Coast Highway (Hill Street) Bridge
over San Luis Rey River Replacement NES



Natural Environment Study

Including Focused Surveys for Special-Status Species, Jurisdictional Waters/Wetland Delineation, Bioacoustics and Noise Analyses, and Conceptual Mitigation Plan

Coast Highway over the San Luis Rey River

City of Oceanside, San Diego County, California

District 11-SD

BRLS-5079(030)

April 2023

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

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STATE OF CALIFORNIA
Department of Transportation
and City of Oceanside

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LIST OF ABBREVIATED TERMS

AASHTO	Association of State Highway and Transportation Officials
amsl	above mean sea level
APN	Assessor's Parcel Number
BMP	Best Management Practice
BSA	Biological Study Area
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CIDH	Cast-In-Drilled-Hole
City	City of Oceanside
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of San Diego
CRPR	California Rare Plant Rank
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DOT	U.S. Department of Transportation
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Federal Endangered Species Act
ESHA	Environmentally Sensitive Habitat Area
FCH	Final Critical Habitat
FHWA	Federal Highway Administration
GPS	Global Positioning System
HBP	federal-aid Highway Bridge Program
HCP	Habitat Conservation Plan
I-5	Interstate 5
Leq	average A-weighted decibel sound level over a one-hour period
MBTA	Migratory Bird Treaty Act
MHCP	Multiple Habitat Conservation Program
MOU	Memorandum of Understanding
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NMFS	National Marine Fisheries Service
PFMC	Pacific Fishery Management Council
RECON	RECON Environmental, Inc.
ROW	right-of-way

RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SEL	sound exposure level
SR-76	State Route 76
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Summary

The City of Oceanside proposes to replace the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River (Br. No. 57C0322), which is located approximately 0.3 mile south of Harbor Drive, immediately west of and parallel to Interstate 5, in the city of Oceanside, San Diego County, California. The project is funded by the federal-aid Highway Bridge Program administered by the Federal Highway Administration through the California Department of Transportation Local Assistance Program. The replacement bridge will meet current applicable City, American Association of State Highway and Transportation Officials, and California Department of Transportation design standards. Two project alternatives are analyzed in this report. Alternative 1 involves bridge replacement along the existing alignment and would require the existing bridge and roadway to be closed during construction. Alternative 2 involves bridge replacement immediately west of the current bridge alignment to maintain traffic on the existing bridge and roadway during construction.

To support the analysis provided in this report, the following biological and focused studies were conducted: a general biological survey; vegetation and habitat mapping; focused surveys for rare plants, tidewater goby (*Eucyclogobius newberryi*; federally endangered), southern California steelhead (*Oncorhynchus mykiss irideus,* pop.10; federally endangered), light-footed Ridgway's rail (*Rallus obsoletus levipes*; federally and state endangered and fully protected), least bell's vireo (*Vireo bellii pusillus*; federally and state endangered) , southwestern willow flycatcher (*Empidonax traillii extimus*; federally and state endangered), coastal California gnatcatcher (*Polioptila californica californica*; federally threatened and state Species of Special Concern), and bats; an essential fish habitat assessment; a jurisdictional wetland/waters delineation; bioacoustics study; and a noise study. The results of each of these studies are provided as appendices to this document.

Whichever alternative is chosen, the project is a bridge replacement and will not increase traffic capacity, add lanes, or substantially widen the bridge. The project has been designed to keep permanent and temporary impacts to the minimum necessary to fulfill the project purpose and need, but it will result in impacts to habitats and natural communities of special concern, jurisdictional wetlands and waters, and special status plant and animal species. Direct permanent and temporary project impacts are summarized in Table S-1. Direct impacts may occur from alteration or loss of habitat through bridge construction and demolition and staging and equipment access. Additional potential direct temporary impacts include noise impacts to nesting birds. Direct temporary impacts to breeding light-footed Ridgway's rail, least Bell's vireo, coastal California gnatcatcher, and/or other special status birds and raptors may occur as a result of construction noise, including paving and pile driving operations. No cumulative impacts to sensitive biological resources are anticipated.

Potential indirect temporary impacts include water quality impacts from inadvertent release of hazardous materials, sediment, or other construction-related runoff. Release of pollutants or sedimentation could have an indirect temporary impact on fish (e.g., tidewater goby) within and downstream of the project impact area.

Avoidance and minimization measures have been incorporated into each project alternative to minimize potential impacts to habitats, natural communities, jurisdictional wetlands/waters, and

special status plant and animal species; and to prevent the introduction or spread of invasive species. These are presented in detail in Chapter 4 and include delineation of approved work areas; environmental education for project personnel; biological monitoring during construction; best management practices (e.g., erosion control measures); pre-construction surveys for special status plant species, special status avian species, and nesting birds protected by the Migratory Bird Treaty Act and California Fish and Game Code; and noise reduction measures to avoid impacts to special status avian species.

The majority of the mitigation for temporary and permanent impacts to sensitive vegetation communities, jurisdictional wetlands and waters, and special status plant species is proposed on site through implementation of the Conceptual Mitigation Plan, which includes on-site mitigation within the temporary project impact areas and an adjacent Habitat Enhancement Area. Temporary impacts to native habitat would be mitigated at a 1:1 ratio through revegetation of temporary impact areas. Permanent impacts would be mitigated at a minimum 3:1 ratio through a combination of on-site creation, re-establishment, enhancement and restoration and purchase of off-site credits from an approved mitigation bank within the San Luis Rey watershed such as the Brook Forest Conservation/Mitigation Bank, Wildlands' San Luis Rey Mitigation Bank, and/or Wildlands' Buena Creek Conservation Bank. All on-site mitigation areas are located along the San Luis Rey River in the Coastal Zone, but outside of the Caltrans right-of-way. Any impacted special status plants (e.g., sticky dudleya [*Dudleya viscida*; California Native Plant Society Rare Plant Rank 1B.2], San Diego marsh-elder [*Iva hayesiana*; CRPR 2B.2], Lewis' evening-primrose [*Camissoniopsis lewisii*; California Native Plant Society Rare Plant Rank 3]) would be included in the plant palette for mitigation areas.

Beneficial effects to special status animal species are anticipated following implementation of the Conceptual Mitigation Plan. Successful implementation of the mitigation plan is anticipated to result in a net gain of high-quality native upland and riparian habitat on site, providing higher quality nesting habitat for multiple avian species and decreasing the potential long-term habitat degradation caused by invasive species.

Temporary and permanent impacts to jurisdictional wetlands/waters would require permit authorizations from the U.S. Army Corps of Engineers through the Section 404 Permit Program and Section 408, from the California Department of Fish and Wildlife through a 1602 Streambed Alteration Agreement, from the Regional Water Quality Control Board through a 401 State Water Quality Certification, and from the California Coastal Commission under a Coastal Development Permit.

Consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service will be required pursuant to Section 7 of the Federal Endangered Species Act to ensure the proposed avoidance, minimization, and mitigation measures would adequately protect federally listed species so as to not jeopardize the continued existence of or result in the destruction of critical habitat for those species. In addition, a consistency determination will be required pursuant to Section 2080.1 of the California Fish and Game Code to ensure the proposed measures would adequately protect state listed species and avoid unnecessary "take."

Table S-1: Sensitive Biological Resource Impacts by Project Alternative.

Sensitive Biological Resource	Alternative 1 Impacts		Alternative 2 Impacts		Habitat Enhancement Area
	Permanent	Temporary	Permanent	Temporary	Temporary
Freshwater marsh	0.02 acre	0.09 acre	0.02 acre	0.08 acre	–
Disturbed southern riparian scrub	0.07 acre	0.65 acre	0.19 acre	0.53 acre	0.14 acre native habitat enhancement
Non-native riparian	0.23 acre	0.42 acre	0.19 acre	0.46 acre	3.10 acre native habitat enhancement
Open water	– †	0.80 acre	– †	0.83 acre	–
Diegan coastal sage scrub	0.11 acre	1.00 acre	0.23 acre	0.88 acre	–
Disturbed Diegan coastal sage scrub	–	0.17 acre	–	0.17 acre	–
Eucalyptus woodland	–	0.74 acre	–	0.74 acre	–
Disturbed habitat	0.69 acre	2.60 acre	0.58 acre	2.70 acre	–
Urban/ developed	1.38 acre	7.32 acre	1.60 acre	7.09 acre	–
Wildlife movement	None expected	Remove vegetative cover, disrupt movement; construction noise	None expected	Remove vegetative cover, disrupt movement; construction noise	Remove vegetative cover, disrupt movement
USACE Non-wetland Waters of the U.S.	– †	0.80 acre (228 linear feet)	– †	0.83 acre (227 linear feet)	–
USACE Wetland	0.25 acre	1.06 acre	0.35 acre	0.96 acre	2.10 acre native habitat enhancement
CDFW/RWQCB Streambed	– †	0.80 acre (228 linear feet)	– †	0.83 acre (227 linear feet)	–
CDFW/RWQCB State Wetlands (Riparian Habitat)	0.32 acre	1.15 acre	0.40 acre	1.07 acre	0.12 acre native habitat enhancement
CCC Wetlands	0.32 acre	1.95 acre	0.40 acre	1.89 acre	3.24 acre native habitat enhancement
CCC Environmentally Sensitive Habitat	0.43 acre	3.11 acre	0.63 acre	2.94 acre	3.24 acre native habitat enhancement
San Diego ambrosia (*Ambrosia pumila*)	None expected	None expected	None expected	None expected	None expected
Variegated dudleya (*Dudleya variegata*)	None expected	Salvage and translocate if found	None expected	Salvage and translocate if found	None expected
Sticky dudleya (*Dudleya viscida*)	None expected	Salvage and translocate if found	None expected	Salvage and translocate if found	None expected
San Diego marsh-elder (*Iva hayesiana*)	None expected	1 individual	None expected	1 individual	None expected

Sensitive Biological Resource	Alternative 1 Impacts		Alternative 2 Impacts		Habitat Enhancement Area
	Permanent	Temporary	Permanent	Temporary	Temporary
Lewis' evening-primrose (*Camissoniopsis lewisii*)	None expected	60 individuals	None expected	60 individuals	None expected
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	None expected	None expected	None expected	None expected	120 individuals
Monarch (*Danaus plexippus*)	None expected	Remove suitable habitat	None expected	Remove suitable habitat	None expected
Tidewater goby (*Eucyclogobius newberryi*)	None expected †	Noise impacts; Remove suitable habitat within FCH	None expected †	Noise impacts; Remove suitable habitat within FCH	None expected
Southern steelhead (*Oncorhynchus mykiss*)	None expected	Noise impacts; Disrupt movement along migration route	None expected †	Noise impacts; Disrupt movement along migration route	None expected
Groundfish, pelagic fish, and other Pacific coast salmon species Essential Fish Habitat	None expected †	Remove suitable habitat	None expected †	Remove suitable habitat	None expected
Special status reptiles	Remove suitable habitat	Remove suitable habitat	Remove suitable habitat	Remove suitable habitat	Enhance suitable habitat
Light-footed Ridgway's rail (*Rallus obsoletus levipes*)	Remove foraging habitat	Remove foraging habitat; construction noise	Remove foraging habitat	Remove foraging habitat; construction noise	Enhance foraging habitat
Yellow warbler (*Setophaga petechia*)	Remove occupied habitat	Remove occupied habitat; construction noise	Remove occupied habitat	Remove occupied habitat; construction noise	Enhance suitable nesting habitat
Western least bittern (*Ixobrychus exilis*)	Remove foraging habitat	Remove foraging habitat; construction noise	Remove foraging habitat	Remove foraging habitat; construction noise	Enhance foraging habitat
Olive-sided flycatcher (*Contopus cooperi*)	Remove suitable habitat	Remove suitable habitat; construction noise	Remove suitable habitat	Remove suitable habitat; construction noise	Enhance foraging habitat
Clark's marsh wren (*Cistothorus palustris clarkae*)	Remove suitable habitat	Remove suitable habitat; construction noise	Remove suitable habitat	Remove suitable habitat; construction noise	Enhance foraging habitat
Least Bell's vireo (*Vireo bellii pusillus*)	Remove suitable habitat	Remove suitable habitat; construction noise	Remove suitable habitat	Remove suitable habitat; construction noise	Enhance suitable nesting habitat
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Remove unoccupied habitat within FCH	Remove unoccupied habitat within FCH	Remove unoccupied habitat within FCH	Remove unoccupied habitat within FCH	Enhance suitable nesting habitat
Coastal California gnatcatcher (*Polioptila californica californica*)	Remove suitable habitat	Remove suitable habitat; construction noise	Remove suitable habitat	Remove suitable habitat; construction noise	None expected

Sensitive Biological Resource	Alternative 1 Impacts		Alternative 2 Impacts		Habitat Enhancement Area
	Permanent	Temporary	Permanent	Temporary	Temporary
Migratory birds and raptors	Remove suitable habitat	Remove suitable habitat; construction noise	Remove suitable habitat	Remove suitable habitat; construction noise	Enhance suitable nesting habitat
Western mastiff bat (*Eumops perotis*)	Remove potential day roost sites	Remove potential day roost sites	Remove potential day roost sites	Remove potential day roost sites	Remove potential day roost sites
Pacific pocket mouse (*Perognathus longimembris pacificus*)	None expected	None expected	None expected	None expected	None expected

USACE = U.S. Army Corps of Engineers; CDFW = California Department of Fish and Wildlife; RWQCB = Regional Water Quality Control Board; CCC = California Coastal Commission

[†] In worst-case-scenario, replacement bridge will result in approximately 110 square feet of permanent impact to open water from installation of supports. However, removal of the existing bridge will entail removal of one bridge support (with an approximate footprint of 145 square feet) from the open water, resulting in a net decrease in the permanent footprint of the bridge within the open water of the river channel.

Chapter 1 – Introduction

The City of Oceanside (City) proposes to replace the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River (Br. No. 57C0322). The bridge is located approximately 0.3 mile south of Harbor Drive, immediately west of and parallel to Interstate 5 (I-5), in the city of Oceanside, San Diego County, California (Appendix A: Figure 1). The general setting is a perennial river surrounded by commercial development; Coast Highway (Hill Street) includes roadways, curbs, and a sidewalk on the west side of the road and bridge. The bridge currently carries vehicular, bicycle, and pedestrian traffic on the Coast Highway over the San Luis Rey River. There is no curbside on-street parking allowed on the bridge or near the bridge on the approach roadways.

The project is funded by the federal-aid Highway Bridge Program (HBP) administered by the Federal Highway Administration (FHWA) through the California Department of Transportation (Caltrans) Local Assistance Program. The replacement bridge will meet current applicable City, American Association of State Highway and Transportation Officials (AASHTO), FHWA, and Caltrans design standards. Two build alignment alternatives are currently under consideration for the proposed project. Alternative 1 involves replacement of the existing bridge in nearly the same alignment as the existing bridge. Alternative 2 (proposed alignment) involves building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open to maintain service on the existing roadway and bridge during construction.

1.1 Project Purpose and Need

The existing bridge was built in 1929 and is in poor structural condition. At 92 years old, the bridge is past its useful service life. The bridge is a "Fracture Critical" steel truss because it is structurally non-redundant and has steel members loaded in tension–if one of these members fractured, it would cause collapse of a span.

The purpose of this project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. The replacement bridge will conform to local, state, and federal environmental and planning policies using HBP funds.

The project objectives are:

- Remove the existing structurally deficient, fracture critical, and seismically vulnerable bridge from service, and replace it with a new bridge built to current structural and geometric standards.
- Improve public safety and pedestrian circulation through the addition of a raised sidewalk on the western side of the bridge.
- Avoid adverse changes in traffic circulation and the community cohesion.
- Minimize right-of-way take.

- Minimize impacts to the river and riparian zone.
- Offset the majority of project costs through State and Federal funding.
- Facilitate and/or incorporate bike path connections to the San Luis Rey Trail and future bike path connection on the north side of the San Luis Rey River.
- Make the bridge more pedestrian and bicycle friendly.
- Improve the user experience for pedestrians and bicyclists on the trail below the bridge.
- Reduce visual impacts and optimize scenic resources including the views of the Pacific Ocean and the San Luis Rey River.
- Provide a context sensitive design solution appropriate for the scenic setting.
- Give the bridge its own character as a City street, separate from the I-5 freeway.

1.2 Project Description

The Coast Highway runs from southeast to northwest at an approximate 30-degree angle to true north. For purposes of this Project Description, the Coast Highway is assumed to run north to south and the San Luis Rey River flows from east to west.

1.2.1 Existing Bridge

The existing Coast Highway Bridge was constructed in 1929. It is a 950-foot-long five-span bridge with a cast-in-place concrete deck. The approach spans (Spans 1 and 5) are rolled steel girders. Spans 2, 3, and 4 are each 268-foot-long steel truss spans. The truss spans have a total depth of approximately 40 feet, constructed of dual simple span riveted steel trusses. Piers 3 and 4 are located in the main river supported on piles. Piers 2 and 5, located near the edges of the river, are supported on spread footings. The existing abutments are seat type concrete abutments on spread footings. The bridge was widened to the east in 1952. The widening was removed in 1971 when I-5 was built, and the bridge was restored to its original configuration. The bridge is a total of approximately 49 feet wide, with a curb-to-curb width of approximately 40 feet providing two 12-foot traffic lanes plus 8-foot shoulders. It has a raised sidewalk along the west edge of the deck.

The following utilities are attached to the bridge:

- 12-inch gas line–attached to the lower portion of the truss along the east side of the bridge;
- Two 12-inch waterlines–attached to the lower portion of the truss along the east side of the bridge;
- 10-inch waterline–attached to the lower portion of the truss along the west side of the bridge;
- 14-inch sewer force main–attached to the lower portion of the truss along the west side of the bridge; and
- Electrical and telecommunications lines – attached under the top deck along the west side of the bridge.

There are also two sewer lines in the bridge vicinity. One runs down the center of the Coast Highway, and terminates approximately 40 feet south of the bridge, and does not cross the San Luis Rey River. The second sewer line runs under the bridge, on the downstream side of the bridge.

The San Luis Rey River Trail runs along the southern riverbank and provides recreational and commuter uses for bicyclists and pedestrians. Access along this trail will be maintained during construction to the extent practical. Temporary closures and/or detours are anticipated to be needed during construction. After construction, the trail will be returned to its pre-project condition or better.

On the north side of the river, there is a paved concrete pedestrian path near the top of the slope, which crosses under the I-5 bridges and under the existing Coast Highway Bridge, and provides coastal access to the residential neighborhood to the east. This path will likely need to be modified to extend it under the new Coast Highway Bridge. Access along this trail will be maintained during construction to the extent practical. Temporary closures and/or detours are anticipated to be needed during construction. After construction, the trail will be returned to its pre-project condition or better.

1.2.2 Replacement Bridge

Two build alignment alternatives are currently under consideration for the proposed project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. No additional traffic lanes are proposed in the project; the existing two-lane bridge will be replaced with another two-lane bridge. The project impact area shown on Figures 2a and 2b (Appendix A) accommodates for both build alternatives. The preferred alternative is that the bridge would be replaced close to the same location, immediately west of the current bridge alignment to maintain service on the existing roadway and bridge during construction.

The deck width on the new bridge will match existing conditions with two 12-foot-wide travel lanes and two 8-foot-wide shoulders for a curb-to-curb width of 40 feet. This roadway section is consistent with City and AASHTO standards for a facility of this type, and also matches the existing curb and gutter line along the Coast Highway. The shoulders may be reduced to 4 feet if required by Caltrans for funding purposes.

South of the bridge there are sidewalks on each side of the street. However, north of the bridge there is only a sidewalk on the west side of the street. New bridges and streets constructed to the City standard would generally have 6-foot-wide sidewalks on each side, and the HBP program would generally participate in sidewalks where sidewalks currently exist. To provide the necessary pedestrian circulation, to align with the sidewalk north of the bridge, and to address the project objectives of improving the user experience for pedestrians and optimizing views of scenic resources, as well as maximize federal funding participation, a single 8-foot-wide sidewalk is proposed for the west side of the new bridge. The bridge barriers and railings will meet current crash testing requirements for vehicular and pedestrian railings and will be aesthetically pleasing. Coastal views will be considered when selecting bridge and rail types.

The structure Type Selection is underway. The preferred alternative proposed is a cast-in-place post-tensioned concrete box girder bridge on column piers along a new alignment just west of the existing bridge. The final bridge type chosen during final design may have slight variations to the proposed preferred alternative identified in the on-going Type Selection; however, any modifications would not affect the overall environmental disturbance footprint studied in the technical studies and environmental documents.

Bridge construction is anticipated to require construction of a temporary trestle adjacent to the existing bridge and along the new bridge to facilitate access. Cofferdams and bubble curtains may be required to construct some of the bridge concrete piers and supports. Cofferdams will be installed along the banks of the river in order to construct the piers and supports on land while bubble curtains will be used to construct the piers and supports within the river.

1.2.3 Roadway Approach Work

The project will include new pavement, curbs, gutters, and sidewalks adjacent to the replacement bridge. The project will conform back to the existing roadway as quickly as practical. The curb-to-curb clear width of the street will match the width of the existing street and bridge. The approaches will transition as necessary to conform to the width of the sidewalk and roadway clear width on the bridge.

