent noise regulations. Relevant Comprehensive Plan policies on noise are listed in **Table 4-21**.

Table 4-21. City of Palo Alto Comprehensive Plan Policies Related to Noise

Policy Number	Policy Description
Policy N-6.1	Encourage the location of land uses in areas with compatible noise environments. Use the guidelines in Table N-1 to evaluate the compatibility of proposed land uses with existing noise environments when preparing, revising, or reviewing development proposals.
Policy N-6.3	Protect the overall community and especially sensitive noise receptors, including schools, hospitals, convalescent homes, senior and child care facilities and public conservation land from unacceptable noise levels from both existing and future noise sources, including construction noise.
Policy N-6.6	Apply site planning and architectural design techniques that reduce overall noise pollution and reduce noise impacts on proposed and existing projects within Palo Alto and surrounding communities.
Policy N-6.7	While a proposed project is in the development review process, the noise impact of the project on existing residential land uses, public open spaces and public conservation land should be evaluated in terms of the increase in existing noise levels for the 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.
Policy N-6.11	Continue to prioritize construction noise limits around sensitive receptors, including through limiting construction hours and individual and cumulative noise from construction equipment.

Source: City of Palo Alto 2017a

City of Palo Alto Municipal Code Noise Ordinance

The Palo Alto Noise Ordinance (Chapter 9 of the Palo Alto Municipal Code) provides guidance on appropriate noise levels within the City. Regulations pertaining to construction noise are as follows:

“Construction. Except for construction on residential property as described in subsection (c) of this section, construction, alteration and repair activities which are authorized by valid city building permit shall be prohibited on Sundays and holidays and shall be prohibited except between the hours of eight a.m. and six p.m. Monday through Friday, nine a.m. and six p.m. on Saturday provided that the construction, demolition or repair activities during those hours meet the following standards:

- (1) No individual piece of equipment shall produce a noise level exceeding one hundred ten A-weighted decibels (dBA) at a distance of twenty-five feet. If the device is housed within a structure on the property, the measurement shall be made out-side the structure at a distance as close to twenty-five feet from the equipment as possible.
- (2) The noise level at any point outside of the property plane of the project shall not exceed one hundred ten dBA.
- (3) The holder of a valid construction permit for a construction project in a non-residential zone shall post a sign at all entrances to the construction site upon commencement of construction, for the purpose of informing all contractors and subcontractors, their

employees, agents, materialmen and all other persons at the construction site, of the basic requirements of this chapter.” (City of Palo Alto 2000)

Existing Conditions

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect our ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a wave resulting in the tone’s range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves, combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound’s effect. This characteristic of sound can be measured precisely with instruments. The analysis of a project defines the noise environment of the Project area in terms of sound intensity and the Project’s effect on adjacent sensitive land uses.

Measurement of Sound

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

For example, 10 dB are 10 times more intense than 1 dB; 20 dB are 100 times more intense than 1 dB; and 30 dB are 1,000 times more intense than 1 dB. Thirty decibels (30 dB) represent 1,000 times as much acoustic energy as 1 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single point source, sound levels decrease approximately 6 dBA for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations), the sound decreases 3 dBA for each doubling of distance in a hard-site environment. Line source (noise in a relatively flat environment with absorptive vegetation) decreases 4.5 dBA for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average level (L_{dn}) based on dBA. CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to

the hourly L_{eq} for noises occurring from 7 p.m. to 10 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10 p.m. to 7 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within 1 dBA of each other and are normally exchangeable.

It should also be noted that Day-Night Average Sound Level (DNL) is the standard federal metric for determining cumulative exposure of individuals to noise. DNL is the 24-hour average sound level in decibels. The average is derived from noise measurements taken during a 24-hour period. DNL adds a 10 dB noise penalty to each aircraft operation occurring during nighttime hours (10 p.m. to 7 a.m.). DNL includes that penalty to compensate for people's heightened sensitivity to noise during this period.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max} , which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half of the time the noise level exceeds this level, and half of the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category includes audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dB or greater since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category includes changes in noise level of less than 1.0 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Surrounding Land Uses

The Project area is located along the Bay shoreline in a parkland setting, setback from any residential or commercial development. The Palo Alto Airport is located approximately 0.5 miles northwest of the Project and the Project is within the Palo Alto Airport's AIA (Santa Clara County Airport Land Use Commission 2016). Specifically, the site falls within the Traffic Pattern Zone of the AIA. This designation has minimal land use restrictions associated with it, indicating that projects in this portion of the AIA are unlikely to have substantial impacts on airport operations. The Project area is not located within the airport noise impact zone (Santa Clara County Airport Land Use Commission 2016).

Existing Noise Levels

The existing ambient noise environment in the study area is lower than that of an urban environment due to its separation from more developed parts of the region. Nearby sources of noise are limited and include surrounding roads, the Palo Alto Airport, and the RWQCP.

Sensitive Receptors

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. The nearest noise-sensitive receptors to the Project area include commercial and office space located approximately 0.5 miles west of the Project area; residential neighborhoods and apartment complexes located over 1 mile from the Project area; and the Emerson School, located approximately 1.2 miles southwest of the Project area.

Discussion

The Project would generate negligible operational noise and would not result in an increase in operational noise impacts over baseline conditions; therefore, this section only discusses construction-related noise.

a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The City of Palo Alto's noise ordinance addresses noise produced by temporary construction activities, such as those which would occur at the Project area. The Project would be required to adhere to the restrictions of the noise ordinance, thereby minimizing potential impacts from noise.

The noise ordinance specifies that construction activities are to be limited to between 8:00 AM and 6:00 PM on weekdays and 9:00 AM to 6:00 PM on Saturdays; that no individual piece of equipment is to generate noise greater than 110 dBA at a distance of 25 feet; and the noise level at any point outside of the property line of the project shall not exceed 110 dBA. The noise ordinance also includes the provision that signage must be posted to inform visitors of the days and times during which construction is permitted. Given work is proposed to begin at 7:00 AM each day, Valley Water intends to seek an exception to the noise ordinance, per direction from City staff. Valley Water would undertake construction according to these proposed work hours only if approved by the City.

Construction of the Project would temporarily generate noise during the up to five seasonal work periods from September 1 through January 31. Construction activities at the Project area could include excavation, existing tide gate structure demolition, CIDH pile installation, ground improvements using DSM method, new tide gate structure construction, levee reconstruction, and pressing of sheet piles with the Giken silent pressing machine, among others. The noise levels at 25 feet for individual pieces of equipment that may be used during construction are summarized in **Table 4-22**.

Table 4-22. Construction Equipment Noise at 25 Feet

Equipment	Noised Level (dB) at 25 feet
Compressor ^a	73.5
Street Sweeper ^a	91.1
Blasting ^a	95.9
Deep Foundation Drilling ^a (CIDH pile installation and DSM)	101.7
Concrete Saw ^a	94.4
Giken silent piler	69.0
Front-end loader, backhoe, crane, concrete mixer, grader, paver ^b	94.7
Compactor ^b	81.0
Generator ^b	88.8

Sources:

^a Carpenter 2018.

^b EPA 1971.

Based on the information presented in **Table 4-22**, no single piece of construction equipment would exceed the noise ordinance threshold of 110 dB at 25 feet for construction equipment. The loudest equipment would be the drill rig/auger used for CIDH pile installation and DSM ground improvements, which would be approximately 102 dB. This equipment would only be used for two of the up to five construction seasons, and the remaining equipment to be used in construction would be well below the 110-dB noise threshold. Given that the loudest activities in the Project area would be concentrated around the existing tide gate and trail users would be restricted from the Project area (which extends 150 to 1,800 feet beyond the loudest construction equipment), the Project would not result in noise exceeding 110 dB at any areas outside the Project area during any phase of construction. During Project construction, signage would be posted near the Project area as specified in the City's noise ordinance. Therefore, the impact would be **less than significant**.

b) Would the Project result in generation of excessive ground borne vibration or ground borne noise levels?

