City of Palo Alto U.S. Highway 101 Overpass and Reach Trail at Adobe Creek Project ***NES***

Natural Environment Study

Palo Alto, Santa Clara County, California

Caltrans District 04

04-SCL-101-50.684

EA 04-4H1300/ Project ID 0413000080

February 2017

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Natural Environment Study

STATE OF CALIFORNIA
Department of Transportation
City of Palo Alto

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Summary

This Natural Environment Study (NES) has been prepared following California Department of Transportation (Caltrans) procedures. Caltrans has assumed Federal Highway Administration (FHWA) responsibility for environmental review, consultation, and coordination on the proposed U.S. Highway 101 Overpass and Reach Trail at Adobe Creek Project (project), as assigned by FHWA pursuant to 23 USC 326. As such, Caltrans will act as the lead federal agency for Section 7 of the Federal Endangered Species Act.

Project Description

The City of Palo Alto proposes to build a year-round bicycle and pedestrian overcrossing of U.S. Highway 101 (US 101) at Adobe Creek, which will replace an existing underpass prone to closures during flooding. The project will improve connectivity to the Palo Alto Baylands Nature Preserve, East Bayshore Road businesses, and regional San Francisco Bay Trail network from residential neighborhoods and employment districts in southern Palo Alto. The project will further improve accessibility and safety of local access by developing a Class I multi-use trail along existing Santa Clara Valley Water District (SCVWD) maintenance facilities, and improve pedestrian connectivity from West Bayshore Road. The combined overcrossing and access improvements will support regional bicycle commuting and encourage greater recreational use of the Baylands and trail system. The project involves construction of a grade-separated, shared bicycle and pedestrian bridge over US 101 and East and West Bayshore Roads, as well as the construction of a Class I trail parallel with Adobe Creek. The project is located within Santa Clara County in the City of Palo Alto, in the immediate vicinity of Adobe Creek.

Project Effects on Sensitive Biotic Habitats

Reconnaissance-level surveys of the Biological Study Area (BSA) were conducted by H. T. Harvey & Associates ecologists on November 18 and 21, 2013, and December 13, 2016.

Four biotic habitats were identified within the 7.78-acre (ac) BSA: riparian eucalyptus woodland (0.24 ac), aquatic (0.29 ac; all under developed/landscaped), ruderal grassland (1.04 ac), and developed/landscaped (6.50 ac). The new, shared bicycle and pedestrian bridge will cross US 101 near Adobe Creek, but no falsework or support structures will be placed in the channel; thus, the bridge will not impact aquatic habitat. Further, the widened bridge on West Bayshore Road over Adobe Creek that is part of the project will not place falsework or support structures in the channel and therefore will not impact aquatic habitat.

The project will permanently impact 0.17 ac of ruderal grassland habitat and temporarily impact 0.74 ac of this habitat as a result of site grading, vegetation removal, and construction access. No impacts on aquatic or riparian habitats will occur as part of the project.

Special-status Plant Species

Several special-status plant species are known to occur in the region. However, most of these plants are associated with habitat types that do not occur within the BSA, occur at elevations outside of the range of elevations that occur on the project site, or are present on specific soil types or conditions that do not occur within the BSA. In addition, portions of the BSA contain developed or ruderal areas that do not support native vegetation. It was determined that the site provided potential habitat for only one special-status plant, Congdon's tarplant (*Centromadia parryi* ssp*. congdonii*). A focused survey for Congdon's tarplant was conducted within the published bloom period (May to November) and no individuals were found. Therefore, all special-status plants are determined to be absent from the BSA, and no effect on any of these species will result from project implementation.

Special-status Animal Species

Species Not Occurring in the BSA. Several federal and/or state special-status animal species that occur in the region do not occur in the BSA because the project site lacks suitable habitat and/or is outside the species' range. These include the green sturgeon (*Acipenser medirostris*), Central California Coast steelhead (*Oncorhynchus mykiss*), Central California Coast coho salmon (*Oncorhynchus kisutch*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), burrowing owl (*Athene cunicularia*), California black rail (*Laterallus jamaicensis coturniculus*), California Ridgway's rail (*Rallus obsoletus obsoletus*; formerly called the California clapper rail), western snowy plover (*Charadrius alexandrinus nivosus*), California least tern (*Sterna antillarum browni*), and Townsend's big-eared bat (*Corynorhinus townsendii*), among others. These species are not discussed further in this document with the exception of four species of particular interest to the resource agencies: the Central California Coast steelhead, Central California Coast coho salmon, California Ridgway's rail, and California black rail.

Species that May Occur in the BSA only on Occasion. Several state special-status animal species may occur in the BSA only as occasional foragers, migrants, or transients, and are not expected to reside or breed on the site, or to occur on the site in large numbers. These include the Vaux's swift (*Chaetura vauxi*), olive-sided flycatcher (*Contopus cooperi*), yellow warbler (*Setophaga petechia*), American peregrine falcon

(*Falco peregrinus anatum*), and western red bat (*Lasiurus blossevillii*), which do not breed in the vicinity of the site.

Species that Potentially Breed in or near the BSA. The BSA supports potentially suitable habitat for a number of special-status animal species that may reside or breed on or very near the site. These are the western pond turtle (*Actinemys marmorata*), northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), San Francisco common yellowthroat (*Geothlypis trichas sinuosa*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), Alameda song sparrow (*Melospiza melodia pusillula*), and white-tailed kite (*Elanus leucurus*).

The salt marsh harvest mouse (*Reithrodontomys raviventris*) has been previously documented in the Palo Alto Flood Control Basin over 0.65 mi from the BSA, and it and the salt marsh wandering shrew (*Sorex vagrans halicoetes*) may occur in diked brackish marsh habitat in the portion of the Palo Alto Flood Control Basin located adjacent to the BSA. However, no suitable breeding or foraging habitat for the salt marsh harvest mouse or salt marsh wandering shrew occurs within the BSA, as the ruderal vegetation within the BSA lacks high-density ground cover required by these species. Consequently, these species are highly unlikely to occur in the BSA except perhaps in extreme flood events, which occur only rarely in the Flood Control Basin and will not occur during the dry season, when the project will be constructed. Nevertheless, avoidance measures will be implemented by the project to ensure that no take of the fully protected salt marsh harvest mouse occurs; these measures will also provide protection for the salt marsh wandering shrew. As a result, the project is not likely to adversely affect the salt marsh harvest mouse.

Permits and Consultation

The project may affect, but is not likely to adversely affect the salt marsh harvest mouse or any other federally listed species, and thus formal consultation should not be necessary under the federal Endangered Species Act. However, the need for formal consultation for the salt marsh harvest mouse will be determined by the USFWS.

Presence of Invasive Non-native Plant Species

Non-native grasses, forbs, and trees occur in the riparian eucalyptus woodland and ruderal grassland within the BSA. During construction, the project will implement measures to avoid and minimize the spread of invasive weeds. With the implementation of these measures, the proposed project is not expected to introduce new weeds at the project site and will reduce the risk of further invasive species spread or establishment.

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List of Abbreviated Terms

ac	acre(s)
Bay Trail	San Francisco Bay Trail
Baylands	Palo Alto Baylands Nature Preserve
BCDC	Bay Conservation and Development Commission
BMPs	best management practices
BSA	Biological Study Area
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Environmental Science Associates
FESA	Federal Endangered Species Act
ft	foot/feet
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MBTA	Migratory Bird Treaty Act
mi	mile(s)
NES	Natural Environment Study
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
OHW	ordinary high-water
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SCVTA	Santa Clara Valley Transportation Authority
SCVWD	Santa Clara Valley Water District
SFBBO	San Francisco Bay Bird Observatory
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
US 101	U.S. Highway 101
WTA	Wetland Technical Assessment

Chapter 1 – Introduction

Environmental Science Associates (ESA) conducted a background review and field studies for the U.S. Highway 101 (US 101) Overpass and Reach Trail at Adobe Creek Project (also known as the Bicycle and Pedestrian Overcrossing Project) in August 2012, and prepared a draft Natural Environment Study (NES) for the project in May 2013 (ESA 2013). H. T. Harvey & Associates conducted a background review and field surveys for the project in November 2013, and prepared a revised draft NES for the project based on these studies and information about the project received through October 2014. The project design and description were subsequently revised by the City of Palo Alto, and H. T. Harvey & Associates updated the background review again in December 2016, conducted a brief follow-up site visit on December 13, 2016, to check existing conditions, and prepared this revised NES based on previous studies and information about the project received through December 2016. All documents are compiled according to template guidelines prepared by Caltrans (2002, 2014).

1.1. Project History and Purpose and Need

The purpose of the proposed project is to improve pedestrian and cyclist connectivity to the Palo Alto Baylands Nature Preserve (Baylands), East Bayshore Road businesses, and regional San Francisco Bay Trail (Bay Trail) network from residential neighborhoods and employment districts in south Palo Alto. The improved connectivity and access will support regional bicycle commuting and encourage greater recreational activity and use of the Baylands and trail system.

During the times the existing Benjamin Lefkowitz Undercrossing is closed due to flooding, access across US 101 to/from southern Palo Alto and the Baylands Nature Preserve/Bay Trail does not meet community needs because it requires significant out-of-direction travel south to the San Antonio Road overpass, which primarily serves motorized vehicles and lacks sufficient facilities for bicycles and pedestrians. Access across US 101 is also available to the north on the Oregon Expressway Overpass, but that facility is 1.3 miles (mi) away and does not meet current Americans with Disabilities Act standards.

The need for a new year-round pedestrian/bicycle crossing of US 101 in south Palo Alto is identified in the City of Palo Alto Comprehensive Plan (2007) and the Palo Alto Bicycle and Pedestrian Transportation Plan (City of Palo Alto 2012a). The Palo Alto Bicycle and Pedestrian Transportation Plan, which was adopted in June 2012, identifies the Adobe Creek project as the highest priority Across Barrier Connection project in the City. The US 101 Overcrossing at Adobe Creek is also identified as a high priority project in the City's Bicycle and Pedestrian Transportation Plan (City of Palo Alto 2012a) and the City's East Meadow Circle/Fabian Way Concept Plan (City of Palo Alto 2012b).

1.2. Project Description

For purposes of this report, the Biological Study Area (BSA) includes all areas of direct potential temporary and permanent project impacts. In addition, the BSA was expanded to include a larger upland area within the Palo Alto Flood Control Basin to show adjacent sensitive habitats that are avoided by the project. Additionally, wetlands within the Flood Control Basin outside, and west/northwest of the BSA are mapped to assist project designers in avoiding impacts to those wetlands.

1.2.1. PROJECT LOCATION

The project is located within Santa Clara County in the City of Palo Alto at the US 101 crossing of Adobe Creek (Figure 1). The proposed US 101 Overpass and Reach Trail will be located adjacent to and above Adobe Creek, US 101, West Bayshore Road, and East Bayshore Road. A portion of the BSA is also located within the Palo Alto Flood Control Basin (Figure 2).

1.2.2. PROJECT ELEMENTS

The proposed project consists of the construction of a year-round, grade-separated, shared bicycle and pedestrian bridge over US 101 and East and West Bayshore Roads at Adobe Creek, sidewalk and bikeway improvements along West Bayshore Road, and an approximately 800-foot (ft) long trail along the east side of Adobe Creek between US 101 and East Meadow Drive. Ancillary improvements to be constructed as part of the new facility will include new signage and striping, sidewalk improvements, retaining walls, fencing, railings, landscaping, utility relocations, amenities, and lighting.

The proposed main pedestrian/bicycle bridge over US 101 will be a bowstring steel truss structure approximately 165 ft in length that will clear-span the freeway. The structure, which will have a total width of 14 ft, will be supported on concrete pier walls located between the freeway and East and West Bayshore Roads. The vertical clearance of the structure over US 101 will be approximately 18.5 ft.

Leading up to the main bridge will be additional steel truss spans over East and West Bayshore Roads, as well as concrete approach ramp structures. The steel truss and concrete ramp on the east side of US 101 will be supported on concrete pier walls. The steel truss on the west side of US 101 will be supported on concrete pier walls, and the concrete approach ramp structure will be supported on oval concrete columns, some of which will be within the existing parking lot for the office building located at 3600 West Bayshore Road. This will require some reconfiguration of the parking lot, but no net loss of parking spaces is anticipated.

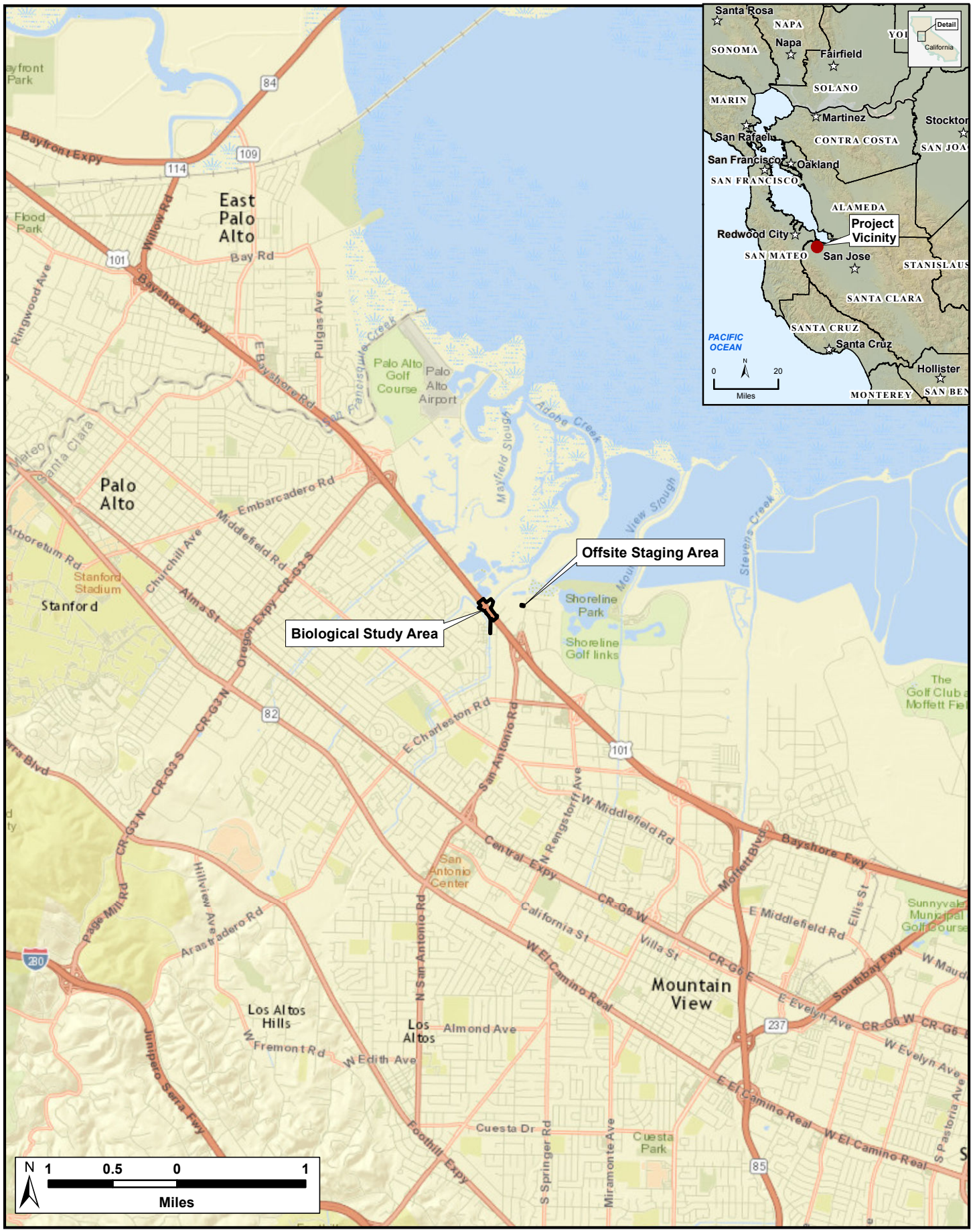

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Figure 1: Vicinity Map

City of Palo Alto Highway 101 Overpass and Reach Trail at Adobe Creek Project (3538-02)

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The ramp on the east side of US 101 will connect to the existing Bay Trail that is located adjacent to East Bayshore Road.

The ramp on the west side of US 101 will connect to a new pedestrian/bicycle bridge over Adobe Creek adjacent to West Bayshore Road. The new bridge will be a single-span, prefabricated steel half-through truss structure approximately 140 ft in length and 14 ft in width. The existing sidewalk will be widened and will connect to the existing bike lane on West Bayshore Road. The sidewalk will also connect to an approximately 800-ft long trail to be constructed along the east side of Adobe Creek between US 101 and East Meadow Drive. Construction of the trail will consist of paving the existing gravel maintenance road that is above the top-of-bank, which is used by the Santa Clara Valley Water District (SCVWD). Trailheads will be constructed at each end. A 2-foot high fence will also be constructed on top of the existing raised floodwall for safety purposes.

1.2.3. RIGHT OF WAY REQUIREMENTS

With one exception, the proposed project will be constructed within the existing public right of way of Caltrans, the City, and the SCVWD. The exception is that right of way will be required from a portion of the existing parking for the office building located at 3600 West Bayshore Road (Assessor's Parcel Number 127-10-076).

1.2.4. CONSTRUCTION AND PHASING

Based on preliminary geotechnical recommendations, the bridges will be supported on cast-in-drilled-holes piles that will likely extend to a depth of up to approximately 75 ft. Pile driving is not proposed.

Major construction phases are anticipated to include:

- Site preparation and utility relocation work in advance of the primary bridge construction.
- Principal Span substructure construction (piles, pile caps and pier walls) within the Caltrans right of way. This stage will be expedited to minimize impacts to the traveling public.
- East Approach Structure and West Approach Structure construction (including construction of the Adobe Creek Bridge).
- Placement of the Principal Span prefabricated steel superstructure over US 101. This will require night work for temporary closure of US 101 during setting of the Principal Span.
- Adobe Creek Reach Trail Construction. This work will be scheduled to minimize impacts to SCVWD operations.

- The City has identified an equipment staging/materials storage area that will be utilized by the contractor during construction. The site is a nearby, City-owned parcel on the west side of San Antonio Road, just north of US 101, near the San Antonio Road/Casey Street intersection. The area to be used for staging is a gravel lot that is presently used for equipment storage and vehicle parking.

- Project construction is anticipated to take approximately 18 months.

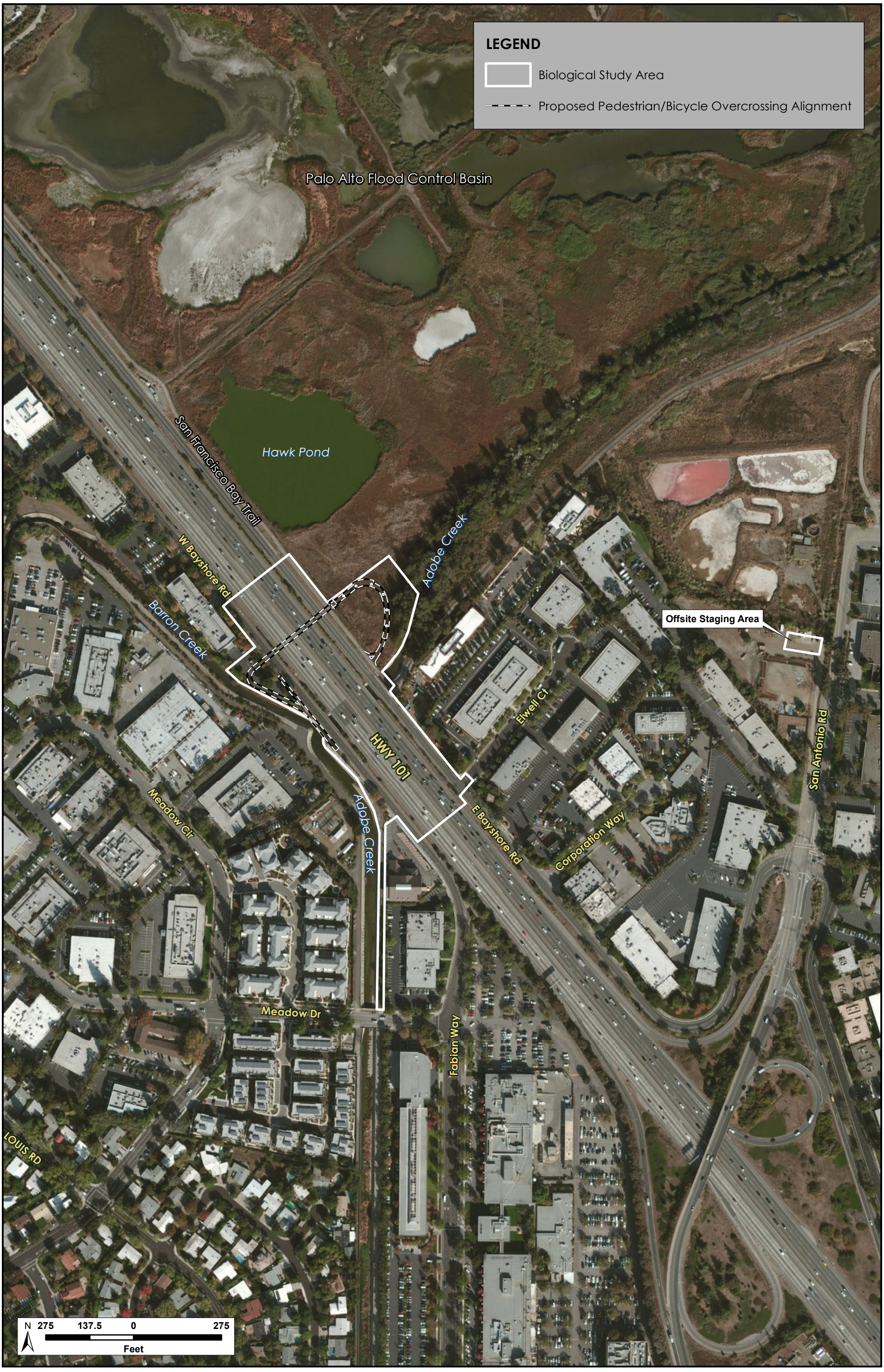

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Figure 2: Biological Study Area
City of Palo Alto Highway 101 Overpass and Reach Trail at Adobe Creek Project (3538-02)
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Chapter 2 – Study Methods

2.1. Regulatory Requirements

The City of Palo Alto provided H. T. Harvey & Associates with plans showing the proposed limits of work for the project. The project's BSA includes all potential areas where direct temporary and permanent project impacts will occur, as well as additional areas adjacent to impact areas where sensitive habitats were mapped (Figure 2). Indirect impacts have been avoided to the extent feasible in development of the plans. Potential indirect effects, such as construction noise and effects on downstream water quality, are considered and discussed where applicable in Chapter 4.

The following laws, orders, and guidelines pertain to the regulation of biological resources that may occur within the BSA. Project applicability has been addressed under each of the regulations described below. For the purposes of this document, non-substantial effects are defined as those effects that, in a California Environmental Quality Act (CEQA) document, are considered to have a less-than-significant effect.

2.1.1. FEDERAL ENDANGERED SPECIES ACT

The U.S. Fish and Wildlife Service (USFWS), which has jurisdiction over federally listed (i.e., threatened and endangered) plants, wildlife, and resident fish, and the National Marine Fisheries Service (NMFS), which has jurisdiction over anadromous fish and marine fish and mammals, implement the federal Endangered Species Act (FESA). Section 7 of the FESA mandates that all federal agencies consult with the USFWS and NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. Federal agencies are required to consult with the USFWS and NMFS if they determine that a project "may affect" a listed species. The FESA prohibits the "take" of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

Project Applicability: The only federally listed species reasonably expected to occur in close proximity to the project site is the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*). This species is not expected to be present within the BSA when construction occurs due to unsuitability of habitat. Nevertheless, avoidance measures, such as clearing ground-level vegetation by hand prior to work within the BSA and installation of an exclusion barrier around the impact area prior to construction, will avoid take of the salt marsh harvest mouse. Additional fencing will restrict contractor access to the work area and provide visual screening between natural areas in the Flood Control Basin and the work area. The project may affect, but is not likely to adversely affect the salt marsh harvest mouse and formal consultation for this species should not

be necessary. However, the need for formal consultation for the salt marsh harvest mouse will be determined by the USFWS. Caltrans, with its delegated National Environmental Policy Act authority, is the lead federal agency for Section 7 consultation.

The endangered California Ridgway's rail (*Rallus obsoletus obsoletus*, formerly called the California clapper rail) is considered absent from the BSA and immediately adjacent areas due to the absence of suitable habitat, and the species has never been recorded in the Palo Alto Flood Control Basin. However, the species is of particular concern to resource agencies and is addressed in the *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (USFWS 2013), which includes a portion of the BSA. Thus, the California Ridgway's rail is addressed in full detail in this NES.

No federally listed fish species are expected to occur on the site; however, because anadromous Central California Coast steelhead (*Oncorhynchus mykiss*), and possibly coho salmon (*Oncorhynchus kisutch*), historically occupied the Adobe Creek watershed and are of general concern to resource agencies, anadromous fish are addressed in full detail in this NES.

No suitable habitat for federally listed plant species was detected during reconnaissance-level surveys of the BSA, and no such species are reasonably expected to occur on the site based on a review of such species' distributions and on-site habitat conditions.

2.1.2. CALIFORNIA ENDANGERED SPECIES ACT

The State of California enacted the California Endangered Species Act (CESA) in 1984. The CESA prohibits the "take" of State endangered and threatened species; however, habitat destruction is not included in the State's definition of take. Section 2090 of the CESA requires State agencies to comply with endangered species protection and recovery and to promote conservation of these species. The California Department of Fish and Wildlife (CDFW) administers the CESA and, with the exception of "Fully Protected Species," authorizes take through Section 2080.1 agreements (also known as a Consistency Determination) for take of species that are both federal- and State-listed, and Section 2081 for take of a State-only listed species.

Project Applicability: The State endangered salt marsh harvest mouse (also listed as federally endangered) occurs in close proximity to the project site. Because the salt marsh harvest mouse is listed as fully protected under the California Fish and Game Code (see below), the CDFW cannot issue incidental take approval for this species. However, the project will avoid take of this species under the CESA with the implementation of avoidance measures. Therefore, an Incidental Take Permit from the CDFW will not be required for this species.