1.2.4 Utility Relocation

The existing utilities currently supported by the existing bridge will be relocated onto the new bridge. These utilities will remain in service during construction. Once the new bridge is complete, the utilities will be relocated from the existing bridge to their final locations in the new bridge. Accommodations for other utilities and future utilities on the new bridge will be accommodated as practical.

1.2.5 Right-of-Way

The existing right-of-way (ROW) for Coast Highway is approximately 75 feet at the bridge and widens both north and south of the existing bridge. Permanent ROW acquisition is anticipated. During construction, temporary construction easements and permits to enter and construct are anticipated to be required.

There are several areas identified as potential construction staging areas that may require temporary construction easements or encroachment permits from the Caltrans (see Appendix A: Figures 2a and 2b). The following parcels are identified as potential staging areas:

- Assessor's Parcel Number (APN) 143-010-150,
- APN 143-040-450,
- APN 143-040-550,
- APN 143-090-180, and
- Portions of Caltrans ROW under I-5 bridges over the San Luis Rey River.

1.2.6 Traffic Handling

Since constructing the new bridge on a separate alignment just west of the existing bridge is the proposed alternative, traffic will remain on the existing bridge during construction. This will minimize traffic impacts during construction. Once the proposed bridge is constructed, traffic will be cutover from the existing bridge onto the new bridge. During the cutover traffic will be impacted with delays and short-term closures as necessary to make the transition. A traffic handling plan will be submitted by the contractor for approval prior to construction beginning. Once the traffic is fully transitioned onto the new bridge, the existing bridge will be demolished.

1.2.7 Demolition Activities

Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specifications 60-2.01C (2nd paragraph) which states: "Remove piling, piers, abutments, footings, and pedestals to 1 foot below the ground line or 3 feet below finished grade, whichever is lower." These may be modified to meet environmental permit requirements. All concrete and other debris resulting from the demolition of the existing bridge will be removed from the project site and properly disposed of by the contractor. Prior to construction, the contractor is required to prepare a bridge demolition plan in conformance with environmental permits and the Caltrans Standard Specifications. Bridge demolition is anticipated to require construction of a temporary trestle adjacent to the existing bridge to facilitate demolition and provide temporary support during truss removal. Cofferdams and bubble curtains are anticipated to facilitate removal of the existing bridge concrete piers. Cofferdams will be installed along the banks of the river in order to facilitate demolition of the piers and supports on land while bubble curtains will be used to remove the piers and supports within the river. All demolition plans will be reviewed and approved by the Resident Engineer. Equipment used for demolition may include backhoes, excavators, hoe rams, hydraulic hammers, loaders, dump trucks, debris bins, flatbed trucks with cranes, forklifts, crawler cranes, air compressors, jackhammers, chipping guns, cutting torches, and saws.

1.2.8 Construction Activities

Construction will consist of the activities described in the following sections, which will be completed in the general order presented.

1.2.8.1 Clearing, Grubbing, and Tree Removals

Portions of existing roadway, sidewalks, curbs, gutters, hardscape, and landscaping in conflict with new construction would be removed. Areas around the corners of the new bridge would be cleared of vegetation, fencing, and planter beds to gain access for constructing the new bridge. Vegetation and trees in the river within the footprint of the new bridge and construction trestle would be removed as shown on the plans and allowed by the environmental permits.

1.2.8.2 Construction Staging Areas/Site Access

Contractor lay down areas will be in flat unused areas inside the project direct impact limits.

Access to the project site south of the river could be achieved from State Route 76 (SR-76) east of the project site. A temporary access road could be cut into the slope at SR-76 and follow the San Luis Rey River Trail under the I-5 bridges. This path would provide good access from SR-76 and

provide a relatively gradual slope for the access road. Access to the project site north of the river could be achieved from Monterey Drive and Riverside Drive.

1.2.8.3 Construction Access across the River

Stream flow in the San Luis Rey River will be maintained during construction. It is envisioned that a temporary construction trestle would be used to provide access over the river. Along the riverbanks, some temporary grading will be necessary to provide access for construction equipment. Work will be in conformance with City specifications as well as U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), Regional Water Quality Control Board (RWQCB), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS) regulatory requirements. Materials to construct the trestles may consist of steel pilings, steel cap beams and stringers, and timber decking. All work will be contained within the approved project area of disturbance. Equipment used may include light trucks, track mounted cranes, pile driving equipment, forklifts, excavators, and loaders. The trestles would remain in place for the duration of construction which may include staying in place over at least one to two winter seasons.

An analysis comparing the use of a temporary trestle or an earthen berm as the temporary crossing was conducted in 2017 (Moffat and Nichol 2017). The results of this assessment are that the trestle would result in fewer environmental concerns and thus is the preferred method of temporary crossing.

1.2.8.4 New Bridge Foundations

Due to the scour and liquefaction potential of the soils at the project site, the foundations for the replacement bridge will be supported by large diameter piles. Cast-In-Drilled-Hole (CIDH) piles are recommended in the Preliminary Foundation Report for the project. These piles could be up to approximately 180 inches in diameter and 200 feet deep. Groundwater will be encountered during drilling for the CIDH piles. The CIDH pile construction may require the use of high-density drilling slurry and steel casings. Prior to construction, a pile installation plan will be prepared by the contractor for approval by the Resident Engineer, in conformance with applicable permits, project specifications, and environmental measures and conditions. All drilling slurry from the CIDH pile construction will be contained and properly disposed of off-site.

Equipment used may include a crane- or excavator-mounted drill rig for the piles, a crane to set the rebar cages in the drilled holes, dump trucks, compaction equipment, and a truck-mounted concrete boom pump. If slurry is used, there will be mixing tanks, recirculating pumps, and holding tanks for the waste slurry to be trucked off-site.

1.2.8.5 Landscaping

Below the bridge, the river will be restored to its existing condition, with minimal changes to slopes and grades. Some rock slope protection may be required along the slopes to protect the abutments. Areas that are disturbed during construction will be restored using local native upland or riparian, as appropriate, landscaping to revegetate the slopes and riverbanks. Minor landscaping improvements may occur within the street corridor along the reconstructed bridge approaches.

1.2.9 Environmental Documentation and Permits

The following environmental documents and permits are anticipated to be required:

- Environmental Impact Report pursuant to the California Environmental Quality Act
- Categorical Exclusion pursuant to the National Environmental Policy Act (NEPA)
- Section 7, federal Endangered Species Act (ESA) consultation with the USFWS and NMFS
- CDFW California ESA (CESA) Section 2080.1 Consistency Determination
- Section 404 Permit and Section 408 Permission from the USACE
- Section 401, Clean Water Act (CWA), Water Quality Certification from the RWQCB Section
- 1602 Streambed Alteration Agreement from the CDFW

1.2.10 Construction Sequence/Schedule and Timing

Construction is currently scheduled to start in 2024 and take approximately 24 to 30 months to complete. An in-creek work window will be determined during the environmental permitting process with the resource agencies. Temporary works such as the trestles and falsework that may need to stay in place over at least one winter season will be coordinated with the environmental permitting agencies and the USACE levee group.

1.2.11 Mitigation Areas

For either project alternative, much of the mitigation is planned to be accomplished on-site within suitable areas within the project impact area and on adjacent areas owned or managed by the City, referred to herein as the Habitat Enhancement Area (Appendix B). Upon completion of construction, the following revegetation efforts are proposed within temporary impact areas: creation and restoration of Diegan coastal sage scrub; re-establishment and restoration of freshwater marsh and southern riparian scrub; and restoration of open water. Only areas outside of the Caltrans ROW will be considered as compensatory mitigation. Temporarily impacted areas within the Caltrans ROW will be revegetated to meet pre-existing conditions. Vegetation within the Habitat Enhancement Area, located immediately west of the project impact area and north of the San Luis Rey River, will be enhanced through removal of non-native plant species and planting of native riparian plant species. Remaining mitigation for permanent impacts that is not achieved on site would be fulfilled through purchase of credits from an approved mitigation bank within the San Luis Rey watershed such as the Brook Forest Conservation/Mitigation Bank, Wildlands' San Luis Rey Mitigation Bank, and/or Wildlands' Buena Creek Conservation Bank.

1.2.12 New Bridge Construction

Cast-in-place concrete construction, which places concrete in-situ using temporary shoring called "falsework," is generally the preferred, most economical, and by far the most common construction method for highway bridges in California. It is feasible for this site, and was used for the I-5 bridges to the east, which were built in the early 1970s, and more recently for the Pacific Street Bridge to the west, which was completed in 2008. As such, cast-in-place is the anticipated construction

method for this project and will be assumed for evaluating environmental impacts. The basic construction sequence is described below.

The piers and abutments will be constructed on site by installing rebar, placing forms, and pouring concrete. Once the piers and abutments are complete, falsework will be constructed to support the wet concrete for the superstructure. As temporary works, the falsework is designed by the Contractor. It generally consists of timber or steel posts, steel cap beams, and steel stringers. Timber joists and plywood forms are placed on top of the steel stringers. Falsework spans are typically 20 to 60 feet long; however, longer spans are possible. The active river channel is approximately 150 feet wide, so it is likely that falsework supports will be installed within the river. At these locations, the falsework will be supported on piles, which are vibrated and driven into the ground. Falsework supports which are susceptible to flooding will be designed for stream flow and scour in case a flood event occurs during construction. Equipment used for the falsework construction may include light trucks, track-mounted cranes, pile driving equipment, forklifts, generators, excavators, and loaders.

Once the falsework is complete, the vast majority of the work commences from above on top of the falsework. The girders are formed, rebar is placed, and the concrete is poured. Concrete is typically placed from the ends of the bridge using truck-mounted concrete boom pumps. Since this bridge will be approximately 980 feet long, concrete to the center of the bridge may need to be pumped using a concrete pump located on an access road or construction trestles below the bridge. For a multi-cell concrete box girder, the superstructure is placed in two pours, with the stem and soffit poured first and then the top deck placed in the second pour. Between the two concrete pours, utilities are installed in the cells. After the deck is complete and has reached the required strength, the superstructure is typically post-tensioned from abutment to abutment. Equipment used may include light trucks, small cranes to lift rebar and forms into place, concrete trucks, and truck-mounted concrete boom pumps.

After the bridge is pre-stressed, the falsework is removed, backfill is placed behind the abutments, and roadway base materials are placed along the roadway approaches. The roadway will be prepared for final surfacing, and the barriers and railings will be installed. Equipment used may include light trucks, small cranes and forklifts, loaders, dump trucks, pavers, and compaction equipment. Excavations up to 30+ feet are necessary at the proposed bridge abutments and piers. Excavations for the approach roadway and utilities in the approach roadway may be up 15+ feet.

The falsework would remain in place for the duration of the new bridge construction, which may include staying in place over at least one winter season. The falsework could be removed before the existing bridge is demolished.

Due to the size of the new proposed bridge, it is anticipated that construction activities to build the new bridge would start at the beginning of the agency-approved, in-water work window and extend through at least one to two summer construction season and through at least one winter season.

At the beginning of the first construction season, work would consist of installing the temporary work trestles, drilling and pouring the permanent CIDH piles, forming and pouring the permanent substructure columns and supports, installing the superstructure falsework, and other activities that

require ground-disturbing work inside the top of banks to build the new bridge. All ground-disturbing work inside the top of banks to build the new bridge would be performed during the agency-approved work window.

During the first winter season, construction activities would continue on the new bridge but would not involve ground-disturbing/excavating work inside top of bank. Work during the first winter would be performed above the falsework and above the temporary trestles with measures in place to prevent contamination of the creek below. Work above the falsework would include forming the superstructure, placing reinforcement, and pouring concrete. Work above the trestle would include construction access so concrete could be pumped from the trestle over to the bridge superstructure. Work during the winter would allow the superstructure to be completed prior to the start of the second summer season so that traffic could be cut over to the new bridge before the existing bridge is demolished in the second season. The beginning of the second season would involve removal of the temporary superstructure falsework followed by existing bridge demolition and concluding with removal of all temporary trestle works inside the top of banks.

Chapter 2 – Study Methods

This chapter discusses regulatory requirements applicable to the proposed project, biological studies conducted and methods used, literature reviewed, and coordination with agencies and other professionals. RECON Environmental, Inc. (RECON) conducted a literature review, performed general biological and focused species surveys, and prepared this report to provide information needed for the project to comply with state and federal environmental laws and regulations.

2.1 Regulatory Requirements

2.1.1 Clean Water Act

The federal Water Pollution Control Act (CWA) provides a structure for regulating water quality. The discharge of any pollutant from a point source into navigable waters is illegal unless a permit under its provisions is acquired. The USACE, the State Water Resources Control Board, and the nine RWQCBs are responsible for implementing the CWA.

In accordance with Section 404 of the CWA, USACE regulates the discharge of dredged or fill material into waters of the U.S. (including wetlands). All federal agencies are to avoid impacts to wetlands whenever there is a practicable alternative.

Section 401 of the CWA requires that an applicant for a federal license or permit allowing activities resulting in a discharge to waters of the U.S. must obtain a state certification that the discharge complies with other provisions of CWA. The RWQCBs administer this certification program in California.

Section 408 is a program that regulates projects that may alter a USACE Civil Works project and associated lands and serves to verify that the proposed project would neither result in impact to public interest nor the usefulness of the Civil Works project. Section 408 is codified at 33 U.S.C. 408. Building a bridge across a navigable waterway maintained and surveyed by USACE is one identified example of a project that would require Section 408 permission.

2.1.2 Rivers and Harbors Act

The Rivers and Harbors Act requires permits for all structures such as riprap and activities such as dredging proposed within navigable waters of the U.S. USACE grants or denies permits based on the effects on navigation.

2.1.3 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides for statewide coordination of water quality regulations. The California State Water Resources Control Board was established as the statewide authority, and nine separate RWQCBs were developed to oversee water quality on a day-to-day basis.

2.1.4 Executive Order 11990 – Protection of Wetlands

Federal Executive Order (EO) 11990 established a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative. The U. S. Department of Transportation (DOT)

promulgated DOT Order 5660.1A in 1978 to comply with this direction. On federally funded projects, impacts on wetlands must be identified and alternatives that avoid wetlands must be considered. If wetland impacts cannot be avoided, then all practicable measures to minimize harm must be included. This must be documented in a specific Wetlands Only Practicable Alternative Finding. This order also requires early public involvement in projects affecting wetlands.

2.1.5 National Environmental Policy Act

The National Environmental Policy Act of 1969 (NEPA; Public Law 91-190; 42 U.S.C. 4321 et seq.) mandates federal agencies to consider and document environmental impacts of proposed actions and legislation. This act also mandates preparation of comprehensive environmental impact statements where proposed action is "major" and significantly affects the quality of the human environment.

2.1.6 Federal Endangered Species Act

The federal ESA provides the legal framework for the listing and protection of species (and their habitats) identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a 'take' under the ESA. Take of a federally listed threatened or endangered species is prohibited unless a take permit is issued. The ESA allows for take of a threatened or endangered species incidental to development activities once a Habitat Conservation Plan (HCP) has been prepared to the satisfaction of the USFWS and an incidental take permit has been issued. The ESA also allows for the take of threatened or endangered species after consultation has deemed that development activities will not jeopardize the continued existence of the species. The ESA also provides for consultation between USFWS and other federal agencies when an action that may impact federally listed species is proposed by another federal agency; e.g., issuance of a permit for impacts to federal waters by USACE under Sections 404 and 408 of the federal CWA.

2.1.7 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA; 16 U.S. Code 703 et seq.) is a federal statute that implements treaties with several countries on the conservation and protection of migratory birds. The number of bird species covered by the MBTA is extensive and is listed at 50 Code of Federal Regulations [CFR] 10.13. The regulatory definition of "migratory bird" is broad and includes any mutation or hybrid of a listed species and any part, egg, or nest of such birds (50 CFR 10.12). Migratory birds are not necessarily federally listed endangered or threatened birds under the ESA. The MBTA, which is enforced by USFWS, makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory bird, or attempt such actions, except as permitted by regulation. The take, possession, import, export, transport, sale, purchase, barter, or offering of these activities is prohibited, except under a valid permit or as permitted in the implementing regulations (50 CFR 21.11).

2.1.8 Executive Order 13112 – Invasive Species

Federal EO 13112 requires federal agencies to prevent the introduction or spread of invasive species in the U.S. and established the National Invasive Species Council as the coordinating body. The order defines invasive species as "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." Subsequent Federal Highway

Administration guidance directs the use of the state's invasive species list, maintained by the California Invasive Species Council, to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project. Under this order, federal agencies cannot "authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless … the agency has determined … 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."

2.1.9 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act of 1976 was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the U.S., by exercising (a) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (b) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas. The amendments to this act require the delineation of Essential Fish Habitat (EFH) for all managed species.

2.1.10 Marine Mammal Protection Act

This act regulates "take" of all marine mammals in U.S. waters and by U.S. citizens with the intent of preventing depletion of the species. Management is vested in the Department of Commerce (NMFS) for cetaceans and pinnipeds other than walrus, and the Department of the Interior (USFWS) is responsible for all other marine mammals, including sea otter, walrus, polar bear, dugong, and manatee. This act requires consultation on any action that may adversely affect marine mammals and provides a mechanism for an "incidental" take of species not listed under the federal ESA.

2.1.11 California Environmental Quality Act

The California Environmental Quality Act provides guidelines for defining impacts. Appendix G of the guidelines contains questions that local jurisdictions should evaluate when analyzing a project's potential impacts. The California Environmental Quality Act provides these guidelines so that local jurisdictions are able to determine what constitutes an "adverse effect" and significant impact to a biological resource.

2.1.12 California Fish and Game Code

Multiple regulations from the California Fish and Game Code (CFGC) apply to projects in the state:

- Section 200 of the CFGC grants general authority to the Fish and Game Commission to regulate the taking or possession of birds, mammals, fish, amphibians, and reptiles subject to more specific statutory restrictions.
- Under Section 1600-1607, CDFW regulates activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. CDFW has jurisdiction over riparian habitats associated with watercourses. Jurisdictional waters are delineated by the outer edge of riparian vegetation

or at the top of the bank of streams or lakes, whichever is wider. CDFW jurisdiction does not include tidal areas or isolated resources.

- Conservation of Aquatic Resources (CFGC Section 1700 et seq.). This legislation declares State policy to encourage conservation of the living resources of the ocean and other State waters, including species preservation.
- Native Species Conservation and Enhancement Act (CFGC Section 1750 et seq.). This act declares a policy of maintaining sufficient populations of all species of wildlife and native plants and the habitat necessary to ensure their continued existence at optimum levels and establishes an account to manage private donations toward that end.
- The Native Plant Protection Act (Section 1900 et seq.) governs the preservation, protection, and enhancement of endangered or rare native plants.
- The California Endangered Species Act (Sections 2050-2069) declares state policy regarding threatened and endangered species, provides for a listing and review process, prohibits certain acts as damaging to listed species, and provides a consultation process for state projects.
- Section 3503 states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto," and Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird" unless authorized.

2.1.13 California Coastal Act

The California Coastal Act (California Public Resources Code Section 30000 et seq.) sets out various policies protecting marine and land resources including species and habitat. The California Coastal Commission (CCC) was established to regulate development with local government along the coast to ensure that development will be consistent with conservation policies. The California Coastal Act defines an Environmentally Sensitive Habitat Area (ESHA) as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could easily be disturbed or degraded by human activities and developments," and sets forth policies for the protection of these areas within the Coastal Zone.

2.1.14 North County Multiple Habitat Conservation Program

The project lies within the boundary of the Multiple Habitat Conservation Program (MHCP), a comprehensive multi-jurisdictional planning program designed to develop, manage, and monitor an ecosystem preserve in northwestern San Diego County. It is one of several large, multi-jurisdictional habitat planning efforts (i.e., "subregional" plans) in San Diego County and serves as a multiple species HCP pursuant to Section 10(a)(1)(B) of the ESA, as well as a Natural Community Conservation Plan (NCCP) under the State of California's Natural Community Conservation Planning Act of 1991. The MHCP subregion comprises seven incorporated cities in northwestern San Diego County, including Oceanside, within which the project is located (AMEC Earth & Environmental, Inc. et al. 2003). Each jurisdiction will implement their portion of the MHCP plan through a "subarea" plan; the Draft Oceanside Subarea HCP/NCCP is currently out for public review.

2.2 Studies Required

The Biological Study Area (BSA) for the proposed project includes all areas that could potentially be impacted by the project (Appendix A: Figure 3a). This includes the potential direct impact area (e.g., bridge footprint, construction access routes, construction staging areas, temporary work areas), on-site mitigation areas, and adjacent areas sufficient to account for the extent of potential indirect impacts (e.g., noise, lighting, sedimentation). The following adjacent areas were included in the BSA:

- Developed areas within 100 feet of the potential direct impact area,
- Native upland habitat within 300 feet of the potential direct impact area,
- Native riparian and wetland habitats within 500 feet of the potential direct impact area, and
- Open water habitats from the mouth of the San Luis Rey River to approximately 1.4 mile upstream of the Coast Highway Bridge.