The use of certain construction equipment such as drill rigs/augers, compactors, and other equipment can temporarily and intermittently result in ground borne vibration and/or noise. Whenever possible, techniques that reduce the amount of ground borne vibration and noise would be used. For example, the Project avoids use of impact or vibratory pile driving, and instead uses CIDH drilled piles for the tide gate support and the DSM method for ground improvements to support the levee. The existing tide gate would be deconstructed by cutting the existing tide gate into pieces and removing by crane, rather than using a pneumatic hammer to break apart the structure. Furthermore, sheet piles used for dewatering are pressed in using the Giken silent pressing equipment or with an excavator, rather than driving or vibrating the sheet piles into the substrate. These construction methods would greatly reduce ground borne vibration during construction of the tide gate structure and levee, and the Project is not expected to result in excessive groundborne vibration or noise levels. Additionally, there are no sensitive receptors in the Project vicinity and trail users would be restricted access to the Project area. Therefore, the impact from ground borne vibration or ground borne noise would be **less than significant**.

- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?**

The Project area is located approximately 0.5 miles from the Palo Alto Airport and is within the Palo Alto Airport's AIA (Santa Clara County Airport Land Use Commission 2016). Specifically, the Project falls within the Traffic Pattern Zone of the AIA. This designation has minimal land use restrictions associated with it, indicating that projects in this portion of the AIA are unlikely to have substantial impacts on airport operations. The Project area is not located within the Airport Noise Impact Zone (Santa Clara County Airport Land Use Commission 2016). Additionally, the Palo Alto Airport is not a commercial airport. Planes arriving to and departing from the Palo Alto Airport are smaller and quieter than those used at commercial airports. According to the existing and future noise contours maps in the Palo Alto Comprehensive Plan (Maps N-5 and N-6), the Project area is outside the 60 dB CNEL contours for the airport (Palo Alto 2017a). The Project would not expose residents in the Project area to noise and while the Project would result in some temporary exposure of noise to Project workers during Project construction, the noise level would not be excessive due to the limited noise from airport operations. **No impact** would occur.

Population and Housing

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

The City of Palo Alto's Comprehensive Plan (2017) guides development and land use in the Project vicinity. The Comprehensive Plan was used in preparation of this analysis as the basis against which to evaluate potential population and housing impacts.

Existing Conditions

The Project area is not located within any areas zoned for residential use (City of Palo Alto 2013). No residences are located within the Project area and the nearest residential area is located over 1 mile from the Project area. The existing tide gate structure and PAFB provide flood protection for residents of Palo Alto and surrounding municipalities.

Discussion

- a) **Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

The Project would not include any new housing, commercial or industrial space, result in the conversion of adjacent land uses, or provide access to previously inaccessible areas. The Project would maintain existing flood control functions of the PAFB and would not directly or indirectly induce population growth. Therefore, the Project would have **no impact**.

- b) **Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

The Project would not include the demolition of existing housing or displace existing housing or residents which would necessitate the construction of replacement housing elsewhere. Therefore, the Project would have **no impact**.

Public Services

Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physical altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

Fire Services

The Palo Alto Fire Department (PAFD) provides fire protection services to the City of Palo Alto. 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. In 2018, the average response time for PAFD emergency medical services was under 5 minutes, with 95 percent of first responders arriving on scene in under 8 minutes.

Police Services

The Palo Alto Police Department (PAPD) provides police services to the City of Palo Alto. PAPD responds to approximately 60,000 service calls each year and has approximately 169 employees. Response times for PAPD were not available.

Parks

California Public Park Preservation Act

The California Public Park Preservation Act of 1974 provides that a public agency that acquires public parkland for non-park use must either pay compensation that is sufficient to acquire substantially equivalent substitute parkland or provide substitute parkland of comparable characteristics. Accordingly, in the event that parkland and facilities are acquired for non-park use, the agency is required to acquire substitute parkland and facilities. If less than 10 percent but not more than 1 acre of the parkland is acquired, the agency may instead improve the unacquired portion of the parkland and facilities.

Quimby Act

The Quimby Act authorizes the legislative body of a city or county to require the dedication of land or to impose fees for park or recreational purposes as a condition of the approval of a tentative or parcel subdivision map, if specified requirements are met. The dedication of land, or the payment of fees, or both, shall not exceed the proportionate amount necessary to provide three acres of park area per 1,000 persons residing within a subdivision subject to this section, unless the

amount of existing neighborhood and community park area, as calculated pursuant to this subdivision, exceeds that limit, in which case the legislative body may adopt the calculated amount as a higher standard not to exceed five acres per 1,000 persons residing within a subdivision subject to this section.

Existing Conditions

Fire Protection

No facilities for fire protection exist in the Project area. PAFD provides fire services to the Project area and the nearest fire station is located approximately 2.3 miles southwest of the Project area at 3600 Middlefield Road in Palo Alto.

Police Protection

No facilities for police protection exist in the Project area. PAPD provides law enforcement services to the Project area and the nearest police station is located approximately 3.3 miles west of the Project area at 275 Forest Avenue in Palo Alto.

Parks

The Project is located within the Baylands Nature Preserve, a public park and conservation area managed by the City of Palo Alto. The City of Palo Alto officially designated the Baylands Nature Preserve as open space in the mid-20th century and it comprises 1,940 acres of publicly accessible open space. The levee and tide gate are elements of this park, serving as a protective measure against floods. Without the levee and tide gate, the PAFB area would be more vulnerable to the Bay's fluctuating water levels. Byxbee Park, also managed by the City of Palo Alto, is located adjacent to the PAFB. The Baylands Nature Preserve and Byxbee Park are connected by the Adobe Creek Loop Trail, which runs around the perimeter of the PAFB and passes through the preserve and Byxbee Park. The trail totals approximately 5.5 miles in length.

Some parts of the Adobe Creek Loop Trail are considered a part of the Bay Trail, which, when all segments are complete, would create a network of trails surrounding the entire Bay.

Schools

Palo Alto is served by the Palo Alto Unified School District, which 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 nearest school to the Project area is the Emerson School, located approximately 1.2 miles southwest. The nearest public school (part of the Palo Alto Unified School District) is Ohlone Elementary School, located approximately 1.7 miles southwest of the Project area.

Libraries & Other Facilities

Palo Alto's public library system comprises six libraries. The closest Palo Alto library to the Project site is the Rinconada Library, located at 1213 Newell Road, approximately 2.2 miles west of the Project area.

In addition to fire protection services, police services, schools, parks, and libraries, 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 Palo Alto's Arts and Culture Division) (City of Palo Alto 2017a).

Discussion

Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physical altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

a, b) Fire and police protection?

Project activities would not contribute to increased demand for fire or police protection services, since the Project would not contribute to population growth or other long-term land use modifications. Therefore, the Project would have **no impact** to fire and police protection services.

c) Schools?

No schools are located within the Project area and no schools would be affected by the Project. The Project would not contribute to population growth and the demand for schools would not increase. Therefore, there would be **no impact** on schools.

d) Parks?

The Project area is located within the Baylands Nature Preserve, which is managed by the City of Palo Alto and comprises 1,940 acres of publicly accessible open space. The tide gate structure and levee replacements would protect portions of the Baylands Nature Preserve within the PAFB from long-term inundation due to sea-level rise (beyond the intended flood storage functions during storm events).

The Project would involve closure of an approximately 0.5-mile section of the Adobe Creek Loop Trail in the Project area for a total of 43 months, as well as additional temporary closure of the trail to approximately 0.2 mile west of the tide gate and 2.1 miles east of the tide gate during active construction from September 1 to January 31 each year (see **Figure 2-5** and **Figure 2-7**, which includes a detailed trail closure schedule). Access to the rest of the Preserve and surrounding open space would not be impacted. Trail detours would be established to maintain use of a vast majority of the Baylands Nature Preserve's trail network, particularly outside the active construction window. The detour route would include the San Francisquito Creek Trail and its connection to the Renzel Trail (which runs parallel to US-101, slightly inland from the Adobe Creek Loop Trail) via Faber Place (Association of Bay Area Governments 2019).

It is possible that during construction park users would use other nearby parks to avoid trail closures and construction impacts, but this impact would be temporary and would not require the construction of additional park facilities. The Project would not result in a need for additional park space during Project operation, as the trail and other park elements would return to pre-Project conditions. The impact on parks would be **less than significant**.

e) Other public services?