Habitat for the State threatened California black rail (*Laterallus jamaicensis coturniculus*) is absent from the BSA, but wintering individuals may occasionally forage nearby in the Palo Alto Flood Control Basin. Because the California black rail is listed as fully protected under the California Fish and Game Code, the CDFW cannot issue incidental take approval for this species; however, the project will not result in take of this species. Therefore, an Incidental Take Permit from the CDFW will not be required for this species. In addition, the State threatened California Ridgway's rail, which is also federally listed, is considered absent from the BSA and immediately adjacent areas due to the absence of suitable habitat.

No state-listed plant species were detected during reconnaissance-level surveys of the BSA, and no such species are reasonably expected to occur in the BSA based on a review of such species' distributions and on-site habitat conditions.

2.1.3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) governs all fishery management activities that occur in federal waters within the United States 200 nautical mile limit. The Magnuson-Stevens Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. These councils, with assistance from the NMFS, establish Essential Fish Habitat (EFH) in fishery management plans for all managed species. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to NMFS' recommendations.

Project Applicability: No fish species subject to any fisheries management plans are present within the BSA. Therefore, no EFH is present within the BSA.

2.1.4. CLEAN WATER ACT AND PORTER-COLOGNE WATER QUALITY CONTROL ACT

The U.S. Army Corps of Engineers (USACE) has the primary federal responsibility for administering regulations that concern "waters of the United States" within the project area. The USACE acts under two statutory authorities, the Rivers and Harbors Act (Sections 9 and 10) which governs specified activities in "navigable waters of the United States," and the Clean Water Act (CWA) (Section 404), which governs specified activities in "other waters of the United States" including wetlands. The USACE requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters and/or discharging dredged or fill material into waters of the United States below the ordinary high water (OHW) mark in nontidal waters.

The State of California's authority to regulate activities in wetlands and waters at the project site resides primarily with the Regional Water Quality Control Board (RWQCB), which regulates fill in and discharges to waters of the State, including activities in wetlands, under Section 401 of the CWA, and the Porter-Cologne Water Quality Control Act. In addition, within the State of California, the RWQCB administers the Federal National Pollutant Discharge Elimination System (NPDES) program. Established by the CWA, the NPDES program controls and reduces pollutants entering water bodies from point and nonpoint discharges. The RWQCB issues NPDES permits for discharges to water bodies in the San Francisco Bay Area, including those related to construction activity (i.e., Construction General Permit). The RWQCB may impose mitigation requirements even if the USACE does not.

Project Applicability: No work will occur within the bed and bank or aquatic habitat of Adobe Creek (i.e., within waters of the U.S./State) within the BSA. In addition, no wetlands are present in the BSA. Therefore, no permit will be required from the USACE or RWQCB for the project. In some cases, the RWQCB may claim jurisdiction over activities conducted at elevations above the OHW mark, up to the top of bank. However, during early consultation with staff of the RWQCB, it was determined that a RWQCB permit will not be required for the proposed activities. The project will be subject to a NPDES Construction General Permit.

2.1.5. THE FEDERAL MIGRATORY BIRD TREATY ACT

The federal Migratory Bird Treaty Act (MBTA; 16 USC, Section 703, Supplement I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, bird nests, and eggs.

Project Applicability: All native bird species potentially occurring within the BSA are covered under the MBTA. For example, cliff swallows (*Petrochelidon pyrrhonota*) are known to nest under the Adobe Creek pedestrian bridge, the East Bayshore Frontage Road Bridge, and the US 101 bridge (northbound direction) within the BSA (H. T. Harvey & Associates 2008) and are covered under the MBTA.

2.1.6. CALIFORNIA FISH AND GAME CODE

The CDFW is authorized under the California Fish and Game Code, Sections 1600-1603, to enter into a Streambed Alteration Agreement (SAA) with applicants and develop mitigation measures when a proposed project will obstruct the flow or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams.

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.3 of the California Fish and Game Code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs.

Fish and Game Code Sections 3511 birds, 4700 mammals, 5050 reptiles and amphibians, and 5515 fish allow the designation of a species as fully protected. This is a greater level of protection than is afforded by CESA, since such a designation means the species cannot be killed, harmed, or otherwise taken at any time.

Project Applicability: The CDFW has indicated it considers all habitats within the beds of Adobe Creek, from top of the outermost bank to top of the outermost bank, as well as any vegetation associated with these banks (e.g., the riparian habitat along Adobe Creek) as under their jurisdiction. CDFW will require an SAA for any work within the bed, bank, or channel of these creeks. The removal of riparian eucalyptus woodland will also require an SAA from CDFW. However, no impacts to the bed or bank of Adobe Creek, or to any associated riparian habitat, will occur as part of the project.

The California Fish and Game Code protects most native bird, mammal, and other wildlife species that occur in the BSA and in the immediate vicinity.

2.1.7. CALIFORNIA STREETS AND HIGHWAYS CODE (BARRIERS TO FISH PASSAGE)

California Streets and Highways Code § 156-156.4 requires that Caltrans complete an assessment of potential barriers to anadromous fish passage prior to commencing project design, “for any project using state or federal transportation funds programmed after January 1, 2006, if that project affects a stream crossing on a stream where anadromous fish are, or historically were found”.

Project Applicability: Tidal gates in the northwest corner of the Palo Alto Flood Control Basin allow for some movement of fish between the San Francisco Bay and Adobe and Barron Creeks. However, Central California Coast steelhead, coho salmon, or other anadromous fish do not breed in Adobe and Barron Creeks, and the aquatic habitat within the BSA is too shallow to provide suitable habitat for such species. Further, no project work is proposed within aquatic habitat, and the project will not introduce new barriers or exacerbate any existing barriers to anadromous fish movement.

2.1.8. NATIONAL INVASIVE SPECIES COUNCIL

On 3 Feb 1999, Executive Order 13112 was signed establishing the National Invasive Species Council. Executive Order 13112 directs federal agencies to use relevant programs and authorities to:

- prevent the introduction of invasive species;
- detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner;
- monitor invasive species populations accurately and reliably;
- provide for restoration of native species and habitat conditions in ecosystems that have been invaded;
- conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species;
- promote public education on invasive species and the means to address them; and
- not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Project Applicability: Within the BSA, the ruderal habitat above top-of-bank of Adobe Creek supports a mix of common, non-native, weedy species such as fennel (*Foeniculum vulgare*), poison hemlock (*Conium maculatum*), and black mustard (*Brassica nigra*). Several non-native, invasive species occur on the site in the riparian habitat and include blue gum (*Eucalyptus globulus*), pampas grass (*Cortaderia selloana*), and bristly ox-tongue (*Picris echioides*). The project is not expected to result in a substantial increase in invasive species within the BSA due to the limited grading involved in undeveloped habitats. However, some grading will occur in grassland habitats in the Palo Alto Flood Control Basin and adjacent to the riparian habitat along Adobe Creek. Therefore, care will be taken to limit the effects of site disturbance. All areas disturbed by vegetation removal, grading, construction access, and bridge construction will be seeded with a native seed mixture that will help prevent erosion and also will increase the amount of native species within the herbaceous layer of the existing habitats.

2.1.9. EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS 1977

Executive Order 11990, dated May 24, 1977, “Protection of Wetlands”, establishes a national policy “to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.” The order further provides that each agency shall provide leadership to minimize the

destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for: (1) acquiring, managing, and disposing of federal lands and facilities, (2) providing federally undertaken, financed, or assisted construction and improvements, and (3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Project Applicability: No wetlands occur within the BSA.

2.1.10. MCATEER-PETRIS ACT

The McAteer-Petris Act, enacted on September 17, 1965, serves as a legal provision under California state law to preserve San Francisco Bay from indiscriminate filling. The act initially established the San Francisco Bay Conservation and Development Commission (BCDC) as a temporary state agency charged with preparing a plan for the long-term use of the San Francisco Bay. In August 1969, the McAteer-Petris Act was amended to make BCDC a permanent agency and to incorporate the policies of the Bay Plan into state law. BCDC jurisdiction in the San Francisco Bay Area extends over the San Francisco Bay, up to the mean high tide line and to 5 ft above mean sea level in marshes; and over a 100-ft shoreline band inland from the line of mean high tide or the line 5 ft above mean sea level adjacent to marshes. BCDC is responsible for enforcing the McAteer-Petris Act, which requires that "maximum feasible public access, consistent with a project be included as part of each project to be approved by the BCDC."

Project Applicability: The project site is more than 7,000 ft from the San Francisco Bay and is therefore outside of the BCDC jurisdictional limits.

2.1.11. EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT

Executive Order 11988, dated May 24, 1977, "Floodplain Management", establishes a national policy "to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." The order further provides that each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out the agency's responsibilities for: (1) acquiring, managing, and disposing of federal lands and facilities, (2) providing federally undertaken, financed, or assisted construction and improvements, and (3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. Executive Order 11988 applies to federally funded projects occurring within the 100-year floodplain or critical actions within

the 500-year floodplain. “Critical actions” are defined as activities for which even a slight chance of flooding is too great a risk.

Project Applicability: The proposed project will not result in the substantial or adverse modification of any floodplain. Similarly, the project does not directly or indirectly support further development within this floodplain.

2.1.12. RIVERS AND HARBORS ACT

Section 10 of the Rivers and Harbors Act (1899) 33 U.S.C. 403 states:

“That the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or enclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same.”

Under Section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and excavation or fill within navigable or tidal waters requires the approval of the Chief of Engineers. Service concerns include contaminated sediments associated with dredge or fill projects in navigable waters. The USACE has the authority to issue permits for the discharge of refuse matter into or affecting navigable waters under section 13 of the 1899 Act (33 U.S.C. 407; 30 Stat. 1152).

The Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; 48 Stat. 401), as amended, provides authority for the USFWS to review and comment on the effects, on fish and wildlife, of activities proposed to be undertaken or permitted by the USACE.

Project Applicability: Navigable waters do not occur within Adobe Creek; therefore, the BSA does not contain Section 10 jurisdictional habitats.

2.1.13. CITY OF PALO ALTO TREE PRESERVATION ORDINANCE

The City of Palo Alto’s Tree Preservation Ordinance has several stipulations regarding protected trees, requiring permits for their removal or when trimming more than 25% of

the canopy of any regulated trees (Title 8, Palo Alto Municipal Code). Regulated trees can fall under three broad categories: public trees, protected public and private trees, and designated public and private trees. Trees subject to regulation ("protected trees") under the ordinance include all coast live oaks (*Quercus agrifolia*) and valley oaks (*Quercus lobata*) with at least an 11.5-inch trunk diameter or more at 54 inches above the natural grade, and all coast redwoods (*Sequoia sempervirens*) with at least a 16 inch or more trunk diameter at 54 inches above the natural grade. Heritage trees are individual trees of any size or species or historical significance that are deemed as such by City Council. Additionally, this ordinance also requires that project plans be submitted to include accurate information on the trunk diameter and location, and accurate drip line locations of all oaks and redwoods. Project impacts affecting areas under the drip line of these trees requires an arborist's assessment and conservation measures to be submitted with project plans.

Project Applicability: All trees within the BSA appear to fall outside Caltrans' right of way and are thus under the Sphere of Influence of the City of Palo Alto. Some of the trees located in this portion of the BSA may meet the definition of a "protected" tree, as defined by the City ordinance, which depends on tree size and species. As described above, all coast live oaks are considered "protected trees" under the ordinance and several such trees were observed within the project's BSA. Every effort will be made to minimize impacts to protected trees and the ordinance requirements will be applied to the project should any protected trees ultimately be affected, which provides protective measures.

2.2. Studies Required

For the purpose of characterizing potential impacts of the project on biological resources, a BSA was defined that includes all potential areas where temporary and permanent project impacts will occur (i.e., the Area of Potential Impacts; Figure 2). In addition, the BSA was expanded to include a larger upland area within the Palo Alto Flood Control Basin to show adjacent sensitive habitats that are avoided by the project, and wetlands within the Flood Control Basin outside, and west/northwest of, the BSA were mapped to assist project designers in avoiding impacts to those wetlands. For the purpose of this document, "project vicinity" will be used to describe the wider area that includes the BSA and a surrounding approximately 5-mi radius.

2.2.1. SURVEY AND MAPPING METHODS

An ESA biologist conducted a reconnaissance-level survey of the BSA on August 1, 2012, and H. T. Harvey & Associates biologists conducted reconnaissance-level surveys of the BSA on November 18 and 21, 2013, and December 13, 2016. Site visits for the technical wetland delineation were conducted by H. T. Harvey & Associates biologists on November 21, December 11, December 16, 2013, and January 8, 2014.. The purpose of

these surveys is to describe biotic habitats, delineate jurisdictional habitats, identify plants and animals found or likely found on the site, and survey for suitable habitats for special-status plant and animal species.

During ESA's survey, vegetation communities and wildlife habitats were mapped in the field using high-resolution (1 inch = 200 ft) aerial photographs. Potential wetland boundaries were field-verified and all habitat types encountered were drawn by hand on the aerials in the field. All plants and aquatic vegetation that were encountered were noted in the field and identified to a taxonomic level sufficient to determine their rarity and characterize the BSA.

During H. T. Harvey & Associates' surveys, all biotic habitats within the BSA were mapped onto an aerial photograph base (Figure 3). Where appropriate, plant communities are identified according to Holland's system of classification (1986) or Sawyer et al. (2009). Habitat acreages are calculated for all habitat types within the BSA using on-site mapping with an iPad or submeter Trimble, as well as computer-aided design mapping and geographic information systems. Habitats may be considered to be sensitive if they are limited in distribution, are regulated (e.g., by the CWA), or provide habitat for a sensitive species in this region. Reconnaissance-level surveys, including the wetland technical assessment (WTA), are deemed adequate to assess the effects of the project on biological resources, including sensitive habitats, for the purposes of this NES.

2.2.2. RESOURCES REVIEWED

Prior to conducting reconnaissance-level surveys, ESA and H. T. Harvey & Associates biologists collected and reviewed information concerning threatened, endangered, or other special-status species or habitats of concern from several sources. These sources included RareFind data (California Natural Diversity Database [CNDDB] 2016) for the *Mountain View* U.S. Geological Survey (USGS) 7.5-minute quadrangle map in which the BSA occurs, associated California Wildlife Habitat Relationships information, and miscellaneous information available through the USFWS, the CDFW, and technical publications.

Habitat Impacts	Temporary (ac)	Permanent (ac)
Developed	0.27	1.79
Ruderal Grassland	0.74	0.17
TOTAL	**1.01**	**1.96**

LEGEND

- Biological Study Area (7.78 ac)
- Proposed Pedestrian/Bicycle Overcrossing Alignment
- Permanent Impacts
- Temporary Impacts (Including Staging/Access)
- Salt Marsh Harvest Mouse Barrier

Biotic Habitats/Land Uses

- Diked Brackish Marsh
- Developed/Landscaped (6.50 ac)
- Ruderal Grassland (1.04 ac)
- Aquatic (Under Roadway) (0.29 ac)
- Riparian Eucalyptus Woodland (0.24 ac)

N:\Projects3500\3538-01\02\Reports\NES\Fig 3 Biotic Habitats and Impacts Map.mxd

Figure 3: Biotic Habitats and Impacts Map

City of Palo Alto Highway 101 Overpass and Reach Trail at Adobe Creek Project (3538-02)

February 2017

2.2.2.1. California Environmental Quality Act

Section 15380(b) of the CEQA Guidelines provides that a species not listed on the federal or state lists of protected species may be considered rare if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in the FESA and CESA and the section of the state Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a substantial effect on a species that has not yet been listed by either the USFWS or the CDFW or species that are locally or regionally rare.

The CDFW has produced three lists (amphibians and reptiles, birds, and mammals) of "species of special concern" that serve as "watch lists." Species on these lists either are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. Thus, their populations should be monitored. They may receive special attention during environmental review as potential rare species, but do not have specific statutory protection.

All potentially rare or sensitive species, or habitats capable of supporting rare species, are considered for environmental review in this NES as per CEQA §15380(b) (see Chapters 3 and 4).

2.2.2.2. USFWS Species list

H. T. Harvey & Associates biologists generated updated lists of federally threatened and endangered species potentially occurring in the BSA via the USFWS Sacramento Fish & Wildlife Office website on December 22, 2016 (Appendix A).

2.2.2.3. California Native Plant Society

The California Native Plant Society (CNPS), a non-governmental conservation organization, has developed the California Rare Plant Rank (CRPR), a ranked list of plant species of concern in California. Vascular plants included on these lists are defined as follows:

- CRPR 1A—Plants presumed extirpated in California and either rare or extinct elsewhere.
- CPRR 1B—Plants rare, threatened, or endangered in California and elsewhere.
- CRPR 2A—Plants presumed extirpated in California, but more common elsewhere.
- CRPR 2B—Plants rare, threatened, or endangered in California, but more common elsewhere.

- CRPR 3—Plants about which more information is needed – a review list.
- CRPR 4—Plants of limited distribution – a watch list.

These CNPS listings are further described by the following threat rank extensions:

- 0.1—seriously threatened in California.
- 0.2—moderately threatened in California.
- 0.3—not very threatened in California.

Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing on CNPS lists are, in general, considered to meet CEQA's §15380 criteria (see Section 2.2.2.1 above) and adverse effects on these species may be considered substantial.

The CNPS *Online Inventory of Rare Plants* (CNPS 2016) supplied information regarding the distribution and habitats of vascular plants in the CRPR 1A, 1B, 2A, 2B and 3 in the *Mountain View*, *California* USGS 7.5-minute quadrangle, and the eight surrounding quadrangles. Quadrangle-level records are not maintained for CRPR 4 species, so the *Inventory* records for CRPR 4 species occurring in Santa Clara County were also consulted. Additional information on special-status plant species and their distribution within the area were obtained from *The Jepson Manual, Second Edition* (Baldwin et al. 2012).

All CNPS lists and applicable records were consulted to determine the probability of occurrence for all special-status plant species within the project BSA. These lists were combined with the USFWS lists from the BSA and the CNDDB records from within the nine-quadrangle area to create an initial list of species to consider for occurrence within the BSA.

2.3. Personnel and Survey Dates

This NES was prepared by the following personnel at H. T. Harvey & Associates:

- Steve Rottenborn, Ph.D., Principal-in-charge, Senior Wildlife Ecologist
- Patrick Boursier, Ph.D., Division Head, Senior Plant Ecologist
- Howard Shellhammer, Ph.D., Senior Associate Wildlife Ecologist and salt marsh harvest mouse expert
- Julie Klingmann, M.S., Associate, Senior Wildlife Ecologist
- Melissa Newman, M.S., Project Manager, Senior Wildlife Ecologist

- Robin Carle, M.S., Project Manager, Senior Wildlife Ecologist
- Élan Alford, Ph.D., Senior Plant Ecologist

2.3.1. RECONNAISSANCE-LEVEL SURVEYS

ESA biologist M. Giolli conducted a reconnaissance-level field survey of the BSA on August 1, 2012; H. T. Harvey & Associates wildlife ecologists H. Shellhammer, Ph.D., M. Newman, M.S., and R. Carle, M.S., conducted a reconnaissance-level assessment of the BSA on November 21, 2013; H. T. Harvey & Associates plant ecologist É. Alford, Ph.D., conducted a reconnaissance-level assessment of the BSA on November 18 and 21, 2013; and H. T. Harvey & Associates senior wildlife ecologist S. Rottenborn, Ph.D. conducted a brief follow-up site visit on December 13, 2016, to check existing conditions. The purpose of these surveys is to: (1) assess existing biotic habitats, (2) assess the area for its potential to support special-status species and their habitats, (3) identify potential jurisdictional habitats, including waters of the U.S., and (4) provide information for the initial (ESA) and revised (H. T. Harvey & Associates) project impact assessments.

During the November 18 and 21, 2013, surveys H. T. Harvey & Associates biologists conducted focused surveys throughout the BSA for Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), suitable salt marsh harvest mouse habitat (i.e., pickleweed [*Salicornia* sp.]), burrowing owls (*Athene cunicularia*) and suitable burrowing owl habitat (i.e., burrows of suitable size in low vegetation), bats and suitable roosting habitat for bats, San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) nests, and evidence of active or historical raptor and Ardeid (i.e., herons and egrets) nests.

In addition, for the prior US 101 Auxiliary Lanes Project, (State Route 85 to Embarcadero Road), which overlaps this project at Adobe Creek, H. T. Harvey & Associates senior fisheries specialist Sharon Kramer, Ph.D., inspected the site on September 12, 2007, to assess the potential for anadromous fish to occur in Adobe Creek within the BSA (H. T. Harvey & Associates 2008). H. T. Harvey & Associates bat specialist, Dave Johnston, Ph.D., surveyed the bridges over Adobe Creek within the BSA for suitable roosting habitat for bats and signs of bat use on August 22, 2007, and deployed an Anabat recorder (a device used to detect bat call sequences) on November 8, 2007, to further investigate bat use of these bridges (H. T. Harvey & Associates 2008). In consultation with Caltrans, it was subsequently determined bats were not using Adobe Creek Bridge (H. T. Harvey & Associates 2014). H. T. Harvey & Associates herpetologist Steve Carpenter, B.S., conducted reconnaissance-level surveys for herpetofauna on October 25, 2007.

2.3.2. WETLAND TECHNICAL ASSESSMENT AND RIPARIAN HABITAT SURVEY

É. Alford performed a formal WTA using the methods prescribed in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008) from November 21, 2013, to January 8, 2014. Brian Cleary, M.S., assisted with the WTA on December 11, 2013. The extent of riparian habitats within the BSA was determined following guidance provided by the CDFW (California Department of Fish and Game [CDFG] 1994).

2.3.3. TREE SURVEY

A tree survey report was written based on the June 2013 Tree Inventory compiled by Walter Passmore, Urban Forester for the City of Palo Alto, and data for trees located in the Tree Survey Area that were obtained in 2010 as part of the City of Palo Alto's TreeKeeper inventory management program (Appendix B). These inventories were supplemented by observations made during a site visit by W. Passmore and H. T. Harvey & Associates arborist Laurel Kelly on November 5, 2013.

2.4. Agency Coordination and Professional Contacts

On October 10, 2012, ESA contacted BCDC staff and confirmed that the project's BSA lies outside of BCDC jurisdiction. As such, no further consultation with the BCDC is required.

H. T. Harvey & Associates generated a list of special-status species potentially occurring in the BSA via the internet (http://www.fws.gov/sacramento/es/spp_list.htm) from the Sacramento USFWS office on December 22, 2016 (Appendix A).

A WTA was conducted for USACE-jurisdictional wetlands and waters within natural areas of the BSA, the results of which were summarized in a memorandum to the USACE, dated April 25, 2014 (H. T. Harvey & Associates 2014). Bryan Matsumoto of the USACE conducted a site visit with Caltrans biologist Gregory Pera on April 22, 2016, to review the delineation. The delineation map was then revised per USACE comments and provided to the USACE (the delineation map in Figure 6 of Appendix D reflects the revised/updated mapping).

Santa Clara Valley Transportation Authority (SCVTA) senior environmental planner Ann Calnan corresponded via email with Joseph Terry of the USFWS and Darren Howe of NMFS on September 20, 2013, regarding potential biological issues for the proposed project. Joseph Terry expressed concern about "any new trails constructed within or near habitat for the California Ridgway's rail and salt marsh harvest mouse or areas identified within the Tidal Marsh Recovery Plan (USFWS 2013) as future tidal marsh/marsh ecotone restoration areas" (Terry, pers. comm. 2013). Darren Howe stated

that, in Santa Clara County, Adobe and Barron Creeks do not support Central California Coast steelhead or critical habitat. Mr. Howe also stated that, because the project avoids work in tidal waters, it will not affect green sturgeon or their critical habitat (Howe, pers. comm. 2013).

On March 6, 2014, H. T. Harvey & Associates senior wildlife ecologists Steve Rottenborn and Julie Klingmann met with City of Palo Alto personnel, Caltrans personnel, Ann Calnan of the SCVTA, Melissa Escaron of the CDFW, Derek Beauduy of the RWQCB, Joel Casagrande of the NMFS, and Jerry Roe of the USFWS at the site to review site conditions and discuss potential biological issues for the proposed project.

2.5. Limitations That May Influence Results

Focused or presence/absence protocol-level surveys were not conducted for the majority of special-status plant and wildlife species with potential to occur in the project vicinity (exceptions are indicated in Section 2.3.1 above). Focused surveys or surveys during particular seasons are not deemed necessary for the majority of special-status species given the particular species involved and project-specific conditions. For some species, such as the salt marsh harvest mouse and western pond turtle (*Actinemys marmorata*), inferring presence in the project vicinity is reasonable given the species' known or potential occurrence in the site vicinity and potential for dispersal onto the site. For these species, which may occur only infrequently and irregularly, focused surveys are not deemed appropriate because a negative finding will not necessarily guarantee that the species will not be present during project construction. For other species, such as the California red-legged frog and Central California Coast steelhead, assessment of habitat conditions and occurrence records in the region is adequate to determine that the species are absent. In either case (i.e., whether inferring presence based on available information or determining absence based on the lack of suitable habitat), information obtained during more focused surveys or at a time of year more conducive for detecting the species would not have altered the determinations regarding potential presence or absence of these species. This methodology is consistent with the generally accepted standards for the preparation of an NES in that it may recommend further focused surveys to determine presence/absence of species with potential to be present.

Chapter 3 – Results: Environmental Setting

3.1. Description of the Existing Biological and Physical Conditions

3.1.1. BIOLOGICAL STUDY AREA

The BSA is located in the USGS *Mountain View* 7.5-minute quadrangle in the easternmost portion of the City of Palo Alto in Santa Clara County (Figure 1). The 7.78-acre (ac) BSA encompasses all potential areas and features expected to be temporarily or permanently affected by the project, as well as some adjacent areas (Figure 2). These include staging areas, bridge ramp and column locations, the new trail segment over US 101, and the Adobe Creek Reach Trail west of US 101.