Prior to conducting field studies, RECON conducted a review of existing literature relevant to the biological resources known from the vicinity of the BSA to determine special status species historically reported or with potential to occur within the BSA. Literature reviewed included, but was not limited to, the following:

- Pacific Pocket Mouse Assessment of the San Luis Rey River Bike Trail Project Area (Dudek 1997);
- Biological Assessment of the San Luis Rey River for Populations of Tidewater Goby and Steelhead (MBC Applied Environmental Sciences 2000);
- Wetland delineation assessment for the Oceanside Seismic Retrofits Project (Isham et al. 2002);
- Biological Study for the Coast Highway and Douglas Drive Bridges Seismic Retrofits Project (MEC Analytical Systems, Inc. 2003);
- Addendum to Biological Study, Coast Highway and Douglas Drive Bridges Seismic Retrofits Project (MEC Analytical Systems, Inc. 2004);
- Conceptual Mitigation/Revegetation and Monitoring Plan (Burkhart Environmental Consulting and MEC Analytical Systems, Inc. 2004); and
- Results of Focused Surveys for the Light-footed Ridgway's Rail at the Army Corps of Engineers San Luis Rey Flood Risk Management Project Site, San Diego County, California, 2015 through 2020 (Konecny Biological Services 2015, 2016, 2017, 2018, 2019, and 2020)
- Least Bell's Vireos and Southwestern Willow Flycatchers at the San Luis Rey Flood Risk Management Project Area in San Diego County—Breeding activities and habitat use—2020 annual report: U.S. Geological Survey Open-File Report 2021–1053 (Houston, et. al 2021)

Additional maps, imagery, databases, and references reviewed included USGS topographic maps (USGS 1997), soils maps (San Diego Association of Governments [SANDAG] 1995; U.S. Department of Agriculture [USDA] 1973), aerial photographs, California Natural Diversity Database (CNDDB), All Species Occurrences Database (USFWS 2021), SanBIOS (County of San Diego 2021), the San Diego Natural History Museum's plant distribution mapping and voucher specimen lists (2015), the California Native Plant Society (CNPS) database, the USFWS project-specific list of threatened and endangered species, and the NMFS species list. The USFWS, NMFS, CNDDB (two-mile buffer of BSA search), and CNPS (Oceanside quadrangle) species lists are provided in Appendix C.

Biological surveys began with a general biological survey to inventory plant and wildlife species, map vegetation, and assess the suitability of habitat for special-status species identified as having potential to occur based on the literature review discussed above. Following the literature review and general biological survey, the following focused surveys or assessments were conducted: focused rare plant surveys; focused surveys for tidewater goby (*Eucyclogobius newberryi*) and southern California steelhead (*Oncorhynchus mykiss irideus,* pop.10); an EFH assessment; focused presence/absence surveys for coastal California gnatcatcher (*Polioptila californica californica*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and light-footed Ridgway's rail (*Rallus obsoletus levipes*); bat reconnaissance survey; and a jurisdictional wetland/waters delineation. The methods for each of these are provided below.

2.2.1 General Biological Survey, Vegetation Mapping, and Habitat Assessments

An initial general biological survey was conducted in 2015 to map vegetation communities and land cover types, document observed plant and wildlife species, and conduct focused habitat assessments for species with potential to occur on site. The initial areas assessed included a preliminary project impact area and surrounding 100- to 500-foot buffer, depending on the target species. Vegetation mapping was updated in October 2016 during field surveys for the jurisdictional wetland/waters delineation and in March 2017 to reflect the current project impact area and BSA. Vegetation mapping was again updated in 2021 to refine mapping within the most up-to-date project impact area.

Vegetation communities were initially mapped on a one-inch-equals-200-feet aerial photograph and screen digitized in the office by a Geographic Information Systems specialist using ArcGIS software. During the 2021 survey, vegetation mapping was updated directly on a Global Positioning System (GPS) enabled tablet using ArcGIS software.

Plant species observed within the survey area were noted, and plants that could not be identified in the field were identified later using taxonomic keys. The survey included a directed search for sensitive plants that would have been apparent at the time of the surveys. Floral nomenclature was primarily derived from the Jepson Online Interchange (Jepson Flora Project 2020). In instances where common names were not provided in this resource, common names were obtained from Rebman and Simpson (2014). Additional common names were obtained from the USDA maintained database (USDA 2021) or the Sunset Western Garden Book (Brenzel 2001) for ornamental/horticultural plants.

Animal species observed directly or detected from calls, tracks, scat, nests, or other sign were noted. Zoological nomenclature for invertebrates is in accordance with NatureServe (2021) and

Evans (2008); for fishes, Page et al. (2013); for amphibians and reptiles, Crother et al. (2017); for birds, Chesser et al. (2021); for mammals, Bradley et al. (2014) and American Society of Mammologists (2021).

Qualified biologists conducted initial habitat assessments in 2015 by walking throughout the survey area assessing the vegetation communities (e.g., species composition, height, density) for their potential to support special-status species. Biologists drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems specialist using ArcGIS software. Suitable habitat for each of the target sensitive species were confirmed during the 2021 general survey and used for the basis of focused surveys conducted in 2021.

2.2.2 Rare Plants

Focused rare plant surveys were conducted in 2021 using a survey area that included current project impact area and the surrounding 100-foot buffer. The survey area is shown on Appendix A: Figure 3b. Surveys were conducted to update previous rare plant surveys completed in 2015 and 2017. Surveys were conducted over several visits each year at a time of year intended to maximize the detection of rare plants, generally spanning the spring blooming season.

Methodology followed for each of the surveys comprised qualified biologists walking meandering transects throughout the survey area. Surveys were conducted during appropriate times to coincide with the expected blooming period of all target rare plant species and maximize the possibility of detection of those species. A total of three surveys were conducted in early spring, late spring, and summer in 2015, two surveys in 2017 spanning early and late spring, and two surveys in 2021 during mid-spring. When a special-status plant species was observed, the plant's location and elevation were recorded using a handheld GPS unit.

2.2.3 Tidewater Goby, Southern California Steelhead, and Essential Fish Habitat

Surveys were conducted in 2021 within open water habitats from the mouth of the San Luis Rey River approximately 0.4 mile downstream to approximately 1.4 miles upstream of the Coast Highway Bridge; the survey area is shown on Appendix A: Figure 3b. Surveys followed the USFWS Tidewater Goby Survey Protocol (USWFS 2006a). Based on the survey protocol, the San Luis Rey River is considered a large water body, and two sampling methods (i.e., seining and minnow trapping) were required over two separate sampling periods between July 1 and October 31. As per the survey protocols, the two sampling periods were separated by 30 days.

A team of three fisheries biologists, including one USFWS 10[a][1][A] permitted tidewater goby biologist, conducted the surveys. During each sampling period, 12 un-baited minnow traps with 0.1-inch (3-millimeter) mesh were placed in suitable habitat locations with depths ranging from 1.6 to 4.9 feet (0.5 to 1.5 meters). In addition, 10.8- and 16.4-foot (3.3- and 5-meter) knotless nylon seine nets with 0.1-inch (3-millimeter) delta mesh were used to sample the survey area. Seine hauls were pulled in suitable habitats, from the mouth of the lagoon approximately 0.4 mile downstream and extending approximately 1.0 mile (1.6 kilometers) upstream of the Coast Highway Bridge. Preference between the two net sizes was determined based on water depth, the presence of aquatic vegetation or algae, and the size of the area being sampled. Species captured in each seine haul and minnow trap were recorded, and all native species were immediately released unharmed

in the area where they were captured. The locations of each sampling method were recorded using a handheld GPS unit (Garmin 60CSxTM) in Universal Transverse Mercator coordinates, North American Datum) 1983. Water quality data were collected using a Horiba multi-parameter meter (model U-52). Aquatic habitat features (e.g., tidal stages, water depths, substrate types, emergent/submergent vegetation, algae, artificial structures) and any visible disturbances were recorded.

An assessment of EFH was also conducted in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (USFWS 1997a).

Focused fish surveys were previously conducted in 2015 and 2017 within a similar survey area to that described above with the same or similar methodology, as modified based on the extent of water present in the river at the time of surveys.

2.2.4 Light-footed Ridgway's Rail

A USFWS-permitted biologist conducted focused surveys for light-footed Ridgway's rail in 2021, using a survey area that included suitable habitat within the current project impact area and BSA, approximately 1,800 feet downstream, and 300 feet upstream; the survey area is shown on Appendix A: Figure 3b.

Six focused survey events were conducted at least seven days apart between March and May. At the present time, there is no formal USFWS sanctioned survey methodology for the rail, and the USFWS leaves the survey methodology to the discretion of the permitted biologist, and surveys were conducted in accordance with the survey protocol recommendations provided to the USFWS by the Clapper Rail Study Team (2009). Survey events consisted of a single survey at either dawn or dusk. Each dawn and dusk survey lasted approximately three hours. Dawn surveys were conducted from pre-dawn to no later than three-hours after sunrise. Dusk surveys were initiated three hours before sunset and continued until dark.

The surveys were conducted by walking the bike path along the levee on both sides of the riverbank, stopping at stations approximately 100 feet (33 meters) apart along the perimeter of the survey area, and listening for vocalizing light-footed Ridgway's rails. If the species was not detected passively, a digital call-prompt of the light-footed Ridgway's rail's "dueting" was played at 30-second intervals. A response was listened for before proceeding to the next survey station.

Focused surveys for this species, using the same general protocol described above, were also conducted in 2015 and 2017 and included the project impact area and surrounding 500-foot buffer.

2.2.5 Least Bell's Vireo

USFWS-permitted biologists conducted focused surveys for least Bell's vireo in 2021, using a survey area that included suitable habitat within the project impact area and surrounding 500-foot buffer. The survey area is shown on Appendix A: Figure 3b.

Qualified biologists conducted focused surveys for least Bell's vireo in accordance with the current USFWS survey protocol (USFWS 2001). Eight surveys were conducted at least 10 days apart during the protocol survey window of April 10 to July 31. All surveys were conducted between

approximately dawn and 11:00 a.m. and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the least Bell's vireo.

Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the least Bell's vireo. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas. No more than approximately 50 hectares (3 linear kilometers) of suitable habitat was surveyed per day, per the protocol.

Sensitive species detections were recorded electronically using a hand-held GPS device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, numbers and locations of parasitic brown-headed cowbirds (*Molothrus ater*) were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

Focused surveys for this species, using the same protocol described above, were also conducted in 2015 and 2017 and included suitable habitat within the current project impact area at the time each survey was conducted and surrounding 500-foot buffer.

2.2.6 Southwestern Willow Flycatcher

A USFWS-permitted biologist conducted focused surveys for southwestern willow flycatcher in 2021, using a survey area that included suitable habitat within the project impact area and surrounding 500-foot buffer. This survey area is shown on Appendix A: Figure 3b.

The surveys were conducted in accordance with the current USFWS-accepted survey protocol, which entails intensive surveys of suitable habitat as well as detailed datasheets documenting detections, habitat, and other information about the southwestern willow flycatcher (Sogge et al. 2010).

Five surveys were conducted during the three survey periods outlined in the protocol, including one survey conducted during the first period (May 15 to June 1), two surveys conducted during the second period (June 1 to June 24), and two surveys conducted during the third period (June 24 to July 17). All surveys were conducted between approximately 05:30 and 10:30 a.m. and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the southwestern willow flycatcher.

Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the southwestern willow flycatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded southwestern willow flycatcher vocalization playbacks were used only to elicit initial calls from the southwestern willow flycatcher and were not used frequently or to elicit further behaviors. Pre-recorded vocalizations were played for a period of 10 to 15 seconds and were generally

repeated approximately every 70 to 100 feet within the surveyed habitat. No more than approximately 0.6 mile of suitable habitat was surveyed per day by the USFWS-permitted biologist.

Sensitive species detections were recorded electronically using a hand-held GPS device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

Focused surveys for this species, using the same protocol described above, were also conducted in 2015 and 2017 and included suitable habitat within the current project impact area at the time each survey was conducted and surrounding 500-foot buffer.

2.2.7 Coastal California Gnatcatcher

USFWS-permitted biologists conducted focused surveys for coastal California gnatcatcher in 2021, using a survey area that included suitable habitat within the project impact area and surrounding 300-foot buffer. This survey area is shown on Appendix A: Figure 3b.

USFWS-permitted biologists conducted focused coastal California gnatcatcher surveys in accordance with the current USFWS survey protocol for the species, which requires six visits at intervals of no less than 7 days apart for non-NCCP participants (USFWS 1997b).

The surveys were conducted between 06:00 a.m. and 12:00 p.m. and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, other inclement weather conditions) that would impede detection of the coastal California gnatcatcher. The surveyors slowly walked throughout the suitable habitat identified within the survey area during the habitat assessment and used visual and auditory cues to detect the coastal California gnatcatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded coastal California gnatcatcher vocalization playbacks were only used to elicit initial calls from coastal California gnatcatcher and were not used frequently or to elicit further behaviors. Pre-recorded vocalizations were played for periods of 5 to 15 seconds and were generally repeated approximately every 100 feet within the surveyed habitat.

Sensitive species detections, including coastal California gnatcatcher detections, were recorded electronically using a hand-held GPS device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

Focused surveys for this species, using the same protocol described above, were also conducted in 2015 and 2017 and included the current project impact area at the time each survey was conducted and surrounding 300-foot buffer. Only three survey events were conducted during these previous surveys based on the City's status as an NCCP participant (USFWS 1997b).

2.2.8 Bats

A daytime bat reconnaissance survey was conducted in 2021. Qualified biologists visually inspected the existing Coast Highway Bridge over the San Luis Rey River, the adjacent I-5 bridges, and the surrounding habitats during daylight hours to identify any bats and/or bat sign present within the project area and to assess the potential for bat species that are known from the vicinity of the project to use the bridges and/or adjacent habitats.

The biologists carefully inspected both ends of the existing Coast Highway Bridge, where night roosting would likely occur if the bridge was being used by bats. The biologists also visually assessed the I-5 bridges for bats and bat sign.

A similar assessment was conducted previously in 2016 during the evening.

2.2.9 Jurisdictional Wetland/Waters Delineation

A routine jurisdictional wetland/waters delineation, following the guidelines set forth by USACE (1987, 2008), was performed in summer of 2021 to gather field data at potential jurisdictional wetlands and waters in the survey area. The survey area is shown on Appendix A: Figure 3b and was defined as the project impact area (current at the time of the surveys) and surrounding 100-foot buffer. A jurisdictional delineation was previously conducted in early summer and fall of 2016, using the USACE guidelines current at the time of the survey (USACE 1987, 2008). Prior to conducting the initial delineation, aerial photographs and USGS topographic maps of the site were examined. The results of the 2016 delineation were reviewed and updated during the 2021 survey effort. While on-site in 2021, the potential federal and state jurisdictional areas were examined for hydrophytic vegetation, hydric soils, wetland hydrology, and/or ordinary high water mark to determine the presence and extent of any jurisdictional waters.

The potential wetland areas were surveyed by walking throughout the survey area and making observations of those areas exhibiting characteristics of jurisdictional waters or wetlands. Vegetation units with the potential to be wetlands were examined, and data for each vegetation stratum (i.e., tree, shrub, herb, and vine) were recorded on the datasheet provided in the 2008 Arid West Supplement (USACE 2008). The wetland indicator status of each species recorded was determined by using the National Wetland Plant List (USACE 2018). Three indicators or tests were used to determine hydrophytic vegetation on a site: the dominance test, prevalence index, and morphological adaptations.

To check for hydric soil indicators, sample points were selected within potential wetland areas and where the apparent boundary between wetland and upland was inferred based on changes in the composition of the vegetation and topography. Soil pits were dug to a depth of at least 18 inches or to a depth necessary to determine soil color, evidence of soil saturation, depth to groundwater, and indicators of a reducing soil environment (i.e., mottling, gleying, and sulfidic odor).

Hydrologic information for the site was obtained by reviewing USGS topographic maps and by directly observing hydrology indicators in the field. The wetland hydrology criterion was considered fulfilled at a location if, based upon the conclusions inferred from the field observations, an area had a high probability of being periodically inundated or had soils saturated to the surface at some time during the growing season to develop anaerobic conditions in the surface soil environment,

especially the root zone (USACE 1987). If at least one primary indicator or at least two secondary indicators were found at a sample point, the wetland hydrology criterion was considered fulfilled.

Non-wetland jurisdictional waters were delineated based on the presence of strong hydrology indicators such as the presence of seasonal flows and an ordinary high water mark.

2.3 Personnel and Survey Dates

Surveys conducted in 2015 through 2021 are summarized in Table 1 by date, type, and personnel. Individual qualifications are summarized below.

Table 1: Surveys Performed by Date, Type, and Personnel.

Survey Date	Survey Type	Personnel
Current 2021 Surveys		
3/29/2021	Light-footed Ridgway's rail	John Konecny
4/5/2021	Light-footed Ridgway's rail	John Konecny
4/12/2021	Light-footed Ridgway's rail	John Konecny
4/19/2021	Light-footed Ridgway's rail	John Konecny
4/28/2021	Light-footed Ridgway's rail	John Konecny
5/6/2021	Light-footed Ridgway's rail	John Konecny
4/20/2021	Least Bell's vireo, coastal California gnatcatcher	Darin Busby, Charles Vettes
4/30/2021	Least Bell's vireo, coastal California gnatcatcher	Erik LaCoste, Charles Vettes
5/11/2021	Least Bell's vireo, coastal California gnatcatcher	Erik La Coste, Charles Vettes
5/13/2021	Vegetation mapping and rare plants update	Wendy Loeffler
5/27/2021	Rare plants	Wendy Loeffler, Brian Parker
5/21/2021	Southwestern willow flycatcher; least Bell's vireo, coastal California gnatcatcher	Erik LaCoste
6/1/2021	Southwestern willow flycatcher; least Bell's vireo, coastal California gnatcatcher	Erik LaCoste, Charles Vettes
6/15/2021	Southwestern willow flycatcher; least Bell's vireo	Erik LaCoste, Charles Vettes
6/25/2021	Southwestern willow flycatcher; least Bell's vireo, coastal California gnatcatcher	Charles Vettes
7/9/2021	Southwestern willow flycatcher; least Bell's vireo	Charles Vettes
7/15/2021	Bat reconnaissance survey	Drew Stokes, Brenna Ogg
8/30/2021	Wetland/waters delineation	JR Sundberg, Jade Woll
9/28/2021	Tidewater goby, southern California steelhead, EFH assessment	Antoinette Gutierrez, Samuel Schipper, Grace Teller, Russell Barabe, Cora McClelland
9/29/2021	Tidewater goby, southern California steelhead, EFH assessment	Antoinette Gutierrez, Samuel Schipper, Raelynn Heinitz
Previous Surveys (2015-2017)		
3/20/2015	General biological survey, vegetation mapping, and habitat assessments	Brenna Ogg, Darin Busby
3/28/2015	Light-footed Ridgway's rail	John Konecny
4/4/2015	Light-footed Ridgway's rail	John Konecny
4/6/2015	Light-footed Ridgway's rail	John Konecny
4/14/2015	Rare plants – early spring	Ryan Meszaros, Brian Lohstroh
4/14/2015	Light-footed Ridgway's rail	John Konecny
4/16/2015	Light-footed Ridgway's rail	John Konecny

Survey Date	Survey Type	Personnel
4/21/2015	Light-footed Ridgway's rail	John Konecny
4/23/2015	Light-footed Ridgway's rail	John Konecny
4/29/2015	Light-footed Ridgway's rail	John Konecny
5/1/2015	Light-footed Ridgway's rail	John Konecny
5/6/2015	Least Bell's vireo	Darin Busby, Laurie Gorman
5/7/2015	Rare plants – late spring	Ryan Meszaros, Brian Lohstroh
5/9/2015	Light-footed Ridgway's rail	John Konecny
5/11/2015	Light-footed Ridgway's rail	John Konecny
5/15/2015	Southwestern willow flycatcher	Laurie Gorman
5/18/2015	Least Bell's vireo	Darin Busby
5/28/2015	Coastal California gnatcatcher	Darin Busby, Laurie Gorman
6/1/2015	Least Bell's vireo	Darin Busby
6/1/2015	Southwestern willow flycatcher	Laurie Gorman
6/8/2015	Coastal California gnatcatcher	Darin Busby, Laurie Gorman
6/12/2015	Least Bell's vireo	Darin Busby
6/12/2015	Southwestern willow flycatcher	Laurie Gorman
6/23/2015	Coastal California gnatcatcher	Laurie Gorman, Travis Cooper
6/23/2015	Least Bell's vireo	Travis Cooper, Laurie Gorman
7/7/2015	Least Bell's vireo	Darin Busby
7/7/2015	Southwestern willow flycatcher	Laurie Gorman
7/15–7/16/2015	Tidewater goby, southern California steelhead, EFH assessment	Adam Schroeder, Max Murray, Brian Zitt
7/17/2015	Least Bell's vireo	Darin Busby
7/17/2015	Southwestern willow flycatcher	Laurie Gorman
7/21/2015	Rare plants – summer	Brian Lohstroh, Travis Cooper
7/30/2015	Least Bell's vireo	Darin Busby, Melissa Busby
8/17–8/18/2015	Tidewater goby, southern California steelhead, EFH assessment	Adam Schroeder, Max Murray, Brian Zitt
5/24/2016	Bat reconnaissance survey	Drew Stokes, Kelly Inglett, Brian Parker
6/29/2016	Wetland/waters delineation	Gerry Scheid, JR Sundberg
10/24/2016	Wetland/waters delineation, vegetation mapping update	Gerry Scheid, JR Sundberg
3/7/2017	Vegetation mapping update	Brian Parker
3/24/2017	Light-footed Ridgway's rail	John Konecny
4/1/2017	Light-footed Ridgway's rail	John Konecny
4/9/2017	Light-footed Ridgway's rail	John Konecny
4/10/2017	Rare Plant	Margie Milligan, Andrew Kort
4/12/2017	Coastal California gnatcatcher, least Bell's vireo	Darin Busby
4/16/2017	Light-footed Ridgway's rail	John Konecny
4/24/2017	Light-footed Ridgway's rail	John Konecny
5/3/2017	Coastal California gnatcatcher, least Bell's vireo	Darin Busby
5/4/2017	Light-footed Ridgway's rail	John Konecny
5/15/2017	Coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher	Erik LaCoste
6/5/2017	Least Bell's vireo, southwestern willow flycatcher	Erik LaCoste
5/24/2017	Rare Plant	Margie Milligan, Andrew Kort
6/20/2017	Southwestern willow flycatcher; least Bell's vireo	Erik LaCoste
7/3/2017	Southwestern willow flycatcher; least Bell's vireo	Erik LaCoste

Survey Date	Survey Type	Personnel
7/12/2017	Southwestern willow flycatcher	Erik LaCoste
7/14/2017	Least Bell's vireo	Erik LaCoste
7/24/2017	Least Bell's vireo	Garrett Huffman
7/31/2017	Tidewater goby, southern California steelhead, EFH assessment	Antoinette Gutierrez, Samual Schipper, Grace Teller, Andrew Kort
9/8/2017	Tidewater goby, southern California steelhead, EFH assessment	Antoinette Gutierrez, Samual Schipper, Angelica Zavala-Lopez, Andrew Kort

The following details the qualifications of surveyors who conducted the most recent surveys efforts in 2021.