Since the activity would not contribute to population growth or other long-term land use modifications, the Project is not anticipated to affect other public facilities. Therefore, **no impact** would occur.

Recreation

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

See *Regulatory Framework* under *Public Services*, for a description of regulations related to parks. Other recreational regulatory setting information is included below.

Bay Trail

The Bay Trail, administered by Association of Bay Area Governments (ABAG), is a planned recreational corridor that, when complete, would encircle San Francisco Bay and San Pablo Bay with a continuous network of bicycling and hiking trails. It would connect the shoreline of all nine Bay Area counties, link 47 cities, and cross major toll bridges in the region. To date, approximately 310 miles of the alignment – over 60 percent of the Bay Trail’s ultimate length – have been completed. The Bay Trail Plan has been prepared in consultation with local governments and is periodically amended and updated in consultation with them.

Although not a regulatory agency, ABAG has an interest in the Project given the temporary closure to a section of the Bay Trail, and potential improvements to this stretch of trail implemented by the Project. BCDC considers the Bay Trail Plan in making determinations as to whether a project is consistent with their policies on public access.

San Francisco Bay Area Water Trail

The San Francisco Bay Area Water Trail (Water Trail) was authorized by the San Francisco Bay Area Water Trail Act, which was signed into law in September 2005. The Water Trail is a network of access sites (or “trailheads”) that enables people using non-motorized small boats or other beachable sailcraft, such as kayaks, canoes, dragon boats, and stand-up paddle and windsurf boards, to safely enjoy single and multiple-day trips around San Francisco Bay. The Water Trail Act directed BCDC, in coordination with other agencies and organizations, to conduct a public process to develop the Water Trail Plan, and assigned the California State Coastal Conservancy to be the lead agency for implementing the Plan. BCDC considers the Water Trail Plan in making determinations as to whether a project is consistent with their policies on public access.

Existing Conditions

The Project area encompasses a 0.5-mile section of the Adobe Creek Loop Trail (part of the broader network of trails that comprise the Bay Trail), which is managed by the City of Palo Alto and extends around the perimeter of the PAFB. This trail is a part of the broader network of trails

within the Baylands Nature Preserve and connects to other local and regional trails (i.e., Bay to Ridge Trail, Byxbee Park Hills Trails, and Bay Trail).

The first Bay Trail Plan was approved in 1989 following the passing of Senate Bill 100, which directed ABAG to develop a network of trails that ran around the perimeter of the entire Bay. Today, the Bay Trail is composed of 350 miles of both paved and unpaved trails that provide recreational opportunities for walkers, runners, and bikers of all ages and abilities. In Palo Alto, the Adobe Creek Loop Trail is one of two Bay Trail routes that runs roughly north-south through the Baylands Nature Preserve.

The Adobe Creek Loop Trail also runs along the perimeter of Byxbee Park, which is located directly southwest of the Project area. Byxbee Park serves as a recreational space as well as an example of public environmental art. Byxbee Park contains multiple trails which provide pedestrian and bicycle access to the park.

In addition to trails in and near the Project area, the Palo Alto Baylands Sailing Station and boarding pier/dock occur approximately 700 feet north of the Project area. The pier/dock provide access to the Water Trail for non-motorized watercraft such as kayaks, canoes, row boats, and wind surfboards. The boarding pier leads to a high-freeboard dock via a gangway. During low tides the dock is surrounded by mud or very shallow water and may have limited accessibility (City of Palo Alto 2008). Recreational fishing is also permitted in a small area adjacent to the existing tide gate structure, extending approximately 300 feet in each direction away from the structure.

An overview of recreational opportunities in the Project vicinity are shown in **Figure 4-8**.

Figure 4-8. Recreational Opportunities in Project Vicinity



Discussion

a) **Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

The Project would not induce population growth, and demand for existing neighborhood and regional parks would not increase after completion of the Project. However, there could be a temporary increase in pedestrian and bicycle traffic on trails within the immediate vicinity of the Project area while a 0.5-mile section of the Adobe Creek Loop Trail is closed for a 43 month period and when 2.3 miles of the trail is closed during active construction from September 1 to January 31 each year (see the detailed trail closure schedule in **Figure 2-7**). Detour routes would be established for commuters and other trail users, as shown in **Figures 4-9 and 4-10**. While adjacent trails and nearby parks could experience increased use during construction, the impact would be limited to the up to five years of construction, and full trail access would be restored once work is complete. The potential temporary increase in use of adjacent trails and nearby parks is not expected to substantially deteriorate the physical quality of these facilities.

In addition to trail use, recreational fishing is allowed immediately adjacent to the existing tide gate structure, extending approximately 300 feet in each direction away from the structure. Recreational fishers would lose access to fishing in this area during the up to five years of construction; however, alternative fishing locations are available in the Palo Baylands (i.e., near the Lucy Evans Baylands Nature Interpretive Center) and at several locations along the South Bay shoreline. Given only a small area available to recreational fishers would be temporarily restricted, the temporary increase in the use of other parks for fishing would be small and would not substantially deteriorate those facilities.

The Project would include the installation of educational signage on the Adobe Creek Loop Trail to provide visitors with information about the Baylands Nature Preserve, the PAFB, and/or endangered species. Educational signage may focus on bird nesting in the PAFB, fish and aquatic wildlife found in the Bay or PAFB, or Ridgway's rails, per recommendations received during public outreach efforts. The trail over the tide gate structure itself would also be widened from approximately 14 feet to up to 38 feet, alleviating a location of existing trail constriction. These changes would enhance the quality of the trail in the Project area following construction. Therefore, the impact on existing park and recreational facilities is **less than significant**.

Figure 4-9 Trail Closure and Detours Outside Active Construction Period (February 1 to August 31 annually)