The BSA lies along the boundary of dense commercial development and open, more natural areas associated with the Palo Alto Flood Control Basin and the Baylands. Commercial and residential development lie to the west, south, and east, and extensive open marsh habitat lies to the north. The BSA includes both developed and natural areas, including portions of Adobe Creek, US 101, East and West Bayshore Roads, and the Flood Control Basin. East Bayshore Road, West Bayshore Road, and US 101 bisect the BSA from northwest to southeast. Adobe Creek flows downstream to the northeast through the BSA under US 101 within a concrete-lined channel. Outside the BSA, waters from Adobe Creek join waters from Mayfield Slough within the Palo Alto Flood Control Basin, and eventually flow to the San Francisco Bay via a tidal gate. The portion of the BSA that lies north of US 101 and East Bayshore Road includes a ruderal area and riparian area that are part of the Baylands, which contains diked brackish marsh habitat adjacent to, but outside of the BSA.

3.1.2. PHYSICAL CONDITIONS

The BSA is located on lands adjacent to the South San Francisco Bay. BSA elevation ranges from approximately 0 to 13 ft above sea level. Soils in the BSA are mapped as Urbanland-Hangerone complex, 0 to 2 percent slopes, drained; Urbanland-Embarcadero complex, 0 to 2 percent slopes, drained; and Novato clay, 0 to 1 percent slopes, protected (Natural Resources Conservation Service 2016).

The BSA includes Adobe Creek immediately east of its confluence with Barron Creek. Both Adobe and Barron Creeks flow through the residential, commercial, and industrial areas of the town of Los Altos Hills and the cities of Los Altos, Mountain View, and Palo Alto before they converge at US 101 and flow into the San Francisco Bay Estuary system. Adobe Creek originates on the northeasterly slopes of the Santa Cruz Mountain Range near Monte Bello Ridge. Adobe Creek is a natural stream from its headwaters down to the Adobe Bypass near Interstate 280. Between Interstate 280 and its

confluence with Barron Creek, Adobe Creek varies between semi-natural and hardened modifications. East of this confluence, waters from the creek join waters from Mayfield Slough in the Palo Alto Flood Control Basin, eventually flowing through a tidal gate into San Francisco Bay.

Barron Creek originates in the Los Altos Hills and is a somewhat natural creek channel between its headwaters and Foothill Expressway. East of Foothill Expressway nearly the entire length of the creek channel is concrete bottom, except as it nears the confluence with Adobe Creek where the creek bed and banks are earthen, at the confluence the bed and banks are concrete-lined once again.

The creek segments within the BSA are engineered channels and are actively maintained for flood control purposes. The portion of Adobe Creek within the BSA, at the crossing under US 101, is a concrete lined trapezoidal channel.

Elevations within the BSA range from 0 ft within the channelized portions of Adobe Creek to 13 ft where US 101 crosses over Adobe Creek (Google Inc. 2016). Based on information from the Palo Alto, CA (046646) weather station (Western Regional Climate Center 2016), which is located approximately 2.1 mi northwest of the BSA, the local area has a mean annual temperature of 58.5 degrees Fahrenheit and a mean annual precipitation of 16.15 inches based on 1981-2010 monthly normals.

The National Wetlands Inventory classification system developed by the USFWS identifies one wetland feature within the Baylands (estuarine, intertidal, unconsolidated shore, regularly exposed) and one aquatic feature at Adobe Creek (riverine, lower perennial, unconcolidated bottom, permanently flooded, excavated) within the BSA (National Wetlands Inventory 1976). However, it should be noted that National Wetlands Inventory classifications and mapping do not correspond to jurisdictional wetlands and other waters as defined under the CWA.

3.1.3. BIOLOGICAL CONDITIONS IN THE BIOLOGICAL STUDY AREA

H. T. Harvey & Associates mapped all biotic habitats within the BSA onto an aerial photograph during field surveys (Figure 3). Where appropriate, plant communities are named according to Holland's system of classification (1986) and Sawyer et al. (2009). Habitat acreages are calculated for all habitat types within the BSA. Four biotic habitats are identified within the approximately 7.78-ac BSA: developed/ landscaped, ruderal grassland, aquatic, and riparian eucalyptus woodland. Table 1 provides the approximate acreage of each habitat and land use type within the BSA. Appendix C provides a list of all plant species identified within or directly adjacent to the BSA. Invasive species present in the BSA are discussed in Section 5.6.

Table 1: Biotic Habitat/Land Use Acreages within the BSA.

Biotic Habitat/Land Use	Total Area (ac)
Developed/Landscaped	6.50
Ruderal Grassland	1.04
Aquatic (most under developed areas)	0.29
Riparian Eucalyptus Woodland	0.24
Total Area	7.78*

* The total BSA acreage is less than the sum of the acreages of individual habitat types because all "aquatic" habitat is located underneath the developed/landscaped areas of US 101.

3.1.3.1. Developed/Landscaped

Vegetation. Upland portions of the BSA are mostly developed and consist of concrete or asphalt hardscape (i.e., bike trails, sidewalks, parking lots, frontage roads, and US 101), and defined landscaped areas in the parking lots, rights of way, and sidewalks. These urbanized areas do not lend themselves to characterization by established vegetation classification systems (e.g., Holland), and are identified as developed habitat in this report. Vegetation within these areas is limited to landscaping plants or roadside grasses and weeds. Several installed trees occur along the roadside edges and parking lots include eucalyptus, Monterey pine (*Pinus radiata*), and coast live oak.

Photo 1: Developed/Landscaped Habitat

Wildlife. Developed areas provide relatively little habitat value for most wildlife species; however, bridges can provide important nesting sites for birds and roosting sites for bats. Staining indicative of bat use was detected during a daytime survey of the Adobe Creek bridge in 2007, although no suitable day-roosting habitat was present on this bridge or the East and West Bayshore Road bridges. A subsequent nocturnal acoustic survey detected five Yuma myotis (*Myotis yumanensis*) foraging under the Adobe Creek bridge (H. T. Harvey & Associates 2008), and H. T. Harvey & Associates biologists determined that the Adobe Creek bridge supports night-roosting habitat for bats. Other commonly occurring bat species, such as the big brown bat (*Eptesicus fuscus*) and the long-eared myotis (*Myotis evotis*), may also night roost on the Adobe Creek bridge. No special-status bats were detected or are expected to use the Adobe Creek bridge due to the

urban nature of the project area (e.g., the pallid bat [*Antrozous pallidus*] has been extirpated from the urban Santa Clara Valley floor, and Townsend's big-eared bat [*Corynorhinus townsendii*] is absent from this area owing to the absence of cavernous roosting sites).

Several barn swallows (*Hirundo rustica*) and cliff swallows were observed in the vicinity of the Adobe Creek bridge in the spring of 2007, and 100 active cliff swallow nests were observed under the Adobe Creek pedestrian bridge (H. T. Harvey & Associates 2008). In addition, there were six cliff swallow nests under the East Bayshore Frontage Road bridge and four cliff swallow nests under the US 101 bridge (northbound direction). A black phoebe (*Sayornis nigricans*) nest was also observed under the West Bayshore Frontage Road bridge at Adobe Creek in spring of 2008 (H. T. Harvey & Associates 2008).

Additional wildlife that can occur in developed portions of the BSA include species that are typically accustomed to urban environments and high levels of disturbance from human activities, including native gulls (*Larus* sp.) and house finches (*Haemorhous mexicanus*) and non-native European starlings (*Sturnus vulgaris*) and rock pigeons (*Columba livia*). Two rock pigeons were observed building nests under the Adobe Creek bridge during the 2008 surveys (H. T. Harvey & Associates 2008). Additional bird species, such as American robins (*Turdus migratorius*), American crows (*Corvus brachyrhynchos*), and lesser goldfinches (*Spinus psaltria*) may utilize trees or other vegetation within landscaped areas for nesting. Mammals such as the house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*) and raccoon (*Procyon lotor*) can also occur in developed portions of the BSA.

3.1.3.2. Ruderal Grassland

Vegetation. The ruderal area within the BSA occurs in the northeastern portion of the BSA that intersects with the Baylands. Within this area, the dominant vegetation comprises approximately 5 to 7-ft tall, short-lived, weedy, herbaceous species including black mustard, poison hemlock, and fennel, which thrive in the saline and brackish soil conditions, and includes smilo grass (*Stipa miliacea*), Italian ryegrass (*Festuca perennis*), foxtail barley (*Hordeum jubatum* ssp. *jubatum*) and ripgut brome (*Bromus diandrus*). This ruderal community occurs within the upland edge of a larger, more complex, salt and brackish marsh community of the Baylands to the northeast. The ruderal area lacks the diversity of native wetland plants present in the adjacent marsh and closely matches both the upland mustard stands and the poison hemlock or fennel patches vegetation types described in the Manual of California Vegetation (Sawyer et al. 2009). No low-growing herbaceous cover is present in this habitat; aside from the comparatively large-diameter stems of the black mustard, poison hemlock, and fennel that dominate this area, the ground cover is relatively sparse. Although most of the area

is not regularly maintained by mowing, some mowing occurs along the Bay trail, and the vegetation in much of the ruderal grassland habitat was cut in spring or summer of 2016.

Photo 2: Ruderal Grassland Habitat

Wildlife. The wildlife community inhabiting the ruderal grassland habitat within the BSA is influenced by the presence of both adjacent development (e.g., US 101 and commercial businesses) and natural areas within the Flood Control Basin. Adjacent roads, highways, and businesses are sources of high levels of human disturbance, which discourage the presence of wildlife species that do not tolerate such disturbance. In contrast, the Flood Control Basin supports many native species associated with large areas of marsh habitat, including special-status species. Thus, while the ruderal grassland habitat in the BSA is not extensive or of high quality, it has the potential to support wildlife species that are both adapted to urban areas and associated with large marsh and aquatic habitats nearby.

The tall ruderal vegetation present throughout the majority of this habitat precludes the presence of wildlife species that are associated with shorter grassland vegetation. For instance, burrowing owls will roost and forage in areas of shorter grasslands in the region (e.g., at Byxbee and Shoreline Parks), but are not expected to roost or forage in the BSA due to the tall height of the vegetation. Smaller avian species such as the house finch, lesser goldfinch, golden-crowned sparrow (*Zonotrichia atricapilla*), and white-crowned sparrow (*Zonotrichia leucophrys*) are likely to forage in this tall vegetation. Avian species associated with the adjacent riparian eucalyptus woodland, such as the chestnut-backed chickadee (*Poecile rufescens*), bushtit (*Psaltriparus minimus*), and yellow-rumped warbler (*Setophaga coronata*), are also likely to forage in this ruderal vegetation occasionally due to its close proximity to riparian habitat. Common nesting species in the ruderal grassland vegetation in the BSA are the red-winged blackbird (*Agelaius phoeniceus*) and song sparrow (*Melospiza melodia*).

Amphibian species associated with the adjacent riparian and aquatic habitats, such as the Sierran chorus frog (*Pseudacris sierra*), could potentially occur within the ruderal

grassland habitat in the BSA. Common reptiles such as the western terrestrial garter snake (*Thamnophis elegans*), gopher snake (*Pituophis catenifer*), and western fence lizard (*Sceloporus occidentalis*) are likely to occur in this area.

During the November 2013 and December 2016 reconnaissance-level survey, H. T. Harvey & Associates biologists walked all areas of the BSA and determined that burrows of California ground squirrels (*Spermophilus beecheyi*) are absent. California ground squirrels are typically associated with areas of shorter vegetation, and the tall ruderal vegetation within the BSA as well as the lack of adjacent populations of ground squirrels preclude the presence of this species. Common mammal species that could potentially occur in this ruderal habitat include striped skunks (*Mephitis mephitis*), gray foxes (*Urocyon cinereoargenteus*), California voles (*Microtus californicus*), and Botta's pocket gophers (*Thomomys bottae*). Small mammals that rely on herbaceous ground cover, such as the California mouse (*Peromyscus californicus*), are unlikely to occur in this habitat due to the dominance of tall vegetation and lack of herbaceous ground cover throughout the BSA. Bats, such as the Yuma myotis and Brazilian free-tailed bat (*Tadarida brasiliensis*), will forage aerially over this habitat.

3.1.3.3. Riparian Eucalyptus Woodland

Vegetation. A riparian corridor occurs within the northeastern portion of the BSA along Adobe Creek, north of US 101. Riparian communities often dominate fine-grained sand and gravel bars with a high water table and are distributed along and at the mouths of most perennial and many intermittent streams in the Bay Area. As opposed to typical native riparian communities, the riparian community within the BSA is dominated by the non-native eucalyptus species. These trees are approximately 30- to 50-ft tall. Volatile chemicals contained in the bark and leaf litter that is deposited by eucalyptus creates poor growing conditions for the natural riparian community and may suppress the germination of native seeds. Tall trees within the riparian eucalyptus woodland create a closed canopy that casts shade below onto the understory. Some native species such as common reed (*Phragmites australis*) and

Photo 3: Riparian Eucalyptus Woodland Habitat

coyote brush (*Baccharis pilularis*) are present within the BSA at the edges of riparian woodland in the lower canopy and understory. This habitat closely resembles the eucalyptus groves described in the California Manual of Vegetation (Sawyer et al. 2009).

Wildlife. As described for ruderal grassland habitat above, the wildlife community within the riparian eucalyptus woodland habitat in the BSA is influenced by the proximity of this habitat to both extensive urbanization and marsh habitat in the Palo Alto Flood Control Basin. Thus, this wildlife community includes species that are both adapted to urban areas and associated with expansive natural marsh habitats.

Riparian habitats in California generally support exceptionally rich animal communities and contribute disproportionately to landscape-level species diversity. However, the riparian habitat within the BSA is of relatively low quality because it is composed primarily of introduced tree species (e.g., eucalyptus) and understory species (e.g., giant reed). The riparian vegetation in this habitat is relatively dense, the understory is composed of common reed, and the paucity of native trees limits the likelihood that native riparian-obligate wildlife species will occur here. Nevertheless, a number of riparian wildlife species occur in this woodland.

Reptiles such as the western terrestrial garter snake, western fence lizard, and gopher snake that occur mainly in adjacent ruderal and marsh habitats will forage in the riparian woodland. No old nests of raptors, egrets, or herons were observed during the reconnaissance-level surveys, but several old nests of non-native squirrels (i.e., eastern tree squirrels (*Sciurus carolinensis*), which were observed in nearby landscaped areas) were present. Black-crowned night herons (*Nycticorax nycticorax*) are known to roost in the riparian habitat along Adobe Creek approximately 0.25 mi downstream from the BSA (Shani Kleinhaus, pers. comm. 2012). The mature eucalyptus trees provide potential nesting habitat for several species of raptors, including the red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperi*), and white-tailed kite (*Elanus leucurus*). Many other common bird species may nest in this riparian habitat, including the mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), California scrub-jay (*Aphelocoma californica*), Bewick's wren (*Thryomanes bewickii*), and house finches. Migrating birds such as yellow-rumped warblers, yellow warblers (*Setophaga petechia*), and Pacific-slope flycatchers (*Empidonax difficilis*) forage in this woodland habitat.

Urban-adapted mammals such as the raccoon, non-native Virginia opossum (*Didelphis virginiana*), and striped skunk are common in riparian habitats, and are likely to use the riparian eucalyptus woodland within the BSA as foraging habitat. In addition, several species of bats, including the Yuma myotis and Mexican free-tailed bat forage over riparian habitats such as that found in the BSA, and small numbers may roost in small crevices in trees on the project site.

3.1.3.4. Aquatic

Photo 4: Aquatic Habitat in Adobe Creek

Vegetation. The entire reach of Adobe Creek within the BSA is channelized and aligned within a concrete bed and banks. The water within the channel is slow moving and was approximately 1 to 2-ft deep at the time of the surveys. No wetlands occur within the channel. Although sparse hydrophytic vegetation such as tall flat sedge (*Cyperus eragrostis*) and brass buttons (*Cotula coronopifolia*) was present on sediment deposits on top of the concrete channel bottom during surveys from November 2013 to January 2014, spring scouring flows and regular channel maintenance activities conducted by the SCVWD remove much of the channel bottom sediments deposited by stream flows, and no such wetlands were observed during the USACE's wetland delineation site visit in April 2016. The entire associated "riparian habitat" along Adobe Creek as it passes under US 101 consists of concrete channel banks.

Wildlife. Fish surveys conducted by Leidy (1999) in Adobe Creek revealed the presence of native species such as the threespine stickleback (*Gasterosteus aculeatus*), Sacramento sucker (*Catostomus occidentalis*), prickly sculpin (*Cottus asper*), and California roach (*Lavinia symmetricus*), and non-native species such as bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), redear sunfish (*Lepomis microlophus*), carp (*Cyprinus carpio*), and rainwater killifish (*Lucania parva*). During the April 22, 2008, site survey, Adobe Creek at the US 101 bridge crossing was extremely shallow (approximately 1 to 2 ft deep) and stagnant, indicating that this stretch of creek provides sub-optimal habitat for many fish species. In addition, carp were observed at the Adobe Creek bridge crossing during the September 12, 2007, site visit and the resource agency site visit on March 6, 2014. The presence of this species is expected in creeks with shallow water and low dissolved oxygen concentration (indicating low habitat quality for most native species).

Sparse hydrophytic vegetation on sediment deposits on top of the concrete channel bottom in Adobe Creek, when present, could provide cover for native Sierran chorus frogs, which were observed during 2007 reconnaissance-level surveys of the BSA, as well as other aquatic species such as non-native bullfrogs (*Lithobates catesbeianus*).

Waterbirds such as mallards (*Anas platyrhynchos*), great blue herons (*Ardea herodias*), and great egrets (*Egretta alba*) forage in the aquatic habitats in the BSA. Mammals expected to forage in this habitat include the raccoon and the non-native common muskrat (*Ondatra zibethicus*). Bats, such as the Yuma myotis and Brazilian free-tailed bat, will forage aerially over aquatic habitat in Adobe Creek.

Central California Coast steelhead, an anadromous form of rainbow trout, historically inhabited Adobe Creek. However, factors such as channelization, flood control projects, and barriers to fish migration have prevented them from spawning in Adobe Creek in recent history (Leidy et al. 2005). Tidal gates in the northwest corner of the Palo Alto Flood Control Basin previously prevented but now allow the passage of fish between the San Francisco Bay and Adobe and Barron Creeks. However, there are no known runs within Adobe Creek, and the aquatic habitat in the BSA is too shallow and stagnant to provide suitable habitat for Central California Coast steelhead, and this species is not expected to occur in the BSA.

Aquatic wildlife species use Adobe Creek to cross from one side of the freeway to the other. Adobe Creek, in addition to the adjacent existing seasonal underpass trail, also serves as a movement pathway for terrestrial species. Due to the intensive urbanization adjacent to the BSA and heavy traffic volumes along US 101, there is little potential for movement of wildlife across the highway aside from the existing overpasses and the creeks that cross under the highway. Thus, common, urban-adapted species such as raccoons, striped skunks, and the non-native opossum may use the stream channel within and adjacent to the BSA to move from one side of US 101 to the other. The project is not expected to interfere with such movement.

3.2. Regional Species and Habitats of Concern

3.2.1. OVERVIEW AND METHODS

The BSA is located near South San Francisco Bay and its associated marshes, which are considered environmentally sensitive habitats. In general, South San Francisco Bay salt and brackish marshes have been severely impacted by anthropogenic disturbance due to development and land uses such as salt evaporation ponds, landfills, sewage and dredge disposal, flood control projects, and golf courses. Portions of the Palo Alto Flood Control Basin located in the Baylands northeast of the BSA support muted-tidal northern coastal salt marsh habitat containing pickleweed, marsh jaumea (*Jaumea carnosa*), and saltgrass (*Distichlis spicata*). Brackish and freshwater emergent marsh habitats are also abundant in the Palo Alto Flood Control Basin in the Baylands (see Figure 3). Further impacts on these sensitive coastal and wetland habitats are undesirable, and as such, project plans and Best Management Practices (BMPs) have been carefully developed to avoid all direct and indirect impacts on marsh and wetland areas near the BSA (Figure 3).

Habitats may be considered to be sensitive if they are limited in distribution, are regulated (e.g., by the CWA), or provide habitat for a sensitive species in this region. Several special-status species occur only within habitats within or near the coastal zone or in wetland/riparian habitats in this region. To develop a list of species and habitats of concern that may occur in the project region, H. T. Harvey & Associates biologists collected and reviewed information concerning threatened, endangered, or other special-status species or habitats of concern from several sources as described in Section 2.2.2, above.

Special-status plant and wildlife species that occur in the project region are presented in Table 2. Those species for which potential habitat is present in the BSA are noted and are discussed in further detail in Sections 4.2 and 4.3. Natural communities of special concern are discussed in Section 4.1.

3.2.2. SPECIAL-STATUS PLANT SPECIES

The CNPS identifies 48 special-status plant species of Rank 1A, 1B, 2A, 2B, or 3 that occur in at least one of the nine USGS 7.5-minute quadrangles that contain or surround the BSA (CNPS 2016). The CNPS records another 32 special-status species of Rank 4 that occur in Santa Clara County (CNPS 2016). Seventeen of the Rank 4 species are determined to be absent from the BSA for one or more of the following reasons: (1) lack of specific edaphic requirements such as serpentine; (2) other edaphic requirements are not met by the habitats on site; (3) lack of suitable habitat types such as cismontane woodland, chaparral, coastal scrub, and coniferous forest; (4) the elevation range of the species is outside the range of the BSA; or (5) the species is considered extirpated from the county. The remaining 15 special-status species in Rank 4 occur in similar elevations and broad habitat types similar to the project area. These 15 species as well as the 48 Rank 1 – 3 special-status species are addressed for their potential to occur within the BSA (Table 2). CNDDB records of special-status plants within the vicinity of the BSA are shown in Figure 4.

3.2.3. SPECIAL-STATUS ANIMAL SPECIES

H. T. Harvey & Associates biologists evaluated the list of special-status animal species that occur in the region, developed from the resources described in Section 2.2.2, for their potential to occur in the BSA (Table 2). A number of special-status animal species are known to occur in the project region but are not expected to occur in the BSA due to a lack of suitable habitat or because the project site is outside of the known range of the species. These species are included in Table 2 to indicate the rationale for determining their absence from the BSA.

Several other special-status species that occur in the region may occur in the BSA only as uncommon to rare visitors, migrants, or transients, but are not expected to reside or

breed in the BSA, to occur in large numbers, or otherwise to make substantial use of the site. Still other species may breed on the site or are expected to occur in considerable numbers. Species in both of these groups are discussed in further detail in Section 4.3. CNDDB records of special-status animal species within the vicinity of the BSA are shown on Figure 5.

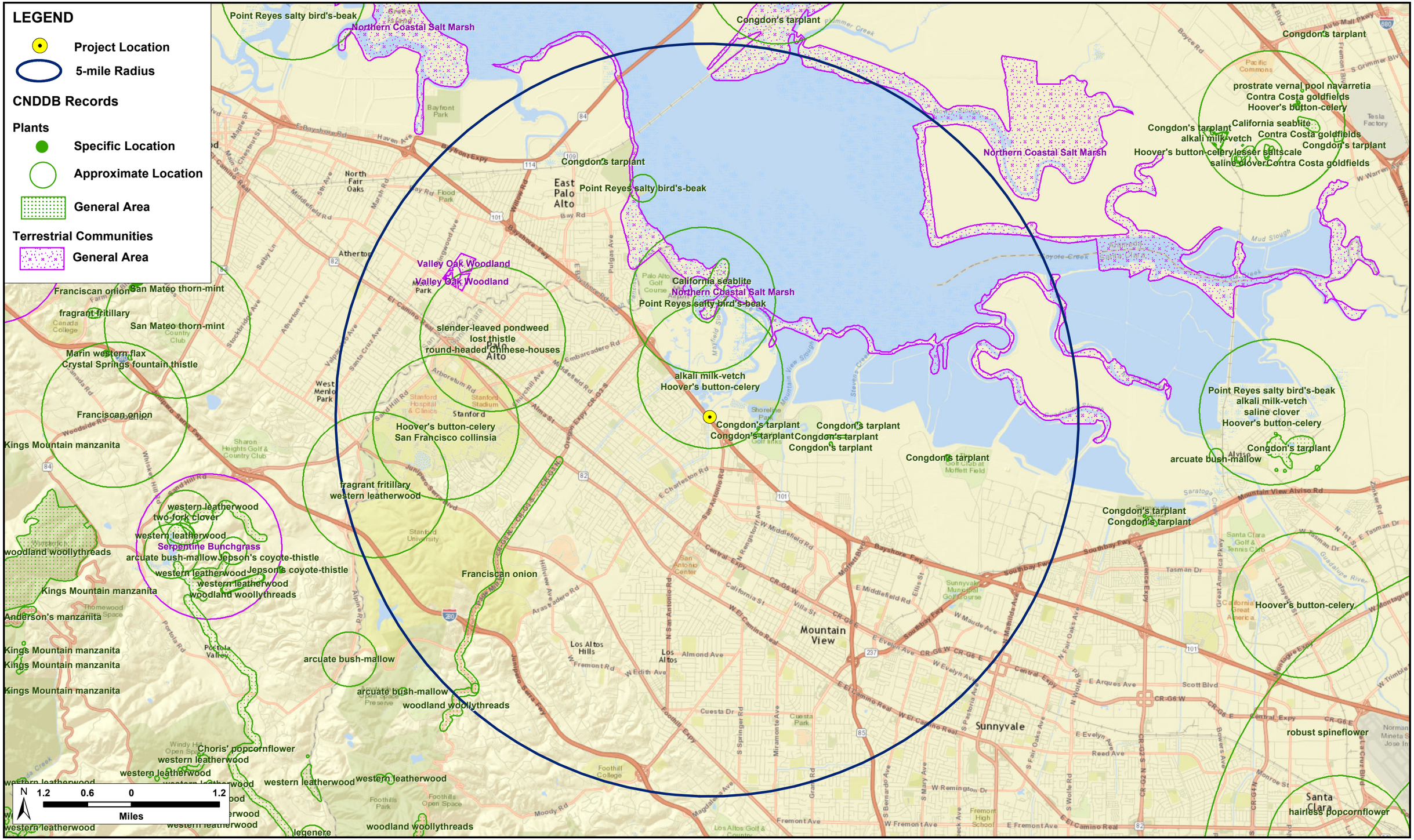

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Figure 4: CNDDB Plant Records

City of Palo Alto Highway 101 Overpass and
Reach Trail at Adobe Creek Project (3538-02)

February 2017

Figure 5: CNDDB Animal Records

City of Palo Alto Highway 101 Overpass and Reach Trail at Adobe Creek Project (3538-02)