Wendy Loeffler has 26 years of experience conducting general biological assessments, constraints analyses, and impact assessments; environmental compliance monitoring; vegetation mapping; habitat restoration; mitigation implementation and monitoring; and focused surveys for sensitive floral and faunal species in a variety of habitats in southern California. Ms. Loeffler maintains a USFWS ESA Section 10(a)(1)(A) recovery permit for multiple species including coastal California gnatcatcher; has years of experience conducting protocol presence/absence surveys for least Bell's vireo and focused rare plant surveys; and has attended training sessions for willow flycatcher identification and survey techniques.

John Konecny has decades of experience conducting biological assessments, breeding bird surveys, nest searches, construction monitoring, and general biological surveys. Mr. Konecny maintains a USFWS ESA Section 10(a)(1)(A) recovery permit and a CDFW Memorandum of Understanding (MOU) for multiple avian species. Specifically, he conducts focused surveys for the California gnatcatcher, least Bell's vireo, western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), Yuma and light-footed Ridgway's rail (*Rallus obsoletus yumanensis; R. o. levipes*), California black rail (*Laterallus jamaicensis coturniculus*), Belding's Savannah sparrow (*Passerculus sandwichensis beldingi*), and southwestern willow flycatcher. He also performs nest monitoring of the California least tern (*Sternula antillarum browni*), western snowy plover (*Charadrius nivosus* ssp. *nivosus*), least Bell's vireo, light-footed Ridgway's rail, and California gnatcatcher; construction monitoring for least Bell's vireo and California gnatcatcher; and brown-headed cowbird trapping. He served as Research Associate for the Clapper Rail Study Team from 1998 to 2016, conducting the range-wide annual census, captive breeding program, banding, and radio telemetry for the light-footed Ridgway's rail in southern California.

Darin Busby is an experienced biologist with a USFWS ESA 10(a)(1)(A) survey permit for multiple species including coastal California gnatcatcher. Mr. Busby has expertise conducting focused surveys and monitoring for a variety of sensitive wildlife species, including least Bell's vireo; evaluating impacts to sensitive biological resources; conducting both general and species-specific habitat assessments; designing, implementing, and managing field studies for general biological surveys and large-scale baseline ecological studies; performing wildlife movement studies; and conducting jurisdictional wetland delineations. In addition, he has experience mapping vegetation, rare plants, and sensitive species habitats, managing project databases, and preparing a variety of biological technical documents.

Erik LaCoste holds a USFWS ESA 10(a)(1)(A) survey permit for multiple species including coastal California gnatcatcher and southwestern willow flycatcher. In addition, Mr. LaCoste has expertise conducting focused surveys and monitoring for a variety of sensitive wildlife species, including least Bell's vireo, and is a certified wildlife tracker with experience planning and implementing wildlife movement studies. He routinely conducts both general and species-specific assessments for both small- and large-scale projects to evaluate potential impacts to sensitive biological resources. Mr. LaCoste also has experience managing project databases and preparing applicable biological reports, from simple monitoring forms to complex Biological Technical Reports.

Charles Vettes holds a USFWS ESA 10(a)(1)(A) survey permit for multiple species including coastal California gnatcatcher and southwestern willow flycatcher. In addition, Mr. Vettes has extensive experience conducting focused surveys and monitoring for least Bell's vireo, a species for which he has done thousands of hours of surveys. He also assists with impact evaluations during project planning, is skilled at implementing complex mitigation and monitoring programs during the project construction phase, and has excellent reporting skills.

Brian Parker has over 20 years of experience conducting vegetation mapping, species surveys, habitat restoration, focused rare plant surveys, wetland delineations, and construction monitoring in southern California. He has performed focused surveys for numerous species including coastal California gnatcatcher, least Bell's vireo, and small mammals. He also has formal field training in California bat ecology, field capture and handling, and acoustic monitoring.

Brenna Ogg has over 15 years of experience conducting general biological assessments, constraints analyses, and impact assessments; environmental compliance monitoring; vegetation mapping; habitat restoration; mitigation implementation and monitoring; and focused surveys for sensitive floral and faunal species in a variety of habitats in southern California. Ms. Ogg maintains a USFWS ESA Section 10(a)(1)(A) recovery permit for multiple species including coastal California gnatcatcher; has years of experience conducting protocol presence/absence surveys for least Bell's vireo and focused rare plant surveys; and has attended training sessions for willow flycatcher identification and survey techniques, and various plant families.

Drew Stokes is a wildlife biologist with the Department of BioServices at the San Diego Natural History Museum. With over 20 years of field experience, he is considered the local expert on bats in San Diego County and one of few bat experts in southern California. He currently holds an MOU with the CDFW to capture and handle bats. Mr. Stokes has extensive experience using acoustic bat survey techniques including the Anabat bat detector system. He also has worked on several bat radio telemetry projects in the southwestern U.S. He currently is acting as an Independent Scientific Advisor for the San Diego East County Multiple Species Conservation Program for bats, and is part of the California Bat Working Group, who is responsible for developing the California Bat Conservation Plan.

JR Sundberg has 17 years of experience performing rare plant identification and surveys; habitat assessments for coastal California gnatcatcher; vegetation mapping; environmental compliance monitoring; and focused surveys for endangered, threatened, and sensitive species throughout southern California. Mr. Sundberg also has completed wetland delineations and assessments within riverine, lacustrine, and estuarine wetland systems. His experience includes wetland delineations within difficult and atypical wetlands including vernal pool complexes and urbanized streams as

well as montane meadows, perennial and intermittent river systems, and ephemeral drainages. Mr. Sundberg holds a USFWS Section 10(a)(1)(A) recovery permit for vernal pool and upland plants.

Antonette Gutierrez is a highly experienced biologist who has been performing ecological surveys in estuarine, riparian, and terrestrial communities since 1998. She has specialized experience conducting habitat assessment, surveys, and monitoring for threatened and endangered species (plants, invertebrates, fish, amphibian, reptiles, birds, and mammals). More specifically, she has performed multi-year general bird, fisheries, infaunal and epifaunal invertebrate, and water quality surveys, as well as habitat mapping in various locations throughout southern California. Ms. Gutierrez has conducted surveys and predator control efforts for tidewater goby in the San Mateo Creek System, and she is experienced with other southern California fish species and Essential Fish Habitat evaluations.

2.4 Agency Coordination and Professional Contacts

There has been no agency coordination for this project to date. Current project-specific species lists were obtained from USFWS on November 18, 2021, and NMFS on December 10, 2021; these lists are included in Appendix C.

2.5 Limitations That May Influence Results

The initial general biological survey in 2015 and updated vegetation mapping survey in 2017 were conducted in early spring, outside the blooming period for some annual species. However, rare plant surveys conducted in 2015, 2017, and 2021 were conducted at various times spanning spring to summer to maximize the possibility of detection of species with potential to occur. Therefore, survey timing with respect to season is not expected to have limited survey results.

However, weather conditions may have affected the expression or population size of some annual plant species. Overall, the 2020-2021 wet season (October 1, 2020-July 31, 2021) was below average (National Climate Data Center 2021; National Weather Service [NWS] 2021a and 2021b). This is similar to the conditions for the 2015 and 2017 surveys; although, in 2015, the region received above average rainfall in December, followed by a warm, dry period. As observed on other sites in southern California, this early influx of moisture appeared to result in good germination of many annual plant species, followed by early desiccation and low rates of reproductive success.

The wildlife surveys were limited by seasonal and temporal factors. During the general biological and focused species surveys, animal species observed directly or detected from calls, tracks, scat, nests, or other sign were noted. The seasonal timing of surveys, which spanned from early spring to summer, would have maximized detection of target avian species and allowed for detection of most diurnal mammal and reptile species. However, some winter migrants and nocturnal species may not have been detected. Nocturnal animals were only identified by sign that was apparent during daytime surveys.

Despite the limitations discussed above, focused surveys have been repeated over several years, which increases the likelihood of detection of plant species that may not have germinated in any given year and likely captures variability in site use by some special-status animal species.

Chapter 3 – Results: Environmental Setting

This chapter describes the existing biological and physical conditions of the project impact area, BSA, and larger region within which the project is proposed. This includes a summary of climate, topographical and hydrological features, soils, habitat, land use, level of human and/or natural disturbance.

3.1 Description of the Existing Biological and Physical Conditions

The main project area (i.e., Coast Highway Bridge) is located immediately west of I-5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the city of Oceanside, San Diego County, California. Other project components (e.g., roadway approaches, construction staging and access areas) extend north and south along Coast Highway and east along the north side of the San Luis Rey River.

3.1.1 Study Area

Except for the San Luis Rey River channel and adjacent vegetated slopes, the BSA is bordered to the north and south by developed land, which includes SR-76, commercial properties, gas stations, lodging, parking lots, and residential development. Within the BSA, the developed land largely consists of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; undeveloped land comprises a mix of native and non-native vegetation (Appendix A: Figures 3a and 3b). The vegetation communities and land cover types found within the BSA include urban/developed, disturbed habitat, open water (San Luis Rey River), freshwater marsh, disturbed southern riparian scrub, non-native riparian, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, and eucalyptus woodland. A large portion of the vegetation within the survey area has been subject to recent and historic disturbance, active management, and non-native plant invasion.

3.1.2 Physical Conditions

3.1.2.1 Climate

San Diego County is generally characterized by warm, dry summers and mild winters, with annual precipitation typically falling between November and March. The vicinity of the BSA is largely influenced by a coastal climate weather regime, constraining extreme variations in air temperature and often resulting in marine layer during summer (Schoenherr 1992; Unitt 2004).

3.1.2.2 Topography

The project BSA is located within Township 11 South, Range 5 West, Sections 14, 22, and 23 of the USGS 7.5-minute Oceanside topographic quadrangle (USGS 1997; Appendix A: Figure 4). Elevation within the BSA ranges from approximately zero to 70 feet above mean sea level (amsl), with the lowest elevations along the water's surface and the highest elevations within the developed areas of the northern portion of the BSA.

3.1.2.3 Soils

The soils in the central portion of the BSA are described as tidal flats along the river; terrace escarpments along the steep slopes adjacent to the river; Huerhuero loam, made land, and Marina loamy coarse sand in the developed areas north of the river; and Tujunga sand in the developed

areas south of the river. The western reach of the river within the BSA largely comprises made land and Tujunga sand, and the eastern reach of the river within the BSA includes made land, tidal flats, Grangeville fine sandy loam, riverwash, and Tujunga sand. Soil types mapped within the BSA are shown on Appendix A: Figure 5, and the following descriptions are summarized from the USDA Soil Survey, San Diego, California (USDA 1973).

Tidal flats (Tf) occurs as level areas that are periodically covered with tidal water, are often barren, but may support sparse salt-tolerant vegetation. This soil ranges from clay to very fine sand.

Terrace Escarpments (TeF) are steep formations on the nearly even fronts of terraces and alluvial fans. These landscapes occur between flood plains and the steep sides of drainages that are being entrenched into the level uplands. The soil on terrace escarpments is typically loamy or gravelly and four to ten inches thick over soft marine parent material.

Huerhuero loam, 15 to 30 percent slopes, eroded (HrE2) is present within the BSA. The Huerhuero series consists of moderately well-drained loams that have developed in sandy marine sediments and have a clay subsoil.

Made land (Md) consists of level areas that have been filled with excavated or dredged soil material and/or paving material.

Marina loamy coarse sand, 2 to 9 percent slopes (MlC) is present in the BSA. The Marina series occur on old beach ridges and consist of somewhat excessively drained, very deep loamy coarse sands derived from weakly consolidated iron-bearing sand deposited or eroded by the wind.

Tujunga sand, 0 to 5 percent slopes (TuB) is present within the BSA. The Tujunga series occur on alluvial fans and floodplains, and consist of very deep, excessively drained sands derived from granitic alluvium.

Grangeville fine sandy loam, 0 to 2 percent slopes (GoA) occurs within the BSA. Soils in the Grangeville series are formed from granitic alluvium and occur on alluvial fans and plains. This series and consists of somewhat poorly drained, very deep, fine sandy loams.

Riverwash (Rm) soils occur in intermittent stream channels and typically consist of sand, gravel, or cobble. Riverwash soil may be devoid of vegetation in many places or may contain sparse patches of shrubs and forbs, or riparian trees along banks. These soils are rapidly permeable and excessively drained.

3.1.2.4 Hydrology

The BSA lies at the western edge of the approximate-560-square-mile San Luis Rey Watershed. Rainfall received within this watershed primarily drains through the San Luis Rey River, which flows in a westerly direction from headwaters originating in the Cleveland National Forest and empties into the Pacific Ocean. Lake Henshaw is located in the upper one-third of the watershed and has affected water flows in the San Luis Rey River since its construction in 1925 (City of Escondido 2015). Flow in the San Luis Rey River most commonly occurs between November and March of each rain year.

The San Luis Rey River bisects the BSA approximately 0.5 mile east of the Pacific Ocean. The area where the San Luis Rey River and Pacific Ocean meet is typically blocked by a sandbar during the dry season. However, at times of high flow, the river flows directly into the Pacific Ocean. A review of aerial imagery from 1994 to 2010 shows a previous frequent, if not constant, connection between the river and the Pacific Ocean. However, following removal of a road and associated culvert in 2008/2009, aerial imagery from October 2012 through August 2021 show consistent presence of the sandbar blocking the river-ocean connection and little to no sign of recent flow across the sandbar (Google 2021), with the exception of a few months where the connection between the San Luis Rey River and Pacific Ocean was restored, e.g., between August 2017 and February 2018, August 2019, and December 2020. The mouth was again blocked during surveys conducted in September and October 2021.

The BSA includes a channelized section of the San Luis Rey River. Within the central BSA on either side of the San Luis River are narrow floodplain terraces, with some portions of the upper banks west of the Coast Highway Bridge lined with concreted riprap. Although the terraces may flood during peak river flow or high tides, the hydrology is primarily within the banks of the river and groundwater driven. The lack of predominately salt-tolerant vegetation also supports a fresh groundwater hydrology.

3.1.3 Biological Conditions in the Biological Study Area

3.1.3.1 Vegetation Communities and Land Cover Types

The following nine vegetation communities or land cover types are present within the BSA: freshwater marsh, disturbed southern riparian scrub, non-native riparian, open water, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, eucalyptus woodland, disturbed habitat, and urban/developed land (Appendix A: Figures 6a and 6b). Vegetation classification follows Holland (1986) as modified by Oberbauer et al. (2008).

Freshwater Marsh

Within the BSA, freshwater marsh occurs as large patches within riparian scrub or woodland, or as narrow fringes along the river's edge. Common species include California bulrush (*Schoenoplectus californicus*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), and southern cattail (*Typha domingensis*). Some plant species more typical of brackish or salt marsh are also present in scattered patches, including fleshy jaumea (*Jaumea carnosa*) and salt grass (*Distichlis spicata*).

Disturbed Southern Riparian Scrub

Disturbed southern riparian scrub occurs in relatively small patches in the western portion of the BSA, on the north and south banks of the San Luis Rey River. In the eastern portion of the BSA, this community is more expansive with connectivity to native marsh and stands of riparian woodland. This vegetation community contains a dense canopy ranging in height from approximately 15 to 20 feet and is dominated by narrow-leaf willow (*Salix exigua*) and arroyo willow (*Salix lasiolepis*). However, it is considered disturbed due to the presence of scattered invasive plant species such as saltcedar (*Tamarix ramosissima*) and giant reed (*Arundo donax*). This on-site community has an open to dense understory dominated by species such as mule fat (*Baccharis salicifolia*), southern

cattail, California bulrush, western poison oak (*Toxicodendron diversilobum*), and coyote brush (*Baccharis pilularis*).

Non-native Riparian

This vegetation community occurs along the north bank of the San Luis Rey River, west of the Coast Highway Bridge, and contains a dense canopy ranging in height from approximately 15 to 30 feet and is dominated by plant species such as Brazilian pepper tree (*Schinus terebinthifolius*), saltcedar, giant reed, and Canary Island date palm (*Phoenix canariensis*). This community also contains scattered narrow-leaf willow, arroyo willow, and blue elderberry (*Sambucus nigra* ssp. *caerulea*), and an open to dense understory dominated by plant species such as mule fat, southern cattail, California bulrush, western poison oak, castor bean (*Ricinus communis*), garden nasturtium (*Tropaeolum majus*), and coyote brush.

Open Water

Open water occurs within the main channel of the San Luis Rey River. At the time focused surveys were conducted in 2021, the river was closed off to the Pacific Ocean; however, there was still some tidal influence and water quality measurements collected in May indicated a highly saline system, but at about 50 percent of the levels for open ocean.

Diegan Coastal Sage Scrub

The Diegan coastal sage scrub within the BSA has an open or broken canopy with low to moderately dense shrub cover, ranges in shrub height from approximately 1 to 4 feet, and is dominated by the following plant species: California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), coyote brush, deerweed (*Acmispon glaber*), and goldenbush (*Isocoma menziesii*). This vegetation community occurs on either side of the existing bike path west of the Coast Highway Bridge and on the slope between the river and SR-76 east of the bridge. Irrigation pipes are present in the patch of habitat west of the bridge and north of the bike path, indicating this area was subject to restoration activity at some point. Historic aerials indicate the pipes were initially laid in 2008, and thus this is likely no longer an active restoration area.

One small area within the Diegan coastal sage scrub supports more of an upland-riparian transitional species composition. This area contains some of the same species as found in the undisturbed Diegan coastal sage scrub but also contains a mix of tall, dense vegetation associated with the adjacent riparian scrub habitat, such as mule fat and black elderberry (*Sambucus nigra*). This area occurs south of the river, south of the bike path, and west of the Coast Highway Bridge.

Disturbed Diegan Coastal Sage Scrub

The disturbed Diegan coastal sage scrub within the BSA contains a similar species composition and structure to that found in the undisturbed Diegan coastal sage scrub described above, but it has been subject to various types of disturbance resulting in a prevalence of invasive or ornamental species, such as black mustard (*Brassica nigra*), sweet fennel (*Foeniculum vulgare*), castor bean, pampas grass (*Cortaderia selloana*), and fountain grass (*Pennisetum setaceum*). This vegetation

community occurs along a steep slope east of the Coast Highway Bridge in the northeastern portion of the BSA and in a couple of small patches in the southwestern portion of the BSA.

Eucalyptus Woodland

Eucalyptus woodland within the BSA occurs within larger areas of ornamental plantings and disturbance, mostly within the eastern portion of the BSA, between the bridge and SR-76. The trees within the eucalyptus woodland are red gum (*Eucalyptus camaldulensis*) with most individuals over 50 feet tall. The understory is a mix of bare ground, ornamental ground cover species such as Canary Island ivy (*Hedera canariensis*), and ruderal plant species.