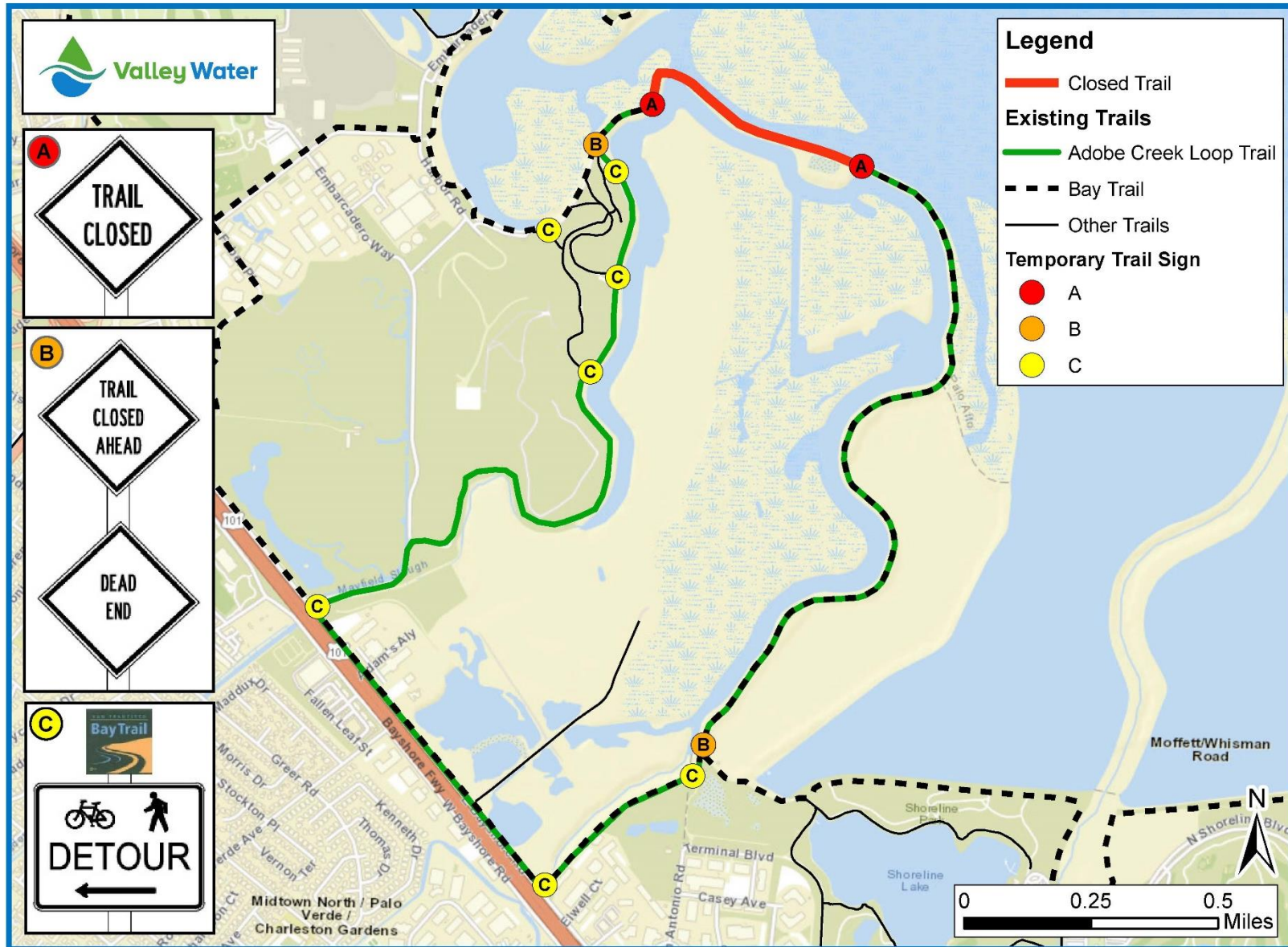
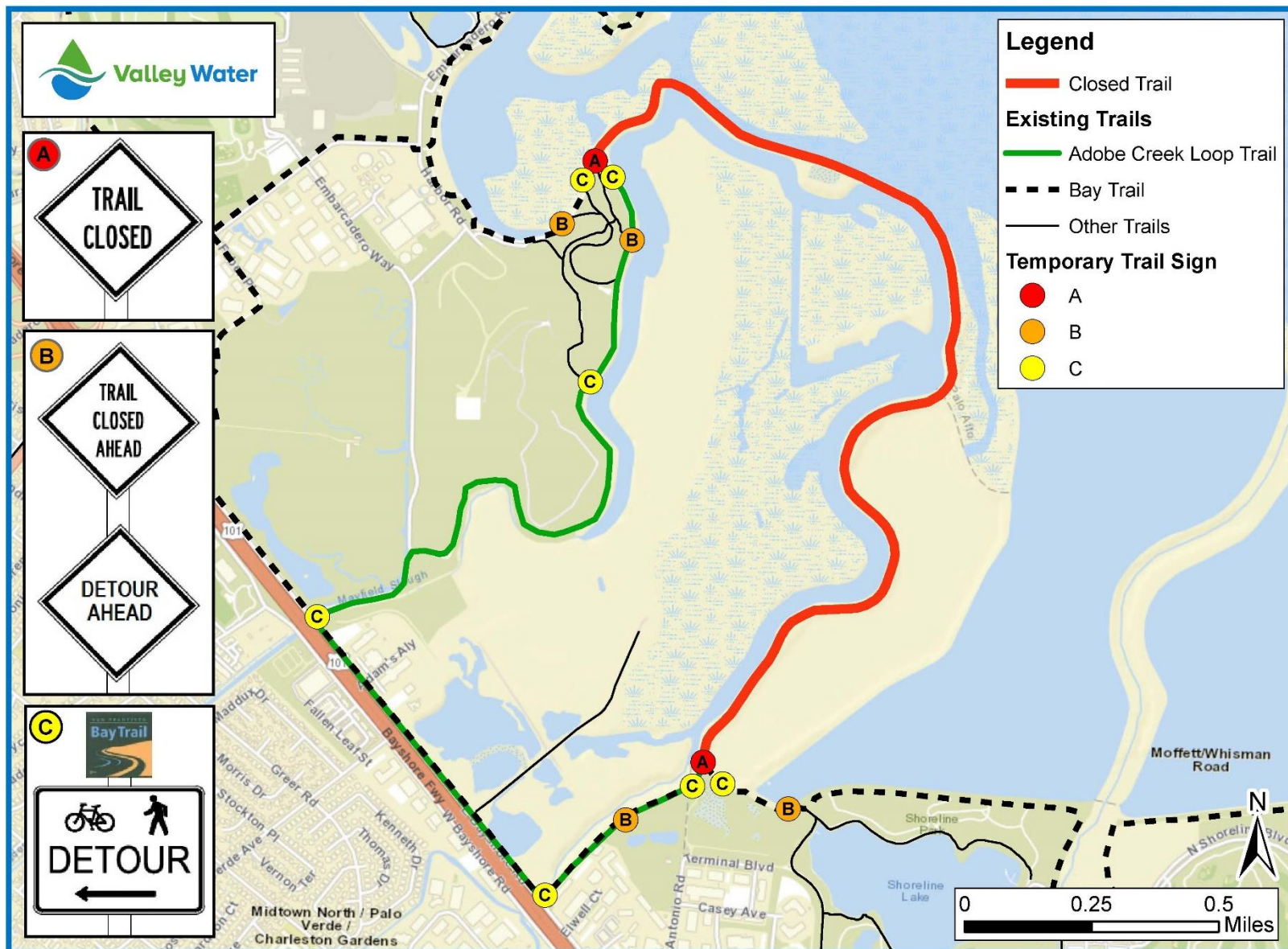


Figure 4-10. Trail Closure and Detours During Active Construction Period (September 1 to January 31 annually)



b) Would the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The Project would not induce population growth and demand for recreational facilities would not increase after completion of the Project. The Project includes reconstruction of the tide gate structure and levee that support the existing Adobe Creek Loop Trail (Bay Trail); the trail would be restored to its pre-Project function at the completion of construction.

Minor relocation of the tide gate structure would not result in migration of the low-tide channel such that the channel moves away from the Sailing Station dock, which is a “trailhead” for the Water Trail. Modifications to the dock to maintain access would not be required. **No impact** would occur.

Transportation

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Regulatory Setting

CEQA Guidelines

The new CEQA Guidelines Section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas, and shifts the focus from driver delay to reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. The criteria shift the focus of transportation impact analysis away from level of service (LOS) in favor of VMT.

Local and Regional Plans

The Santa Clara County General Plan (1994) contains goals and policies related to transportation.

The City of Palo Alto is committed to improving transportation for people living in, working in, and visiting Palo Alto. Palo Alto's Comprehensive Plan (2017); Parks, Trails, Open Space, and Recreation Master Plan (2017); and Bicycle and Pedestrian Transportation Plan (2012) contain a variety of goals, objectives, and policies that guide the City's transportation network. The Palo Alto Comprehensive Plan contains general transportation goals within seven broad categories, including Sustainable Transportation, Streets, Neighborhood Improvements, Parking, Road Safety, Transit Dependent Communities, and Regional Collaboration. The Parks, Trails, Open Space, and Recreation Master Plan provides the City with clear guidance regarding future renovations and capital improvement needs for parks, trails, open space and recreation facilities and programs for the coming years. The Bicycle and Pedestrian Transportation Plan identifies objectives for the expansion of bicycle and pedestrian goals for the City, with a specific focus on encouraging bicycle and pedestrian commuting to school and work. While the Bicycle and Pedestrian Transportation Plan does not identify its own policies, it reviews and comments on the policies set forth by the Comprehensive Plan. **Table 4-23** lists the specific transportation policies relevant to the Project.