February 2017

Table 2: Potential for Special-status Species and Critical Habitat to Occur in the BSA

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Federal or State Endangered, Threatened, or Candidate Species						
San Mateo thorn-mint	*Acanthomintha duttonii*	FE, SE, CRPR 1B.1	Serpentinite areas in Chaparral, valley and foothill grassland.	A	No Effect	The BSA is outside the species' elevation range. Microhabitat and edaphic requirements absent from BSA. Serpentine soils are absent.
Robust spineflower	*Chorizanthe robusta* var. *robusta*	FE, CRPR 1B.1	Very sandy or gravelly maritime chaparral, cismontane woodland openings, coastal dunes and scrub.	A	No Effect	No suitably dry, well-drained, coarse, loose, mineral soils in area; determined to be absent.
Crystal Springs fountain thistle	*Cirsium fontinale* var. *fontinale*	FE, SE, CRPR 1B.1	Serpentinite seeps in chaparral openings, cismontane woodland, or valley and foothill grassland.	A	No Effect	The BSA is outside the species' elevation range. Microhabitat and edaphic requirements absent from BSA. Serpentine soils are absent.
San Mateo woolly sunflower	*Eriophyllum latilobum*	FE, SE, CRPR 1B.1	Cismontane woodland, often serpentinite and roadcuts.	A	No Effect	The BSA is outside the species' elevation range. The appropriate woodland habitat does not occur within the BSA. Microhabitat and edaphic requirements absent from BSA. Serpentine soils are absent.
Marin western flax	*Hesperolinon congestum*	FT, ST, CRPR 1B.1	Serpentinite areas in chaparral or valley and foothill grassland.	A	No Effect	Microhabitat and edaphic requirements absent from BSA. Serpentine soils are absent.
Contra Costa goldfields	*Lasthenia conjugens*	FE, CRPR 1B.1	Mesic, often alkaline cismontane woodland, playas, valley and foothill grassland, vernal pools.	A	No Effect	All known populations in Santa Clara County now extirpated. Marginally suitable habitat within the BSA is highly invaded and disturbed; determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Dudley's lousewort	*Pedicularis dudleyi*	SR, CRPR 1B.2	Maritime chaparral, cismontane woodland, North Coast coniferous forest, or valley and foothill grassland.	A	N/A	The BSA is outside the species' elevation range. Marginally suitable habitat within the BSA is highly invaded and disturbed; determined to be absent.
California seablite	*Suaeda californica*	FE, CRPR 1B.1	Marshes and swamps with coastal salt influences.	A	No Effect	All historical populations in the San Francisco Bay are now extirpated; none of the reintroduced populations are near the BSA. Suitable salt marsh habitat for this species is absent from the BSA.
Two-fork clover	*Trifolium amoenum*	FE, CRPR 1B.1	Coastal bluff scrub and Valley and foothill grassland, sometimes on serpentinite.	A	No Effect	The BSA is outside the species' elevation range. Marginally suitable habitat within the BSA is highly invaded and disturbed; determined to be absent.
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	Ephemeral freshwater and vernal pools in the Central Valley and the San Francisco Bay Area.	A	No Effect	No suitable vernal pool habitat is present in the BSA, and the species is not known to occur in Santa Clara County.
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT	Serpentine grasslands in the San Francisco Bay area where its primary larval host plant (*Plantago erecta*) is present in high densities.	A	No Effect	Suitable serpentine grassland habitat is absent, and the BSA is outside the species' range.
San Bruno elfin butterfly	*Callophrys mossii bayensis*	FE	Steep, north-facing coastal montane slopes where its larval host plant, broadleaf stonecrop (*Sedum spathulifolium*), is present.	A	No Effect	Suitable coastal grassland and scrub habitats are absent, and the BSA is outside the species' range.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Longfin smelt	*Spirinchus thaleichthys*	FC, ST	Spawns in fresh water in the upper end of the San Francisco Bay; occurs year-round in the South Bay.	A	No Effect	Suitable tidal habitat is absent from the BSA.
Delta smelt	*Hypomesus transpacificus*	FT, SE	Shallow, tidal water in the Sacramento/ San Joaquin River Delta.	A	No Effect	Suitable tidal habitat is absent from the BSA, and the site is outside the species' range.
Central California Coast steelhead	*Oncorhynchus mykiss*	FT	Occurs in drainages of the San Francisco and San Pablo Bays, as well as in central California coastal rivers. Spawns and rears in cool streams that reach the ocean and that have shallow, partially shaded pools, riffles, and runs.	A	No Effect	Although historic records indicate that Central California Coast steelhead once inhabited Adobe Creek, recent sampling in Adobe Creek indicate no steelhead or non-migratory rainbow trout are present (Leidy 2005; T. Schane, pers. comm. 2007). Tide gates that once excluded passage now allow the passage of anadromous fish from the San Francisco Bay to Adobe and Barron Creeks, but there is no known run, and the aquatic habitat in the BSA is too shallow and stagnant to provide suitable habitat for steelhead.
California tiger salamander	*Ambystoma californiense*	FT, ST	Vernal or temporary pools in annual grasslands or open woodlands.	A	No Effect	There are no recent records of this species from the vicinity of the BSA (nearby occurrences are from 1900; CNDDB 2016). No suitable habitat is present in the BSA or surrounding vicinity. Additionally, the species is considered extirpated from the vicinity due to urbanization. The closest population is at Lagunita on the Stanford University campus.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
California red-legged frog	*Rana draytonii*	FT, CSSC	Streams, freshwater pools, and ponds with overhanging vegetation. Deep pools with emergent vegetation are required for breeding.	A	No Effect	Adobe and Barron Creeks do not provide suitable habitat for this species (i.e., streams with pools and ponds with emergent vegetation for breeding). Additionally, there is no evidence this species still exists in the majority of the project region, including the entire urbanized Valley floor, due to development, the alteration of hydrology of its aquatic habitats, and the introduction of non-native predators such as non-native fishes and bullfrogs (H. T. Harvey & Associates 1997; SCVWD 2011). California red-legged frogs have not been recorded in Adobe and Barron Creeks, and the nearest record of a red-legged frog is 2.6 mi to the southwest (CNDDB 2016). The population represented by the closest record is effectively isolated from the BSA by dense urban development, and red-legged frogs are not expected to make their way into the BSA from that location. There is no evidence that California red-legged frogs occur around the edge of the South Bay anywhere in Santa Clara County or adjoining areas of neighboring counties, nor any evidence that individuals from populations high in the watersheds outside of the urban Santa Clara Valley disperse into urban areas. As a result, there is not expectation that red-legged frogs occur in or near the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
San Francisco garter snake	*Thamnophis sirtalis tetrataenia*	FE, SE, SP	Freshwater marshes, ponds, and slow-moving streams. Prefers dense cover and access to adjacent upland grassland habitat.	A	No Effect	No suitable habitat is present in the BSA or surrounding vicinity, and the BSA is isolated from the nearest known populations (by approximately 10 mi; CNDDB 2016) by extensive urbanization.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, ST	Scrub and/or chaparral habitats interspersed with grassland, oak savanna, oak-bay woodland, and riparian zones with rock outcrops.	A	No Effect	Suitable habitat is absent from the BSA, and the site is outside the species' range.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
California black rail	*Laterallus jamaicensis coturniculus*	ST, SP	Nests in pickleweed-dominated tidal salt marshes as well as fresh and brackish marshes dominated by bulrush (*Scirpus* sp.). Forages in mud-bottomed sloughs.	A	N/A	Occurs in the South Bay primarily as a scarce winter visitor. However, the species has recently (since 2012) been recorded in the South Bay during the breeding season, and has been confirmed breeding, in the Alviso area (Laurie Hall pers. comm. 2013; Cornell Lab of Ornithology 2016; Santa Clara County bird data, unpublished, South Bay Birds list-serve 2016). Suitable nesting habitat for black rails is absent from the BSA and from adjacent nontidal marsh and transitional habitats; the nearest tidal habitat is approximately 1.5 mi to the north outside of the Palo Alto Flood Control Basin. Ostensibly, suitable nonbreeding habitat for California black rails occurs in adjacent nontidal marsh habitat, as well as in ruderal grassland habitat in the BSA. However, this species has not been recorded in the Palo Alto Flood Control Basin despite intensive coverage of the area by birders, and few individuals, if any, are expected to forage there at any given time. Should black rails occur in the Palo Alto Flood Control Basin, they are expected to occur in muted tidal habitats northwest of the BSA, and not within freshwater marsh habitat adjacent to the BSA or ruderal grassland and riparian habitats within the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
California Ridgway's rail	*Rallus obsoletus obsoletus*	FE, SE, SP	Tidal saltwater and brackish marshes dominated by pickleweed and cordgrass.	A	No Effect	Known to nest and forage in tidal marshes in the South Bay, and to occur in upland transitional habitats during high tides or flooding events when marshes are inundated. The majority of records from the BSA vicinity are located in tidal habitats to the northeast, outside of the Palo Alto Flood Control Basin, in Mayfield Slough and in Charleston Slough, with a few records from the Palo Alto Flood Control Basin (CNDDB 2016, Cornell Lab of Ornithology 2016). The nearest confirmed records are more than 1.0 mi north of the BSA. Because Ridgway's rails typically nest in broader marshes with well-developed tidal channels (conditions that are absent from the BSA), they are not expected to nest within or adjacent to the BSA or in the Palo Alto Flood Control Basin. Ridgway's rails may occasionally wander upstream from their typical salt marsh habitats and forage in tidal brackish or freshwater marsh habitats, especially during high tides. However, marsh habitats are absent from the BSA, and no tidal habitats occur in nearby areas. Thus, the species is not expected to occur within or adjacent to the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Western snowy plover	*Charadrius alexandrinus nivosus*	FT, CSSC	Sandy beaches on marine and estuarine shores, San Francisco Bay salt pans, and shores of large alkali lakes.	A	No Effect	No suitable habitat is present in the BSA or surrounding vicinity. The nearest nesting locations in 2013 and 2016 were at pond SF2 in the Ravenswood Complex approximately 4.2 mi to the northwest and pond A9 in the Alviso Complex approximately 5.5 mi to the northeast (Donehower 2013, San Francisco Bay Bird Observatory, unpublished data).
California least tern	*Sterna antillarum browni*	FE, SE, SP	Nests along the coast on bare or sparsely vegetated substrates near water, usually on sand or gravelly substrates. In San Francisco Bay, nests primarily on an old airport runway. Forages for fish in open waters.	A	No Effect	Least terns forage primarily in managed ponds and over the open Bay, and thus foraging least terns are not expected to use Adobe Creek or Barron Creek. This species has not been recorded in the Palo Alto Flood Control Basin despite intensive coverage of the area by birders. No suitable nesting or roosting habitat is present in the BSA or surrounding vicinity. The nearest nesting location is at Eden's Landing Ecological Reserve approximately 10 mi to the north.
Marbled murrelet	*Brachyramphus marmoratus*	FT, SE	Nests in old-growth forests and forages in coastal waters.	A	No Effect	No suitable nesting, roosting, or foraging habitat occurs within or near the BSA, and the site is outside the species' range.
Swainson's hawk	*Buteo swainsoni*	ST	Nests in trees surrounded by extensive marshland or agricultural foraging habitat.	A	N/A	Not known to nest along the edges of the Bay in Santa Clara County. Occasional individuals may fly over the site.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT, SE	Nesting habitat is cottonwood/willow riparian forest. Occurs only along the upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter Co., the south for the Kern River in Kern Co., and along the Santa Ana, Amargosa, and lower Colorado rivers.	A	No Effect	No suitable nesting, roosting, or foraging habitat occurs within or near the BSA, and the site is outside the species' range.
Bank swallow	*Riparia riparia*	ST	Colonial nester on vertical banks or cliffs with fine-textured soils near water.	A	N/A	No suitable nesting or roosting habitat occurs within or near the BSA. Occasional individuals may fly over the site during migration.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE, SE, SP	Salt marsh habitat dominated by common pickleweed, and adjoining grasslands during high winter tides.	HP	Not Likely to Adversely Effect	Salt marsh harvest mice have been documented approximately 0.35 mi to the north at Renzel Marsh and approximately 0.63 mi to the northeast in the Palo Alto Flood Control Basin (H. T. Harvey & Associates 1990a, 1990b, 2006). Suitable pickleweed-dominated habitat for this species occurs immediately outside the BSA in pickleweed-dominated nontidal marsh. Suitable breeding and foraging habitat is absent from the BSA owing to the absence of dense foliage near the ground; the weedy vegetation dominating the BSA consists of plants with relatively large-diameter stems and little foliage near the ground. Thus, the habitat within the BSA is unsuitable for salt marsh harvest mice, and the species is not expected to occur. Occasional individuals inhabiting adjacent marshes could take refuge in ruderal areas of the BSA only during extreme flooding events.
California Species of Special Concern						
Central Valley fall/late fall-run Chinook salmon	*Oncorhynchus tshawytscha*	CSSC	Cool rivers and large streams that reach the ocean and that have shallow, partially shaded pools, riffles, and runs.	HP/SA	N/A	Chinook salmon are known to spawn and forage in creeks in the South San Francisco Bay Area. However, suitable spawning habitat is absent from the BSA. Tide gates that once excluded passage now allow the passage of anadromous fish from the San Francisco Bay to Adobe and Barron Creeks, but there is no known run and the aquatic habitat in the BSA is too shallow and stagnant to provide suitable habitat for Chinook salmon.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
California giant salamander	*Dicamptodon ensatus*	CSSC	Wet coastal forests with perennial or near-perennial streams.	A	N/A	No suitable habitat is present in the BSA or surrounding vicinity, and the BSA is outside the species' range.
Santa Cruz black salamander	*Aneides niger*	CSSC	Moist terrestrial woodlands, forests, and coastal grasslands.	A	N/A	No suitable habitat is present in the BSA or surrounding vicinity, and the BSA is outside the species' range.
Red-bellied newt	*Taricha rivularis*	CSSC	Coastal streams and woodlands in northern California.	A	N/A	No suitable habitat is present in the BSA or surrounding vicinity, and the BSA is outside the species' range.
Western pond turtle	*Actinemys marmorata*	CSSC	Permanent or nearly permanent water in ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation.	HP	N/A	Although breeding populations have been extirpated from most urbanized areas in the project region, individuals of this long-lived species still occur in streams and ponds in the Santa Clara Valley. Suitable foraging habitat for western pond turtles occurs in Barron and Adobe Creeks within the BSA, although due to the low quality of this habitat (i.e., cement-lined channels and lack of dense aquatic vegetation), the species is unlikely to occur. Nevertheless, small numbers of individuals from nearby populations could occasionally occur as foragers within the BSA. Should individuals occur on the site, marginally suitable nesting habitat occurs in ruderal grassland and riparian habitats within and adjacent to the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Black skimmer	*Rynchops niger*	CSSC (nesting)	Nests on abandoned levees and islands in saline managed ponds and marshes.	A	N/A	Black skimmers have nested in the South Bay since 1994, including at Shoreline Lake (CNDDB 2016). No suitable islands for nesting are present within the BSA, and no suitable open water foraging habitat is present. Thus, black skimmers are determined to be absent from the BSA.
Northern harrier	*Circus cyaneus*	CSSC (nesting)	In the South Bay, nests in open areas along Bay edges in pickleweed-dominated salt marsh, brackish marshes dominated by bulrush (*Scirpus* sp.), and dense ruderal vegetation. Forages over open areas.	HP	N/A	Known to nest in the Palo Alto Flood Control Basin, and occurs year-round in the BSA vicinity (Bousman 2007a, Cornell Lab of Ornithology 2016). Suitable foraging habitat for harriers occurs in ruderal grasslands within the BSA. Due to the vast expanse of available nesting habitat in the Palo Alto Flood Control Basin, the poor-quality nesting habitat within the BSA, and the high levels of disturbance adjacent to the BSA, northern harriers are not expected to nest within the BSA. This species may nest in suitable marsh habitats nearby and forage within the BSA year-round.
Short-eared owl	*Asio flammeus*	CSSC (nesting)	Nests on ground in tall emergent vegetation or grasses, forages over a variety of open habitats.	A	N/A	Known to occur in the Palo Alto Flood Control Basin during migration and winter (Cornell Lab of Ornithology 2016). However, this species has not been recorded summering in the South Bay in decades, and the habitat on the site is too close to trees, the Bay Trail, and the frontage road to provide suitable nesting conditions due to the species' aversion to trees and disturbance.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Long-eared owl	*Asio otus*	CSSC (nesting)	Riparian bottomlands with tall, dense willows and cottonwood stands (also dense live oak and California Bay along upland streams); forages primarily in adjacent open areas.	A	N/A	No suitable willow/cottonwood riparian habitat occurs in the BSA, and this species is not known from the site vicinity. Determined to be absent.