Disturbed Habitat

Disturbed habitat is mostly mapped beneath the Coast Highway and I-5 bridges, where sign of vegetation maintenance is evident. Other areas of disturbed habitat occur adjacent to development. The disturbed habitat comprises a mix of bare ground and native and non-native grass and forb such as slender wild oat (*Avena barbata*), ripgut grass (*Bromus diandrus*), golden-top (*Lamarckia aurea*), crimson fountain grass, iceplants (*Mesembryanthemum* spp.), fennel, tocalote (*Centaurea melitensis*), garland daisy (*Glebionis coronaria*), and black mustard. A few native species–such as laurel sumac (*Malosma laurina*), California sagebrush, and San Diego marsh-elder are also found scattered within the disturbed habitat, as this community often occurs in areas situated between the native vegetation along the river and the surrounding development.

Urban/Developed Land

Urban/developed land includes commercial and residential development, roads and bridges, and paved bike/pedestrian paths. Large areas of ornamental plantings also occur within the developed areas in the southern portion of the BSA; these areas largely comprise low-lying ground covers such as Canary Island ivy and freeway iceplant (*Carpobrotus edulis*).

3.1.3.2 Plant Species

A total of 187 plant species, of which 75 are native to the locality, were observed within the BSA within surveys conducted in 2015-2017, and 2021. A complete list of plant species detected is provided in Appendix D.

3.1.3.3 Wildlife Species

The riparian habitat and open water along the lower San Luis Rey River supports a wide variety of resident and migratory birds, mammals, reptiles, amphibians, fish, and other aquatic species. A total of 115 wildlife species, of which 7 are introduced species, were detected within the BSA within surveys conducted in 2015-2017, and 2021. A complete list of wildlife species detected is provided in Appendix E.

Birds commonly detected within the BSA include species typical of native upland, riparian, and marsh habitats, as well as the urban-wildland interface. These commonly observed species included Anna's hummingbird (*Calypte anna*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), northern rough-winged swallow (*Stelgidopteryx serripennis*), song sparrow (*Melospiza melodia*), lesser goldfinch (*Spinus psaltria*), California towhee (*Melozone crissalis*),

mallard (*Anas platyrhynchos*), American coot (*Fulica americana*), red-winged blackbird (*Agelaius phoeniceus*), and great-tailed grackle (*Quiscalus mexicanus*).

Mammals commonly detected within the BSA include species typical of native upland habitat and the urban-wildland interface. These species included desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), and raccoon (*Procyon lotor*).

3.1.3.4 Wildlife Movement Corridors/Habitat Connectivity

The lower San Luis Rey River in the vicinity of the BSA serves as a movement corridor for terrestrial and avian wildlife species. Although the portion of the river that occurs within and adjacent to the BSA is immediately surrounded by urban development to the north and south, the floodplain and adjacent slopes support a variety of native riparian and upland habitats, providing cover and movement opportunities for many terrestrial species. The San Luis Rey River provides connectivity from the coast to multiple inland canyons that ultimately link to the Santa Margarita River, Ysidora Basin, large undeveloped areas of Marine Corps Base Camp Pendleton, and Whelan Lake to the north and northeast. The San Luis Rey River provides additional movement opportunities for avian species that can cross barriers such as roadways; multiple undeveloped canyons, including Lawrence Canyon, occur south of SR-76 and may serve as stepping-stone connections to Loma Alta Creek and Marsh to the north and Buena Vista and Agua Hedionda Lagoons to the south.

The portion of the San Luis Rey River that occurs within and adjacent to the BSA provides only intermittent connectivity for fish and other aquatic species between the river and canyon systems and the ocean. As discussed above in Section 3.1.2.4, based on a review of aerial imagery from 2012 to 2021, the area where the San Luis Rey River and Pacific Ocean meet appears to be frequently and consistently blocked by a sandbar, and only appears to have been breached for very short periods of time during very high flows or tides. Water quality testing during fish surveys conducted in 2021 also indicated little to no saltwater intrusion. However, as of this most recent wet season, the river-ocean connection has been restored for a period of at least three months, providing potential movement opportunities for anadromous fish.

3.1.3.5 Invasive Species

Invasive/noxious plant species were observed within the BSA and are listed in Table 2. Species considered invasive or noxious are those listed in the California Invasive Plant Council's (Cal-IPC) California Invasive Plant Inventory Database (Cal-IPC 2021), California Noxious Weeds list (California Department of Food and Agriculture 2021), and/or the CFR.

Table 2: Invasive Species Observed.

Scientific Name	Common Name	Rating
ANGIOSPERMS: MONOCOTS		
ARECACEAE	PALM FAMILY	
Phoenix canariensis Chabaud	Canary Island palm	limited (Cal-IPC)
Washingtonia robusta H. Wendl.	Mexican fan palm	moderate, alert (Cal-IPC)
ASPARAGACEAE	ASPARAGUS FAMILY	
Asparagus asparagoides (L.) Druce	florist's-smilax	moderate, alert (Cal-IPC)
POACEAE (GRAMINEAE)	GRASS FAMILY	
Arundo donax L.	giant reed	high (Cal-IPC) widespread 15, 9 (ISCC) noxious weed (CDFA)
Avena barbata Pott ex Link	slender wild oat	moderate (Cal-IPC) widespread, 4, 8 (ISCC)
Brachypodium distachyon (L.) P. Beauv.	purple falsebrome	moderate (Cal-IPC)
Bromus diandrus Roth	ripgut grass	moderate (Cal-IPC) widespread, 18, 8 (ISCC)
Bromus hordeaceus L.	soft chess	limited (Cal-IPC) widespread, 8, 8 (ISCC)
Bromus madritensis L. ssp. *rubens* (L.) Husn.	red brome	high (Cal-IPC) widespread, 17, 7 (ISCC)
Cortaderia selloana (Schult. & Schult. f.) Asch. & Graebn.	pampas grass	high (Cal-IPC) widespread, 9, 14 (ISCC)
Cynodon dactylon	Bermuda grass	moderate (Cal-IPC)
Ehrharta erecta Lam.	panic veldt grass	moderate (Cal-IPC)
Festuca [=*Vulpia*] *myuros* L.	rattail sixweeks grass	moderate (Cal-IPC)
Festuca perennis (L.) Columbus & J.P. Sm. [=*Lolium multiflorum* and *Lolium perenne*]	rye grass	moderate (Cal-IPC)
Hordeum murinum L. ssp. *glaucum* (Steud.) Tzvelev	smooth barley	moderate (Cal-IPC)
Pennisetum setaceum (Forssk.) Chiov.	crimson fountain grass	moderate (Cal-IPC) widespread, 6, 8 (ISCC)
Polypogon monspeliensis (L.) Desf.	annual beard grass, rabbitfoot grass	limited (Cal-IPC)
Schismus barbatus (L.) Thell.	Mediterranean schismus	limited (Cal-IPC)
Stipa miliacea (L.) Hoover var. *miliaceae* [=*Piptatherum miliaceum* ssp. *miliaceum* and *Oryzopsis miliacea*]	smilo grass	limited (Cal-IPC)
ANGIOSPERMS: DICOTS		
AIZOACEAE	FIG-MARIGOLD FAMILY	
Carpobrotus edulis (L.) N.E. Br.	freeway iceplant	high (Cal-IPC) widespread, 9, 16 (ISCC)
Malephora crocea	Crocea iceplant	watch (Cal-IPC)
Mesembryanthemum crystallinum L.	crystalline iceplant	moderate, alert (Cal-IPC) widespread, 1, 9 (ISCC)
Tetragonia tetragonioides (Pall.) Kuntze	New Zealand spinach	limited (Cal-IPC)
ANACARDIACEAE	SUMAC OR CASHEW FAMILY	
Schinus terebinthifolius Raddi	Brazilian pepper tree	limited (Cal-IPC)
APIACEAE (UMBELLIFERAE)	CARROT FAMILY	
Conium maculatum L.	common poison hemlock	moderate (Cal-IPC) widespread, 16, 5 (ISCC)
Foeniculum vulgare Mill.	Fennel	high (Cal-IPC) widespread, 8, 10 (ISCC)

Scientific Name	Common Name	Rating
ARALIACEAE	**GINSENG FAMILY**	
Hedera canariensis Willd.	Canary Islands ivy	high (Cal-IPC)
ASTERACEAE	**SUNFLOWER FAMILY**	
Carduus pycnocephalus L.	Italian thistle	moderate (Cal-IPC) noxious weed (CDFA)
Centaurea melitensis L.	tocalote, Maltese star-thistle	moderate (Cal-IPC) noxious weed (CDFA)
Cotula coronopifolia L.	brass-buttons	limited (Cal-IPC)
Gazania linearis (Thunb.) Druce	treasure flower	moderate, alert (Cal-IPC)
Glebionis coronaria (L.) Spach [=*Chrysanthemum coronarium*]	garland, crown daisy	moderate (Cal-IPC)
Hypochaeris glabra L.	smooth cat's-ear	limited (Cal-IPC)
Helminthotheca (=Picris) echioides	Bristly ox-tongue	limited (Cal-IPC)
BRASSICACEAE (CRUCIFERAE)	**MUSTARD FAMILY**	
Brassica nigra (L.) W.D.J. Koch	black mustard	moderate (Cal-IPC) widespread, 9, 4 (ISCC)
Hirschfeldia incana (L.) Lagr.-Fossat	short-pod mustard	moderate (Cal-IPC)
Lobularia maritima (L.) Desv.	sweet alyssum	limited (Cal-IPC)
Raphanus sativus L.	radish	limited (Cal-IPC)
Sisymbrium irio L.	London rocket	moderate (Cal-IPC)
CHENOPODIACEAE	**GOOSEFOOT FAMILY**	
Atriplex semibaccata R. Br.	Australian saltbush	moderate (Cal-IPC)
Salsola tragus L.	Russian thistle, tumbleweed	limited (Cal-IPC) widespread, 18, 9 noxious weed (CDFA)
EUPHORBIACEAE	**SPURGE FAMILY**	
Ricinus communis L.	castor bean	limited (Cal-IPC) widespread, 9, 9 (ISCC)
FABACEAE (LEGUMINOSAE)	**LEGUME FAMILY**	
Medicago polymorpha L.	California burclover	limited (Cal-IPC)
GERANIACEAE	**GERANIUM FAMILY**	
Erodium cicutarium (L.) L'Hér. ex Aiton	redstem filaree	limited (Cal-IPC)
LYTHRACEAE	**LOOSESTRIFE FAMILY**	
Lythrum hyssopifolia L.	grass poly, hyssop loosestrife	limited (Cal-IPC)
MYRTACEAE	**MYRTLE FAMILY**	
Eucalyptus camaldulensis Dehnh.	red gum, river red gum	limited (Cal-IPC)
OXALIDACEAE	**OXALIS FAMILY**	
Oxalis pes-caprae L.	Bermuda buttercup	moderate (Cal-IPC)
PLANTAGINACEAE	**PLANTAIN FAMILY**	
Plantago lanceolata L.	English plantain	limited (Cal-IPC)
POLYGONACEAE	**BUCKWHEAT FAMILY**	
Emex spinosa (L.) Campd.	devil's thorn	moderate, alert (Cal-IPC) noxious weed (CFR)
Rumex crispus L.	curly dock	limited (Cal-IPC)
SCROPHULARIACEAE	**FIGWORT FAMILY**	
Myoporum laetum G. Forst.	ngaio tree	moderate (Cal-IPC)
Verbascum thapsus L.	woolly mullein	limited (Cal-IPC)
SIMAROUBACEAE	**QUASSIA OR SIMAROUBA FAMILY**	
Ailanthus altissima (Mill.) Swingle	tree of heaven	moderate (Cal-IPC) widespread, 14, 8 (ISCC) noxious weed (CDFA)

Scientific Name	Common Name	Rating
SOLANACEAE	NIGHTSHADE FAMILY	
Nicotiana glauca Graham	tree tobacco	moderate (Cal-IPC)
TAMARICACEAE	TAMARISK FAMILY	
Tamarix ramosissima Ledeb.	saltcedar	high (Cal-IPC) widespread, 16, 13 (ISCC) noxious weed (CDFA)
ZYGOPHYLLACEAE	CALTROP FAMILY	
Tribulus terrestris L.	puncture vine	limited (Cal-IPC) noxious weed (CDFA)

3.2 Regional Species and Habitats and Natural Communities of Concern

A total of six special status plant species, ten special status wildlife species, and critical habitat for three wildlife species have been recorded within the BSA, as shown in Table 3. Potentially suitable habitat for an additional 20 special status plant species and 28 special status wildlife species is present within the BSA. However, all but one of these plant species are not expected to occur within the BSA, and the remaining species have a low potential, based on lack of detection over several surveys and the evidence that its presence is due to a restoration project outside of the BSA. Only seven of these special status wildlife species have a moderate or high potential to occur. Each of these species is addressed in Table 3. Species known or with moderate or high potential to occur in the BSA and those species with critical habitat identified in the BSA are discussed further in Chapter 4.

Natural communities of concern found within the BSA include four vegetation communities: southern riparian scrub, freshwater marsh, Diegan coastal sage scrub, and non-native riparian. Other regional or local issues of concern include wildlife movement, jurisdictional wetlands and waters, and Coastal ESHA. Each of these communities/issues is addressed in Table 3 and discussed further in Chapter 4.

Table 3: Listed, Proposed Species, Natural Communities, and Critical Habitat Potentially Occurring or Known to Occur in the Biological Study Area.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
SPECIAL STATUS PLANT SPECIES					
LYCOPODS					
SELAGINELLACEAE SPIKE-MOSS FAMILY					
Selaginella cinerascens	ashy spike-moss	CRPR 4.1	Perennial rhizomatous herb; chaparral, coastal scrub; elevation 65–2,100 feet.	HP	Not expected. No historical occurrence records exist within 1 mile of BSA, and only marginally-suitable habitat exists within the BSA. Species was not observed during focused surveys conducted in 2015, 2017, and 2021.
ANGIOSPERMS: DICOTS					
CHENOPODIACEAE GOOSEFOOT FAMILY					
Aphanisma blitoides	aphanisma	CRPR 1B.2	Annual herb; coastal bluff scrub, coastal sage scrub; sandy soils; blooms March–June; elevation less than 1,000 feet.	HP	Not expected. No historical occurrence records exist within 1 mile of the BSA, and only marginally-suitable habitat is present within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period.
Atriplex coulteri	Coulter's saltbush	CRPR 1B.2	Perennial herb; coastal bluff scrub, coastal dunes, coastal sage scrub, valley and foothill grasslands; alkaline or clay soil; blooms March–October; elevation less than 1,500 feet.	HP	Not expected. CNDDB has records within 1 mile of the BSA (Appendix C), and potentially suitable habitat is present within the BSA. However, this species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period and would have likely been apparent if present.
Atriplex pacifica	south coast saltbush	CRPR 1B.2	Annual herb; coastal bluff scrub, coastal dunes, coastal sage scrub, playas; blooms March–October; elevation less than 500 feet.	HP	Not expected. Historical occurrence records exist within 1 mile, and marginally-suitable habitat is present within the BSA. However, species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
APIACEAE CARROT FAMILY					
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE SE CRPR 1B.1 MHCP	Biennial/perennial herb; vernal pools, mesic areas of coastal sage scrub and grasslands, blooms April–June; elevation less than 2,000 feet. Known from San Diego and Riverside counties. Additional populations occur in Baja California, Mexico.	A	Not expected. Historical occurrence records exist in CNDDB within 1 mile of the BSA (see Appendix C). However, no suitable habitat is present within the BSA, and species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
ASTERACEAE SUNFLOWER FAMILY					
Ambrosia pumila	San Diego ambrosia	FE CRPR 1B.1 MHCP	Perennial herb (rhizomatous); chaparral, coastal sage scrub, valley and foothill grasslands, creek beds, vernal pools, often in disturbed areas; blooms May–September; elevation less than 1,400 feet. Many occurrences extirpated in San Diego County.	HP	Low potential to occur. 675 individuals observed in 2015 in a scattered patch along southern bank of San Luis Rey River; none were observed in the BSA or project impact area. Appears to be part of a revegetation effort based on on-site evidence (e.g., presence of irrigation lines) and lack of naturally occurring historical location records within 1 mile. Species was not detected within the BSA during 2015, 2017, or 2021 focused surveys.
Baccharis vanessae	Encinitas baccharis [=Encinitas coyote brush]	FT SE CRPR 1B.1 MHCP	Perennial deciduous shrub; chaparral; maritime; sandstone; blooms August–November; elevation less than 2,500 feet. San Diego County endemic. Known from fewer than 20 occurrences. Extirpated from Encinitas area.	A	Not expected. No historical occurrence records exist within 1 mile of the BSA. No suitable habitat is present within the BSA, which is outside the species' elevation range. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015, 2017, or 2021 focused surveys.
Centromadia [=*Hemizonia*] *pungens* ssp. *laevis*	smooth tarplant	CRPR 1B.1	Annual herb; chenopod scrub, meadow and seeps, playas, riparian woodland, valley and foothill grasslands; alkaline soils; blooms April–September; elevation less than 2,100 feet. California endemic. Known from San Diego, Riverside, and San Bernardino counties.	A	Not expected. Historical record exists in CNDDB within 1 mile of the project impact area (see Appendix C). However, no suitable habitat is present within the BSA, and species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	CRPR 1B.1	Annual herb; coastal bluff scrub, sandy, coastal dunes; blooms January–August; elevation less than 350 feet.	HP	Not expected. Historical records exist in CNDDB within 1 mile of the project impact area (see Appendix C), and marginally-suitable habitat is present within the BSA. However, species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period.
Corethrogyne [=*Lessingia*] *filaginifolia* var. *linifolia*	Del Mar Mesa sand aster	CRPR 1B.1 MHCP	Perennial herb; coastal bluff scrub, openings in southern maritime chaparral and coastal sage scrub; sandy soil; blooms May–September; elevation less than 500 feet. San Diego County endemic.	HP	Not expected. No historical occurrence records exist within 1 mile of project impact area, and only marginally-suitable habitat exists within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
Ericameria palmeri var. *palmeri* [=*E. palmeri* ssp. *palmeri*]	Palmer's goldenbush [=Palmer's ericameria]	CRPR 1B.1	Perennial evergreen shrub; chaparral coastal sage scrub, typically in mesic areas; blooms July–November; elevation less than 2,000 feet. Known in California from sixteen occurrences all of which are in San Diego County. Additional populations in Baja California, Mexico.	HP	Not expected. No historical occurrence records exist within 1 mile of project impact area, and only marginally-suitable habitat exists within the BSA. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
Hazardia orcuttii	Orcutt's hazardia	ST CRPR 1B.1 MHCP	Perennial evergreen shrub; chaparral, coastal sage scrub; blooms August–October; elevation 280 feet. Known in California from only five occurrences all of which are in San Diego County. Additional populations occur in Baja California, Mexico.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area. No suitable habitat is present within the BSA, and the project site is outside species' elevation range. Species was not observed during 2015, 2017, or 2021 focused surveys.
Isocoma menziesii var. *decumbens*	decumbent goldenbush	CRPR 1B.2	Perennial shrub; chaparral, coastal sage scrub; sandy soils, often in disturbed areas; blooms April–November; elevation less than 500 feet.	HP	Not expected. CNDDB has an occurrence record from 2011 within 1 mile of the project impact area (see Appendix C), and marginally-suitable habitat is present within the BSA. However, this conspicuous species was not observed and would have likely been apparent if present during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Iva hayesiana	San Diego marsh-elder	CRPR 2B.2 MHCP	Perennial herb; marshes and swamps, playas, riparian areas; blooms April–September; elevation below 1,700 feet.	P	Present. 32 individuals were observed in three locations within and adjacent to the BSA – one in the northern portion along Carmelo Drive and 2 in the southwestern portion along the southern bank of the San Luis Rey River. The individuals observed along the southern bank of the San Luis Rey River appear to be part of a revegetation effort in this area based on on-site evidence (e.g., irrigation lines). During 2017 focused surveys, 14 individuals were again observed in the Diegan coastal sage scrub along the bike path that runs along the southern bank of the San Luis Rey River. All of these individuals are outside the project impact area but inside the 100-foot rare plant survey buffer. Species was again detected during the 2021 focused surveys.
Leptosyne [=*Coreopsis*] *maritima*	sea-dahlia	CRPR 2B.2	Perennial herb; coastal bluff scrub, coastal sage scrub; blooms March–May; elevation less than 500 feet.	HP	Not expected. Historical occurrence records exist in CNDDB within 1 mile of the project impact area (see Appendix C), and marginally-suitable habitat is present. However, species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
Packera [=*Senecio*] *ganderi*	Gander's ragwort [=Gander's butterweed]	SR CRPR 1B.2	Perennial herb; chaparral, burn areas; blooms April–May; elevation 1,300–4,000 feet. California endemic. Known from fewer than 12 occurrences in San Diego and Riverside counties.	A	Not expected. The BSA is outside the species' elevation range, and no suitable habitat is present. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
BORAGINACEAE BORAGE FAMILY					
Harpagonella palmeri	Palmer's grapplinghook	CRPR 4.2	Annual herb; chaparral, coastal sage scrub, valley and foothill grasslands; clay soils; blooms March–May; elevation less than 3,200 feet. Inconspicuous and easily overlooked.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area, and no suitable habitat is present within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
CACTACEAE CACTUS FAMILY					
Ferocactus viridescens	San Diego barrel cactus	CRPR 2B.1 MHCP	Perennial stem succulent; chaparral, coastal sage scrub, valley and foothill grasslands, vernal pools; blooms May–June; elevation less than 1,500 feet.	HP	Not expected. Historical and recent (2015) occurrence records exist in CNDDB within 1 mile of the project impact area (see Appendix C), and suitable habitat is present. However, this conspicuous species was not observed and would have likely been apparent if present during 2015, 2017, or 2021 focused surveys.
CONVOLVULACEAE MORNING-GLORY FAMILY					
Dichondra occidentalis	western dichondra	CRPR 4.2	Perennial herb (rhizomatous); chaparral, cismontane woodland, coastal sage scrub, valley and foothill grasslands; blooms March–July; elevation less than 200–1,650 feet.	HP	Not expected. No historical occurrence records exist within 1 mile of project impact area, and only marginally-suitable habitat exists within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
CRASSULACEAE STONECROP FAMILY					
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	CRPR 1B.1 MHCP	Perennial herb; coastal sage scrub, coastal bluff scrub, chaparral, grasslands; blooms April–June; elevation less than 1,500 feet.	HP	Not expected. This species has been reported previously in CNDDB within 2 miles of the project impact area (see Appendix C). Marginally-suitable habitat is present; however, species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
Dudleya brevifolia [=*D. blochmaniae* ssp. *brevifolia*]	short-leaved dudleya [short-leaved live-forever]	SE CRPR 1B.1 MHCP	Perennial herb; southern maritime chaparral, coastal sage scrub on Torrey sandstone; blooms in April; elevation less than 1,000 feet. San Diego County endemic. Known from fewer than five occurrences in the Del Mar and La Jolla areas.	A	Not expected. No historical occurrence records exist within 1 mile of project impact area, and no suitable habitat is present within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Dudleya variegata	variegated dudleya	CRPR 1B.2	Perennial herb; coastal sage scrub, grassland and chaparral habitats in stony places lacking shrub cover, on isolated rocky substrate in grasslands, and on mima mounds near vernal pools; blooms May–June; elevation less than 500 feet.	P	Present. Two individuals were observed during 2017 focused surveys in the disturbed Diegan coastal sage scrub along the trail that runs along the northern bank of the San Luis Rey River and just east of I-5. Both individuals are outside the proposed project footprint but inside the 100-foot rare plant survey buffer. This species was not observed during 2015 focused surveys nor during the 2021 surveys.
Dudleya viscida	sticky dudleya	CRPR 1B.2 MHCP	Coastal sage scrub, mesic, north-facing slopes in shade; gabbroic rock; blooms May–June; elevation less than 1,800 feet. California endemic. Known from San Diego, Riverside, and Orange counties.	P	Present. Eight individuals were observed in a scattered patch just outside the BSA along the southern bank of the San Luis Rey River. These individuals were likely part of a revegetation effort, as they were found within an area fed by irrigation lines. Additional individuals of this species were detected incidentally in 2016 along the slope north of the river and east of I-5, within the BSA but outside the project impact area. These individuals are likely part of a naturally-occurring population. During 2017 focused surveys, 24 individuals were observed in the disturbed Diegan coastal sage scrub along the trail that runs along the northern bank of the San Luis Rey River and just east of I-5. All individuals are outside the project impact area but inside the BSA. These plants were observed again during the 2021 surveys.
ERICACEAE HEATH FAMILY					