Table 4-23. Transportation Policies Relevant to the Project

Policy Number	Policy
<i>Santa Clara County General Plan</i>	
C-PR 33.5	Public improvement projects, such as road widenings, bridge construction, and flood control projects that may impact existing or proposed trails should be designed to facilitate provision of shared use.
<i>City of Palo Alto Comprehensive Plan</i>	
Policy T-1.18	Increase cooperation with surrounding communities and other agencies to establish and maintain off-roadway bicycle and pedestrian paths and trails that are integrated with creek, utility, railroad rights-of-way and green spaces in a manner that helps enhance and define the community and avoids environmental impacts.
Policy T-1.19	Provide facilities that encourage and support bicycling and walking.
Policy T-1.24	Monitor and publicly report on the level of service at critical intersections (as shown on Map T-5) on a regular basis and consider additional intersections to add to this list to monitor the effectiveness of the City's growth management policies. Also monitor multi-modal level of service for arterials and residential arterials.
Policy T-2.3	Use motor vehicle LOS at signalized intersections to evaluate the potential impact of proposed projects, including contributions to cumulative congestion. Use signal warrants and other metrics to evaluate impacts at unsignalized intersections.
Policy T-2.4	Consistent with the principles of Complete Streets adopted by the City, work to achieve and maintain acceptable levels of service for transit vehicles, bicyclists, pedestrians and automobiles on roads in Palo Alto, while maintaining the ability to customize to the Palo Alto context.
<i>Parks, Trails, Open Space, and Recreation Master Plan</i>	
Policy 1.G	Encourage walking and biking as a way of getting to and from parks, supporting implementation of the Bicycle and Pedestrian Transportation Plan.
Policy 2.A	Sustain the community's investment in parks and recreation facilities.

Sources: Santa Clara County 1994; City of Palo Alto 2017a; City of Palo Alto 2017e

The City of Palo Alto's Municipal Code establishes rules related to truck travel through the City. These rules include stipulations about what routes are appropriate for trucks (defined as any vehicle exceeding a maximum gross weight of seven tons) to take when traveling through Palo Alto (City of Palo Alto 2019b).

Existing Conditions

The Adobe Creek Loop Trail (a portion of the Bay Trail) provides pedestrians and bicyclists access through the Project area. Maintenance vehicles owned or contracted by the City of Palo Alto or Valley Water are the only vehicles which have access to this trail. There are no other roadways in the Project area.

The primary roads providing access to the Project area are San Antonio Road and Embarcadero Road. San Antonio Road provides access to the Project area via the Adobe Creek Loop Trail (2.2 miles south of the Project area) from the south; Embarcadero Road provides access to the Project area from the southwest via the Adobe Creek Loop Trail (0.6 miles southwest of the Project area) (see **Figure 2-5**). The Project area is located approximately 0.3 mile from the San Antonio Road exit (Exit 400C) from US-101 and 1 mile from the Embarcadero Road exit (Exit 402) from US-101.

Both Embarcadero Road and San Antonio Road are considered arterial roadways in the Palo Alto Comprehensive Plan (City of Palo Alto 2017a). The segments of San Antonio and Embarcadero Roads connecting the Project area to US-101 are non-residential streets supporting commercial land uses. The City of Palo Alto considers the Embarcadero Road and East Bayshore Road intersection, which is located between US-101 and the Embarcadero Road access route to the Project area, to be a key intersection. The City of Palo Alto monitors this intersection’s LOS as a way to assess traffic conditions (City of Palo Alto 2017a). Palo Alto’s 2017 Traffic Safety and Operations Report indicates that this intersection is operating at LOS-D (which represents an average delay of between 35.1 and 55.0 seconds per vehicle) for the AM and PM peak hours (City of Palo Alto 2017d). The Comprehensive Plan states that “the City will continue to use vehicular LOS at local intersections when evaluating development applications, including a project’s potential contribution to cumulative LOS” (City of Palo Alto 2017a).

Discussion

a) Would the Project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

The Project area does not include any publicly accessible roadways or public transit routes. Access to the Project area would occur from San Antonio Road and Embarcadero Road, both of which primarily consist of commercial uses and are considered arterial roads in the Palo Alto Comprehensive Plan (City of Palo Alto 2017a). No alterations to existing roadways are proposed by the Project and there would be no impact to vehicle transportation or roadway configurations.

Construction vehicles would comply with the Palo Alto Municipal Code’s rules pertaining to truck use in Palo Alto. As shown in the City of Palo Alto’s 2017 Traffic Safety and Operations Report, the LOS at the nearest monitored intersection to the Project area was most recently identified to be LOS-D, indicating that there is an average delay between 35.1 and 55.0 seconds during peak hours. The Project would not permanently increase congestion at this and other nearby intersections. Construction vehicles would increase the volume of traffic on these routes to the Project area only during the up to five construction seasons (21 total months), as shown in **Table 4-24**.

Table 4-24. Estimated Construction-Related Vehicle Trips

Vehicle Type/ Purpose	Average Number of Worker/Vendor Trips per Day	Average Number of Haul Trips per Day	Total Average Trips per Day
Phase 0 – Year 1	10	10	20
Phase 1 – Year 2	20	15	35
Phase 1 – Year 3	20	20	40
Phase 2 – Year 4	20	15	35
Phase 2 – Year 5	20	25	45

There would be temporary impacts to pedestrian and bicycle facilities due to the planned closure of a portion of the Adobe Creek Loop Trail, but trail access would be fully restored following Project completion. During the trail closure, alternate trail routes would be identified with detour signage (see **Figures 4-9 and 4-10**). Temporary closure of the Adobe Creek Loop

Trail in the Project area would not impair the ability of commuters to travel through the area, as the majority of the Adobe Creek Loop Trail and Bay Trail would continue to function as a commuter route. The Project would not permanently change the Adobe Creek Loop Trail's capacity for shared pedestrian and bicycle use or the ability of pedestrians and bicyclists to access trails and recreational space near the Project area.

The Project would be consistent with policies established by Santa Clara County and the City of Palo Alto. BMP TR-1 (*Incorporate Public Safety Measures*) would be incorporated into the Project and would further reduce potential transportation impacts by ensuring adequate safety features are present in and near the Project area. Therefore, the impact would be **less than significant**.

b) Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

The Project would not conflict or be inconsistent with Section 15064.3 of the CEQA Guidelines, which considers a Project's transportation impacts by evaluating the VMT attributable to the Project. The Project would only generate a temporary increase in VMT during the up to five construction seasons (21 total months); the total anticipated vehicle trips by construction phase as summarized in **Table 4-24**. The Project would not permanently impact vehicle traffic in the Project vicinity, as the Project would not induce growth, result in land use changes, or permanently alter traffic circulation. Following Project construction, no additional maintenance would be required beyond what is already occurring. Therefore, no permanent increase in VMT would occur as a result of the Project. Therefore, the impact would be **less than significant**.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Project would not include new design features (e.g., new facilities or obstructions within public roadways) or alterations of existing roadways (e.g., road realignment). However, the Project would widen the Adobe Creek Loop Trail over the new tide gate structure by approximately 24 feet, which would improve bicycle and pedestrian safety over the structure. The trail alignment would also be slightly modified (moved south) and the turn angle of the trail in the Project area would be minimally reduced. Therefore, the Project would not result in an increase in traffic or transportation hazards along roadways or trails.

Construction of the Project would result in heavy vehicles and equipment accessing the Project area via roadways including US-101, Embarcadero Road, and San Antonio Road. The presence of large, slow-moving equipment among the general-purpose traffic on roadways in the Project vicinity could result in temporary safety hazards. However, given the nature of the roadways used by construction vehicles and the limited duration of construction, traffic safety hazards would not be substantially increased. In addition, implementation of BMP TR-1 (*Incorporate Public Safety Measures*), which requires fencing, barriers, lights, flagging, guards and/or signs (as appropriate) to provide warning to the public of construction activities, would minimize the effects from construction traffic. Therefore, the impact would be **less than significant**.

d) Would the Project result in inadequate emergency access?

Emergency access to the Project area is provided by the Adobe Creek Loop Trail, which runs across the top of the existing levee and tide gate structure. Emergency access to the Adobe

Creek Loop Trail immediately south of the Project area would be minimally impacted because vehicles would not be able to drive along the trail through the construction site from Embarcadero Road (0.6 miles southwest of the Project area) and would instead be required to enter from the trail's southern end at San Antonio Road (2.2 miles south of the Project area). Thus, the distance emergency vehicles would need to travel to reach portions of the Adobe Creek Loop Trail would increase by up to 1.6 miles during construction, though fewer trail users would be expected in this area during construction due to detours. Nevertheless, all portions of the trail would still have adequate emergency access and the increased distanced for emergency access would be temporary. Following Project completion, full emergency access would be restored. Therefore, the impact on emergency access would be **less than significant**.