Burrowing owl	*Athene cunicularia*	CSSC	Flat, open grasslands and ruderal habitats with low-growing vegetation and suitable burrows, usually those made by California ground squirrels.	A	N/A	Known to nest in the Palo Alto vicinity (Trulio 2007) and has historically occurred year-round at Byxbee Park, at Shoreline Park, and within other open areas along South Bay edges (CNDDB 2016; Cornell Lab of Ornithology 2016; Santa Clara County bird data, unpublished, South Bay Birds list-serve 2016). However, this species has not been recorded along the southern edge of the Palo Alto Flood Control Basin despite intensive coverage of the area by birders. During the November 21, 2013, and December 13, 2016, reconnaissance-level survey, H. T. Harvey & Associates biologists walked all areas of the BSA and determined that suitable nesting and roosting habitat for owls (e.g., suitable burrows, such as those of California ground squirrels) were absent. The extremely tall (i.e., 6 to 8 ft) ruderal vegetation that dominates the BSA under most conditions precludes the presence of nesting, roosting, or foraging burrowing owls. This ruderal habitat is not maintained by regular mowing, with the exception of narrow, highly disturbed strips of habitat along the edges of the Bay Trail that do not contain burrows of California ground squirrels. These areas provide ostensibly suitable foraging habitat for burrowing owls, but given the few owls in the vicinity (e.g., occasional wintering birds at Byxbee Park approximately 1.2 mi to the north and a few breeding birds at Shoreline Park approximately 0.4 mi to the northeast), burrowing owls are not expected to occur within the BSA.
Long-eared owl	*Asio otus*	CSSC (nesting)	Riparian bottomlands with tall, dense willows	A	N/A	No suitable habitat is present in the BSA or surrounding vicinity.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
			and cottonwoods; also dense coast live oak and California bay (*Umbellularia californica*) along upland streams. Forages primarily in open areas.			
Short-eared owl	*Asio flammeus*	CSSC (nesting)	Nests in marshes and moist fields, forages over open areas.	A	N/A	Historically recorded nesting in the project region in the Palo Alto Flood Control Basin, though it has not been confirmed nesting there since the 1970s. No suitable nesting habitat is present in the BSA.
Vaux's swift	*Chaetura vauxi*	CSSC (nesting)	Nests in snags in coastal coniferous forests or, occasionally, in chimneys; forages aerially.	HP	N/A	May occasionally forage over the site during migration, but no suitable nesting habitat is present within the BSA.
Olive-sided flycatcher	*Contopus cooperi*	CSSC (nesting)	Wooded areas usually near openings, burns, ponds, and bogs.	HP	N/A	Expected to occur within the BSA as an occasional forager during migration. No suitable densely vegetated habitat for nesting is present within the BSA.
Loggerhead shrike	*Lanius ludovicianus*	CSSC (nesting)	Nests in tall shrubs and dense trees; forages in grasslands, marshes, and ruderal habitats.	HP	N/A	Nests in a number of locations in the project region in open grassland, ruderal, or agricultural habitats where scattered brush, chaparral, or trees provide perches and nesting sites (Bousman 2007b), though populations seem to have declined in recent years as suitable habitat has been increasingly developed. Ruderal habitat in the BSA provides suitable nesting and foraging habitat.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
San Francisco common yellowthroat	*Geothlypis trichas sinuosa*	CSSC	Nests primarily in fresh and brackish marshes in tall grass, tules, and willows; uses salt marshes primarily in winter.	HP	N/A	Common yellowthroats potentially nesting in the BSA are of the special-status subspecies *sinuosa* (San Francisco Bay Bird Observatory [SFBBO] 2012). The greatest proportion of nesting records in the project region occur within brackish and freshwater marshes near the edge of the Bay and in early successional riparian habitat in broader floodplains (Bousman 2007c). Nests are typically located in extensive stands of bulrushes in brackish marshes and dense cattail beds in freshwater marshes, but the species also nests in forbs in riparian habitats. The species is expected to nest in emergent vegetation along Adobe Creek and in tall ruderal vegetation within the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Yellow warbler	*Setophaga petechia*	CSSC (nesting)	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods.	HP	N/A	Prefers riparian corridors with adjacent open space (rather than in heavily developed areas) and an overstory of mature cottonwoods and sycamores, a midstory of box elders and willows, and a substantial shrub understory (Bousman 2007d). Riparian habitats with reduced understory, abundant non-native vegetation, and immediately adjacent development (such as the habitat in the BSA) are generally not used by this species, although individuals may forage in these areas during migration. The eucalyptus riparian habitat along Adobe Creek provides suitable foraging habitat for this species, and yellow warblers forage in this area during migration (S. Rottenborn, pers. obs.). Thus, suitable nesting habitat for yellow warblers is absent from the BSA, but this species will occur within the BSA as a migrant during the spring and fall.
Bryant's savannah sparrow	*Passerculus sandwichensis alaudinus*	CSSC	Nests in pickleweed-dominant salt and brackish marshes and adjacent ruderal habitat.	HP	N/A	In the South San Francisco Bay, nests primarily in short pickleweed-dominated portions of diked/muted tidal salt marsh habitat and in adjacent ruderal habitats (Rottenborn 2007). This species may nest in the pickleweed-dominated marsh habitat immediately adjacent to the BSA, but it will not nest in the tall ruderal vegetation within the BSA. During the nonbreeding season, *alaudinus* and other savannah sparrow subspecies may forage in open areas in the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Alameda song sparrow	*Melospiza melodia pusillula*	CSSC	Nests in salt marsh, primarily in marsh gumplant and cordgrass along channels.	HP	N/A	The *pusillula* subspecies is endemic to Central and South San Francisco Bay. In the project vicinity, this subspecies occurs in the taller vegetation found along tidal sloughs. The location of the interface between populations of the Alameda song sparrow (*pusillula*) and the common race that breeds in freshwater riparian habitats in the region (*gouldiii*) is not definitive due to difficulties distinguishing these subspecies in the field. Song sparrows nesting within the BSA may belong to the *pusillula* or *gouldii* subspecies, or may be intergrades between the two (SFBBO 2012). However, this subspecies is known to nest in marsh habitat in the project region, and is presumed to be present (and relatively common) in brackish marsh habitat in the Palo Alto Flood Control Basin. Both the *pusillula* and *gouldii* subspecies will forage within the BSA outside the breeding season.
Tricolored blackbird	*Agelaius tricolor*	CSSC (nesting)	Nests near fresh water in dense emergent vegetation.	A		Typically nests in extensive stands of tall emergent herbaceous vegetation in nontidal freshwater marshes and ponds, which are not present in the BSA. Has not been recorded nesting in the BSA, and the very tall ruderal vegetation in the BSA is unsuitable as foraging habitat.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Salt marsh wandering shrew	*Sorex vagrans halicoetes*	CSSC	Medium to high marsh 6 to 8 ft above sea level with abundant driftwood and common pickleweed.	HP	N/A	Occur most often in tall pickleweed within medium to high wet tidal marsh (6 to 8 ft above sea level), with abundant driftwood and other debris for cover (Shellhammer 2000). No pickleweed habitat occurs within the BSA to support this species, but suitable pickleweed-dominated nontidal habitat occurs immediately outside the BSA. As with the salt marsh harvest mouse, no herbaceous ground cover is present in the ruderal grassland habitat in the BSA to provide cover and foraging opportunities for salt marsh wandering shrews, should they occur in adjacent marsh habitat. Therefore, the ruderal grassland habitat in the BSA is not suitable as upland escape habitat for salt marsh wandering shrew and consequently the species is highly unlikely to occur there, except perhaps in extreme flood events.
Pallid bat	*Antrozous pallidus*	CSSC	Forages over many habitats; roosts in caves, rock outcrops, buildings, and hollow trees.	A	N/A	Suitable night-roosting sites are located under the Adobe Creek Bridge, but no suitable day-roosting habitat occurs within the BSA. However, no known maternity colonies are present within the project vicinity, and this species is considered extirpated from the urbanized Santa Clara Valley.
Western red bat	*Lasiurus blossevillii*	CSSC	Roosts in foliage in forest or woodlands, especially in or near riparian habitat.	HP	N/A	Occurs as a migrant and winter resident, but does not breed in the project region. Small numbers of western red bats may occasionally roost in the foliage of riparian trees in the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Townsend's big-eared bat	*Corynorhinus townsendii*	CSSC	Roosts in caves and mine tunnels, and occasionally in deep crevices in trees such as redwoods or in abandoned buildings, in a variety of habitats.	A	N/A	No known extant populations occur on the Santa Clara Valley floor, and suitable breeding habitat is absent from the BSA.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	CSSC	Nests in a variety of habitats including riparian areas, oak woodlands, and scrub.	HP/SA	N/A	Suitable habitat for woodrats is present in the eucalyptus riparian habitat along Adobe Creek. However, H. T. Harvey & Associates biologists specifically surveyed for woodrat nests during the November 2013 surveys, and no woodrat nests were observed. With the exception of records along Coyote Creek and along the edges of the Valley, San Francisco dusky-footed woodrats are not known to occur in the more urbanized portions of Santa Clara County (H. T. Harvey & Associates 2010).
American badger	*Taxidea taxus*	CSSC	Burrows in grasslands and occasionally in infrequently disked agricultural areas.	A	N/A	The ruderal grassland habitat on the site is too small, highly disturbed, and isolated from other expansive grasslands in the region to support this species.
CNPS-listed Plant Species and State Fully Protected Animal Species						
Franciscan onion	*Allium peninsulare* var. *franciscanum*	CRPR 1B.2	Soils derived from clay, volcanics, or serpentinite in cismontane woodland and valley and foothill grassland.	A	N/A	All potentially suitable habitats in the BSA are highly disturbed and invaded; the area is outside the species' elevation range; determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
California androsace	*Androsace elongata* ssp. *acuta*	CRPR 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland.	A	N/A	All potentially suitable habitats in the BSA are highly disturbed and invaded; the area is outside the species' elevation range; determined to be absent.
Anderson's manzanita	*Arctostaphylos andersonii*	CRPR 1B.2	Openings and edges in broadleafed upland forest, chaparral, and North Coast coniferous forest.	A	N/A	Lack of suitable habitat; the area is outside the species' elevation range; determined to be absent.
Kings Mountain manzanita	*Arctostaphylos regismontana*	CRPR 1B.2	Soils derived from granite or sandstone in broadleafed upland forest, chaparral, or North Coast coniferous forest.	A	N/A	Lack of suitable habitat; the area is outside the species' elevation range; determined to be absent.
Alkali milk-vetch	*Astragalus tener* var. *tener*	CRPR 1B.2	Alkaline playas and vernal pools, valley and foothill grasslands underlain by alkaline adobe clays.	A	N/A	All potentially suitable habitat in the BSA is highly disturbed and invaded; species determined to be absent.
Brittlescale	*Atriplex depressa*	CRPR 1B.2	Alkaline, clay soils in chenopod scrub, meadows and seeps, playas, vernal pools, and valley and foothill grasslands.	A	N/A	All potentially suitable habitats in the BSA are highly disturbed and invaded; species determined to be absent.
San Joaquin spearscale	*Atriplex joaquiniana*	CRPR 1B.2	Alkaline chenopod scrub, meadows and seeps, playas, vernal pools, and valley and foothill grasslands.	A	N/A	All potentially suitable habitats in the BSA are highly disturbed and invaded; species determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Lesser saltscale	*Atriplex minuscula*	CRPR 1B.1	Alkaline or sandy soils in chenopod scrub, playas, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; fine-textured clay soils on site are unsuitable; species determined to be absent.
Mexican mosquito fern	*Azolla microphylla*	CRPR 4.2	Marshes and swamps with ponds containing slow water.	A	N/A	Lack of suitable habitat because adjacent marshes are brackish; determined to be absent.
Brewer's calandrinia	*Calendrinia breweri*	CRPR 4.2	Sandy or loamy areas of chaparral and coastal scrub, often in disturbed or burned areas.	A	N/A	No habitats resembling chaparral or coastal scrub within the BSA, fine-textured silty clay soils on site are unsuitable; determined to be absent.
South Coast Range morning-glory	*Calystegia collina* ssp. *venusta*	CRPR 4.3	Serpentinite or sedimentary soils in chaparral, cismontane woodland, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; soils on site are not serpentine-influenced; BSA is outside the species' elevation range; species determined to be absent.
Chaparral harebell	*Campanula exigua*	CRPR 1B.2	Usually in rocky, serpentinite areas in chaparral.	A	N/A	No habitats resembling chaparral are present in the BSA; soils are not serpentine-influenced; BSA is outside the species' elevation range; species determined to be absent.
Congdon's tarplant	*Centromadia parryi* ssp. *congdonii*	CRPR 1B.1	Alkaline areas in valley and foothill grassland.	HP/SA	N/A	Focused survey was conducted in all appropriate habitats within the BSA but the species was not found; species determined to be absent.
Point Reyes bird's-beak	*Chloropyron maritimum* ssp. *palustre*	CRPR 1B.2	Marshes and swamps with coastal salt influences.	A	N/A	All creeks on site with estuarine influence are highly disturbed, are channelized with cement bottoms, have scouring flows and sediment control, and are heavily shaded by US 101 overpasses; determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Lost thistle	*Cirsium praeteriens*	CRPR 1A	Unknown.	A	N/A	Species presumed extirpated, collected in "Palo Alto area" in 1901 and species has never been found since that time; considered extirpated in California; determined to be absent.
Santa Clara red ribbons	*Clarkia concinna* ssp. *automixa*	CRPR 4.3	Chaparral or cismontane woodland.	A	N/A	No suitable habitats are present in the BSA; soils are not serpentine-influenced; species determined to be absent.
Round-headed Chinese-houses	*Collinsia corymbosa*	CRPR 1B.2	Coastal sand dunes.	A	N/A	No suitable habitat is present in the BSA; not known to occur in Santa Clara County; determined to be absent.
San Francisco collinsia	*Collinsia multicolor*	CRPR 1B.2	Sometimes found in serpentinite areas of closed-cone coniferous forest or coastal scrub.	A	N/A	No suitable habitats are present in the BSA; soils are not serpentine-influenced; species determined to be absent.
Western leatherwood	*Dirca occidentalis*	CRPR 1B.2	Mesic areas of broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland.	A	N/A	All potentially suitable habitats in the BSA are highly disturbed and invaded and contain a large amount of eucalyptus leaf litter; species determined to be absent.
Ben Lomond buckwheat	*Eriogonum nudum* var. *decurrens*	CRPR 1B.1	Sandy areas of chaparral, cismontane woodland, maritime ponderosa pine sandhills of the lower montane coniferous forest.	A	N/A	No suitable habitats are present in the BSA; soils are not sandy; BSA is outside the species' elevation range; species determined to be absent.
Hoover's button-celery	*Eryngium aristulatum* var. *hooveri*	CRPR 1B.1	Vernal pools.	A	N/A	No vernal pools on site, all mesic habitat highly disturbed; species determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Jepson's coyote-thistle	*Eryngium jepsonii*	CRPR 1B.2	Seasonal wetlands in clay soils.	A	N/A	No suitable seasonal wetlands are present in the BSA, and the species is not known to occur in Santa Clara County. Determined to be absent.
San Francisco wallflower	*Erysimum franciscanum*	CRPR 4.2	Usually on serpentinite or granitic soils, sometimes on roadsides in chaparral, coastal dunes, coastal scrub, or valley and foothill grasslands.	A	N/A	No serpentinite or granitic features in BSA, all soils on site are derived from non-granitic parent materials, roadsides in BSA are highly disturbed and affected by landscaping, invasives, and high traffic volumes; species determined to be absent.
Minute pocket moss	*Fissidens pauperculus*	CRPR 1B.2	Seasonally moist, silty soils on steep slopes.	A	N/A	No suitable silty, seasonally wet slopes are present in the BSA, and the species is not known to occur in Santa Clara County. Determined to be absent.
Stinkbells	*Fritillaria agrestis*	CRPR 4.2	Chaparral, cismontane and pinyon and juniper woodlands, and valley and foothill grasslands on heavy clay soils, sometimes serpentinite.	A	N/A	No serpentinite features on site, areas resembling suitable habitat type are highly disturbed; species determined to be absent.
Fragrant fritillary	*Fritillaria liliacea*	CRPR 1B.2	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, often on serpentinite soils.	A	N/A	No serpentinite features on site, BSA is highly disturbed and invaded by non-natives; species determined to be absent.
Loma Prieta hoita	*Hoita strobilina*	CRPR 1B.1	Usually in serpentinite and mesic areas of chaparral, cismontane woodland, or riparian woodland.	A	N/A	No serpentinite features on site; all potentially suitable habitats are highly disturbed and invaded and contain a large amount of eucalyptus leaf litter; species determined to be absent.
Coast iris	*Iris longipetala*	CRPR 4.2	Marshes, seeps, and mesic areas of coastal prairies and lower montane coniferous forests.	A	N/A	No suitable habitat due to scouring flows and sediment control practices; mesic landscaped areas too highly disturbed; species determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Legenere	*Legenere limosa*	CRPR 1B.1	Vernal pools.	A	N/A	No vernal pools within the BSA, all mesic habitat highly disturbed; species determined to be absent.
Bristly leptosiphon	*Leptosiphon acicularis*	CRPR 4.2	Chaparral, cismontane woodland, coastal prairie, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; BSA is outside the species' elevation range; species determined to be absent.
Serpentine leptosiphon	*Leptosiphon ambiguus*	CRPR 4.2	Usually in serpentinite areas of cismontane woodland, coastal scrub, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; BSA is outside the species' elevation range; no serpentinite features on site; species determined to be absent.
Large-flowered leptosiphon	*Leptosiphon grandiflorus*	CRPR 4.2	Usually on sandy soils in coastal bluff scrub, closed-cone coniferous forest; cismontane woodland; coastal dunes, coastal prairie, coastal scrub; or valley and foothill grassland.	A	N/A	No sandy soils within the BSA, all landscaped areas potentially resembling native habitat types heavily disturbed; determined to be absent.
Woolly-headed lessingia	*Lessingia hololeuca*	CRPR 3	Serpentinite clay, areas in broadleafed upland forest, coastal scrub, lower montane coniferous forest, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; no serpentinite features on site; species determined to be absent.
Indian Valley bush-mallow	*Malacothamnus aboriginum*	CRPR 1B.2	Rocky, granitic, often in burned areas in chaparral or cismontane woodland.	A	N/A	No suitable habitat is present within the BSA; BSA is outside the species' elevation range; species determined to be absent.
Arcuate bush-mallow	*Malacothamnus arcuatus*	CRPR 1B.2	Chaparral or cismontane woodland.	A	N/A	No suitable habitat is present within the BSA; species determined to be absent.
Davidson's bush-mallow	*Malacothamnus davidsonii*	CRPR 1B.2	Chaparral, cismontane woodland, coastal scrub, or riparian woodland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded, BSA is outside the species' elevation range; species determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Hall's bush mallow	*Malacothamnus hallii*	CRPR 1B.2	Chaparral and coastal scrub.	A	N/A	No suitable habitat is present within the BSA; species determined to be absent.
Mt. Diablo cottonweed	*Micropus amphibolus*	CRPR 3.2	Rocky areas in broadleafed upland forest, chaparral, cismontane woodland, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded, BSA is outside the species' elevation range; species determined to be absent.
San Antonio Hills monardella	*Monardella antonina* ssp. *antonina*	CRPR 3	Chaparral, Cismontane woodland.	A	N/A	No suitable habitat is present within the BSA; BSA is outside the species' elevation range; species determined to be absent.
Woodland woolythreads	*Monolopia gracilens*	CRPR 1B.2	Serpentine influenced areas in of broadleafed upland forest openings, chaparral openings, cismontane woodland, North Coast coniferous forest openings, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded by nonnative species; BSA is outside the species' elevation range; no serpentinite features on site; species determined to be absent.
Cotula navarretia	*Navarretia cotulifolia*	CRPR 4.2	Chaparral, cismontane woodland, or valley and foothill grassland habitats on adobe clay soils.	A	N/A	Heavy clay soils are present on site, but all areas resembling suitable native habitat are too heavily disturbed and invaded; species determined to be absent.
Pincushion navarretia	*Navarretia myersii* ssp. *myersii*	CRPR 1B.1	Often in acidic vernal pools.	A	N/A	All potentially suitable mesic habitats are highly disturbed and invaded; species determined to be absent.
Prostrate vernal pool navarretia	*Navarretia prostrata*	CRPR 1B.1	Meadows, seeps, and vernal pools; also mesic areas in coastal scrub and alkaline valley and foothill grassland.	A	N/A	All mesic habitat within the BSA is highly disturbed; species determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
Gairdner's yampah	*Perideridia gairdneri* ssp. *gairdneri*	CRPR 4.2	Mesic areas of broad-leafed upland forest, chaparral, coastal prairie, valley and foothill grassland, or vernal pools.	A	N/A	All mesic habitat within the BSA is too heavily disturbed and invaded; species determined to be absent.
White-flowered rein orchid	*Piperia candida*	CRPR 1B.2	Sometimes found in serpentinite areas of broadleafed upland forest, lower montane coniferous forest, or North Coast coniferous forest.	A	N/A	No suitable habitat is present within the BSA because the existing woodlands are not appropriate native habitat; no serpentinite features on site; species determined to be absent.
Choris' popcorn-flower	*Plagiobothrys chorisianus* var. *chorisianus*	CRPR 1B.2	Mesic areas of chaparral, coastal prairie, or coastal scrub.	A	N/A	No suitable habitat is present within the BSA; species determined to be absent.
Hickman's popcorn-flower	*Plagiobothrys chorisianus* var. *hickmanii*	CRPR 4.2	Closed-cone coniferous forest, chaparral, coastal scrub, marshes and swamps, or vernal pools.	A	N/A	All mesic habitat within BSA is too heavily disturbed and invaded; aquatic habitat is channelized and routinely maintained for sediment control; species determined to be absent.
Hairless popcorn-flower	*Plagiobothrys glaber*	CRPR 1A	Alkaline meadows and seeps, marshes and swamps under the influence of coastal salt.	A	N/A	Species presumed extirpated in Santa Clara county; all potentially suitable mesic habitats on site are too disturbed; species determined to be absent.
Delta woolly-marbles	*Psilocarphus brevissimus* var. *multiflorus*	CRPR 4.2	Vernal pools.	A	N/A	All mesic habitat within the BSA is too heavily disturbed and invaded; species determined to be absent.
California alkali grass	*Puccinellia simplex*	CRPR 1B.2	Grasslands, wetlands, and seeps with alkaline soils.	A	N/A	No suitable habitat or alkaline soils are present within the BSA. Determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
chaparral ragwort	*Senecio aphanactis*	CRPR 2B.2	Sometimes found in alkaline areas of chaparral, cismontane woodland, or coastal scrub.	A	N/A	No suitable habitat is present within the BSA; species determined to be absent.
maple-leaved checkerbloom	*Sidalcea malachroides*	CRPR 4.2	Often in disturbed areas of broadleafed upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, or riparian woodland.	A	N/A	The only marginally suitable habitat within the BSA is riparian woodland, but the blue gum dominance does not facilitate persistence of this species; this is a large perennial shrub, and the species was not observed during reconnaissance-level surveys of the BSA; species determined to be absent.
most beautiful jewel-flower	*Streptanthus albidus* ssp. *peramoenus*	CRPR 1B.2	In serpentinite influenced areas of chaparral, cismontane woodland, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; no serpentinite features on site; BSA is outside species' elevation range; species determined to be absent.
slender-leaved pondweed	*Stuckenia filiformis* ssp. *alpina*	CRPR 2B.2	Marshes and swamps assorted with shallow freshwater.	A	N/A	No suitable habitat is present within the BSA because aquatic habitat is channelized, regularly maintained to remove sediment deposition, and influenced by coastal salts; BSA is outside species' elevation range; species determined to be absent.
two-fork clover	*Trifolium amoenum*	CRPR 1B.1	Sometimes serpentinite areas of coastal bluff scrub, or valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; no serpentinite features on site; species determined to be absent.
saline clover	*Trifolium hydrophilum*	CRPR 1B.2	Marshes and swamps, mesic and alkaline areas of valley and foothill grassland, Vernal pools.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; species determined to be absent.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
caper-fruited tropidocarpum	*Tropidocarpum capparideum*	CRPR 1B.1	Alkaline hills in valley and foothill grassland.	A	N/A	All potentially suitable habitats are highly disturbed and invaded; hills are not present within the BSA; species determined to be absent.
California brown pelican	*Pelecanus occidentalis californicus*	SP (nesting colony and communal roosts)	Nests and roosts on undisturbed islands near estuarine, marine, subtidal, and marine pelagic waters. Forages in open water.	A	N/A	Brown pelicans are uncommon nonbreeding visitors in Santa Clara County. No suitable aquatic habitat is in the BSA; Barron and Adobe Creeks within the BSA are too narrow and shallow to provide suitable foraging habitat for brown pelicans, and this species is not expected to occur in the BSA.
American peregrine falcon	*Falco peregrinus anatum*	SP	Forages in many habitats; nests on cliffs and tall bridges and buildings.	HP	N/A	Peregrine falcons are known to nest on electrical transmission towers in the Mountain View area, but no suitable nesting platforms exist in the BSA and they are not known or expected to nest in the BSA. However, peregrine falcons occur as occasional foragers in open areas throughout the project region, and individuals may forage for birds over the BSA.
Golden eagle	*Aquila chrysaetos*	SP	Breeds on cliffs or in large trees (rarely on electrical towers), forages in open areas.	HP	N/A	Suitable nesting habitat for golden eagles is not present in the BSA. Based on the limited number of recorded occurrences in this area by birders, this species is expected to forage rarely or infrequently in open habitats adjacent to the BSA but not within the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat/ Species Present/ Absent	Effects Determination	Rationale
White-tailed kite	*Elanus leucurus*	SP	Nests in tall shrubs and trees, forages in grasslands, marshes, and ruderal habitats.	HP	N/A	Known to nest in the Baylands and in ruderal areas along Bay edges (Bousman 2007e). The proximity of large eucalyptus trees for nesting and adjacent open ruderal and marsh habitat for foraging makes the habitat in the BSA suitable for white-tailed kites, although high levels of disturbance may preclude nesting.

Key to Table 2 Abbreviations: Absent [A] - no habitat present or site is outside the species' range. Habitat Present/Species Absent [HP/SA] - site conditions consistent with suitable habitat, but for other reasons (e.g., habitat quality), the species is not expected to occur. Habitat Present [HP] -habitat is, or may be present and the species may be present.

Status: Federal Endangered (FE); Federal Threatened (FT); Federal Candidate (FC); State Endangered (SE); State Threatened (ST); State Candidate (SC); State Protected (SP); State Rare (SR); California Species of Special Concern (CSSC).

- CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere
- CRPR Rank 2 = Plants rare, threatened, or endangered in California but more common elsewhere
- CRPR Rank 3 = Plants about which information is needed-a review list
- CRPR Rank 4 = Plants of limited distribution-a watch list
  - .1 = seriously endangered in California
  - .2 = fairly endangered in California
  - .3 = not very endangered in California

Effects determinations are provided only for federally listed species (N/A = Not Applicable).

Chapter 4 – Results: Biological Resources, Discussion of Impacts and Mitigation

4.1. Natural Communities of Special Concern

A query of sensitive habitats in RareFind (CNDDB 2016) was performed for the *Mountain View* USGS 7.5-minute quadrangle and all eight surrounding quadrangles. CNDDB identified the following sensitive habitats as occurring in the project region: northern coastal salt marsh, serpentine bunchgrass grassland, valley oak woodland, north central coast California roach/stickleback/steelhead stream, and north central coast steelhead/sculpin stream. The BSA does not have suitable soil substrates or microclimatic regimes for any of these sensitive terrestrial habitats, and none was observed to occur on the site during the reconnaissance-level surveys. Northern coastal salt marsh occurs immediately adjacent to the BSA, but does not occur within the limits of the BSA. This sensitive habitat is not expected to be impacted during project construction.

4.1.1. WETLANDS AND WATERS OF THE U.S./WATERS OF THE STATE

A formal wetland delineation to determine jurisdictional boundaries has been prepared for the project (Appendix D) and was submitted to the USACE for verification on June 30, 2014. The USACE conducted a site visit with Caltrans biologists on April 22, 2016, and requested minor revisions to the delineation. The delineation map was then revised per USACE comments and provided to the USACE (the delineation map in Figure 6 of Appendix D reflects the revised/updated mapping). The BSA contains aquatic habitat within the OHW marks of Adobe Creek.

4.1.1.1. Survey Results

The BSA contains approximately 0.29 ac of jurisdictional waters of the U.S./waters of the State in the Adobe Creek channel. Although these waters themselves will not be impacted by the project, they are included within the BSA because they occur under the US 101 roadway within the BSA. Within the BSA, Adobe Creek is contained entirely within a cement channel, including a cement bottom. The BSA does not contain any jurisdictional wetlands. Ruderal grassland determined to be uplands occurs above top of bank of Adobe Creek in the Baylands. Outside the BSA, diked brackish marsh wetlands adjoin Hawk Pond in the Baylands.

4.1.1.2. Project Impacts

The project alignment has been designed to avoid all impacts, both temporary and permanent, on waters of the U.S./waters of the State. Construction crews will not need to access areas below the top of bank in either Adobe Creek or Barron Creek.

In the absence of BMPs, impacts to water quality in Adobe and Barron Creeks could result from general construction activities. During construction, debris, sediment, or pollutants could inadvertently be washed from the work area into adjacent aquatic habitat (however, see Section 4.1.1.3 below for avoidance and minimization efforts). With implementation of the avoidance and minimization measures, including incorporation of all recommended BMPs and clearing and grubbing work in the dry season, the proposed project will not have a substantial effect on aquatic habitat or to the water quality of Adobe Creek.

4.1.1.3. Avoidance and Minimization Efforts

In development of the proposed project, the City of Palo Alto and project designers met on site with H. T. Harvey & Associates biologists to discuss potentially jurisdictional wetlands and waters of the U.S./waters of the State boundaries and ensure that the project will avoid these features to the maximum extent practicable. No work will be conducted within Adobe Creek or Barron Creek, and no construction access below top of bank will be needed. Falsework will not be placed within the channel during construction of the new overcrossing. No piles will be placed within the channel. No permanent support structures will be placed within the channel.

The project applicant will implement BMP's to protect water quality during construction. These measures include:

- No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products or other organic or earthen material will be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the U.S./State or aquatic habitat.

- No equipment will be operated in the live stream channel.

- Equipment staging and parking areas will occur within established access areas in upland habitat above the top of bank.

- Machinery or vehicle refueling, washing, and maintenance will occur at least 60 ft from the top-of-bank. Equipment will be regularly maintained to prevent fluid leaks. Any leaks will be captured in containers until the equipment is moved to a repair location. A spill prevention and response plan will be prepared prior to construction and will be implemented immediately for cleanup of fluid or hazardous materials spills.

- Standard erosion control and slope stabilization measures will be required for work performed in any area where erosion could lead to sedimentation of a waterbody.

4.1.1.4. Compensatory Mitigation

No permanent or temporary impacts will occur to jurisdictional wetlands and/or waters of the U.S./State. During the resource agency site visit, staff of the San Francisco Bay RWQCB (Derek Beauduy) indicated no approvals are required from that agency for proposed project activities adjacent to banks of the creek. Thus, no compensatory mitigation is warranted.

4.1.1.5. Cumulative Impacts

Cumulative impacts on jurisdictional wetlands and/or waters of the U.S./State result from past, current, and reasonably foreseeable future projects in the region. Although such projects could result in impacts jurisdictional wetlands and/or waters of the U.S/State, it is expected that current and future projects that impact such habitats will be required to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process. As discussed above, the project will not result in temporary or permanent impacts to jurisdictional wetlands and/or waters of the U.S./State and, therefore, the project will not cumulatively contribute to wetland habitat impacts or losses.

4.1.2. RIPARIAN HABITAT AND RIPARIAN TREES

Approximately 0.24 ac of riparian eucalyptus woodland occurs along Adobe Creek in the northeastern portion of the BSA.

4.1.2.1. Survey Results

A riparian corridor occurs within the BSA adjacent to Adobe Creek within the Baylands. This feature is described in Section 3.1.3.3. The CDFW is expected to take jurisdiction over this area under Sections 1600-1603 of California Fish and Game Code.

4.1.2.2. Project Impacts

The project alignment has been designed to avoid impacts, both permanent and temporary, on riparian habitat along Adobe Creek. Construction crews will not need to access areas within the riparian habitat. Therefore, there will be no impacts to riparian habitat as a result of the project.

4.1.2.3. Avoidance and Minimization Efforts

Because no impacts on riparian habitat will occur as part of the project, and no indirect impacts are expected, no avoidance and minimization efforts specific to this habitat are necessary.

4.1.2.4. Compensatory Mitigation

Because riparian habitat will not be impacted by the project, no compensatory mitigation is warranted.

4.1.2.5. Cumulative Impacts

The project will not result in adverse effects on riparian habitat; therefore, the project will not contribute to any cumulative riparian habitat impacts.

4.2. Special-status Plant Species

One special-status plant species has potential to occur within the project area: Congdon's tarplant. Table 2 includes a list of special-status plant species with occurrence records from the project vicinity. As described in Table 2, with the exception of Congdon's tarplant, these species are eliminated from further discussion due to absence of suitable habitat within the project site or absence of recent species occurrence records.

4.2.1. CONGDON'S TARPLANT

4.2.1.1. Survey Results

Congdon's tarplant is a CNPS Rank 1B species. It is an annual herb typically found in alkaline valley and foothill grassland habitat. This species typically blooms between May and November. This species is known to occur as close to the site as Shoreline Park, approximately 0.6 mi east of the project site (CNDDB 2016) and thus has potential to occur within ruderal habitat within the project vicinity.

A focused survey was conducted within the BSA on November 18, 2013, which is within the Congdon's tarplant bloom period. On that date, Congdon's tarplant was observed to be in late flowering stage, the vegetative portions of the plants were beginning to brown, and yellow flower heads were still persistent at a reference site at the Sunnyvale Baylands (CNDDB occurrence #18). No Congdon's tarplants were found within the BSA in November 2013, and current (December 2016) habitat conditions in the BSA are no more suitable for the species than they were during the November 2013 surveys. This species is thus considered absent from the BSA.

4.3. Special-status Animal Species Occurrences

As discussed in Chapter 3, the following special-status animal species are determined to potentially reside or breed in or immediately adjacent to the BSA: western pond turtle, northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), San Francisco common yellowthroat (*Geothlypis trichas sinuosa*), Bryant's savannah

sparrow (*Passerculus sandwichensis alaudinus*), Alameda song sparrow (*Melospiza melodia pusillula*), and white-tailed kite. The salt marsh harvest mouse and salt marsh wandering shrew have been previously documented in the Palo Alto Flood Control Basin over 0.65 mi from the BSA and may occur in diked brackish marsh habitat in the portion of the Flood Control Basin located adjacent to the BSA, but they are highly unlikely to occur in the BSA except perhaps in extreme flood events.

Several other special-status wildlife species may occur in the BSA only as occasional foragers, migrants, or transients; these are the Vaux's swift, olive-sided flycatcher, yellow warbler, American peregrine falcon, and western red bat. None of these species are expected to breed on, or regularly use, the BSA, as the site is not within their breeding range and/or contain breeding habitat, and thus, these species are not expected to be adversely affected by project activities. Suitable foraging habitat for these species is abundant in the region, and the BSA represents a miniscule fraction of foraging habitat available to these species regionally. The project's effects on nonbreeding habitat for these species are therefore not expected to result in appreciable impacts on regional populations, and no avoidance or minimization measures for these species are warranted.