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Arctostaphylos glandulosa ssp. *crassifolia*	Del Mar manzanita	FE CRPR 1B.1 MHCP	Perennial evergreen shrub; southern maritime chaparral; sandy soil; blooms December–April; elevation less than 1,200 feet.	A	Not expected. No historical occurrence records exist within 1 mile of project impact area, and no suitable habitat is present within the BSA. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015, 2017, or 2021 focused surveys.
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	CRPR 1B.2 MHCP	Perennial evergreen shrub; chaparral; blooms April–June; elevation 100–2,600 feet.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area, and no suitable habitat is present. The BSA is outside species' elevation range. This conspicuous species was not observed and would have likely been apparent if present during 2015, 2017, or 2021 focused surveys.
EUPHORBIACEAE SPURGE FAMILY					
Euphorbia misera	cliff spurge	CRPR 2B.2 MHCP	Shrub; coastal sage scrub, maritime succulent scrub, coastal bluff scrub; blooms December–August; elevation less than 2,000 feet.	HP	Not expected. CNDDB has an historical occurrence record from Oceanside (see Appendix C), and marginally-suitable habitat present within the BSA. However, species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
FABACEAE LEGUME FAMILY					
Acmispon prostratus [=*Lotus nuttallianus*]	Nuttall's acmispon, Nuttall's lotus	CRPR 1B.1 MHCP	Annual herb; coastal dunes, coastal sage scrub; sandy substrate; blooms March–June; elevation less than 50 feet.	P	Present. This species was observed in 2017 and 2021 along the bike trail west of the bridges and south of the river. This species was also observed in this same general area in 1998 (Dudek and Associates as cited in MEC Analytical Systems, Inc. 2003), and previous records exist within 1 mile of the project impact area (see Appendix C).

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Astragalus tener var. *titi*	coastal dunes milkvetch	FE SE CRPR 1B.1	Annual herb; coastal bluff scrub, coastal dunes, sandy soils, mesic coastal prairie; blooms March–May; elevation less than 200 feet. California endemic. Known from fewer than 10 occurrences in San Diego (presumed extirpated), Los Angeles (presumed extirpated), and Monterey counties.	HP	Not expected. This species has been reported previously in CNDDB within 2 miles of the project impact area (see Appendix C), and potentially suitable habitat is present. However, this species was not observed during the 2015, 2017, or 2021 focused surveys, which were conducted during this species' blooming period.
FAGACEAE OAK FAMILY					
Quercus dumosa	Nuttall's scrub oak	CRPR 1B.1 MHCP	Perennial evergreen shrub; closed-cone coniferous forest, coastal chaparral, coastal sage scrub; sandy and clay loam soils; blooms February–March; elevation less than 1,300 feet.	HP	Not expected. This species has been reported previously in CNDDB within 2 miles of the project impact area (see Appendix C); however, only marginally-suitable habitat is present. This conspicuous species was not observed and would have likely been apparent if present during the 2015, 2017, or 2021 focused surveys.
LAMIACEAE MINT FAMILY					
Acanthomintha ilicifolia	San Diego thornmint	FT SE CRPR 1B.1 MHCP	Annual herb; chaparral, coastal sage scrub, and grasslands; friable or broken clay soils; blooms April–June; elevation less than 3,200 feet.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area. No suitable soils are present, and species was not observed during 2015, 2017, or 2021 focused surveys.
Lepechinia cardiophylla	heart-leaved pitcher sage	CRPR 1B.2	Perennial shrub; closed-cone coniferous forest, chaparral, cismontane woodland; blooms April–July; elevation 1,700–4,500 feet.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area. No suitable habitat is present, and the BSA is outside species' elevation range. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Monardella hypoleuca ssp. *lanata*	felt-leaved monardella	CRPR 1B.2	Perennial herb (rhizomatous); chaparral, cismontane woodland; blooms June–July; elevation 1,000–5,200 feet.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area. No suitable habitat is present, and the BSA is outside species' elevation range. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
ONAGRACEAE EVENING-PRIMROSE FAMILY					
Camissoniopsis [=*Camissonia*] *lewisii*	Lewis' evening-primrose	CRPR 3	Annual herb; coastal bluff scrub, cismontane woodland, coastal dunes, coastal sage scrub, valley and foothill grasslands; sandy or clay soils; blooms March–July; elevation less than 1,000 feet.	P	Present. 164 individuals were observed in 2015 and 187 individuals were observed in 2021 in scattered patches within the BSA immediately adjacent to the paved bike path that runs along the southern bank of the San Luis Rey River. Individuals appear to be naturally occurring.
POLEMONIACEAE PHLOX FAMILY					
Navarretia fossalis	spreading navarretia [=prostrate navarretia]	FT CRPR 1B.1 MHCP	Annual herb; vernal pools, marshes and swamps, chenopod scrub; blooms April–June; elevation 100–4,300 feet.	HP	Not expected. CNDDB has a previous occurrence record within 1 mile of the project impact area (see Appendix C), and marginally-suitable habitat is present. However, species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
POLYGONACEAE BUCKWHEAT FAMILY					
Chorizanthe orcuttiana	Orcutt's spineflower	FE SE CRPR 1B.1 MHCP	Annual herb; maritime chaparral, closed-cone coniferous forest, coastal sage scrub; sandy openings; blooms March–May; elevation less than 400 feet. San Diego County endemic. Known from fewer than 20 occurrences.	HP	Not expected. Limited suitable habitat is present within the BSA; however, species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Nemacaulis denudata var. *denudata*	coast woolly-heads	CRPR 1B.2	Annual herb; coastal dunes; blooms April–September; elevation less than 330 feet.	HP	Not expected. CNDDB has an historical occurrence record from Oceanside (see Appendix C), and marginally-suitable habitat is present within the BSA. However, species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
Nemacaulis denudata var. *gracilis*	slender woolly-heads	CRPR 2B.2	Annual herb; coastal and desert dunes, Sonoran desert scrub; blooms March–May; elevation 170–1,300 feet.	HP	Not expected. CNDDB has an historical occurrence record from Oceanside (see Appendix C), and marginally-suitable habitat is present within the BSA. However, species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
RANUNCULACEAE BUTTERCUP FAMILY					
Myosurus minimus	little mousetail	CRPR 3.1 MHCP	Annual herb; vernal pools, perennial grasslands; blooms March–June; elevation 70–2,100 feet.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area, and no suitable habitat is present within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.
RHAMNACEAE BUCKTHORN FAMILY					
Adolphia californica	California adolphia	CRPR 2B.1	Perennial deciduous shrub; Diegan coastal sage scrub and chaparral; clay soils; blooms December–May; elevation 100–2,500 feet.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area. No suitable habitat is present within the BSA, and project site is outside species' elevation range. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015, 2017, or 2021 focused surveys.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Ceanothus verrucosus	wart-stemmed ceanothus	CRPR 2B.2 MHCP	Perennial evergreen shrub; chaparral; blooms December–April; elevation less than 1,300 feet.	A	Not expected. No historical occurrence records exist within 1 mile of project impact area, and no suitable habitat is present within the BSA. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015, 2017, or 2021 focused surveys.
ANGIOSPERMS: MONOCOTS					
JUNCACEAE RUSH FAMILY					
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	CRPR 4.2	Perennial herb (rhizomatous); coastal dunes, meadows and seeps, coastal salt marsh, riparian; blooms May–June; elevation less than 3,000 feet.	P	Present. 123 individuals were observed scattered along the northern bank of the San Luis Rey River within the BSA but outside the project impact area. Individuals appear to be naturally occurring. 63 individuals were observed in similar locations in 2017 and 2021.
POACEAE GRASS FAMILY					
Orcuttia californica	California Orcutt grass	FE SE CRPR 1B.1 MHCP	Annual herb; vernal pools; blooms April–August; elevation 50–2,200 feet.	A	Not expected. No historical occurrence records exist within 1 mile of project impact area, and no suitable habitat is present within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys.
THEMIDACEAE BRODIAEA FAMILY					
Bloomeria [=*Muilla*] *clevelandii*	San Diego goldenstar	CRPR 1B.1	Perennial herb (bulbiferous); chaparral, coastal sage scrub, valley and foothill grassland, vernal pools; clay soils; blooms May; elevation 170–1,500 feet.	A	Not expected. No historical occurrence records exist within 1 mile of the project impact area. No suitable clay soils are present within the BSA, and the project site is outside the species' elevation range. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during this species' blooming period.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Brodiaea filifolia	thread-leaved brodiaea [=thread-leaf brodiaea]	FT SE CRPR 1B.1 MHCP	Perennial herb (bulbiferous); cismontane woodland, coastal sage scrub, playas, valley and foothill grassland, vernal pools; often clay soils; blooms March–June; elevation less than 43,800 feet. California endemic. Known from San Diego, Riverside, Orange, Los Angeles, and San Bernardino counties.	A	Not expected. No historical occurrence records exist within 1 mile of project impact area, and no suitable clay soils are present within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period.
Brodiaea orcuttii	Orcutt's brodiaea	CRPR 1B.1	Perennial herb (bulbiferous); closed cone coniferous forest, chaparral, meadows and seeps, valley and foothill grassland, vernal pools; mesic, clay soil; blooms May–July; elevation less than 5,600 feet.	A	Not expected. No suitable habitat is present within the BSA. Species was not observed during 2015, 2017, or 2021 focused surveys conducted during species' blooming period.
SPECIAL STATUS WILDLIFE SPECIES					
INVERTEBRATES					
BRANCHINECTIDAE FAIRY SHRIMP					
Branchinecta sandiegonensis	San Diego fairy shrimp	FE MHCP	Vernal pools.	A	Not expected. This species has been reported previously within 2 miles of the project impact area in CNDDB (see Appendix C). However, it is not expected to occur, as the BSA lacks suitable vernal pool habitat.
STREPTOCEPHALIDAE FAIRY SHRIMP					
Streptocephalus woottoni	Riverside fairy shrimp	FE MHCP	Vernal pools.	A	Not expected. The BSA lacks suitable vernal pool habitat.
DANAINAE MILKWEED BUTTERFLIES					

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Danaus plexippus pop. 1	Monarch (California overwintering population)	FC	Wide variety of habitats, including urban areas. Roosts and over-winters on Eucalyptus trees. Host plant is milkweed (*Asclepias* sp.).	HP	Low potential. This species has been reported previously in CNDDB within 2 miles of the project impact area on Camp Pendleton (see Appendix C). The BSA supports one small area of eucalyptus that could serve as overwintering habitat but the species is not known to occur in immediate vicinity and no host plant was observed during surveys.
HALIOTIDAE	ABALONE				
Haliotis cracherodii	black abalone	FE	Marine; rocky intertidal and subtidal areas.	A	Not expected. The BSA lacks a suitable marine environment with rocky intertidal or subtidal habitat.
Haliotis sorenseni	white abalone	FE	Marine; open rocky or boulder habitat mixed with sand channels; typically found between depths of 80 to 100 feet.	A	Not expected. The BSA lacks a suitable marine environment with rocky habitat and lacks sufficient depth.
FISHES					
GOBIIDAE	GOBYS				
Eucyclogobius newberryi	tidewater goby	FE SSC	Coastal lagoons, brackish bays at mouth of freshwater streams.	HP, CH	Moderate potential. Good to moderate-quality habitat is present within the BSA west of I-5. The CNDDB includes a 1986 record from an extirpated population near the mouth of the Santa Margarita River 2 miles to the north and a 1958 record from the San Luis Rey River 3,000 feet to the east (see Appendix C). No tidewater goby was detected in the San Luis Rey River in 2000, 2011, 2013, 2015, 2017, or 2021 (MBC Applied Environmental Sciences 2000, Appendix H). However, tidewater goby was detected in the San Luis Rey River in 2010 (USFWS 2013a).
SALMONIDAE	SALMON & TROUT				