Tribal Cultural Resources

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Regulatory Setting

Effective July 1, 2015, AB 52 requires lead agencies to provide notice to any California Native American tribes that have requested notice of projects proposed by the lead agency, and if a tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe. Topics that may be addressed during consultation include tribal cultural resources, the potential significance of project impacts, type of environmental document that should be prepared, and possible mitigation measures and project alternatives.

AB 52 creates a new category of resources called tribal cultural resources. PRC Section 21074(a) defines tribal cultural resources as:

“Sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

- a) Included or determined to be eligible for inclusion in the California Register of Historical Resources; and/or
- b) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1; and/or
- c) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.”

Because criteria a) and b) also meet the definition of a historical resource under CEQA, a tribal cultural resource may also require additional consideration as a historical resource. Tribal cultural resources may or may not exhibit archaeological, cultural, or physical indicators.

PRC Section 21073 defines California Native American tribes as “a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of the Statutes of 2004.” This includes federally and non-federally recognized tribes.

Recognizing that California tribes are experts in their tribal cultural resources and heritage, AB 52 requires that CEQA lead agencies carry out consultation with tribes at the commencement of the CEQA process to identify tribal cultural resources. Furthermore, because a significant effect on a tribal cultural resource is considered a significant impact on the environment under CEQA, consultation is required to develop appropriate avoidance, impact minimization, and mitigation measures.

Tribal Consultation

AB 52 consultation requirements went into effect on July 1, 2015 for all projects that have not already published a NOI to Adopt a ND or MND, or published a Notice of Preparation of an EIR. To date, Valley Water has received one written request from the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area Region to receive notifications as specified in PRC Sections 21080.3.1. Therefore, Valley Water mailed a Project notification letter to Charlene Nijmeh, Chairwoman of the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area Region, on July 10, 2019, which provided a brief description and location of the Project. A follow-up email was placed with Chairwoman Nijmeh on August 19, 2019, but no response was received. A follow-up phone call was also placed with Chairwoman Nijmeh on August 19, 2019, but no message was left due to a full mailbox. No request for consultation was received within the 30-day response period, or during the second effort to contact the Tribe after the response period lapsed. Therefore, Valley Water has concluded that no consultation on the Project is desired by the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area Region.

Existing Conditions

Valley Water contracted Pacific Legacy, Inc. to conduct a Cultural Resources Investigation for the Project area (**Appendix F**). The results of this investigation showed that the Project area “possesses very low sensitivity for buried cultural resources” and that no cultural resources which are listed or eligible for listing in the NRHP, CRHR, or any other local register of historical resources located in the Project area. This determination was made following an archival and records search, contact with the NAHC and six additional Native American tribe representatives, a pedestrian inventory survey, and an assessment of the PAFB levees and tide gate structure.

Discussion

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or**

The Cultural Resources Investigation (**Appendix F**) determined there are no tribal cultural resources which are listed or eligible for listing in the NRHP, CRHR, or any other local register of historical resources located in the Project area. Therefore, there would be **no impact**.

- b) **A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

The Cultural Resources Investigation (**Appendix F**) conducted for the Project did not suggest presence of tribal cultural resources in the Project area. The investigation stated that the Project area “possesses very low sensitivity for buried cultural resources” and that no cultural resources which are listed or eligible for listing in the NRHP, CRHR, or any other local register of historical resources located in the Project area. USGS maps show that around 1900, the area in and surrounding the Project area was located near the confluence of the Bay proper and historic salt marsh habitat (City of Palo Alto 2008). Salt marsh habitat extended inland beyond what is currently US-101 (City of Palo Alto 2008), or approximately 1.3 miles inland of the Project area. Access to the Project area would have been limited based on these conditions and tribal cultural resources are unlikely to be located within the Project area. Additionally, the Project area has been exposed to past dredging, construction (i.e., tide gate, levee, PAFB), and tidal/flood scour. These activities would have likely obscured or eliminated any limited cultural resources that could have occurred in the Project area. No known tribal cultural resources have been identified (as defined in Section 21074) within the Project area and the Project would not cause a substantial adverse change in the significance of a known tribal cultural resource.

In the event that unknown tribal cultural resources are encountered during construction activities, Valley Water would implement BMP CU-1 (*Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Remains*), which would require that work at the location of the find would be halted immediately within 100 feet of the find and a “no work” zone shall be established utilizing appropriate flagging to delineate the boundary of this zone. A Consulting Archaeologist would visit the discovery site as soon as practicable for identification and evaluation pursuant to PRC Section 21083.2 and CCR Section. If the archaeologist determines that the artifact is not significant, the archaeologist would determine if the artifact or resource can be avoided and, if so, will detail avoidance procedures. If the artifact cannot be avoided, the archaeologist would develop within 48 hours an Action Plan which would include provisions to minimize impacts and, if required, a Data Recovery Plan for recovery of artifacts in accordance with PRC Section 21083.2 and Section 15126.4 of the CEQA Guidelines. If a tribal cultural resource cannot be avoided, the Action Plan would include notification of the appropriate Native American Tribe, and consultation with the tribe regarding acceptable recovery options.

Consistent with BMP CU-1, if burial finds are accidentally discovered during construction, work in affected areas would be restricted or stopped until proper protocols are met. Upon discovering any burial site as evidenced by human skeletal remains, the County Coroner would be immediately notified, and the field crew supervisor shall take immediate steps to secure and protect such remains from vandalism during periods when work crews are absent. No further excavation or disturbance within 100 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.

Impacts resulting from the destruction of tribal cultural resources would be **less than significant**.

Utilities and Service Systems

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

Regulatory Setting

Assembly Bill 939

The primary legislation related to the environmental impacts with respect to solid waste management is AB 939. AB 939 requires all California counties to prepare integrated waste management plans and all municipalities to divert 50 percent of the waste stream from landfill disposal by the year 2000 and each year thereafter. The City of Palo Alto is currently in compliance with AB 939 requirements for 50 percent landfill diversion.

AB 939 also established the California Integrated Waste Management Board, which was renamed CalRecycle. CalRecycle is responsible for reducing waste, promoting the management of all materials to their highest and best use, and protecting public health/safety and the environment. To meet these responsibilities, CalRecycle has enforcement authority in solid waste facility operation and closure; waste diversion planning, programs, and technical assistance; recycled-content newsprint; recycled-content trash bags; used oil recycling; and waste tire hauling and storage.

Palo Alto Comprehensive Plan

The City of Palo Alto Comprehensive Plan contains policies related to utilities and service systems (Table 4-25).

Table 4-25. Palo Alto Comprehensive Plan Policies Related to Utilities

Policy No.	Policy Description
N-4.1	Maintain a safe, clean and reliable long-term supply of water for Palo Alto.
N-4.4	Manage water supply and water quality to reflect not only human use but also the water needed to sustain plant and animal life.
N-4.8	Conserve and maintain subsurface water resources by exploring ways to reduce the impacts of residential basement dewatering and other excavation activities.
N-4.10	Reduce pollution in urban runoff from residential, commercial, industrial, municipal, and transportation land uses and activities.
N-4.12	Promote sustainable low water and pesticide landscaping practices on both public and private property.
N-4.15	Reduce the discharge of toxic materials into the City’s sanitary sewer collection system by promoting the use of BMPs and reducing pollutant levels in City wastewater discharges.
N-4.16	Provide, maintain and operate wastewater treatment facilities, including maintaining adequate capacity at the RWQCP located in Palo Alto, to accommodate projected economic and population growth. Ensure that the plant operates in compliance with applicable local, State, and federal clean water, clean air, and health and safety regulatory requirements.
S-3.8	Strive for 95 percent landfill diversion by 2030, and ultimately zero waste, by enhancing policies and programs for waste reduction, recycling, composting and reuse.
S-3.9	Reduce solid waste generation through requiring salvage and reuse of building materials, including architecturally and historically significant materials.