The following sections discuss the special-status animal species that have the potential to breed on or immediately adjacent to the BSA and/or to regularly use it, that have the potential to be substantially affected by the project (e.g., due to their rarity), and/or that are of particular concern to resource agencies and therefore require additional discussion.

4.3.1. CENTRAL CALIFORNIA COAST STEELHEAD, CENTRAL CALIFORNIA COAST COHO SALMON, AND ESSENTIAL FISH HABITAT

The anadromous Central California Coast steelhead, and possibly the Central California Coast coho salmon, historically occupied the Adobe Creek watershed (Leidy et al. 2005). However, channelization, other flood control projects, and obstacles to fish migration have created barriers and degraded aquatic habitat quality enough to prevent anadromous fish from inhabiting this watershed. Because anadromous fish occurred in Adobe and Barron Creeks historically, the potential for these creeks to support anadromous fish and EFH within the BSA was assessed.

4.3.1.1. Central California Coast Steelhead

The Central California Coast steelhead is a wide-ranging anadromous form of rainbow trout that migrates upstream from the ocean to spawn in late fall or early winter, when flows are sufficient to allow them to reach suitable habitat in far upstream areas. The Central California Coast Distinct Population Segment (DPS) of steelhead includes all runs from the Russian River in Sonoma County south to Aptos Creek in Santa Cruz

County. In the Bay Area, adults typically migrate to spawning areas from late December through early April, and both adults and smolts migrate downstream from February through May (Moyle 2002). Steelhead typically spawn in gravel substrates in clear, cool, perennial sections of relatively undisturbed streams, with dense canopy cover that provides shade, woody debris, and organic matter. Steelhead usually cannot survive long in pools or streams with water temperatures above 70 degrees Fahrenheit; however, they can use warmer habitats if adequate food is available. Steelhead populations have declined due to degradation of spawning and rearing habitat, introduction of barriers to upstream migration, over-harvesting by recreational fisheries, and reduction in winter flows due to damming and spring flows due to water diversion (Moyle 2002). In 1998, the NMFS published a final rule to list the Central California Coast DPS of steelhead as threatened (NMFS 1998), and in 2005 proposed critical habitat for this and other DPS as accessible reaches of all rivers within the range of each listed DPS (NMFS 2005); the final designation became effective January 2006.

4.3.1.2. Central California Coast Coho Salmon

The coho salmon ranges from Alaska to central coastal California. The Central California Coast Evolutionarily Significant Unit of the coho salmon is concentrated in coastal watersheds between Punta Gorda in Humboldt County and the San Lorenzo River in Santa Cruz County (Spence et al. 2005). Gravel mining, poor logging practices, urbanization, and other sources of streambed alteration have significantly reduced habitat for coho salmon. This reduction in habitat combined with reduced genetic diversity, introduced diseases, overharvesting, and climate change have severely impacted coho salmon populations (Brown et al. 1994). Coho are anadromous, meaning that they spend only a portion of their annual cycle in the marine environment, swimming up coastal freshwater streams to spawn. Coho spawn in cool, clear, freshwater streams and rivers with oceanic outlets. Forested streams provide the highest-quality habitat. Coho deposit eggs at the head of riffles with plentiful medium to small, clean gravel (Moyle 2002). Juveniles seek out cool, deep (> 3 ft) water with substantial overhead cover and instream cover such as woody debris (Moyle 2002).

4.3.1.3. Critical Habitat

Adobe and Barron Creeks are not located within designated critical habitat for the Central California Coast steelhead or Central California Coast coho salmon (NMFS 2005).

4.3.1.4. Essential Fish Habitat

EFH is defined by the NMFS as “all types of aquatic habitat—wetlands, coral reefs, seagrasses, rivers—where fish spawn, breed, feed, or grow to maturity” (National Oceanographic and Atmospheric Agency 2016). The NMFS works with regional fishery

management councils to determine areas of EFH. Adobe and Barron Creeks are not listed as EFH for Central California Coast coho salmon by the *Pacific Coast Salmon Fishery Management Plan* (Pacific Fishery Management Council 1999).

4.3.1.5. Survey Results

The tide gate at Mayfield Slough, located downstream from the BSA, historically excluded but now allows the movement of fish between San Francisco Bay and Adobe and Barron Creeks. Historic records indicate that Central California Coast steelhead, and possibly Central California Coast coho salmon, once inhabited the Adobe Creek, Matadero Creek, and Permanente Creek watersheds. However, these species are currently absent from these creeks due to the construction of barriers, channelization of the creeks (with long reaches of concrete-lined, restricted channels), and a lack of suitable spawning and rearing habitat. Recent sampling in the Adobe Creek watershed indicates no steelhead or non-migratory rainbow trout are present (Leidy 2007). These surveys revealed the presence of a few native species, such as threespine stickleback, Sacramento sucker, and California roach, but also the presence of non-natives such as bluegill, green sunfish, redear sunfish, carp, and rainwater killifish (Leidy 2007). Thus, populations of steelhead and anadromous salmonids are absent from Adobe and Barron Creeks.

The tide gate at Mayfield Slough previously prevented anadromous fish from migrating between San Francisco Bay and Adobe and Barron Creeks, but it was opened within the last few years and now allows fish access to Mayfield Slough. However, the slack water upstream from the tide gate is known to have a striped bass (*Morone saxatilis*) population. Presence of these predators will reduce the likelihood of survival of any anadromous fish accessing the Palo Alto Flood Control Basin through the tide gate. Low water quality in this slack, shallow, warm water will also likely discourage steelhead and other anadromous fish from attempting to migrate upstream.

In the unlikely event that anadromous steelhead or coho salmon entered the tidal gate at Mayfield Slough, the shallow, stagnant water in the BSA and downstream from the BSA in the Palo Alto Flood Control Basin does not provide suitable habitat for these species, which require cool, shaded stream habitats. Thus, steelhead and coho salmon are absent from the BSA.

4.3.1.6. Project Impacts

Anadromous fish and EFH are absent from the BSA and no impacts on these resources are expected to occur as a result of the project. No pile driving will occur as part of the project, and therefore no fish will be injured or killed as a result of pressure waves or high noise levels associated with the project. Project noise levels are also, therefore, not

expected to result in impacts on anadromous fish downstream of the BSA within the Palo Alto Flood Control Basin.

4.3.1.7. Avoidance and Minimization Efforts

Because anadromous fish species and EFH are absent from the BSA and adjacent areas, no avoidance and minimization efforts specific to these species or their habitat are necessary. Avoidance and minimization efforts relative to water quality (see Section 4.1.1.3 above) will address potential water quality impacts that may affect other native fish species and aquatic invertebrates within and downstream from the BSA.

Senate Bill 857 requires that Caltrans complete an assessment of potential barriers to anadromous fish passage prior to commencing project design "for any project using state or federal transportation funds programmed after January 1, 2006, if that project affects a stream crossing on a stream where anadromous fish are, or historically were found" (Senate Bill 857, Kuehl). A fish passage assessment per National Oceanic and Atmospheric Association and CDFW guidelines was not conducted because, while salmonids were historically found in the BSA, the project will not affect a stream crossing, and the proposed project will not further impede fish passage.

4.3.1.8. Compensatory Mitigation

Because anadromous fish and EFH are absent from the BSA, no compensatory mitigation is warranted.

4.3.1.9. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

The project will not result in adverse effects on anadromous fish or EFH because anadromous fish and EFH are absent from the BSA; therefore, the project will not contribute to any cumulative effects on these resources.

4.3.2. SALT MARSH HARVEST MOUSE AND SALT MARSH WANDERING SHREW

The salt marsh harvest mouse (a state and federally endangered species and a state fully protected species) and the salt marsh wandering shrew (a California species of special concern) are similarly associated with tidal marsh habitats in the BSA vicinity. These species are assessed together because potential impacts of the project on these species will be similar. Habitat for both salt marsh harvest mice and salt marsh

wandering shrews consists of pickleweed-dominated areas of tidal marshes and diked and muted tidal marshes.

4.3.2.1. Salt Marsh Harvest Mouse

The salt marsh harvest mouse is a rodent endemic to salt marshes, brackish marshes, and adjacent tidally influenced areas of the San Francisco Bay Estuary. The southern subspecies, *R. raviventris raviventris*, is found in marshes of Corte Madera, Richmond, and the South Bay mostly south of the San Mateo Bridge (State Route 92). The salt marsh harvest mouse depends mainly on dense pickleweed as its primary cover and food source and may utilize a broader source of food and cover that includes saltgrass and other vegetation typically found in the salt and brackish marshes of this region. In natural systems, salt marsh harvest mice can be found in the middle tidal marsh and upland transition zones. Upland refugia are an essential habitat component during high tide events, when the marsh plain is inundated, as salt marsh harvest mice are highly dependent on cover (Shellhammer 1978, as cited in USFWS 1984).

4.3.2.2. Salt Marsh Wandering Shrew

The salt marsh wandering shrew occurs primarily in medium to high wet tidal marsh (6 to 8 ft above mean sea level) with abundant driftwood and other debris for cover (Shellhammer 2000). This species has also been recorded in diked marsh habitat. Within these habitats, individuals typically prefer patches of tall pickleweed, in which they build nests. This species' distribution and habitat associations in the South Bay are not well known.

4.3.2.3. Survey Results

To date, there have been no small mammal trapping studies conducted within the BSA. However, the salt marsh harvest mouse database developed for the South Bay Salt Ponds Restoration Project indicates that salt marsh harvest mice were captured approximately 0.4 mi to the north in Renzel Marsh in 1996 and 0.7 mi to the northeast in the Palo Alto Flood Control Basin in 1975 (USFWS and CDFG 2007). Based on these survey results, as well as a habitat assessment conducted for the project by salt marsh harvest mouse expert Howard Shellhammer, it was determined that the diked brackish marsh habitat adjacent to the BSA may be occupied by salt marsh harvest mice, and presumably also by salt marsh wandering shrews, as these species may co-occur. Pickleweed-dominated diked marsh habitat is present throughout the Palo Alto Flood Control Basin and occurs just outside the BSA, and this habitat could support these two mammals.

No suitable breeding or foraging habitat for the salt marsh harvest mouse or salt marsh wandering shrew occurs within the BSA. The ruderal vegetation within the BSA is dominated by tall, weedy plant species such as mustard and fennel; at ground level, only

the relatively large-diameter stems of these species, rather than dense vegetation, is present. As a result, the BSA lacks high-density ground vegetation to provide cover and foraging opportunities for small mammal species. Therefore, the ruderal habitat in the BSA is not suitable as upland escape habitat for salt marsh harvest mice or wandering shrews, and consequently these species are not expected to occur in the BSA under conditions that will be present during project construction. These species may occur in the BSA only in extreme flood events that inundate the rest of the Flood Control Basin (e.g., when unsuitable habitat such as that present in the BSA represents the only non-inundated habitat in the area), events that occur very rarely.

4.3.2.4. Project Impacts

The ruderal grassland habitat in the BSA is unsuitable as habitat for salt marsh harvest mice and salt marsh wandering shrews, and these species are not expected to occur there during construction.

If project construction were to occur during a flooding event that inundates the Flood Control Basin, salt marsh harvest mice and salt marsh wandering shrews could potentially take refuge in the BSA until the flooding recedes. Thus, during flooding events, there is some potential for project activities to result in take of salt marsh harvest mice or salt marsh wandering shrews within the BSA. However, implementation of the measures described below will ensure that take of salt marsh harvest mice or salt marsh wandering shrews is avoided.

No pile driving activities will occur as part of the project, and thus no very loud noises or percussive activities resulting in strong ground vibrations will occur. The closest marsh habitat where salt marsh harvest mice may occur is nearly 100 ft from the nearest construction activities, which will consist of grading and vehicle circulation activities. Small mammals within suitable habitat outside the BSA will be subjected to increased noise and vibrations during construction. No studies have been conducted to determine what noise levels result in disturbance of salt marsh harvest mice or salt marsh wandering shrews. Because noise and vibration levels will attenuate with increasing distance from the source, the nearly 100-ft distance between construction activities and potential salt marsh harvest mouse/salt marsh wandering shrew habitat may be sufficient to prevent noise and vibrations from affecting these small mammals at all. Should salt marsh harvest mice or salt marsh wandering shrews in nearby marsh habitat move away from the source of noise or vibration, they will move away from the project site and toward higher-quality marsh habitat farther out in the Palo Alto Flood Control Basin. Thus, project noise levels are not expected to cause salt marsh harvest mice or salt marsh wandering shrews to flush out into the open, or to increase mortality of individuals due to of predation. Therefore, project noise impacts will not result in take of individual salt marsh harvest mice or salt marsh wandering shrews.

Construction of the new overcrossing will provide potential perching sites for raptors. Raptors are likely to perch on the new structure when hunting for prey, which may include salt marsh harvest mice and salt marsh wandering shrews, within the Flood Control Basin. However, trees, light poles, and other structures provide existing perches for raptors in the immediate vicinity of the new overcrossing structure. Therefore, the construction of the overcrossing is not expected to result in a substantial increase in the predation of small mammal species inhabiting the Baylands by raptors, or to affect regional populations of these species.

Because the project will not adversely affect habitat for the salt marsh harvest mouse, habitat effects associated with the project will not result in take under the FESA. Further, because salt marsh harvest mice are not expected to occur in the BSA during project construction, the project is not expected to result in the disturbance of individuals of this species. While noise and vibration during certain construction periods may disturb salt marsh harvest mice if they are present in the nearest areas of potentially suitable habitat in the Palo Alto Flood Control Basin, individuals should move away from project activities and other hazards associated with developed areas if they are disturbed at all by noise or vibrations associated with construction. With the implementation of the measures described in Section 4.3.2.5, the project will not result in take of individual salt marsh harvest mice. Therefore, the project is not likely to adversely affect the salt marsh harvest mouse under the FESA.

4.3.2.5. Avoidance and Minimization Efforts

Project-related impacts on salt marsh harvest mice and salt marsh wandering shrews have been avoided to the maximum extent feasible through design considerations. The areas of temporary and permanent disturbance within the Palo Alto Flood Control Basin were minimized to accommodate only the project impact area and vehicle maneuvering areas for grading activities. Temporary staging areas will be located outside of the Baylands, as will construction access roads where practicable. Because the salt marsh harvest mouse is fully protected under California Fish and Game Code and take cannot occur, extra care to avoid take of the species, particularly during the enhancement activities, is warranted despite the low probability of this species' occurrence in the BSA. Therefore, implementation of the following measures will ensure avoidance of impacts on salt marsh harvest mice and salt marsh wandering shrews:

- **Worker Environmental Awareness Program.** Before any construction activities begin, a USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include descriptions of the salt marsh harvest mouse and salt marsh wandering shrew, their habitats, the importance of the species, the general measures that are being implemented to conserve these species as they relate to the project, and the boundaries within which the project may be accomplished.

- **Herbaceous Cover Removal.** Prior to the start of project activities within the Flood Control Basin portion of the BSA (including vehicle/equipment access), herbaceous vegetation will be removed from impact areas to eliminate cover for salt marsh harvest mice and salt marsh wandering shrews, thereby discouraging them from occurring in impact areas. Vegetation removal will start where the Bay trail crosses Adobe Creek, and will proceed gradually northwards towards the open marsh habitat in the Flood Control Basin. Vegetation will not be removed during a flooding event that inundates the Flood Control Basin, as these are the conditions in which salt marsh harvest mice and salt marsh wandering shrews are most likely to be present in the BSA. A USFWS-approved biologist familiar with the biology of these species will conduct a pre-construction survey prior to vegetation removal, and will monitor the vegetation removal process. Vegetation will be removed using hand-held equipment (e.g., weed-whackers). This will allow any small mammals, including salt marsh harvest mice and salt marsh wandering shrews, to escape the BSA under the cover of vegetation, and will encourage movement of such small mammals towards available vegetated habitat to the north outside the BSA. All herbaceous vegetation that could potentially conceal a salt marsh harvest mouse or salt marsh wandering shrew within the BSA will be removed, including all herbaceous understory vegetation on the north bank of Adobe Creek. All vegetation that is removed will be hauled offsite the day it is removed, and will not be left on the site to provide potential cover for small mammal species. It is possible that vegetation within the Flood Control Basin portion of the BSA will be removed during the fall prior to construction to reduce potential impacts to nesting birds (as discussed in Section 4.4.1.3). In such a case, if sufficient herbaceous cover regrows prior to construction the following year, this herbaceous cover will again be removed by hand prior to initiation of construction activities.

- **Exclusion Barrier.** The area of vegetation removal will extend approximately 2 to 3 ft beyond the area where equipment and personnel will operate during project construction to create an open area that will discourage salt marsh harvest mice and salt marsh wandering shrews from approaching the exclusion barrier. After removal of the vegetation and prior to the start of construction activities within the Flood Control Basin, a barrier will be installed at the outer limits of the work area to exclude salt marsh harvest mice and salt marsh wandering shrews from the BSA; this barrier will be installed along the perimeter of the work area in the portion of the BSA located northeast of US 101 (see Figure 3). This barrier, which will be shown on the project plans and will be constructed under the guidance of a USFWS-approved biologist, will consist of a 3-ft tall, tight cloth, smooth plastic, or sheet-metal (or similar material approved by the USFWS) fence toed into the soil at least 3 inches deep and supported with stakes placed on the inside of the barrier. A USFWS-approved biologist will conduct a pre-construction survey of the area where vegetation was removed prior to construction access, and will monitor the installation of the barrier. Following the installation of the barrier, designated construction personnel will check its integrity each morning that construction activities occur, and will initiate repairs immediately as needed.

- **Environmentally Sensitive Area Fencing.** Within the Flood Control Basin, BSA limits will also be clearly demarcated with Environmentally Sensitive Area fencing to avoid inadvertent disturbance of any habitat outside of the designated

construction area during construction activities. This fencing can be combined with the exclusion barrier but must not be outside that barrier.

- **Visual Screening.** Additional green screen fencing will be installed along the limits of the BSA between work areas and natural habitats within the Palo Alto Flood Control Basin to screen project activities from view of the Baylands and avoid potential visual disturbance of salt marsh harvest mice and salt marsh wandering shrews. This fencing can be combined with the fencing described above but must not be outside the exclusion barrier.

- **Immediate Work Stoppage.** If a salt marsh harvest mouse or salt marsh wandering shrew, or an animal that could be a harvest mouse or wandering shrew (e.g., a similar species of mouse or shrew), is observed within the BSA during project activities, all work that could result in the injury or death of the individual will stop immediately and the USFWS-approved biologist will be immediately notified. The animal will be allowed to leave the area on its own and will not be handled before work in that area resumes.

4.3.2.6. Compensatory Mitigation

Project activities are not likely to adversely affect individuals or populations of the salt marsh harvest mouse or salt marsh wandering shrew. Therefore, no compensatory mitigation is warranted.

4.3.2.7. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

Cumulative effects on the salt marsh harvest mouse and salt marsh wandering shrew result from a number of past, current, and reasonably foreseeable future projects that occur in marsh and wetland habitats in the San Francisco Bay Estuary. Although such projects could result in impacts on these species, it is expected that most current and future projects that impact these species and their habitats will be required to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process, as well as through the FESA Section 7 consultation process. As a result, most projects in the region will mitigate their impacts on salt marsh harvest mice and salt marsh wandering shrews, minimizing cumulative impacts on these species. Further, a number of additional projects, such as the South Bay Salt Ponds Restoration Project, contribute positively to cumulative effects on these species by enhancing wetland habitats around the San Francisco Bay.

In addition, because no take of the salt marsh harvest mouse or salt marsh wandering shrew will occur with the implementation of the measures described in Section 4.3.2.5,

the project will not make a considerable contribution to cumulative effects on the salt marsh harvest mouse or salt marsh wandering shrew.

4.3.3. CALIFORNIA BLACK RAIL

The California black rail is a small rail that inhabits a variety of marsh types. California black rails are most abundant in extensive tidal marshes with some freshwater input (Evens et al. 1991). They nest primarily in pickleweed-dominated marshes with patches or borders of bulrushes, often near the mouths of creeks. Black rails build nests in tall grasses or marsh vegetation during spring and lay about six eggs. Nests usually are constructed of pickleweed and are placed directly on the ground or slightly above ground in vegetation. Black rails feed on terrestrial insects, aquatic invertebrates, and possibly seeds (Trulio and Evens 2000). The California black rail was listed under the CESA in 1971 and is fully protected species under the California Fish and Game Code.

The California black rail reportedly nested in the Alviso area in the early 1900s (Wheelock 1916), but until recently it was known in the South Bay primarily as a non-breeder. Black rails have been detected in Triangle Marsh east of the project area since 2012. Fourteen of these rails were tracked in Triangle Marsh throughout the 2012 nesting season, suggesting that the species nests there (Laurie Hall, pers. comm. 2013). During the spring and early summer of 2013–2016, small numbers of black rails have been detected calling along lower and mid-Alviso Slough, and breeding was confirmed at Alviso Marine County Park (South Bay Birds list-serve 2016). However, black rails nest primarily in marshes in northern San Francisco Bay (i.e., San Pablo Bay and Suisun Bay), and this species is expected to occur in most parts of the South Bay primarily as a scarce winter visitor.

The scarcity of nesting black rails in the South Bay is presumably a result of habitat loss. Tidal marsh habitat has been lost, but perhaps more important to winter survival is the loss of high-tide refugia. Upland transition habitat, both on natural levees within marshes and on landward edges of marshes, has been lost as a result of fill for development, as well as reductions in marsh size and resulting reductions in natural levees along higher-order channels. Predation of black rails by egrets, herons, gulls, and harriers has been observed in these marshes during winter high tides, as rails are forced into the open by rising water. The importance of this predation on a population level, especially in light of impacts on high tide refugia, is unknown, but it may be a significant factor in the extirpation of nesting populations of the species from the South Bay.

4.3.3.1. Survey Results

No California black rails have been recorded near the BSA, despite the extensive coverage of the area by birders and this species' distinctive calls. California black rails have been recorded at the Palo Alto Baylands Park approximately 1.5 mi northwest of

the BSA, and along Alviso Slough approximately 5.0 mi northeast of the BSA (Cornell Lab of Ornithology 2016). The distribution of nonbreeding black rails in the South San Francisco Bay is poorly understood, as they are extremely difficult to detect during the winter. Their numbers in the South Bay have been increasing over the past several years, and there is some possibility that wintering black rails could occur in the Palo Alto Flood Control Basin during the nonbreeding season, although they have not been documented in this area previously. However, the habitat in the BSA is nontidal and lacks dense ground cover, and is therefore unsuitable for wintering black rails. Outside of the BSA, habitat within the Palo Alto Flood Control Basin is nontidal and of low quality for foraging black rails, gradually becoming higher quality near the tidal gate at Mowry Slough. Black rails are not expected to forage within the BSA, and are highly unlikely to forage in the low-quality nontidal habitats nearby within the Palo Alto Flood Control Basin. Should black rails occur within the Palo Alto Flood Control Basin, they are expected to be far to the northwest within or near tidal habitats. Due to the lack of records of the species in the vicinity, they are expected to do so only very rarely and in low numbers.

Black rails have recently started to nest in the South Bay in tidal marshes in the Alviso area. However, no summering black rails in the South Bay have yet been recorded in nontidal areas such as the Palo Alto Flood Control Basin, and thus this species is not expected to nest close enough to the BSA to be affected by project activities.

4.3.3.2. Project Impacts

Individual black rails are not expected to occur on the site or to be directly affected by the project, as no suitable habitat for this species is present within the BSA. Project activities will not result in impacts on nesting California black rails, as no nesting habitat is present within or near enough to the BSA to be affected by project activities. Occasional foraging black rails could potentially occur in the Palo Alto Flood Control Basin during the nonbreeding season, though based on the complete absence of any detections despite intensive birder coverage, they are expected to occur infrequently and in low numbers, if at all.

Should overwintering black rails occur close enough to the BSA to be affected by the project, heavy ground disturbance, noise, and vibrations caused by construction activities east of US 101 that could result in the disturbance of foraging individuals will cause them to move away from the source and therefore away from work areas. Because foraging habitat for these rails is widely available in the Palo Alto Flood Control Basin, any limited project-related disturbance of foraging rails and their habitat is not expected to be limiting to their populations. Further, this disturbance is not expected to flush individual rails.

4.3.3.3. Avoidance and Minimization Efforts

The project is not expected to affect black rails or their habitats. Therefore, no avoidance and minimization measures are warranted.

4.3.3.4. Compensatory Mitigation

Project activities are not expected to result in any effect on habitat for, or individuals or populations of, the California black rail. Therefore, no compensatory mitigation is warranted.

4.3.3.5. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

Cumulative effects on the California black rail result from a number of past, current, and reasonably foreseeable future projects that occur in marsh and wetland habitats in the San Francisco Bay Estuary. Although such projects could result in impacts on this species, it is expected that most current and future projects that impact these species and their habitats will be required to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process, as well as through the CESA consultation process. As a result, most projects in the region will mitigate their impacts on California black rails, minimizing cumulative impacts on this species. Further, a number of additional projects, such as the South Bay Salt Ponds Restoration Project, contribute positively to cumulative effects on this species by enhancing tidal habitats around the San Francisco Bay.

The project will not result in adverse effects on habitat for, or populations of, the California black rail; therefore, it will not contribute to any cumulative effects on these resources.

4.3.4. CALIFORNIA RIDGWAY'S RAIL

The California Ridgway's rail is a secretive marsh bird that is currently endemic to marshes of the San Francisco Bay. This species formerly nested at several other locations, including Humboldt Bay (Humboldt County), Elkhorn Slough (Monterey County), and Morro Bay (San Luis Obispo County), but is now extirpated from all sites outside of the San Francisco Bay (Harding-Smith 1993). California Ridgway's rails nest in salt and brackish marshes along the edge of the Bay, and are most abundant in extensive salt marshes and brackish marshes dominated by Pacific cordgrass, pickleweed, and marsh gumplant and that contain complex networks of tidal channels

(Harvey 1980). Shrubby areas adjacent to or within these marshes are also important for predator avoidance at high tides.

Since the mid-1800s, about 90 percent of the San Francisco Bay's marshlands have been eliminated through filling, diking, or conversion to salt evaporation ponds (Goals project 1999). As a result, the California Ridgway's rail lost most of its former habitat, and its population declined severely. The subspecies was listed as endangered by the USFWS in 1970 (USFWS 1970) and by the State of California in 1971. The USFWS approved a joint recovery plan for the salt marsh harvest mouse and the California Ridgway's rail in 1984 (USFWS 1984), and an updated Tidal Marsh Species Recovery Plan was approved in 2013. Critical habitat has not been proposed for the California Ridgway's rail.