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Oncorhynchus mykiss irideus	southern steelhead – southern California Distinct Population Segment	FE	Freshwater streams and rivers.	HP	Not expected to spawn, low potential for migration. The BSA lacks suitable spawning and rearing habitat for this species. The portion of the river within the BSA and would likely only be used by this species as a migration corridor during periods of high flow with sufficient duration to sustain the movement. No steelhead were detected in the San Luis Rey River in 2015, 2017, or 2021 (Appendix H).
ACIPENSERIDAE	**STURGEON**				
Acipenser medirostris	North American green sturgeon – southern Distinct Population Segment	FT	Marine and estuarine areas. Spawning occurs in deep, turbulent waters with clean, hard substrates (e.g., medium-sized gravel, cobble, or boulders).	A	Not expected. Subadults and adults of this species may migrate through nearby coastal waters during migration. However, the primary spawning site for this species is within the upper mainstem Sacramento River in northern California (NMFS 2010, 2015). The BSA lacks suitable spawning habitat.
AMPHIBIANS					
PELOBATIDAE	**SPADEFOOT TOADS**				
Spea hammondii	western spadefoot	SSC MHCP	Vernal pools, floodplains, and alkali flats within areas of open vegetation.	A	Not expected. The BSA lacks sufficient suitable flats with areas of open vegetation to support this species. This species was not detected during focused surveys in 1998 (MEC Analytical Systems, Inc. 2003).
BUFONIDAE	**TRUE TOADS**				
Anaxyrus californicus	arroyo toad	FE SSC MHCP	Open streamside sand/gravel flats. Quiet, shallow pools along stream edges are breeding habitat. Nocturnal except during breeding season (March–July).	A	Not expected. The BSA lacks suitable sandy washes, flats, or shallow pools for breeding.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
REPTILES					
CHELONIIDAE	GREEN TURTLES, FLATBACK SEA TURTLES, LOGGERGHEAD SEA TURTLES, HAWKBILLS, AND RIDLEYS				
Caretta caretta	loggerhead turtle – North Pacific Ocean Distinct Population Segment	FE	Steeply sloped beaches with coarse-grained substrate for nesting, open ocean and nearshore coastal areas for foraging and migration. No known nesting sites along coast of California (NMFS 2013).	A	Not expected. While this species may migrate through nearby coastal waters, the BSA lacks suitable nesting or foraging habitat.
Chelonia mydas	green turtle – East Pacific Distinct Population Segment	FT	Marine coastal and open ocean areas for feeding, undisturbed beaches for nesting, and open ocean convergence zones.	A	Not expected. While this species may migrate through nearby coastal waters, the BSA lacks suitable nesting or foraging habitat.
Lepidochelys olivacea	olive Ridley turtle	FT	Open ocean for foraging, undisturbed beaches for nesting, occasionally found in coastal areas, bays, and estuaries;	A	Not expected. While this species may migrate through nearby coastal waters, the BSA lacks suitable nesting or foraging habitat.
DERMOCHELYIDAE	LEATHERBACK SEA TURTLES				
Dermochelys coriacea	leatherback turtle	FE	Open ocean for foraging and migration, coastal areas for foraging, tropical beaches for nesting.	A	Not expected. While this species may migrate through nearby coastal waters, the BSA lacks suitable nesting or foraging habitat.
EMYDIDAE	BOX & WATER TURTLES				
Actinemys [=Emys; Clemmys] marmorata pallida	southwestern pond turtle	SSC MHCP	Ponds, small lakes, marshes, slow-moving, sometimes brackish water.	HP	Not expected. No historical occurrence records exist within 2 miles of project impact area. Suitable habitat is present in the far upstream portion of the BSA; however, the project impact area supports tidally-influenced water that would be too fast moving to likely support this species.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
IGUANIDAE	**IGUANID LIZARDS**				
Phrynosoma blainvillii [= P. coronatum coastal population]	coast horned lizard	SSC MHCP	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.	HP	Low potential. The BSA is within the species' range and provides suitable coastal sage scrub habitat. However, no harvester ants were detected during the survey, and there are no CNDDB records for this species within 2 miles of the project impact area.
SCINCIDAE	**SKINKS**				
Eumeces skiltonianus interparietalis	Coronado skink	SSC	Grasslands, open woodlands and forest, broken chaparral. Rocky habitats near streams.	HP	Moderate potential. Habitat in the BSA is suitable with open to dense scrub habitat and wooded areas adjacent to water. No database records were found within 2 miles of the BSA.
TEIIDAE	**WHIPTAIL LIZARDS**				
Aspidoscelis hyperythra beldingi	Belding's orange-throated whiptail	SSC MHCP	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.	HP	Low potential. Although potentially suitable habitat is present within the BSA, this species would likely have been detected during biological surveys. The CNDDB does not have any records within 2 miles of the BSA.
Aspidoscelis tigris stejnegeri	coastal whiptail	SSC	Coastal sage scrub, chaparral, woodlands, and streamsides where plants are sparsely distributed.	HP	Low potential. Although potentially suitable habitat is present within the BSA, this species would likely have been detected during biological surveys. The CNDDB does not have any records within 2 miles of the BSA.
ANNIELLIDAE	**LEGLESS LIZARDS**				
Anniella pulchra pulchra	silvery legless lizard	SSC	Herbaceous layers with loose soil in coastal scrub, chaparral, and open riparian. Prefers dunes and sandy washes near moist soil.	HP	Low potential. Suitable riparian and coastal sage scrub habitat adjacent to water is present within the BSA. The CNDDB does not have any records within 2 miles of the BSA.
COLUBRIDAE	**COLUBRID SNAKES**				
Salvadora hexalepis virgultea	coast patch-nosed snake	SSC	Grasslands, chaparral, sagebrush, desert scrub. Found in sandy and rocky areas.	HP	Low potential. Coastal sage scrub in the BSA occurs in a largely urban setting and in previously graded areas along the channelized San Luis Rey River. There are no CNDDB records of this species within 2 miles of the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Thamnophis sirtalis ssp. novum	south coast garter snake	SSC	Restricted to marsh and upland habitats near permanent sources of water that have good strips of riparian vegetation.	HP	Moderate potential. BSA supports suitable habitat and CNDDB and SanBIOS have noted several individuals have been recorded within the vicinity.
Thamnophis hammondii	two-striped gartersnake	SSC	Permanent freshwater streams with rocky bottoms. Mesic areas	HP	Moderate potential. Suitable permanent water is present in the BSA, and freshwater marsh and riparian scrub habitats provide opportunity for refuge and foraging. SanBIOS has a record of this species along the San Luis Rey River in the vicinity of the BSA (County of San Diego 2016).
CROTALIDAE	RATTLESNAKES				
Crotalus ruber	red-diamond rattlesnake	SSC	Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields.	HP	Moderate potential. Suitable coastal sage scrub habitat is present within the BSA. The CNDDB has a record within coastal sage scrub and southern willow scrub less than one mile from the project impact area (see Appendix C).
BIRDS					
PELECANIDAE	PELICANS				
Pelecanus occidentalis californicus	California brown pelican (nesting colony)	(State and Federal Delisted) FP MHCP	Coastal salt water, open ocean; rare vagrant inland. Nonbreeding year round visitor.	HP (foraging only) A (nesting)	Not expected (nesting). Present (foraging). This species has been observed during focused avian surveys and areas near the river mouth are suitable for roosting or resting. Not expected to nest within the BSA.
ARDEIDAE	HERONS & BITTERNS				
Ixobrychus exilis hesperis	western least bittern	SSC	Brackish and freshwater marshes in the coastal lowland. Rare summer resident, rare in winter.	P	Present. This species was observed during focused avian surveys. The freshwater marsh within the BSA provides suitable breeding habitat.
THRESKIORNITHIDAE	IBISES				
Plegadis chihi	white faced ibis (rookery site)	MHCP	Freshwater ponds, irrigated fields, brackish lagoons. Migrant and winter visitor, rare in summer. Very localized breeding.	HP (foraging only) A (nesting)	Low potential to forage but not expected to nest within BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
ACCIPITRIDAE	**HAWKS, KITES, & EAGLES**				
Accipiter cooperii	Cooper's hawk (nesting)	MHCP	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas.	P	Present. Observed during focused avian surveys. Suitable habitat present to forage throughout BSA and nest within mature trees.
Circus cyaneus hudsonius	northern harrier (nesting)	SSC	Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.	HP (foraging only) A (nesting)	Low potential to forage throughout BSA but not expected to nest. This species was not detected during general biological or focused avian surveys conducted in 2015.
Elanus leucurus	white-tailed kite (nesting)	FP	Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.	HP	Low potential to forage throughout BSA and nest within mature trees. This species was not detected during general biological or focused avian surveys conducted in 2015.
Pandion haliaetus	osprey (nesting)	MHCP	Coast, lowland lakes, rarely foothills and mountain lakes. Uncommon fall/winter resident, rare in spring and summer. Fish are the primary prey item.	P (foraging only) A (nesting)	Present. Observed during focused avian surveys. Not expected to nest and no nests observed.
FALCONIDAE	**FALCONS & CARACARAS**				
Falco peregrinus anatum	peregrine falcon	(State delisted) FP MHCP	Open coastal areas, mud flats. Rare inland. Rare fall and winter resident, casual in late spring and early summer. Local breeding populations extirpated.	HP (foraging only)	Not expected (nesting). May occur as occasional visitor during migration. Not expected to nest due to lack of suitable cliff areas.
RALLIDAE	**RAILS, GALLINULES, & COOTS**				
Rallus obsoletus [=longirostris] levipes	light-footed Ridgway's rail	FE SE, FP MHCP	Coastal salt marshes typically supporting cordgrass (*Spartina foliosa*) and pickleweed (*Salicornia* spp.). Also found to nest in freshwater marsh supporting cattails (*Typha* sp.), bulrush (*Scirpus* sp.) and spiny rush (*Juncus acutus*). Localized resident.	HP	Present (historically), high potential. One pair of light-footed Ridgway's rail was detected on the north bank of the San Luis Rey River in the western portion of the BSA in 2015; however, no rails were detected in 2017 or 2021 (Appendix J). The larger stands of freshwater marsh within the BSA provide suitable nesting habitat for this species.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
CHARADRIIDAE	LAPWINGS & PLOVERS				
Charadrius alexandrinus nivosus	western snowy plover (coastal population)	FT SSC MHCP	Sandy beaches, lagoon margins, tidal mud flats. Migrant and winter resident. Localized breeding.	HP (foraging only) A (nesting)	Low potential to forage and not expected to nest. CNDDB has reported this species within 2 miles of the BSA on Camp Pendleton at the mouth of the Santa Margarita River (see Appendix C). However, the BSA lacks undisturbed beach or dune habitat for nesting. In addition, no western snowy plover were observed nesting at the river mouth during surveys conducted in 2000 (MEC Analytical Systems, Inc. 2003). The river mouth is likely unsuitable for nesting due to high human activity levels and lack of cover.
LARIDAE	GULLS, TERNS, & SKIMMERS				
Sternula antillarum browni	California least tern (nesting colony)	FE SE, FP MHCP	Bays, estuaries, lagoons, shoreline. Resident. Localized breeding.	A (nesting) HP (foraging only)	Not expected to nest within the BSA due to lack of suitable open flats. Moderate potential to forage in open water within BSA. In addition, no California least tern were observed nesting at the river mouth during surveys conducted in 2000 (MEC Analytical Systems, Inc. 2003). The river mouth is likely unsuitable for nesting due to high human activity levels and lack of cover. The nearest known nesting site reported on CNDDB is on Camp Pendelton at the mouth of the Santa Margarita River (see Appendix C).
TYRANNIDAE	TYRANT FLYCATCHERS				
Contopus cooperi	olive-sided flycatcher	SSC	Extensive conifer stands in San Diego Mountains.	P	Present. This species was observed during focused avian surveys conducted in 2015. Potential to forage within the BSA during migration but low potential to nest within BSA; this species prefers conifer stands in the mountains for nesting.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Empidonax traillii extimus	southwestern willow flycatcher	FE SE MHCP	Nesting restricted to willow thickets. Also occupies other woodlands. Rare spring and fall migrant, rare summer resident. Extremely localized breeding.	HP, CH	Not expected. Low quality nesting habitat is present. No southwestern willow flycatchers were detected within the BSA during protocol presence/absence surveys conducted during the 2015, 2017, and 2021 breeding seasons (Appendix M). In addition, this species was not detected west of or near I-5 during protocol surveys and monitoring conducted between 1989 and 2002 (MEC Analytical Systems, Inc. 2003), nor has been detected. This species has been declining in the region.
VIREONIDAE	VIREOS				
Vireo bellii pusillus	least Bell's vireo (nesting)	FE SE MHCP	Willow riparian woodlands. Summer resident.	P, CH	Present. This species was detected upstream of the bridge during 2017 focused surveys, although, it was not detected within the BSA during protocol surveys conducted in 2015 or 2021. Breeding pairs of least Bell's vireo were detected in 2021 approximately 1,000 feet upstream of the project impact area (USGS 2021). In addition, this species was not detected west of I-5 during protocol surveys conducted between 1989 and 2002.
HIRUNDINIDAE	SWALLOWS				
Riparia riparia	bank swallow	ST	Steep riverbanks, gravel pits. Nest in colonies.	A	Not expected. The BSA lacks suitable bluffs, and this species is now a very rare fall migrant. Possible historic occurrence records in CNDDB exist within 2 miles of the project impact area (see Appendix C).
TROGLODYTIDAE	WRENS				
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren	SSC MHCP	Maritime succulent scrub, coastal sage scrub with *Opuntia* thickets. Rare localized resident.	A	Not expected. This species has been reported previously in CNDDB within 2 miles of the project impact area (see Appendix C). However, the BSA lacks suitable cactus stands to support nesting.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Cistothorus palustris clarkae	Clark's marsh wren	SSC	Freshwater and brackish marshes found along lakes, ponds, and rivers.	P	Present. This species was observed during focused avian surveys. All freshwater marsh within the BSA is considered suitable nesting habitat for this species, and all freshwater marsh, disturbed southern riparian scrub, and non-native riparian is considered suitable foraging habitat.
SYLVIIDAE GNATCATCHERS					
Polioptila californica californica	coastal California gnatcatcher	FT SSC MHCP	Coastal sage scrub, maritime succulent scrub. Resident.	HP	Present (incidentally). Moderate potential (nesting). This species was detected incidentally once during rare plant surveys conducted in 2021; however, the species has not been detected during focused surveys conducted in 2015, 2017, or 2021, nor earlier surveys conducted in 2000. The incidental detection could have been an individual moving through. Moderate potential to nest within BSA within suitable coastal sage scrub habitat.
TURDIDAE THRUSHES					
Sialia mexicana occidentalis	western bluebird	MHCP	Open woodlands, farmlands, orchards.	HP	Moderate potential to nest within cavities of mature trees within the BSA. However, it was not observed during 2015, 2017, or 2021 focused avian surveys.
PARULIDAE WOOD WARBLERS					
Setophaga [=Dendroica] petechia	yellow warbler (nesting)	SSC	Breeding restricted to riparian woodland. Spring and fall migrant, localized summer resident, rare winter visitor.	P	This species was observed during 2015 and 2021 avian species within the riparian habitat in the BSA. This species is assumed nesting within the BSA.
Icteria virens auricollis	yellow breasted chat (nesting)	SSC MHCP	Dense riparian woodland. Localized summer resident.	P	Present. This species was detected within the BSA upstream of bridge during focused avian surveys conducted in 2017.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
EMBERIZIDAE	EMBERIZIDS				
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	MHCP	Coastal sage scrub, chaparral, grassland. Resident.	HP	Low potential to nest within coastal sage scrub in BSA. This species has been previously reported in CNDDB within 1 mile of the project impact area (see Appendix C). However, this species was not detected during focused avian surveys conducted in 2015, 2017, or 2021.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	SE MHCP	Salt marshes, lagoons dominated by *Salicornia*. Resident.	A	Not expected. This species has been reported previously in CNDDB within 2 miles of the project impact area (see Appendix C). However, no *Salicornia*-dominant marsh was observed within the BSA, and this species was not detected during focused avian surveys conducted in 2015, 2017, or 2021.
ICTERIDAE	BLACKBIRDS & NEW WORLD ORIOLES				
Agelaius tricolor	tricolored blackbird	SSC	Freshwater marshes, agricultural areas, lakeshores, parks. Localized resident.	HP	Low potential to nest within freshwater marsh in BSA. This species was not detected during focused avian surveys conducted in 2015, 2017, or 2021.
MAMMALS					
BALAENOPTERIDAE	RORQUALS				
Balaenoptera borealis	sei whale	FE MMPA	Subtropical to subpolar waters along the continental shelf edge and slope.	A	Not expected. The BSA lacks suitable marine habitat.
Balaenoptera musculus	blue whale	FE MMPA	Offshore and coastal waters from sub-polar to sub-tropical latitudes.	A	Not expected. While this species may migrate through nearby coastal waters, the BSA lacks suitable marine habitat.
Balaenopteridae physalus	fin whale	FE MMPA	Deep offshore waters, typically from temperate to polar latitudes, occasionally in tropical waters.	A	Not expected. The BSA lacks suitable marine habitat.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Eubalaena japonica	north Pacific right whale	FE MMPA	Typically found in coastal or shelf waters from temperate to subpolar latitudes. Shallow coastal waters in lower latitudes used for nursery areas, and higher latitudes during spring and summer.	A	Not expected. While this species may migrate through nearby coastal waters, the BSA lacks suitable marine habitat.
Megaptera novaeangliae	humpback whale	FE MMPA	Shallow, warm ocean waters for calving, often near offshore reefs, islands, or continental shores; cold coastal waters for feeding.	A	Not expected. While this species may migrate through or forage within nearby coastal waters, the BSA lacks suitable marine habitat.
DELPHINIDAE	**OCEANIC DOLPHINS**				
Orcinus orca	killer whale – southern resident	FE MMPA	Typically found in cold and temperate ocean waters, occasional in tropical, subtropical, and offshore waters. Spring, summer, and fall range includes inland waterways of Washington state and transboundary waters between the U.S. and Canada. Winter movements extend to central California and Southeast Alaska.	A	Not expected. The BSA lacks suitable marine habitat and is outside this species' documented range.
PHYSETERIDAE	**SPERM WHALES**				
Physeter microcephalus	sperm whale	FE MMPA	Deep waters of low latitudes. Older males often occur near edge of ice pack at higher latitudes.	A	Not expected. The BSA lacks suitable marine habitat.
OTARIIDAE	**FUR SEALS AND SEA LIONS**				
Arctocephalus townsendi	Guadalupe fur seal	FE MMPA	Tropical waters, including coastal rocky habitats and caves for breeding. Non-migratory species found almost entirely on Guadalupe Island, Mexico, with one small population off of southern California at San Miguel Island.	A	Not expected. The BSA lacks suitable habitat and is outside the species' known range.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
VESPERTILIONIDAE	VESPER BATS				
Antrozous pallidus	pallid bat	SSC	Deserts, canyons, and grasslands below 6,000 feet. Coniferous forests above 6,000 feet. Most abundant in Great Basin, Mojave, and Sonoran Deserts. Day and night roosts occur in crevices in rock outcrops, caves, mines, and trees. Tree roosts are primarily in cavities on redwoods, sequoias, oaks, riparian trees, and fruit trees, as well under exfoliating bark.	HP	Low potential to roost or forage. Although the BSA contains open water for foraging, this is largely a desert species and is unlikely to occur in the BSA. There are no CNDDB records of this species within 2 miles of the BSA. No bats or guano were observed under the Coast Highway Bridge during site visits in March 2000, September 2001, December 2001, and October 2002 (MEC Analytical Systems, Inc. 2003), or during the focused bat survey conducted in 2016 and 2021 (Appendix O).
MOLOSSIDAE	FREE-TAILED BATS				
Eumops perotis californicus	western mastiff bat	SSC	Woodlands, rocky habitat, arid and semiarid lowlands, cliffs, crevices, buildings, tree hollows. Audible echolocation signal.	HP	Low potential to roost and moderate potential to forage within the BSA. The CNDDB has records of this species foraging along the Santa Margarita River, approximately 2 miles north of the project impact area (see Appendix C). No bats or guano were observed under the Coast Highway Bridge during site visits in March 2000, September 2001, December 2001, and October 2002 (MEC Analytical Systems, Inc. 2003), or during the focused bat survey conducted in 2016 and 2021 (see Appendix O).
Nyctinomops femorosaccus	pocketed free-tailed bat	SSC	Observed in a variety of habitats, including scrublands and pine-oak forests. Often forages over stock ponds and other water bodies. Normally roost in crevice in rocks, slopes, cliffs, in buildings, caves, and under roof tiles.	HP	Low potential to roost or forage within the BSA. Although potentially suitable foraging habitat occurs within the BSA, this species has not been reported within 2 miles, and no evidence of bat roosting was detected during site visits in March 2000, September 2001, December 2001, and October 2002 (MEC Analytical Systems, Inc. 2003), or during the focused bat survey conducted in 2016 and 2021 (see Appendix O).

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
LEPORIDAE	RABBITS & HARES				
Lepus californicus bennettii	San Diego black-tailed jackrabbit	SSC MHCP	Open areas of scrub, grasslands, agricultural fields.	HP	Low potential. Marginally suitable habitat occurs within the Diegan coastal sage scrub and southern riparian scrub within the BSA. Additionally, the CNDDB has a record of this species approximately 1.5 miles south of the BSA (see Appendix C).
HETEROMYIDAE	POCKET MICE & KANGAROO RATS				
Chaetodipus californicus femoralis	Dulzura pocket mouse	SSC	Brushy areas of coastal sage scrub, chamise-redshank & montane chaparral, sagebrush, annual grassland, valley foothill hardwood, valley foothill hardwood–conifer & montane hardwood. Probably most attracted to interface of grassland and brush.	HP	Low potential. Although coastal sage scrub is present, it is largely in an urban setting. This species is known from the northern portion of Camp Pendleton, approximately 17 miles to the north, and a patch of habitat in Carlsbad, approximately 7.5 miles to the south.
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	SSC MHCP	San Diego County west of mountains in sparse, disturbed coastal sage scrub or grasslands with sandy soils.	HP	Low potential. Although coastal sage scrub is present, it is largely in an urban setting. The CNDDB has several records from Camp Pendleton, approximately 17 miles to the north. Other records are from high quality coastal sage scrub and chaparral near San Elijo Lagoon, 15 miles to the south. In addition, a 1992 record from Carlsbad 10 miles to the south appears to have been extirpated by a development.
Dipodomys stephensi	Stephens' kangaroo rat	FE ST MHCP	Grassland, open areas.	A	The BSA lacks sufficient suitable flat, dry areas of open habitat to support this species. No kangaroo rat sign was observed during surveys.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Perognathus longimembris pacificus	Pacific pocket mouse	FE SSC MHCP	Open coastal sage scrub; fine, alluvial sands near ocean.	HP	Low potential to occur due to the past and present disturbance within the BSA and the site's current isolation from nearby known occupied habitat (MEC Analytical Systems, Inc. 2003). The CNDDB has a historic occurrence (1931-1936) at the Santa Margarita River mouth, approximately 2 miles north of the BSA, but the population at the Santa Margarita River site is thought to be extirpated (see Appendix C).
MURIDAE	MICE, RATS, & VOLES				
Neotoma lepida intermedia	San Diego desert woodrat	SSC	Coastal sage scrub and chaparral.	HP	Low potential to occur. Potentially suitable habitat is present within the BSA, and *Neotoma lepida* has been reported previously within 2 miles north of the project impact area (County of San Diego 2016). However, no woodrat middens typical of this species were observed during surveys.
FELIDAE	CATS				
Puma concolor	mountain lion	FP MHCP	Many habitats.	HP	Low potential. While this species occurs in a variety of habitats, it generally requires large expanses of undeveloped land. Abundant suitable habitat occurs on Camp Pendleton. However, the habitat within the BSA is generally in an urban setting. There are no CNDDB records of this species within 2 miles of the BSA.
NATURAL COMMUNITIES					
Freshwater Marsh		*	Wetland community comprising perennial emergent monocots typically forming a closed canopy.	P	This vegetation community is present in the BSA.
Southern Riparian Scrub		*	Riparian vegetation dominated by small trees or shrubs and lacking tall riparian trees.	P	Disturbed stands of this vegetation community are present in the BSA.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale
Non-native Riparian		*	Densely vegetated riparian thickets dominated by non-native, invasive species. Non-native, invasive species account for greater than 50 percent of the total vegetative cover.	P	This vegetation community is present in the BSA.
Diegan Coastal Sage Scrub		*	Upland plant community consisting of low-growing, aromatic, drought-deciduous soft-woody shrubs that have an average height of approximately three to four feet. Typically dominated by facultatively drought deciduous species.	P	Undisturbed, disturbed, and restored stands of this vegetation community are present in the BSA.
Wildlife Movement Corridor		N/A	Areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance.	P	The BSA functions as part of a wildlife movement corridor, which comprises the San Luis Rey River and adjacent undeveloped floodplain and slopes, and connects to canyons and open space upslope.
Jurisdictional Wetlands/Waters		N/A	May include wetlands, non-wetland waters, riparian habitat, and isolated waters.	P	Resources under the jurisdiction of USACE, CDFW, RWQCB, and CCC were identified within the project impact area. These include wetland waters of the U.S., non-wetland waters of the U.S, State streambed, and adjacent wetlands/riparian habitat.
Environmentally Sensitive Habitat Areas (ESHA)		N/A	ESHA is defined as: "Any area in which plant or animal life or their habitats are either especially rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.	P	ESHA within the BSA includes Diegan coastal sage scrub, open water, freshwater marsh, southern riparian scrub, and some areas of disturbed habitat (mapped as disturbed wetland or disturbed riparian jurisdictional areas). The habitat included is known to support at least 5 rare plant species and 3 rare avian species.

HABITAT PRESENT/ABSENT

A = Absent: no habitat present and no further work needed.
HP = Habitat Present: habitat is, or may be present. The species may be present.
P = Present: the species is present.
CH = Critical Habitat: Project impact area is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Occurrence Determination and Rationale

STATUS

FEDERAL CANDIDATES AND LISTED SPECIES

FE = Federally listed endangered
FT = Federally listed threatened
MMPA = Protected under the Marine Mammal Protection Act

STATE LISTED SPECIES

SE = State listed endangered
SR = State listed rare
ST = State listed threatened
FP = Fully Protected
SSC = State Species of Special Concern

CALIFORNIA NATIVE PLANT SOCIETY (CNPS): CALIFORNIA RARE PLANT RANKS (CRPR)

1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
2B = Species rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing.
3 = Species for which more information is needed. Distribution, endangerment, and/or taxonomic information is needed.
4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.
.1 = Species seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat).
.2 = Species fairly threatened in California (20-80% occurrences threatened; moderate degree and immediacy of threat).