Existing Conditions

Valley Water manages an integrated water resources system that includes the supply of clean, safe water; flood protection; and stewardship of streams on behalf of Santa Clara County's 1.9 million residents. Valley Water manages ten dams and surface water reservoirs, three water treatment plants, and more than 275 miles of streams.

Water

The City of Palo Alto’s water is provided by the City’s Utilities Department. The City is a member of the Bay Area Water Supply and Conservation Agency, and through this agency, the City obtains its entire supply of potable water from the City and County of San Francisco’s Regional Water System, operated by the San Francisco Public Utilities Commission (City of Palo Alto 2016a).

Wastewater

Palo Alto’s wastewater is treated at the RWQCP located at 2501 Embarcadero Way in Palo Alto (City of Palo Alto n.d.). The RWQCP is owned and operated by the City of Palo Alto for Los Altos, Los Altos Hills, Mountain View, Palo Alto, Stanford University, and the East Palo Alto Sanitary District. Wastewater from these communities and districts is treated by the RWQCP prior to discharge to the Bay. The RWQCP has a 39 million gallon per day (mgd) average dry weather flow capacity and the daily average dry weather flow to the RWQCP in 2018 was 16.8 million gallons (City of Palo Alto 2018a). Palo Alto has a current capacity share of 15.3 mgd. As of 2010,

approximately 6.9 mgd of wastewater from Palo Alto was collected and treated by the RWQCP. This quantity is expected to decrease to 6.5 mgd by the year 2030 (City of Palo Alto 2012).

No wastewater is currently produced within the Project area.

Storm Water Drainage

The City of 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 Palo Alto: San Francisquito, Matadero, Barron, and Adobe. Within these watersheds, stormwater flows directly to creeks and Bay without treatment. The PAFB receives water from Adobe, Matadero, and Barron Creeks and is a critical part of Valley Water's and the City of Palo Alto's ability to safely handle storm water flows.

Solid Waste

In 2005, the Palo Alto City Council adopted a goal of achieving zero waste (no waste burned or buried) by 2021. Palo Alto's first Zero Waste Plan was adopted in 2007, and has since been revised multiple times, most recently in 2018. In 2016, the City diverted 82 percent of its waste, bringing it closer to its goal of 95 percent diversion by 2020 (City of Palo Alto 2018b).

If requiring disposal at a landfill, solid waste generated by the Project would be taken to the Newby Island Landfill in San Jose. The Newby Island Landfill has a total capacity of 65.9 million cubic yards, with remaining capacity of 21.2 million cubic yards as of 2015. No solid waste is currently produced by the existing tide gate and levee.

Gas and Electricity

The City of Palo Alto's Utilities Department purchases natural gas and electricity on the wholesale market through contracts with several suppliers, which is delivered to the City through PG&E's transmission networks. Palo Alto has its own electric and natural gas distribution networks to deliver services to residents and businesses. Electric and gas services in Palo Alto are provided by the Palo Alto Electric Utility and Palo Alto Gas Utility, respectively (City of Palo Alto 2016b).

Discussion

a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The Project is an improvement to a component of an existing storm water management facility. The Project would ensure long-term operation of the tide gate and PAFB to maintain flood protection in the communities upstream of the PAFB and along the US-101 corridor. The Project would prevent failure of the existing tide gate structure (which would result in increased flood risk); upsize the tide gate to function under future sea-level rise scenarios; and maintain the level of flood protection for Matadero, Adobe, and Barron Creeks. Other types of facilities, including water or wastewater facilities, electric power facilities, natural gas facilities, and telecommunications facilities, would not be interrupted by the Project, and addition or expansion of these facilities would not be necessary as a result of the Project, as the operational utility demand would remain unchanged from baseline conditions. **No impact** would occur.

b) Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Water use during Project construction would be limited to dust suppression, which would be transported to the Project area via water trucks, or from filtered water pumped from the dewatering area. Once operational, the Project would not result in an increased demand for water from existing conditions. Therefore, no new or expanded water supply entitlements would be required to serve the Project, and the impact would be **less than significant**.

c) Would the Project result in a determination by the wastewater treatment provider, which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?

The Project would not require wastewater treatment during construction or operation. Therefore, the Project would not increase wastewater treatment demand at the RWQCP, which serves the Project area. **No impact** would occur.

d) Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Solid waste generated during construction of the Project would either be deposited at one or more of the SBSPRP's ponds in Sunnyvale or Mountain View, or at the Newby Island Landfill. Project construction would generate solid waste associated with demolition of the existing tide gate and levee including concrete, rock rip-rap, levee fill, and other materials (refer to **Table 2-2** in Chapter 2, *Project Description*). Over 95% of the waste generated would be soils from excavation of the existing levee, and if this material meets the RWQCB quality standards for use as fill for SBSPRP restoration activities (as described in detail in Chapter 2, *Project Description*), the material would be deposited at one or more of the ponds. Any material not suitable for use at the SBSPRP ponds would be disposed of at the Newby Island Landfill. Solid waste requiring disposal during construction would not exceed approximately 50,000 cubic yards and there is sufficient capacity to process this waste at the Newby Island Landfill. Prior to the disposal of construction debris, the materials would be tested for contamination (for example, old wooden piles may have creosote). Should Valley Water or a construction contractor need to dispose of materials that contain hazardous materials, this material would be disposed of at a regulated facility as required by California State law.

The Project would not result in a change to existing maintenance activities and therefore would not result in an increase or change in the type of solid waste generated during Project operation. The Project would not increase the amount of solid waste produced within the City of Palo Alto. Impacts related to solid waste disposal would be **less than significant**.

e) Would the Project comply with federal, State, and local management and reduction statutes and regulations related to solid waste?

The Project would comply with all applicable federal, State, and local statutes and regulations related to solid waste, including recycling programs. The Project would not impair the City of Palo Alto's Zero Waste Plan goal of 100 percent waste diversion, which goes beyond the standards for waste reduction set by State and federal agencies. Once operational, the Project would not result in an increase in the negligible amount of solid waste produced from maintenance of the tide gate and levee. **No impact** would occur.

Wildfire

If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose people or structures to significant risks, including downslope, or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Regulatory Setting

The CEQA Guidelines were amended in 2019 to address the need to evaluate wildfire impacts. The Appendix G checklist amendments apply to projects located in or near State responsibility areas (where the state has financial responsibility of preventing and suppressing fires), or lands classified as very high fire severity zones by local agencies.

The Palo Alto Comprehensive Plan (2017) only includes policies related to wildfire for areas prone to wildfire hazards, and therefore does not apply to the Project.

Existing Conditions

The State of California and Santa Clara County Fire Hazard Severity Zone maps are based on an evaluation of fire history, existing and potential fuel, flame length, blowing embers, terrain, weather, and the likelihood of buildings igniting. The Fire Hazard Severity Zone maps indicate that the Project area is within a Local Responsibility Area for determining the risk of wildfires and occurs outside of a designated Very High Fire Hazard Severity Zone (CalFire 2008). Furthermore, the Project area is not part of the Wildland Urban Interface Zone, which is the primary area of concern for risks associated with wildfires.

Discussion

a) Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

The Project is not located in or near a State responsibility areas or lands classified as very high fire hazard severity zones. **No impact** would occur.

- b) Would the Project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

The Project is not located in or near State responsibility areas or lands classified as very high fire hazard severity zones. **No impact** would occur.

- c) Would this Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

The Project is not located in or near State responsibility areas or lands classified as very high fire hazard severity zones. **No impact** would occur.

- d) Would the Project expose people or structures to significant risks, including downslope, or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

The Project is not located in or near State responsibility areas or lands classified as very high fire hazard severity zones. **No impact** would occur.

Mandatory Findings of Significance

CEQA requires that the analysis of potential project impacts include cumulative impacts. CEQA defines cumulative impacts as “two or more individual effects which, when considered together are considerable or which compound or increase other environmental impacts.” This analysis of cumulative impacts need not be as in-depth as what is performed relative to the project, but instead is to “be guided by the standards of practicality and reasonableness.”