Ridgway's rails are typically found in the intertidal zone and sloughs of salt and brackish marshes dominated by pickleweed, Pacific cordgrass, gumplant, saltgrass, jaumea, and adjacent upland refugia. They may also occupy habitats with other vegetative components, which include but are not limited to bulrush, cattails, and Baltic rush. Shrubby areas adjacent to or within these marshes are also important for predator avoidance at high tides. The species does not occur in muted tidal or diked salt marshes. However, they have been documented in brackish marshes in the South Bay. Surveys conducted during the 1990 breeding season (H. T. Harvey & Associates 1990c) and winter season (H. T. Harvey & Associates 1990d) found a number of California Ridgway's rails occupying salt/brackish transitional marshes and several brackish, alkali bulrush-dominated marshes. In addition, California Ridgway's rails were found in nearly pure stands of alkali bulrush along Guadalupe Slough in 1990 and 1991 (H. T. Harvey & Associates 1990c, 1990d, 1991). Occasional nonbreeding individuals may also wander upstream along tidal sloughs from their typical salt marsh habitats into tidal brackish/freshwater marsh habitats.

4.3.4.1. Survey Results

No suitable nesting or foraging habitat for California Ridgway's rails occurs within or near the BSA, and Ridgway's rails have not been documented within the BSA or in nearby areas (Olofson Environmental, Inc. 2011, PRBO Conservation Science 2011, CNDDB 2016). Although Ridgway's rails have been reported in the BSA vicinity on a few occasions by amateur birders (Cornell Lab of Ornithology 2016), no experienced birders or rail surveyors have ever recorded Ridgway's rails in the Palo Alto Flood Control Basin, despite extensive coverage of the Basin by birders for decades. Due to the species' close resemblance of the common Virginia rail (*Rallus limicola*), similarities between these two species' calls, and the strong association of Ridgway's rails with tidal habitats, these unverified reports are likely misidentified Virginia rails.

Unlike California black rails, the distribution of California Ridgway's rails and their habitats in the South Bay is well documented. Ridgway's rails occur in tidal habitats along the edges of San Francisco Bay, with the nearest documented occurrences along Permanente Creek approximately 1.0 mi to the east and at Charleston Slough approximately 1.3 mi to the northeast (Olofson Environmental, Inc. 2011, PRBO Conservation Science 2011, CNDDB 2016). Ridgway's rails do not occur in muted tidal or diked brackish marshes, and are not expected to occur in the Palo Alto Flood Control Basin. They will occasionally wander upstream from their typical salt marsh habitats into nearby tidal brackish/freshwater marsh habitats; however, the entire portion of Adobe Creek within the BSA lacks suitable marsh habitat for use by this species, and the nearest tidal habitat is at least 1.2 mi downstream from the BSA. Thus, Ridgway's rails are not expected to travel upstream to forage along the Adobe Creek channel, as they are strongly associated with tidal habitats.

Ridgway's rails are known to take refuge in nontidal habitats, including ruderal habitats, during high tides. Ridgway's rail mortality is greatest during the winter, primarily because of predation during extreme winter high tides (Eddleman 1989, Albertson 1995). During high tides, rails and other wildlife hide within any available cover in the transition zone and high marsh, but as people approach, the birds may flush and attract predators. In addition, the presence of people in or near the high marsh plain or upland areas during marsh inundation may prevent Ridgway's rails from leaving the lower marsh plain to seek cover, which also leaves them vulnerable to predation (Evens and Page 1983, Evens and Page 1986). However, the nearest tidal habitat to the BSA where Ridgway's rails potentially occur is approximately 1.0 mi to the northeast, outside of the Palo Alto Flood Control Basin. Should Ridgway's rails move into adjacent nontidal areas during high tides, they are expected to remain in areas near the tidal habitat; individuals will not traverse the more than 1.0 mi of unsuitable diked marsh habitat to reach the BSA or nearby areas during high tides. No Ridgway's rails have been recorded even in the portion of the Flood Control Basin closest to tidal marshes. Thus, Ridgway's rails are not expected to occur within the BSA or close enough to the BSA to be affected by project activities, even during high tides, and the project will have no effect on the species under FESA.

4.3.4.2. Project Impacts

Project activities will not affect California Ridgway's rails, nests of Ridgway's rails, or habitat for Ridgway's rails, as no suitable tidal habitat for this species is present within or near enough to the BSA such that individuals or their nests could be affected by project activities.

4.3.4.3. Avoidance and Minimization Efforts

The project will have no substantial effects on California Ridgway's rails or their habitats. Therefore, no avoidance and minimization measures are warranted.

4.3.4.4. Compensatory Mitigation

Project activities are not expected to result in any effect on habitat for, or populations of, the California Ridgway's rail. Therefore, no compensatory mitigation is warranted.

4.3.4.5. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

The project will not result in adverse effects on habitat for, or populations of, the California Ridgway's rail; therefore, it will not contribute to any cumulative effects on these resources.

4.3.5. WESTERN POND TURTLE

The western pond turtle occurs in ponds, streams, and other aquatic habitats in the Pacific Slope drainages of California and northern Baja California, Mexico. Ponds or slack-water pools with suitable basking sites (e.g., logs) are an important habitat component for pond turtles. Their nesting season typically occurs from April through July, with the peak occurring in late May to early July. Females lay eggs in upland habitats, typically in clay or silty soils in unshaded (often south-facing) areas within a few hundred yards of aquatic habitat. Nesting sites typically consist of open habitat with full sun exposure and are typically located along stream or pond margins, but if no suitable habitat is available, adults have been documented making considerable overland journeys and nesting as far as 1300 ft (0.25 mi) from the water (Jennings and Hayes 1994, Bury and Germano 2008). Juveniles feed and grow in shallow aquatic habitats (often creeks) with emergent vegetation and ample invertebrate prey. Although degradation of aquatic habitats due to development, introduction of non-native predators, and water diversions all impact western pond turtles, the destruction of non-aquatic habitat (e.g., basking areas and nesting habitats) is equally detrimental to their long-term persistence.

4.3.5.1. Survey Results

No western pond turtles were detected during the October 2007 focused survey or the November 2013 reconnaissance-level surveys, and pond turtles are not known to occur in Barron or Adobe Creeks (CNDDB 2016). Marginally suitable foraging habitat for

western pond turtles occurs within the shallow aquatic habitat and emergent vegetation in Barron and Adobe Creeks, and marginally suitable nesting habitat for turtles occurs in some nearby upland areas in the Baylands.

Western pond turtles have been recorded at Lagunita approximately 3.6 mi to the southwest and in San Francisquito Creek approximately 3.7 mi to the east. They are unable to reach the BSA from these areas due to the lack of hydrological connection and the presence of several miles of dense urban development between these areas. However, it is possible that small numbers of turtles could disperse to the BSA from other nearby natural areas where they may occur, such as the downstream reaches of streams and freshwater wetlands located along San Francisco Bay to the north and southeast. Given that western pond turtles are not known to occur in the site vicinity (CNDDB 2016), they were not observed during site surveys, and that urbanization likely precludes the occurrence of a viable population in Adobe and Barron Creeks, western pond turtles are expected to occur in the BSA rarely and in low numbers, if at all.

4.3.5.2. Project Impacts

Although western pond turtles are widespread in the project region, the species is not particularly abundant along Adobe Creek, and may not occur there at all. However, because individuals of this species can be long-lived, their widespread distribution in the project region may belie a population that will likely decline substantially in the future because of poor reproduction, as young turtles are seen in relatively few parts of the region. Therefore, the loss of even a few individuals could reduce the viability of a population to the extent that it will be extirpated. Project activities could result in the injury or mortality of small numbers of individual western pond turtles or western pond turtle nests. For example, individual turtles or their eggs may be directly harmed or killed as a result of crushing by construction personnel or equipment or as a result of desiccation or burying. The implementation of the avoidance and minimization measures described above will minimize the risk of mortality of western pond turtles and their nests during project construction. Therefore, project-related impacts on this species will not be substantial.

Project construction will result in the permanent loss of 0.17 ac of marginal upland nesting and dispersal habitat for pond turtles, and the temporary disturbance of 0.74 ac of marginal upland nesting and dispersal habitat for pond turtles. However, this habitat is marginal and the amount impacted is minute compared to the area of available nesting and dispersal habitats in the vicinity. Therefore, the project will not result in substantial adverse effects on habitats for western pond turtles.

4.3.5.3. Avoidance and Minimization Efforts

The project will incorporate avoidance and minimization measures, as described Section 4.1.1.3 above, for work adjacent to Adobe and Barron Creeks to prevent impacts related to the degradation of water quality in downstream habitats.

During all surveys and monitoring performed for the project, the qualified biologist will look for western pond turtles within the BSA. If any pond turtles are detected in areas where they could potentially suffer injury or mortality due to project activities, they will be relocated in consultation with the CDFW to areas outside of the BSA that provide suitable habitat.

There are no practicable measures to detect or avoid impacts on western pond turtle nests. In the unlikely event that any turtle nests are found during a pre-construction survey or during monitoring by a biologist, the nests will be avoided until the eggs have hatched, if feasible. However, if avoidance of the nest is not feasible (e.g., if avoidance will result in an unacceptable delay in the project's schedule) or if the eggs are discovered after the nest has been impacted, any viable eggs will be relocated to a suitable location outside the impact area in consultation with the CDFW.

4.3.5.4. Compensatory Mitigation

With implementation of the avoidance and minimization measures described above, the project will minimize impacts on western pond turtles and their nests, and it is likely that western pond turtles, should they occur in the BSA, will continue to use the reach of Adobe Creek following the completion of construction. Further, given the temporary nature of impacts on the majority of upland habitat within the BSA, project-related impacts will not result in substantial adverse effects on upland habitat for western pond turtles. As a result, no compensatory mitigation of impacts on western pond turtles or their habitats is warranted.

4.3.5.5. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

Cumulative effects on the western pond turtle result from a number of past, current, and reasonably foreseeable future projects that occur in wetland and aquatic habitats in the San Francisco Bay Area. Although such projects could result in impacts on this species, it is expected that most current and future projects that impact this species and its habitats will be required to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process. As a result, most projects in the region will mitigate their impacts on western pond turtles, minimizing cumulative impacts on this species.

Due to the very low probability that the western pond turtle will be impacted by the project, and with implementation of the avoidance and minimization measures described above, the project will have no measurable contribution to cumulative effects on populations or habitat of western pond turtles.

4.3.6. NORTHERN HARRIER AND BRYANT'S SAVANNAH SPARROW

The northern harrier and Bryant's savannah sparrow, listed as California Species of Special Concern, are discussed in this section together as both may nest near the BSA, and they may occasionally forage in the BSA, but neither is expected to breed within the BSA.

4.3.6.1. Northern Harrier

The northern harrier nests in marshes and grasslands, usually those with tall vegetation and moisture sufficient to inhibit accessibility of nest sites to predators. This species forages, primarily on small mammals and birds, in a variety of open grassland, ruderal, and agricultural habitats.

Northern harriers breed in small numbers in extensive patches of tidal marsh habitat along the edges of the South San Francisco Bay. Within Santa Clara County, northern harriers nest along the South Bay within pickleweed-dominated salt marshes, brackish marshes with bulrush, and dense ruderal grasslands (Bousman 2007a). The species is known to nest in the Baylands. Northern harriers forage in a variety of open habitats, especially during the nonbreeding season, and the species is fairly widespread as a forager in grasslands, extensive wetlands, and agricultural areas in the project region during migration and winter. In some years, when vole populations are particularly high, high densities of harriers can be found in some areas (De Anza College Wildlife Corridor Steward Team 2009).

4.3.6.2. Bryant's Savannah Sparrow

The Bryant's savannah sparrow is one of four subspecies of savannah sparrows that nest in California. The subspecies *Passerculus sandwichensis alaudinus* occurs primarily along coastal and bay shore areas from Humboldt Bay to Morro Bay, and is found year-round in low-elevation, tidally influenced habitat. Specifically, this subspecies prefers pickleweed-dominated salt marshes, although it also occurs in adjacent grasslands and ruderal areas. Bryant's savannah sparrows nest in the South Bay primarily in short pickleweed-dominated portions of diked/muted tidal salt marsh habitat, and in adjacent ruderal habitat. In the BSA, Bryant's savannah sparrows may nest in small numbers in ruderal grassland habitat that is adjacent to diked nontidal marsh habitat outside of the BSA. During the nonbreeding season, *Passerculus sandwichensis*

alaudinus and other savannah sparrow subspecies may forage in open areas throughout the project area.

4.3.6.3. Survey Results

No northern harriers or savannah sparrows were observed nesting or foraging within the BSA during any of the reconnaissance-level surveys. The tall, dense, ruderal habitat within the BSA does not provide suitable nesting habitat for northern harriers due to the presence of adjacent trees, development, and human disturbance. Because breeding harriers are strongly associated with open areas, any pairs occupying the Baylands will preferentially nest in the nearby expanses of marsh and ruderal grassland habitats within the Palo Alto Flood Control Basin rather than within the BSA. Suitable foraging habitat for northern harriers is present within the BSA, and breeding and nonbreeding harriers could potentially forage there year-round.

Savannah sparrows nest in shorter vegetation than the tall ruderal vegetation present in the BSA. This species is known to nest in the Flood Control Basin and could potentially nest in shorter vegetation (e.g., pickleweed) outside of the BSA.

4.3.6.4. Project Impacts

The habitats in the BSA are used only by foraging harriers, and possibly foraging Bryant's savannah sparrows, while open habitats within the Palo Alto Flood Control Basin outside the BSA vicinity may support nesting pairs. Construction-related disturbance during the nesting season, including noise-related disturbances, could potentially result in the disturbance of active nests of these species located outside the BSA, resulting in the incidental loss of fertile eggs or nestlings or the abandonment of nests. In addition, the project will result in the temporary and permanent loss of a small amount of foraging habitat for these species.

Suitable habitat for these species within the Baylands is relatively abundant. Therefore, the permanent loss of up to 0.17 ac of upland foraging habitat and temporary disturbance of up to 0.74 ac of upland foraging habitat within the BSA for foraging harriers and savannah sparrows will not result in appreciable impacts on regional populations. Further, project restoration will improve habitats for these species in the long term. The potential disturbance of up to one nest of each species is not expected to result in appreciable impacts on regional populations. Therefore, project-related impacts will not be substantial.

With the implementation of the avoidance and minimization measures described in Section 4.4.1.3 below, the project will avoid or minimize impacts to northern harriers and Bryant's savannah sparrows. The project will impact a very small amount of potential

foraging habitat, but such impacts will have no measureable effect on regional populations of these species.

4.3.6.5. Avoidance and Minimization Efforts

As discussed in Section 4.3.6.4, the project will have no substantial effects on northern harriers, Bryant's savannah sparrows, or their habitats. Therefore, no avoidance and minimization measures are warranted.

Nevertheless, these two species like most other native bird species in the project vicinity, are protected by the MBTA and California Fish and Game Code. This project will implement measures to avoid and minimize impacts on active nests of such protected birds as described in Section 4.4.1.3.

4.3.6.6. Compensatory Mitigation

Because the project will have no effect on the regional abundance of the northern harrier or Bryant's savannah sparrow, no compensatory mitigation is warranted.

4.3.6.7. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

Cumulative impacts on the northern harrier and Bryant's savannah sparrow result from past, current, and reasonably foreseeable future projects in the region. For some projects, impacts on these species may be considered significant during the CEQA process, and mitigation of such impacts will be provided. Mitigation of impacts on northern harriers, Bryant's savannah sparrows, and their habitats may also be required through the permitting process. As a result, cumulative projects are not expected to have a significant cumulative effect on these species. Further, a number of additional projects, such as the South Bay Salt Ponds Restoration Project, contribute positively to cumulative effects on these species by enhancing tidal habitats around the San Francisco Bay.

With implementation of the avoidance and minimization measures described above, the project will have no measurable contribution to cumulative effects on populations, or habitat, of northern harriers or Bryant's savannah sparrows.

4.3.7. SPECIAL-STATUS BIRDS WITH POTENTIAL TO NEST IN THE BSA

There are four special-status bird species listed as California Species of Special Concern with the potential to nest in the BSA (as opposed to nesting outside of, but

near, the BSA in the case of the northern harrier and Bryant's savannah sparrow discussed above): the loggerhead shrike, white-tailed kite, San Francisco common yellowthroat, and Alameda song sparrow. All of these species occur year-round in the BSA vicinity, and are known to nest in ruderal or riparian habitats in the Baylands. They are assessed together because the potential impacts of the project on these species are similar.

4.3.7.1. Loggerhead Shrike

The loggerhead shrike is a predatory songbird associated with open habitats interspersed with shrubs, trees, poles, fences, or other perches from which it can hunt (Yosef 1996). Loggerhead shrikes are still fairly common in parts of the San Francisco Bay Area, but urbanization has reduced available habitat, and local populations are likely declining (Cade and Woods 1997, Humple 2008). This species nests in a number of locations in the project region where open grassland, ruderal, or agricultural habitat with scattered brush, chaparral, or trees that provide perches and nesting sites occurs (Bousman 2007b). Ruderal habitat within the BSA provides suitable nesting, roosting, and foraging habitat for loggerhead shrikes.

4.3.7.2. White-tailed Kite

White-tailed kites are known to nest along the northern edge of Santa Clara County, throughout the open areas edging the San Francisco Bay (Bousman 2007a). White-tailed kites nest in trees or shrubs, typically in areas away from high human activity and those with extensive open foraging habitat with adequate prey. In the project vicinity, there are foraging areas of adequate size to support white-tailed kites within the Palo Alto Flood Control Basin and throughout the Baylands. Within the BSA, up to one pair of white-tailed kites could potentially nest in the eucalyptus trees along Adobe Creek, and forage in adjacent ruderal habitat; however, high levels of human activity may preclude nesting.

4.3.7.3. San Francisco Common Yellowthroat

The San Francisco common yellowthroat is one of approximately 12 subspecies of common yellowthroat recognized in North America, two of which occur in the project region: the California Species of Special Concern, *Geothlypis trichas sinuosa*, and the widespread subspecies *Geothlypis trichas arizela.* Common yellowthroats nesting in the BSA are likely of the special-status subspecies *Geothlypis trichas sinuosa*, but intergrades between the two subspecies may also occur in this area (SFBBO 2012). Because subspecies cannot be reliably distinguished in the field and intergrades often occur, determination of the presence of San Francisco common yellowthroat can be achieved only by locating birds that are actively nesting within the breeding range known for the subspecies.

The San Francisco common yellowthroat inhabits emergent vegetation and nests primarily in fresh and brackish marshes, although it also nests in salt marsh habitats that support tall vegetation (Guzy and Ritchison 1999). This subspecies builds open-cup nests low in the vegetation and nests from mid-March through late July (Guzy and Ritchison 1999, Gardali and Evens 2008).

4.3.7.4. Alameda Song Sparrow

The Alameda song sparrow is one of three subspecies of song sparrow that breed only in salt marsh habitats in the San Francisco Bay Area (Chan and Spautz 2008). Prime habitat for Alameda song sparrows consists of large areas of tidally influenced salt marsh dominated by cordgrass and gumplant and intersected by tidal sloughs, offering dense vegetative cover and singing perches. Although the subspecies *Melospiza melodia pusillula* (the "species" of special concern) occasionally is found in brackish marshes dominated by bulrushes, it is apparently very sedentary and is not known to disperse upstream into freshwater habitats (Basham and Mewaldt 1987). While the range of the Alameda song sparrow has remained relatively unchanged over time, populations have been reduced substantially and are continually threatened by the loss and fragmentation of salt marshes around the Bay (Nur et al. 1997, Chan and Spautz 2008).

Alameda song sparrows are likely absent from the BSA, as the nearest suitable salt marsh habitat is located approximately 1.2 mi to the northeast. However, the location of the interface between populations of the Alameda song sparrow and the common race (*Melospiza melodia gouldii*) is not definitive due to the difficulties distinguishing these subspecies in the field. Song sparrows nesting within the BSA belong to either subspecies, or may be intergrades between the two.

4.3.7.5. Survey Results

No focused breeding-season surveys have been conducted within the BSA for special-status breeding birds. However, the habitat within the BSA provides potential nesting habitat for loggerhead shrikes (in ruderal grassland habitat), white-tailed kites (in eucalyptus trees in the riparian habitat), and San Francisco common yellowthroats.

As noted, Alameda song sparrows are likely absent from the BSA; however, because the location of the interface between populations of the Alameda song sparrow and the common race is not definitive, song sparrows nesting within the BSA belong to either subspecies, or may be intergrades between the two.

4.3.7.6. Project Impacts

Construction-related disturbance during the nesting season, including noise-related disturbances, could potentially result in the loss or disturbance of small numbers of nests

of these species. In addition, the project will result in the permanent loss of up to 0.17 ac of ruderal nesting habitat for these species, as well as the temporary disturbance of up to 0.74 ac of ruderal nesting habitat for these species.

Construction of the new overcrossing will provide perching sites for raptors within the Palo Alto Flood Control Basin. Raptors are likely to perch on the new structure when hunting for prey, such as special-status nesting birds, within the Flood Control Basin. However, eucalyptus trees, light poles, and other structures provide existing perches for raptors in the immediate vicinity of the location of the new overcrossing structure. Therefore, the construction of the overcrossing is not expected to create a substantial increase in the predation of birds inhabiting the Flood Control Basin by raptors, or to affect regional populations of these species.

None of the special-status nesting birds is particularly rare in the region, and suitable habitat for these species within the region is relatively abundant. Suitable habitat for these species within the Baylands is also relatively abundant. Therefore, the permanent loss of up to 0.17 ac of nesting and foraging habitat and temporary disturbance of up to 0.74 ac of upland nesting and foraging habitat within the BSA for nesting and foraging loggerhead shrikes, white-tailed kites, San Francisco common yellowthroats, and Alameda song sparrows will not result in appreciable impacts on regional populations. Further, project restoration activities will improve habitats for these species in the long term. The potential disturbance of nesting of these species as a result of the project is not expected to result in appreciable impacts on regional populations due to loss of habitat or individuals. Therefore, project-related impacts on these species will not be substantial.

With the implementation of the avoidance and minimization measures described in Section 4.4.1.1 below, the project will avoid causing the death or injury of any native bird species, including loggerhead shrikes, white-tailed kites, San Francisco common yellowthroats, and Alameda song sparrows. The project will impact a very small amount of potential nesting and foraging habitat for these species, but such impacts will have no measureable effect on regional populations.

4.3.7.7. Avoidance and Minimization Efforts

As discussed in Section 4.3.7.6, the project will have no substantial effects on loggerhead shrikes, white-tailed kites, San Francisco common yellowthroats, Alameda song sparrows, or their habitats. Therefore, no avoidance and minimization measures are warranted. Nevertheless, all of these species are protected by the MBTA and California Fish and Game Code. This project will implement measures to avoid and minimize impacts on active nests of such protected birds as described in Section 4.4.1.3.

4.3.7.8. Compensatory Mitigation

The project will have no effect on the regional abundance of the loggerhead shrike, white-tailed kite, San Francisco common yellowthroat, or Alameda song sparrow due to loss of habitat or loss of individuals. Therefore, no compensatory mitigation is proposed.

4.3.7.9. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

Cumulative impacts on the loggerhead shrike, white-tailed kite, San Francisco common yellowthroat, and Alameda song sparrow result from past, current, and reasonably foreseeable future projects in the region. For some projects, impacts on these species may be considered significant during the CEQA process, and mitigation of such impacts will be provided. Mitigation of impacts on these species and their habitats may also be required through the permitting process. As a result, cumulative projects are not expected to have a significant cumulative effect on these species.

With implementation of the avoidance and minimization measures described above, the project will have no measurable contribution to cumulative effects on populations or habitat of these species.

4.4. General Wildlife Issues

4.4.1. MIGRATORY BIRDS

As described in Section 2.1 above, the MBTA and the California Fish and Game Code protect migratory birds, including their eggs, nests, and young. The majority of migratory birds that have the potential to nest within the BSA are not special-status species and are regionally common. Nevertheless, the project will implement measures to avoid and minimize effects on active nests of migratory birds to comply with the MBTA and California Fish and Game Code.

4.4.1.1. Survey Results

Several species of birds protected under the MBTA and the California Fish and Game Code may nest within or adjacent to the BSA. These include the cliff swallow, Anna's hummingbird, red-tailed hawk, California scrub-jay, American crow, Bewick's wren, dark-eyed junco (*Junco hyemalis*), and house finch. Cliff swallows are known to nest under bridges over Adobe Creek in the BSA, and many additional species may nest in trees and shrubs or on buildings and structures within and adjacent to the BSA.

4.4.1.2. Project Impacts

Construction disturbance during the breeding season could result in the incidental loss of eggs or nestlings, either directly through the destruction or disturbance of active nests or indirectly by causing the abandonment of nests. Project impacts on colonially nesting birds (i.e., the large numbers of cliff swallows that nest under the Adobe Creek pedestrian bridge, the East Bayshore Frontage Road Bridge, and the US 101 bridge) could potentially represent a substantial impact on their local populations, and will be considered significant under CEQA. However, project impacts on other bird species that could potentially nest within or adjacent to the BSA will not be considered a substantial adverse effect due to the local and regional abundances of these species and/or the low magnitude of the potential impact of the project to these species. Nevertheless, all native bird species are protected under the MBTA and California Fish and Game Code. With implementation of the avoidance and minimization measures provided below, the project has a low likelihood of resulting in the death or injury of migratory birds or their active nests, eggs, or young. The project will affect a very small amount of potential nesting habitat for migratory birds, but such effects will have no measurable effect on regional populations of these species because the impacted habitat represents such a small proportion of regionally available habitat.

Construction of the new overcrossing will provide perching sites for raptors within the Flood Control Basin. Raptors are likely to perch on the new structure when hunting for prey, such as migratory birds, within the Flood Control Basin. However, eucalyptus trees, light poles, and other structures provide existing perches for raptors in the immediate vicinity of the location of the new overcrossing structure. Therefore, the construction of the overcrossing is not expected to create a substantial increase in the predation of migratory birds inhabiting the Flood Control Basin by raptors, or to affect regional populations of these species.