Past, present, and reasonably foreseeable future projects occurring in the vicinity of the proposed project sites could result in cumulative impacts in combination with Project impacts. These projects have been identified by reviewing local and regional planning agencies’ websites, general plans, and other planning documents for approved, ongoing, and proposed projects in the project vicinity.

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

Discussion

a) Would the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

While the Project would result in potentially significant impacts on biological resources, implementation of applicable biological BMPs and mitigation measures as proposed in this Mitigated Negative Declaration would ensure that the Project would not substantially degrade the quality of the environment; substantially reduce the habitat, population, or range of a plant or animal species; cause a fish or wildlife population to drop below self-sustaining levels,

threaten to eliminate a plant or animal community; or reduce the number or restrict the range of a rare or endangered plant or animal. While the Project would minimally reduce the amount of open water habitat in the PAFB, it would also increase the amount of Bay habitat, a higher value habitat that supports special-status species (unlike the PAFB). The Project would also permanently impact a small area of marginal salt marsh habitat in a narrow band (approximately 5 feet wide) along the existing levee toe, but this would not constitute a substantial reduction of habitat for special-status species). **MM-BIO-8** would also be implemented to provide compensatory mitigation for loss of wetlands through on- or off-site mitigation approaches.

The Project would not result in significant impacts on cultural resources given the low likelihood of encountering cultural resources, past disturbance in the Project area, and limited excavation of native soils. BMP CU-1 (*Accidental Discovery of Archeological Artifacts, Tribal Cultural Resources, or Burial Remains*) would avoid or minimize any potential impacts to cultural resources by requiring work to stop in the area if resources are found.

Therefore, with BMPs and mitigation measures, the impact would be **less than significant**.

b) Would the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of the past projects, the effects of other current projects, and the effects of probable future projects)?

As defined by Section 15344(b) of the CEQA Guidelines "the change in the environment which results from the incremental impact of the Project when added to other closely related past, present, and reasonable [sic] foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." In addition to Project-specific impacts, this evaluation considered the Project's potential for incremental effects that are cumulatively considerable.

After construction of the new tide gate, there could be minor effects from subsequent projects involving tide gate maintenance, but the scale and frequency of any such projects would decrease as compared to maintenance of the existing tide gate structure.

Larger related projects could include repairs, reconstruction, or realignment of other levees along the Bay shoreline in the Project vicinity. The South Bay Shoreline Project for Economic Impact Areas 1-10 identified levee improvements along the same alignment of the existing levee in the Project area. This phase of the South Bay Shoreline Project is presently in the feasibility study phase and the schedule for environmental review and construction have not been determined. The Mountain View Ponds Project, a component of the South Bay Salt Pond Restoration Project, involves restoration of existing salt ponds to native habitats approximately 0.75 mile southeast of the Project area. The Mountain View Ponds Project has completed environmental review and is presently seeking environmental permits, but construction is not anticipated to overlap with construction of the tide gate or contribute to cumulatively considerable impacts due to the geographic separation of the projects. Lastly, the SAFER Bay Project, which involves a series of levee improvements and restoration actions, is located approximately 1 mile west and northwest of the Project area and has not yet undergone environmental review. The environmental effects of these projects are anticipated to be largely beneficial, as they increase resilience to natural disasters and climate-change related phenomena such as sea level rise while providing habitat restoration elements.

While the above analysis finds that the Project would result in potentially significant impacts on biological resources, mitigation measures would reduce the Project impacts in these areas to a level of less-than-significant and to a level where the Project's contribution to a cumulative impact would not be cumulatively considerable. The impact would be **less than significant**.

c) Would the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The above analysis shows that the Project would not result in significant impacts with mitigation measures incorporated. While the analysis finds that the Project would result in some adverse impacts to biological resources, mitigation measures would sufficiently reduce those impacts to a less than significant level. The Project would not result in changes to existing land use and there are no permanent residents in the Project vicinity. The majority of potential effects that could impact human beings would be temporary. The long-term effects of this Project would be beneficial, as the Project would provide improved flood protection for a densely populated part of the Bay Area. The impact would be **less than significant**.

Chapter 5 Report Preparation

This chapter lists those individuals who contributed to the preparation of this Mitigated Negative Declaration and supporting technical reports.

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Chapter 6 References

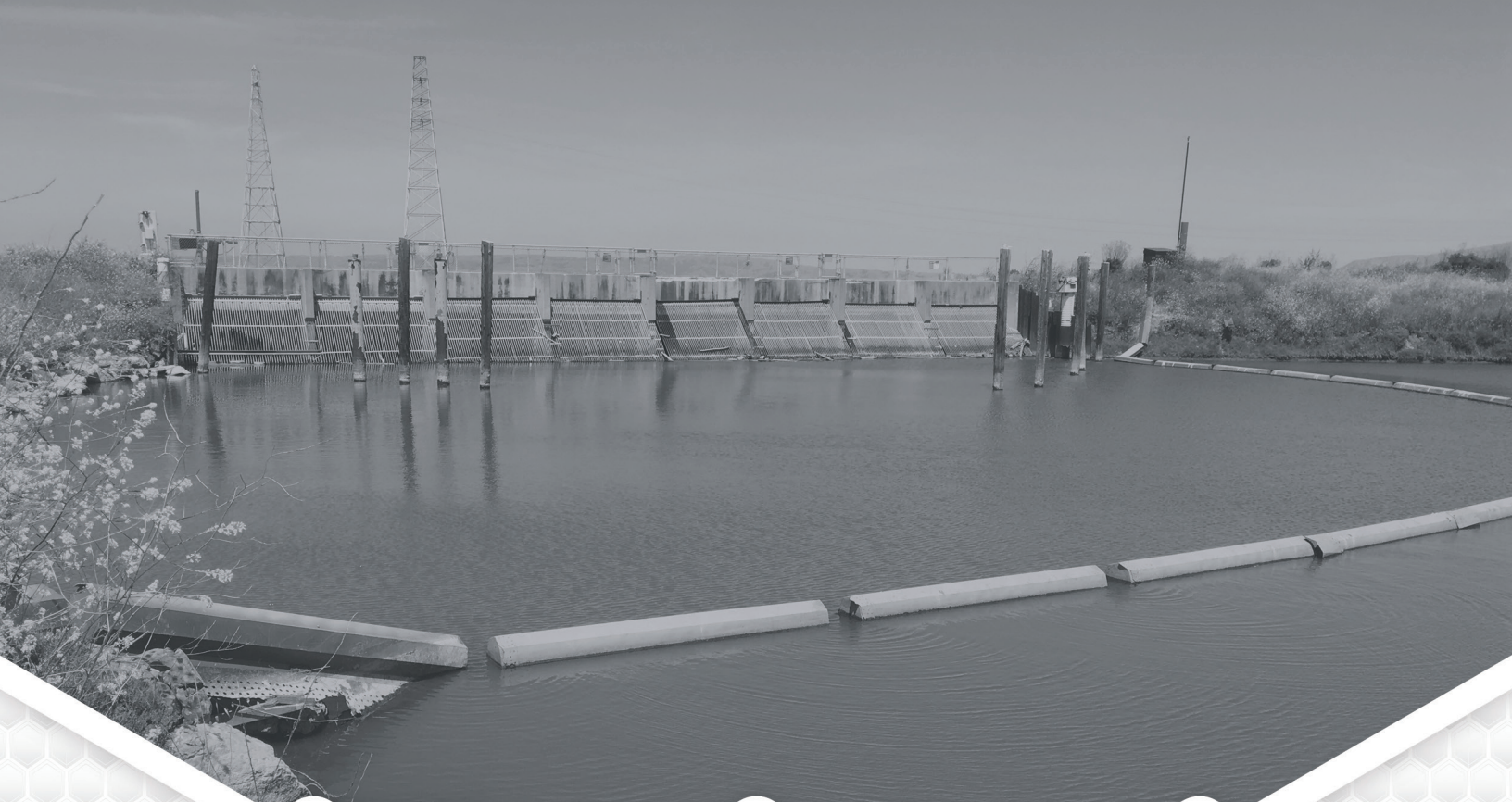
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Valley Water

Clean Water • Healthy Environment • Flood Protection

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