In addition, construction of the overcrossing over US 101 could affect resident or migratory bird species by increasing collision hazards and the amount of artificial lighting in the BSA. Migrating birds, such as songbirds, can be affected by human-built structures because of their propensity to migrate at night and their tendency to be disoriented by artificial light, making them vulnerable to collision with obstructions. In addition, birds migrating at night are strongly attracted to sources of artificial light, particularly during periods of inclement weather. Exposure to a light field at night can cause alteration of a straight flight path, and the change in flight path will keep the bird near the light source longer than if the flight path remained straight. Brightly lit bridges or overcrossings can confuse migrating birds, trapping them in the bright light, which they are reluctant to fly out of, until they are exhausted or collide with a structure.

Many animals are sensitive to light cues, which influence their physiology and shape their behaviors, particularly during the breeding season (Ringer 1972, de Molenaar et al.

2006). Artificial light has been used as a means of manipulating breeding behavior and productivity in captive birds for decades (de Molenaar et al. 2006), and has been shown to influence the territorial singing behavior of wild birds (Longcore and Rich 2004, Miller 2006, de Molenaar et al. 2006). While it is difficult to extrapolate results of experiments on captive birds to wild populations, it is known that photoperiod (the relative amount of light and dark in a 24-hour period) is an essential cue triggering physiological processes as diverse as growth, metabolism, development, breeding behavior, and molting (de Molenaar et al. 2006). This holds true for birds, mammals (Beier 2006), and other taxa as well, suggesting that increases in ambient light may interfere with these processes across a wide range of species, resulting in impacts on wildlife populations.

Artificial lighting may indirectly impact mammals and birds by increasing the nocturnal activity of predators like owls, hawks, and mammalian predators (Negro et al 2000, Longcore and Rich 2004, DeCandido and Allen 2006, Beier 2006). The presence of artificial light may also influence habitat use by rodents (Beier 2006) and by breeding birds (Rogers et al. 2006, de Molenaar et al. 2006), by causing avoidance of well-lit areas, resulting in a net loss of habitat availability and quality.

In the absence of protective measures, the potential impacts of the proposed overcrossing due to bird strikes and increased lighting will be substantial under CEQA due to the potential for large numbers of birds moving along the Baylands to collide with the bridge structure. However, with the implementation of the avoidance and minimization measures described below, project impacts on bird populations due to potential collisions with the overcrossing structure and increased lighting will be less than significant.

4.4.1.3. Avoidance and Minimization Measures

The following measures will be implemented to ensure that project activities avoid substantial impacts on birds and comply with the MBTA and California Fish and Game Code.

- **Avoidance of the Nesting Bird Season.** To the extent feasible, project activities will be scheduled to avoid the avian nesting season. If such activities are scheduled to take place outside the nesting season, all impacts on nesting birds, including raptors, protected under the MBTA and California Fish and Game Code, will be avoided. The nesting season for most birds in Santa Clara County typically extends from February 1 through August 31.

- **Vegetation Removal during the Non-Nesting Season.** If project activities will not be initiated until after the start of the nesting season, potential nesting substrate (e.g., bushes, trees, grasses, and other vegetation) that is scheduled to be removed by the project, if any, may be removed prior to the start of the nesting season (e.g., prior to February) to reduce the potential for initiation of nests. The project schedule includes vegetation removal in the Flood Control

Basin portion of the BSA the fall prior to construction to minimize impacts to nesting birds the following spring. If it is not feasible to schedule vegetation removal during the nonbreeding season, or where vegetation cannot be removed (e.g., in areas immediately adjacent to the BSA), then pre-construction surveys for nesting birds will be conducted as described below.

- **Pre-construction/Pre-disturbance Surveys for Nesting Birds.** If it is not possible to schedule project activities between September 1 and January 31, then pre-construction surveys for nesting birds will be conducted by a qualified biologist to ensure that no nests will be disturbed during project implementation. These surveys will be conducted no more than 48 hours prior to the initiation of project activities. During this survey, a qualified biologist will inspect all potential nesting habitats (e.g., trees, shrubs, grasslands, and buildings) within 300 ft of impact areas for raptor nests and within 100 ft of impact areas for nests of non-raptors.

- **Buffers around Active Nests.** If an active nest (i.e., a nest with eggs or young, or any completed raptor nest attended by adults) is found sufficiently close to work areas to be disturbed by these activities, the biologist, in consultation with CDFW, will determine the extent of a disturbance-free buffer zone to be established around the nest (typically 300 ft for raptors and 100 ft for other species), to ensure that no nests of species protected by the MBTA and California Fish and Game Code will be disturbed during project implementation. Because the majority of the BSA is already subject to disturbance by vehicles and pedestrians, activities that will be prohibited from occurring within the buffer zone around a nest will be determined on a case-by-case basis. In general, activities prohibited within such a buffer while a nest is active will be limited to new construction-related activities (i.e., activities that were not ongoing when the nest was constructed) involving significantly greater noise, human presence, or vibrations than were present prior to nest initiation.

- **Screening.** As described for salt marsh harvest mice and salt marsh wandering shrews above, additional fencing with a green screen will be installed along the limits of the BSA between work areas and natural habitats within the Palo Alto Flood Control Basin. This fencing will screen project activities from view of the Baylands and minimize potential visual disturbance of nesting birds as a result of the project.

- **Nest Deterrence.** If necessary to avoid impacts to active nests (i.e., nests containing eggs or young), nest starts may be removed on a regular basis (e.g., every second or third day), starting in late January or early February, or measures such as exclusion netting or slippery panels may be placed over nesting sites on the existing bridges to prevent active nests from becoming established. Any netting installed for nest deterrence must be installed appropriately by an experienced deterrence technician, under the supervision of a qualified biologist, and must be inspected and maintained regularly to avoid the entrapment or entanglement of birds.

Construction of the proposed overcrossing structure could create a collision hazard for birds. Implementation of the following measures will minimize the potential for bird

collisions with the new overcrossing structure and minimize adverse effects of increased lighting on birds and other animals in adjacent areas:

- The overcrossing will be designed to minimize the potential for bird strikes; it will not include highly reflective surfaces, suspension cables, transparent surfaces, or features such as small wires or netting that could injure birds.
- No power lines shall be suspended above the bridge deck.
- Night lighting on the bridge will be minimized; only lighting needed for safety purposes will be installed. All lighting will be directed at the bridge deck or downward, not outwards toward natural areas, and lights will be shielded to minimize spillover of light into natural areas.

4.4.1.4. Compensatory Mitigation

Because of the limited nature of project effects on migratory bird species and their habitats (with incorporation of avoidance and minimization measures), no compensatory mitigation is warranted.

4.4.1.5. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

With implementation of the avoidance and minimization measures described above, the project will make no measurable contribution to cumulative effects on populations, or habitat, of migratory bird species.

4.4.2. BAT ROOSTS

Bats roost in association with a number of bridges in the South Bay. Accordingly, H. T. Harvey & Associates ecologists surveyed the bridges for signs of bat use on August 22, 2007, and deployed an Anabat bat detector and ZCAIM recorder, a device used to detect vocalizing bats, on November 8, 2007, to investigate further bat use of the US 101/Adobe Creek Bridge. A follow-up, breeding-season survey was conducted on June 17, 2008, to determine more conclusively whether the Adobe Creek Bridge supports a maternity roost.

4.4.2.1. Survey Results

The surveys at the Adobe Creek Bridge detected five Yuma myotis foraging over the water under the bridge. Additionally, staining on the concrete girders provided evidence that this bridge is used as a night roost. No day-roosting habitat for bats was observed on this bridge.

4.4.2.2. Project Impacts

Because the Adobe Creek Bridge is only used as a night roost by bats, the project will not result in impacts on day-roosting bats or maternity colonies of bats. As a result, no bat colonies will be displaced or disturbed by the project, and no individual bats are expected to be killed or injured during project construction. However, if project activities that take place on or adjacent to the Adobe Creek Bridge occur at night, these activities may disturb small numbers of night-roosting bats. Individual bats using the bridge as a night roost may relocate their nighttime activities during construction, but they will likely continue to use the bridge after construction is completed.

The Yuma myotis observed foraging under the bridge are fairly common in the region, and suitable night-roosting habitat (e.g., bridges) for this species and other species of bats that could potentially use the Adobe Creek bridge as a night roost is abundant in the region. Therefore, the temporary disturbance of night-roosting bats under the Adobe Creek Bridge will not result in appreciable impacts on regional populations. Therefore, project-related impacts on these species will not be substantial.

Project construction within the portion of the BSA in the Baylands will result in the permanent and temporary loss of a small amount of foraging habitat for bats. However, the amount of this habitat impacted is minute compared to the area of available foraging habitat available to bat species in the vicinity. Therefore, the project will not result in substantial adverse effects on habitat for foraging bats.

Depending on the final design, the construction of the new overcrossing may create new roosting habitat for bats. Large numbers of bats are unlikely to use this overcrossing regardless of its design, as its height above US 101 and Adobe Creek (10 ft to 18.5 ft, per the 15 percent plans) and proximity to the San Francisco Bay will affect roosting habitat with cool temperatures and windy conditions. Bats are more likely to use available roosts at lower elevations and that are less exposed to winds and cooler temperatures, such as the Adobe Creek Bridge. Because bats are expected to use the new overcrossing in low numbers, if at all, the creation of this habitat is not expected to result in appreciable effects (positive or negative) on regional populations. There is some potential for bats roosting on the new overcrossing to have a higher probability of mortality due to vehicle strikes, but due to the minimal number of bats expected to be roosting on the overcrossing this also will not result in appreciable effects on regional populations.

4.4.2.3. Avoidance and Minimization Efforts

The project will have no substantial effects on roosting bats. Therefore, no avoidance and minimization measures are warranted.

4.4.2.4. Compensatory Mitigation

Because of the limited nature of project effects on roosting bat species and their habitats, no compensatory mitigation is warranted.

4.4.2.5. Cumulative Impacts

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

Cumulative effects on roosting bats result from a number of past, current, and reasonably foreseeable future projects that affect roosting habitat in the region. Although such projects could result in impacts on these species, it is expected that most current and future projects that impact this species and its habitats will be required to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process. As a result, most projects in the region will mitigate their impacts on roosting bats, minimizing cumulative impacts on these species. The project will have no measurable contribution to cumulative effects on populations, or habitat, of northern harriers.

4.4.3. WILDLIFE MOVEMENT

For many species, the landscape is a mosaic of suitable and unsuitable habitat types. Environmental corridors, such as stream courses, are segments of suitable habitat that provide connectivity between these different habitats. On a broader level, corridors also function as avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas.

4.4.3.1. Survey Results

Aquatic wildlife species use Adobe Creek to cross from one side of the freeway to the other. The creek, in addition to the adjacent existing seasonal underpass trail, also serves as a movement pathway for terrestrial species. Due to the intensive urbanization along the project alignment and the heavy traffic volume along US 101, there is little potential for movement of wildlife across the highway aside from the existing overpasses and the creeks that cross under the project alignment. Common, urban-adapted species such as raccoons, striped skunks, and the non-native Virginia opossum may use the stream channel within and adjacent to the BSA to move from one side of US 101 to the other.

4.4.3.2. Project Impacts

No project work will occur in Adobe or Barron Creeks, and the project is not expected to interfere with the movement of wildlife along these channels. Rather, it is possible that by relocating human crossings of US 101 in the project vicinity to an over-crossing, wildlife may be more likely to use the undercrossing to move across the highway. Overall, the BSA will retain its value for wildlife movement, as it will continue to provide an undercrossing through which animals may move freely. Therefore, the project will not substantially affect wildlife movement through the area.

4.4.3.3. Avoidance and Minimization Efforts

No project work will occur in Adobe or Barron Creeks, and the project is not expected to interfere with the movement of wildlife along these channels. Although numerous wildlife species move through the Baylands along migratory pathways, the BSA is located on the periphery of this habitat and project construction will not interfere with wildlife movement in the vicinity. Thus, no avoidance or minimization measures are necessary.

4.4.3.4. Compensatory Mitigation

The project is not expected to result in any substantial increase in barriers to wildlife movement, and thus no compensatory mitigation is necessary.

4.4.3.5. Cumulative Effects

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

Cumulative impacts on wildlife movement result from impacts on the movement of individuals of common and special-status wildlife species as a result of past, current, and reasonably foreseeable future projects in the project vicinity. The project does not permanently increase barriers to the movement of wildlife in the vicinity, and there are no other projects that could constrain wildlife movement in the project vicinity. Although future projects could result in impacts on wildlife movement, it is expected that these projects will undergo separate CEQA review. Ecological impacts determined to be significant during CEQA review for these individual projects will be mitigated to less-than-significant levels. Therefore, the project does not contribute substantially to cumulative effects on wildlife movement.

4.5. Invasive Weeds

The two natural upland habitats in the BSA, ruderal grassland and riparian eucalyptus woodland, are highly invaded habitats. As detailed in Sections 3.1.3.2 and 3.1.3.3, these

habitats are almost entirely composed of invasive plant species. Construction disturbance has the potential to increase populations of invasive weeds and to cause these species to spread beyond areas within the proposed project footprint, which will reduce diversity and degrade habitat functions and values for native plant and wildlife species.

4.5.1. SURVEY RESULTS

Several invasive plant species listed as having “high”, “moderate”, or “limited” impact ratings by the Cal-IPC (2016) were observed within or adjacent to the BSA (Table 3). These species were observed within the ruderal grassland and riparian eucalyptus woodlands habitats in the BSA.

Table 3: List of Invasive Plant Species Observed at or Near the Project Site and the California Invasive Plant Council Ratings.

Common Name	Scientific Name	Habitat Where Species Was Observed on Site	Rating*
giant reed	*Arundo donax*	riparian eucalyptus woodland	High
wild oats	*Avena barbata*	ruderal grassland	Moderate
black mustard	*Brassica nigra*	ruderal grassland	Moderate
ripgut brome	*Bromus diandrus*	ruderal grassland	Moderate
Italian thistle	*Carduus pycnocephalus*	ruderal grassland	Moderate
bull thistle	*Cirsium vulgare*	ruderal grassland	Moderate
poison hemlock	*Conium maculatum*	ruderal grassland	Moderate
Pampas grass	*Cortaderia jubata*	aquatic	High
brass buttons	*Cotula coronopifolia*	aquatic	Limited
Italian ryegrass	*Festuca perennis*	diked brackish marsh, ruderal grassland	Moderate
fennel	*Foeniculum vulgare*	ruderal grassland and riparian eucalyptus woodland	High
English ivy	*Hedera helix*	riparian eucalyptus woodland	High
bristly ox-tongue	*Helminthotheca echioides*	ruderal grassland	Limited
lollypop tree	*Myoporum laetum*	ruderal grassland	Moderate
Bermuda buttercup	*Oxalis pes-caprae*	developed/landscaped	Moderate
Canary Island date palm	*Phoenix canariensis*	developed/landscaped	Limited
rabbitsfoot grass	*Polypogon monspeliensis*	aquatic	Limited
alkali Russian thistle	*Salsola soda*	diked brackish marsh and ruderal grassland	Moderate
radish	*Raphanus sativus*	ruderal grassland	Limited
Himalayan blackberry	*Rubus armeniacus*	riparian eucalyptus woodland	High
smilo grass	*Stipa miliacea*	ruderal grassland	Limited
periwinkle	*Vinca major*	developed/landscaped	Moderate

*These ratings are derived from the California Invasive Plant Council website: http://www.cal-ipc.org/paf/

4.5.2. PROJECT IMPACTS

These invasive species are particularly fast-growing herbaceous or shrub invaders and are often disturbance-adapted. Soil disturbance (an effect expected for this proposed

project) is often followed by a plant invasion of the disturbed area. Some of the areas that will be impacted by proposed project activities will be covered under increased hardscape, which will completely prevent invasive weed establishment in these areas. All of the proposed project's direct permanent and temporary impacts are to developed habitat types or ruderal grassland, which supports a suite on non-native species. The proposed project could contribute to spread of invasive weeds if disturbance resulted in an increase in the density (and therefore propagules) of weeds on the site or if propagules from the site are spread to other natural habitats via equipment or personnel.

4.5.3. AVOIDANCE AND MINIMIZATION EFFORTS

To avoid and minimize the spread of invasive weeds, construction BMPs will be implemented. With the incorporation of these BMP's, project-related impacts are not expected to cause an increase in invasive species populations within the BSA.

- During construction of the proposed project, all seeds and straw materials used on site will be weed-free rice (or similar material acceptable to the City) straw, and all gravel and fill material will be certified weed free to the satisfaction of the City and any deviation from this will be approved by the City.

- During construction of the proposed project, vehicles and all equipment will be washed (including wheels, undercarriages, and bumpers) before entering the proposed project footprint. Vehicles will be cleaned at existing construction yards or legally operating car washes, both before entering the project site and before vehicles from the project site move to natural habitats in other project sites.

- Following construction of the proposed project, a standard erosion control seed mix (acceptable to the City) from a local source shall be planted within the temporary impact zones on any disturbed ground that will not be under hardscape, landscaped, or maintained. This will minimize the potential for the germination of the majority of seeds from non-native, invasive plant species.

4.5.4. COMPENSATORY MITIGATION

With the implementation of avoidance and minimization measures, the project will have limited effects due to the spread of invasive weeds. Thus, no compensatory mitigation is warranted.

4.5.5. CUMULATIVE IMPACTS

Cumulative effects refer to effects of direct and indirect impacts in the project's Action Area. We are unaware of any additional current or future projects that will result in direct or indirect impacts within the Action Area.

Cumulative effects due to the spread of invasive weeds result from a number of past, current, and reasonably foreseeable future projects that occur in marsh and wetland

habitats in the San Francisco Bay Estuary. Although such projects could result in impacts on species and habitats due to the spread of invasive weeds, it is expected that most current and future projects that impact these species and their habitats will be required to mitigate these impacts through the CEQA, Section 1600, or Section 404/401 permitting process, as well as through the FESA Section 7 consultation process. As a result, most projects in the region will mitigate their impacts due to the spread of invasive weeds, minimizing cumulative impacts. Further, a number of additional projects, such as the South Bay Salt Ponds Restoration Project, contribute positively to cumulative effects on local species and habitats enhancing wetland habitats around the San Francisco Bay.

In addition, because the project will minimize the spread of invasive weeds with the implementation of the measures described in Section 4.5.3, the project will not make a considerable contribution to cumulative effects due to the spread of invasive weeds.

4.6. Summary of FESA Impact Determinations

Although not specifically directed to do so in the recent Caltrans NES Guidelines (2014), a summary of determinations of effect has been included within this chapter. Table 4 provides a summary of the determination of effects under FESA.

Table 4: Summary of Potential Project Impacts on Federally Listed, Proposed, or other Special-Status Species or Critical Habitat for these Species in Relation to FESA.

Common Name	Scientific Name	Status	Potential Effect Under FESA
Central California Coast coho salmon	*Oncorhynchus kisutch*	FE, SE	No effect
Central California Coast steelhead	*Oncorhynchus mykiss*	FT	No effect
California Ridgway's rail	*Rallus obsoletus obsoletus*	FE, SE, SP	No effect
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE, SE, SP	Not likely to adversely affect*

*With implementation of the avoidance and minimization measures described herein

Chapter 5 – Results: Permits and Technical Studies for Special Laws or Conditions

5.1. Federal Endangered Species Act Consultation Summary

Provisions of the FESA, as amended (16 USC 1531), protect federally listed threatened and endangered species and their habitats from unlawful take. “Take” under the FESA includes activities such as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” The USFWS regulations define harm to include some types of “significant habitat modification or degradation.” The U.S. Supreme Court ruled on June 29, 1995, that “harm” may include habitat modification “...where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.”

One federally listed species could reasonably be expected to occur in close proximity to the project site: the salt marsh harvest mouse. Measures to avoid, minimize, and compensate for impacts on this species are described in Section 4.3.2.5 above. The project may affect, but is not likely to adversely affect the salt marsh harvest mouse and formal consultation for this species should not be necessary. However, the need for formal consultation for the salt marsh harvest mouse will be determined by the USFWS. Caltrans, with its delegated National Environmental Policy Act authority, is the lead federal agency for Section 7 consultation.

5.2. California Endangered Species Act Consultation Summary

Provisions of California’s Endangered Species Act (Fish and Game Code of California, Chapter 1.5, Sections 2050-2116) protect state-listed threatened and endangered species. The CDFW regulates activities that may result in “take” of individuals. Take is defined as, “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill”.

The California black rail, a state threatened species, and the salt marsh harvest mouse, a state endangered species, could potentially occur in the project vicinity. Measures to avoid, minimize, and compensate for impacts on the salt marsh harvest mouse are described in Section 4.3.2.5 above. The project will have no substantial effects on California black rails or their habitats, and no avoidance and minimization measures are warranted. Both species are fully protected species under the California Fish and Game Code and take is not allowed; therefore, the CDFW cannot issue incidental take approval for these species under CESA.

5.3. Essential Fish Habitat Consultation Summary

No EFH exists within the BSA, because no fish species subject to any fisheries management plans are present. Therefore, consultation with NMFS concerning EFH is not warranted.

5.4. Wetlands and Other Waters and CDFW Riparian Jurisdictional Coordination Summary

A WTA was conducted for this project and no wetlands were determined to be present within the BSA. Adobe Creek and Barron Creek were mapped to the OHW marks of the active channel as aquatic habitat and are considered to be waters of the U.S./State (Figure 3). Riparian habitat associated with Adobe Creek is considered to be jurisdictional by the CDFW under Section 1602 of the California Fish and Game Code. However, no work within the channel of Adobe or Barron Creek (below top of bank), or in riparian habitat, will be performed, and thus the project will not require permits from the USACE, RWQCB, or CDFW.

5.5. Invasive Species

Several invasive plant species were observed within or adjacent to the BSA (Table 3). As described in Section 2.3.1, H. T. Harvey & Associates plant ecologist É. Alford, Ph.D., conducted a reconnaissance-level assessment of the BSA on November 18 and 21, 2013, to assess and map existing biotic habitats. The two natural upland habitats on the site, ruderal grassland and riparian eucalyptus woodland are highly invaded habitats. As detailed in Sections 3.1.3.2 and 3.1.3.3, these habitats are almost entirely composed of invasive plant species. Because of the extent of invasives in these habitats, and because the entire area covered by natural habitat will be restored and restored with natives, no further reconnaissance assessments are needed. Invasive species, particularly fast-growing herbaceous invaders, are often disturbance-adapted, and soil disturbance (an effect expected for this construction project) will often be followed by an invasion of the disturbed area by these species. However, the project will implement avoidance and minimization measures to prevent further spread or introduction of invasives. Therefore, project-related effects are not expected to cause an increase in invasive species populations within the BSA.

5.6. Federal Migratory Bird Treaty Act

As described in Section 4.4.1.1, several species of birds protected under the MBTA and the California Fish and Game Code may nest within or adjacent to the BSA. These include the cliff swallow, Anna's hummingbird, red-tailed hawk, California scrub-jay, American crow, Bewick's wren, dark-eyed junco, and house finch. As described in Section 4.3.7, there are four special-status bird species listed as California Species of

Special Concern with the potential to nest in the BSA the loggerhead shrike, white-tailed kite, San Francisco common yellowthroat, and Alameda song sparrow. As described in Section 4.4.1.3, the project incorporates measures to avoid effects on nesting birds.

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Appendix A – USFWS Special-status Species List

Appendix B – Tree Survey Report

Appendix C – Plants Observed within or near the BSA

Family	Scientific Name	Common Name
Anacardiaceae	*Pistacia chinensis*	Chinese pistache
Apiaceae	*Conium maculatum*	poison hemlock
	Foeniculum vulgare	fennel
Apocynaceae	*Vinca major*	periwinkle
Araliaceae	*Hedera helix*	English ivy
Arecaceae	*Phoenix canariensis*	Canary Island date palm
Asteraceae	*Baccharis pilularis*	coyote bush
	Carduus pycnocephalus	Italian thistle
	Cirsium vulgare	bull thistle
	Cotula coronopifolia	brass buttons
	Helminthotheca echioides	bristly ox-tongue
Brassicaceae	*Brassica nigra*	black mustard
	Nasturtium officinale	watercress
	Raphanus sativus	radish
Chenopodiaceae	*Atriplex prostrata*	fat-hen
	Salicornia pacifica	Pacific pickleweed
	Salsola soda	alkali Russian thistle
Cyperaceae	*Cyperus eragrostis*	tall flatsedge
Fagaceae	*Quercus agrifolia*	coast live oak
Frankeniaceae	*Frankenia salina*	alkali heath
Malvaceae	*Malva parviflora*	cheeseweed
Myrtaceae	*Eucalyptus globulus*	blue gum
	Eucalyptus sideroxylon	red ironbark
	Melaleuca quinquenervia	punktree
Oleaceae	*Fraxinus latifolia*	Oregon ash
Oxalidaceae	*Oxalis pes-caprae*	Bermuda buttercup
Pinaceae	*Pinus radiata*	Monterey pine
Poaceae	*Arundo donax*	giant reed
	Avena barbata	wild oats
	Bromus diandrus	ripgut brome
	Cortaderia jubata	Pampas grass
	Distichlis spicata	salt grass
	Elymus ponticus	tall wheatgrass
	Festuca perennis (Lolium perenne)	Italian ryegrass
	Hordeum jubatum	foxtail barley
	Phragmites australis	common reed
	Poa annua	annual bluegrass
	Polypogon monspeliensis	rabbitsfoot grass
	Stipa miliacea	smilo grass
Onagraceae	*Epilobium ciliatum*	fringed willowherb
Plantaginaceae	*Veronica anagallis-aquatica*	water speedwell
Polygonaceae	*Persicaria* sp.	smartweed
	Rumex pulcher	fiddle dock
Rosaceae	*Rubus armeniacus*	Himalayan blackberry
Salicaceae	*Salix lasiolepis*	arroyo willow
Scrophulariaceae	*Myoporum laetum*	lollypop tree
Typhaceae	*Typha latifolia*	cattail

The species are arranged alphabetically by family name for all vascular plants encountered during the plant survey. Plants are also listed alphabetically within each family. Species nomenclature is from Baldwin (2012).

Appendix D – Delineation of Wetlands and Other Waters