SAN DIEGO MULTIPLE HABITAT CONSERVATION PROGRAM

MHCP = Multiple Habitat Conservation Program covered species

*NATURESERVE'S HERITAGE PROGRAM

Considered an imperiled community according to the rarity rankings established by the NatureServe's Heritage Program methodology. Alliances or associations with a G1 through G3 code are considered rare and threatened throughout their range. An alliance or association with a G5 and an S1 through an S3 code is secure through its range outside the State but is rare and threatened in California. A G4 S4 alliance may or may not be endemic to the state and is considered secure statewide (Sawyer et al. 2009).

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

This chapter describes the habitats and natural communities of special concern, special status plant species, and special status wildlife species that are likely to occur within the project impact area; the potential impacts to these resources; and the avoidance, minimization, and mitigation measures proposed to protect these sensitive resources.

4.1 Habitats and Natural Communities of Special Concern

Habitats and natural communities of special concern are those communities that (1) are of limited distribution; (2) have federal, State, or local laws regulating their development; and/or (3) support concentrations of special status plant or wildlife species. Wetlands and waters of the U.S. are also considered sensitive by both federal and State agencies.

The following habitats and/or natural communities were mapped within the BSA and are shown on Appendix A: Figures 6a and 6b: freshwater marsh, southern riparian scrub, non-native riparian, and Diegan coastal sage scrub. Other regional or local issues of concern include wildlife movement, jurisdictional wetlands and waters, and Coastal ESHA. Jurisdictional wetlands and waters and ESHA within the project impact area are shown on Appendix A: Figures 7a through 7f.

Permanent and temporary vegetation community impacts are presented in Table 4 by project alternative. Impacts to habitats and natural communities of special concern for each project alternative are discussed below. Currently, multiple bridge structures are being considered for the replacement bridge. As each bridge type may have a different support structure, the worst-case scenario for each alternative is analyzed for purposes of this report. For both Alternatives 1 and 2, the full width of the proposed bridge is considered a permanent impact in vegetated areas due to installation of bridge supports, permanent shading effects, and anticipated ongoing vegetation maintenance below the bridge. However, within open water, only the footprint of the maximum number of piles/piers to be installed within the water is counted as permanent impact. This is estimated as a worst-case scenario of the installation of 110 square feet for new supports and the removal of approximately 145 square feet of old supports for a net decrease of total permanent bridge footprint. The remainder of the project impact area is included in the temporary impact calculations to account for temporary vegetation removal or trampling, access, staging, temporary construction trestle and falsework placement, and any other work areas.

4.1.1 Discussion of Freshwater Marsh

Wetland communities such as freshwater marsh are protected by federal, state, and local regulations due to extensive losses from human activity, including agricultural development, urbanization, and channelization of waterways. Some of the most heavily impacted types of wetlands occur along the coast in southern California.

Wetlands play an important role in physical and chemical processes including shoreline and flood protection, groundwater recharge, and water purification. In addition, wetlands provide essential habitat for a wide variety of amphibians, resident and migratory birds, and mammals.

Table 4: Vegetation Community Impacts and Mitigation by Project Alternative.

Vegetation Community	Permanent Impacts in Acres	Temporary Impacts in Acres	Mitigation Ratio (Perm/Temp)	Mitigation Requirement in Acres (Perm/Temp)	Proposed Mitigation		
					Creation[1]	Rehabilitation[2]	Re-establishment/ Restoration[3]
Alternative 1							
Wetland Vegetation Communities							
Freshwater marsh	0.02	0.09	3:1[4] / 1:1	0.06 / 0.09	0.02	0.04	0.09
Disturbed southern riparian scrub	0.07	0.65	3:1[4] / 1:1	0.21 / 0.65	0.30	3.20	1.07[5]
Non-native riparian	0.23	0.42	3:1[4] / 1:1	0.69 / 0.42			
Open water	– [6]	0.80	– / 1:1[4]	– / 0.80	–	–	0.80
Subtotal Wetland Alternative 1	**0.32**	**1.96**		**0.96 / 1.96**	**0.32**	**3.24**	**1.96**
Upland Vegetation Communities							
Diegan coastal sage scrub	0.11	1.00	3:1 / 1:1	0.33 / 1.00	0.33	–	1.17
Disturbed Diegan coastal sage scrub	–	0.17	3:1 / 1:1	– / 0.17			
Eucalyptus woodland	–	0.74	n/a	–	–	–	–
Disturbed habitat	0.69	2.60	n/a	–	–	–	–
Urban/ developed	1.38	7.32	n/a	–	–	–	–
Subtotal Upland Alternative 1	**2.18**	**11.83**		**0.33 / 1.17**	**0.33**	**–**	**1.17**
Total Alternative 1	**2.50**	**13.79**		**1.29 / 3.13**	**0.65**	**3.24**	**3.13**
Alternative 2							
Wetland Vegetation Communities							
Freshwater marsh	0.02	0.08	3:1[4] / 1:1	0.06 / 0.08	0.02	0.04	0.08
Disturbed southern riparian scrub	0.19	0.53	3:1[4] / 1:1	0.57 / 0.53	0.38	3.20	0.99[5]
Non-native riparian	0.19	0.46	3:1[4] / 1:1	0.57 / 0.46			
Open water	– [6]	0.83	– / 1:1[4]	– / 0.83	–	–	0.83
Subtotal Wetland Alternative 2	**0.40**	**1.90**		**1.20 / 1.90**	**0.40**	**3.24**	**1.90**
Upland Vegetation Communities							
Diegan coastal sage scrub	0.23	0.88	3:1 / 1:1	0.69 / 0.88	0.69	–	1.05
Disturbed Diegan coastal sage scrub	–	0.17	3:1 / 1:1	– / 0.17			
Eucalyptus woodland	–	0.74	n/a	–	–	–	–
Disturbed habitat	0.58	2.70	n/a	–	–	–	–
Urban/ developed	1.60	7.09	n/a	–	–	–	–

Vegetation Community	Permanent Impacts in Acres	Temporary Impacts in Acres	Mitigation Ratio (Perm/Temp)	Mitigation Requirement in Acres (Perm/Temp)	Proposed Mitigation		
					Creation[1]	Rehabilitation[2]	Re-establishment/ Restoration[3]
Subtotal Upland Alternative 2	2.41	11.58		0.69 / 1.05	0.69	–	1.05
Total Alternative 2	2.81	13.48		1.89 / 2.95	1.09	3.24	2.95

[1] Wetland creation will consist of purchase of off-site establishment/creation credits to achieve no net loss. Upland creation will take place within upland areas that currently support disturbed habitat.

[2] Rehabilitation will take place immediately adjacent to the project impact area within existing disturbed habitats.

[3] Re-establishment/restoration includes revegetation of temporary impact areas within upland and wetland communities to a higher quality version of the former habitat type.

[4] Subject to goal of no net loss in acreage, function, and biological value. Replacement of habitat will occur through restoration or creation of substitute habitat areas, generally of the same kind and in the vicinity of the impacted habitat.

[5] Non-native riparian habitat will be converted to southern riparian scrub habitat.

[6] In worst-case-scenario, replacement bridge will result in approximately 110 square feet of permanent impact to open water from installation of supports. However, removal of the existing bridge will entail removal of one bridge support (with an approximate footprint of 145 square feet) from the open water, resulting in a net decrease in the permanent footprint of the bridge within the open water of the river channel.

Freshwater marsh within the BSA is subject to jurisdiction by USACE under Section 404 of the CWA, CDFW under Sections 1600-1616 of the State Fish and Game Code, RWQCB under Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act, and CCC under Sections 13577 and 30107.5 of the California Coastal Act. These impacts are addressed further in Section 4.1.7.

4.1.1.1 Survey Results

Within the BSA, freshwater marsh occurs as large patches within riparian scrub or woodland, or as narrow fringes along the river's edge, and has continuity with larger stands of riparian and marsh vegetation that extend up- and downstream. The freshwater marsh within the BSA is known to provide suitable nesting habitat for a variety of bird species, including the federally and State listed light-footed Ridgway's rail and State Species of Special Concern Clark's marsh wren (*Cistothorus palustris clarkae*), as well as habitat for rare plant species such as southwestern spiny rush.

Freshwater marsh within the BSA ranges from low to high ecological value with increasing distance from the existing Coast Highway and I-5 bridges. The freshwater marsh that occurs immediately under the existing Coast Highway Bridge comprises a very small, narrow, and exposed finger of vegetation along the shoreline, adjacent to open disturbed habitat. However, freshwater marsh outside the existing bridge shadow provides higher habitat value, as it occurs immediately adjacent to or inter-mixed with large stands of riparian scrub or woodland.

No stands of freshwater marsh have been mapped within the Habitat Enhancement Area. However, scattered freshwater marsh species do occur in the understory of the non-native riparian and disturbed southern riparian scrub communities, and a large stand of freshwater marsh occurs immediately adjacent to the Habitat Enhancement Area.

4.1.1.2 Project Impacts

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.02 acre and direct temporary impacts to 0.09 acre of freshwater marsh (see Table 4). These impacts are restricted to freshwater marsh of low habitat quality.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.02 acre and direct temporary impacts to 0.08 acre of freshwater marsh (see Table 4). These impacts are restricted to freshwater marsh of low habitat quality.

Habitat Enhancement Area

No permanent direct impacts are anticipated to occur to freshwater marsh as a result of habitat enhancement. Temporary direct impacts may occur during habitat enhancement activities if removal of large specimens of non-native species is required adjacent to the marsh. However, these potential temporary impacts would likely be very minor and outweighed by the beneficial effects of removing invasive species from the river system.

4.1.1.3 Avoidance and Minimization Efforts

The project is a bridge replacement and will not increase capacity, add lanes, or substantially widen the bridge. The project has been designed to keep permanent impacts to the minimum necessary to fulfill the project purpose and need. The following measures will be employed during project construction to avoid and/or minimize impacts to biological resources:

BIO-1. Prior to initiation of construction activities, orange construction fencing or equivalent shall be installed along the limits of disturbance adjacent to sensitive biological resource areas. All construction (including access/staging areas) shall be restricted to approved work areas previously identified or developed areas. Equipment staging, storage, and maintenance shall be located outside the active river thalweg. Temporary fencing will be removed at the completion of construction.

BIO-2a. A qualified biologist shall monitor construction activities as needed to oversee avoidance of biologically sensitive areas, with full-time monitoring during initial vegetation removal, grubbing, and grading. Monitoring biologists shall be familiar with the special status species known or with potential to occur on site. Should a special status species be encountered, work shall stop and the biological monitor consulted. The biological monitor shall determine next steps required, e.g., implement avoidance measures, contact Caltrans, the City or Wildlife Agencies.

BIO-2b. The biological monitor will provide environmental training for all project personnel working on-site to review the purpose for resource protection, the biological resources occurring on-site, environmentally responsible practices and project-specific protection measures and/or permit requirements, and communication protocol.

BIO-3. Erosion and sediment control measures, e.g., straw wattles, gravel bags, silt fencing, shall be in place and in functional condition throughout all phases of the project where sediment run-off from exposed slopes threatens to enter the river or aquatic habitats.

BIO-4. All equipment shall be washed prior to transport to the project site and shall be free of sediment, debris, and foreign matter.

BIO-5. Appropriate types and sufficient quantities of materials, e.g., drip pans, spill kits, shall be maintained on-site to contain any spill or inadvertent release of materials that may cause a condition of pollution or nuisance if the materials reach Waters of the U.S./State.

Avoidance and minimization measures associated with implementation and maintenance of habitat restoration are discussed in the Conceptual Mitigation Plan (see Appendix B).

4.1.1.4 Compensatory Mitigation

Mitigation for temporary and permanent impacts to freshwater marsh will be accomplished by: (1) re-establishing habitat of equal value within temporary project impact areas, (2) rehabilitating a small portion of the Habitat Enhancement Area into freshwater marsh, and (3) purchasing wetland creation credits from a mitigation bank within the San Luis Rey River watershed. Mitigation for temporary impacts is proposed at a 1:1 ratio and will be revegetated in place. Mitigation for

permanent impacts is proposed at a 3:1 ratio and will be implemented through restoration of lands in the project impact area outside of the Caltrans ROW and through purchase of off-site mitigation credit (see Table 4).

As detailed in the Conceptual Mitigation Plan (see Appendix B), permanent impacts will be mitigated through the purchase of 0.02 acre of off-site mitigation credit to achieve no net loss of the resources, and rehabilitation of freshwater marsh within the Habitat Enhancement Area (0.04 acre for both Alternatives; see Table 4) (see Appendix B). Temporary impacts to freshwater marsh will be mitigated through revegetation of temporary impact areas to pre-construction conditions (0.09 acre for Alternative 1 and 0.08 acre for Alternative 2). The re-establishment areas occur downstream of the existing Coast Highway Bridge along the southern bank of the San Luis Rey River.

Although the Habitat Enhancement Area is dominated by riparian vegetation, as discussed above, freshwater marsh species do occur within the understory and a large stand of freshwater marsh occurs immediately adjacent to the enhancement area. Therefore, enhancing the degraded habitats through the removal of non-native plant species is also likely to benefit the freshwater marsh found on site.

4.1.1.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Ongoing projects include the San Luis Rey River Flood Risk Management Project, which includes various levels of vegetation maintenance, periodic management of accumulated sediment, invasive species eradication, and habitat restoration. Known future projects include double-track rail construction (anticipated in 2025 or later) and widening of I-5 (anticipated in 2035 or later).

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to freshwater marsh. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to freshwater marsh so that no net loss of wetland vegetation is achieved. The proposed project would mitigate its permanent impacts to freshwater marsh at a 3:1 ratio through a combination of project-specific habitat re-establishment and/or mitigation bank credit purchase, resulting in no net loss of wetlands.

4.1.2 Discussion of Disturbed Southern Riparian Scrub

Riparian communities such as southern riparian scrub were formerly extensive along major rivers within coastal southern California but have been much reduced by urbanization, flood control, and channel improvements (Holland 1986). Riparian vegetation along waterways typically provides habitat for a wide variety of amphibians, reptiles, resident and migratory birds, and mammals; and contributes to improving water quality through removal of excess nutrients and chemicals.

Much of the disturbed southern riparian scrub within the BSA is subject to jurisdiction by USACE under Section 404 of the CWA, CDFW under Sections 1600-1616 of the State Fish and Game Code, RWQCB under Section 401 of the CWA and the California Porter-Cologne Water Quality Control

Act, and CCC under Sections 13577 and 30107.5 of the California Coastal Act. These impacts are addressed further in Section 4.1.7.

4.1.2.1 Survey Results

In the BSA, disturbed southern riparian scrub occurs as relatively small patches in the western portion of the BSA, on the north and south banks of the San Luis Rey River. In the eastern portion of the BSA, this community is more expansive with connectivity to native marsh and stands of riparian woodland.

Disturbed southern riparian scrub within the BSA ranges from moderate ecological value west of the Coast Highway Bridge to high ecological value east of the I-5 bridges. The disturbed southern riparian scrub within the BSA is known to provide suitable nesting habitat for a variety of bird species, including least Bell's vireo, a Federal and State endangered species, and yellow warbler (*Setophaga petechia*), a State Species of Special Concern. In addition, light-footed Ridgway's rail may utilize the riparian scrub for foraging when seeking refuge from high flows.

4.1.2.2 Project Impacts

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.07 acre and direct temporary impacts to 0.65 acre of disturbed southern riparian scrub (see Table 4). These impacts are largely restricted to areas of moderate habitat quality.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.19 acre and direct temporary impacts to 0.53 acre of disturbed southern riparian scrub (see Table 4). These impacts are largely restricted to areas of moderate habitat quality.

Habitat Enhancement Area

No permanent direct impacts are anticipated to occur to disturbed southern riparian scrub as a result of habitat enhancement. Temporary direct impacts may occur during habitat enhancement activities (e.g., trampling from pedestrian access, damage to adjacent vegetation during removal of large specimens of non-native species). However, these potential temporary impacts would likely be very minor and outweighed by the beneficial effects of removing invasive species from the river system and increasing opportunities for establishment of native species.

4.1.2.3 Avoidance and Minimization Efforts

As mentioned in Section 4.1.1.3, the project has been designed to keep permanent impacts to the minimum necessary to fulfill the project purpose and need. Implementation of BIO-1 through BIO-5, described in Section 4.1.1.3 above, would minimize impacts to disturbed southern riparian scrub.

Avoidance and minimization measures associated with implementation and maintenance of habitat restoration are discussed in the Conceptual Mitigation Plan (see Appendix B).

4.1.2.4 Compensatory Mitigation

Mitigation for temporary and permanent impacts to disturbed southern riparian scrub will be accomplished by: (1) re-establishing habitat of equal or greater value within temporary project impact areas, (2) rehabilitating degraded riparian/wetland habitats immediately adjacent to the project impact area through the removal of non-native plant species, and (3) purchasing wetland credits from a mitigation bank within the San Luis Rey River watershed. Mitigation for temporary impacts is proposed at a 1:1 ratio and will be revegetated in place. Mitigation for permanent impacts is proposed at a 3:1 ratio and will be implemented through restoration of lands in the project impact area outside of the Caltrans ROW and through purchase of off-site mitigation credit (see Table 4).

As detailed in the Conceptual Mitigation Plan (see Appendix B), mitigation for impacts to disturbed southern riparian scrub have been combined with mitigation for impacts to non-native riparian. Permanent impacts will be mitigated through the purchase of 0.30 acre of off-site mitigation credit to achieve no net loss of the resources, and rehabilitation of southern riparian scrub (3.20 acre for both Alternatives; see Table 4) within the Habitat Enhancement Area (see Appendix B). The Habitat Enhancement Area comprises 3.24 acres of non-native riparian and disturbed southern riparian scrub that occur immediately adjacent to the project impact area and will be enhanced through removal of non-native plant species.

Temporary impacts would be mitigated through a combination of re-establishment (1.07 acre for Alternative 1 and 0.99 acre for Alternative 2) and rehabilitation within the Habitat Enhancement Area (3.20 acre for both Alternatives). The rehabilitation of the Habitat Enhancement Area will result in a greater than 1:1 mitigation ratio for temporary impacts. As all riparian vegetation within the project impact area comprises disturbed or non-native-dominated riparian habitat, the proposed mitigation is anticipated to result in a net gain of high quality native riparian habitat.

4.1.2.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to southern riparian scrub. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to riparian habitat so that no net loss is achieved. The project would mitigate its permanent and temporary impacts to riparian habitat (disturbed southern riparian scrub and non-native riparian) at a greater ratio through a combination of purchase of off-site mitigation credits and project-specific habitat re-establishment and rehabilitation, resulting in creation and enhancement of higher quality native riparian habitat.

4.1.3 Discussion of Non-native Riparian

Although non-native riparian is dominated by non-native and invasive tree species, it is a community associated with riparian systems and is known to provide similar physical, chemical, and

habitat-related functions. Non-native riparian can provide suitable foraging and nesting habitat for a variety of wildlife species, including special-status birds such as yellow warbler. In addition, with its adjacency to marsh habitat, it may also provide foraging habitat for marsh species.

Much of the non-native riparian within the BSA is subject to jurisdiction by USACE under Section 404 of the CWA, CDFW under Sections 1600-1616 of the State Fish and Game Code, RWQCB under Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act, and CCC under Sections 13577 and 30107.5 of the California Coastal Act. These impacts are addressed further in Section 4.1.7.

4.1.3.1 Survey Results

In the BSA, this is the dominant vegetation community along the north bank of the San Luis Rey River, west of the Coast Highway Bridge. With connectivity to riparian and wetland vegetation along the river and a mix of native and non-native species, this community provides moderate to high ecological value. Two special status bird species, yellow warbler and western least bittern (*Ixobrychus exilis*), an MHCP-covered species, and one special status plant species, southwestern spiny rush, have been observed within this vegetation. In addition, light-footed Ridgway's rail may utilize the non-native riparian for foraging when seeking refuge from high flows.

4.1.3.2 Project Impacts

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.23 acre and direct temporary impacts to 0.42 acre of non-native riparian (see Table 4). These impacts are largely restricted to areas of moderate habitat quality.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.19 acre and direct temporary impacts to 0.46 acre of non-native riparian (see Table 4). These impacts are largely restricted to areas of moderate habitat quality.

Habitat Enhancement Area

Implementation of the Conceptual Mitigation Plan (see Appendix B) would result in conversion of 3.06 acre of non-native riparian to southern riparian scrub. These impacts are temporary and considered beneficial, as they entail improving the quality of the riparian habitat by removing non-native invasive species from the river system and increasing opportunities for establishment of native species.

4.1.3.3 Avoidance and Minimization Efforts

As mentioned in Section 4.1.1.3, the project has been designed to keep permanent impacts to the minimum necessary to fulfill the project purpose and need. Implementation of BIO-1 through BIO-5, described in Section 4.1.1.3 above, would minimize impacts to non-native riparian.

Avoidance and minimization measures associated with implementation and maintenance of habitat restoration are discussed in the Conceptual Mitigation Plan (see Appendix B).

4.1.3.4 Compensatory Mitigation

Mitigation for temporary and permanent impacts to non-native riparian will be accomplished by: (1) re-establishing and restoring habitat of equal or greater value within temporary project impact areas and (2) rehabilitating degraded riparian/wetland habitats immediately adjacent to the project impact area through the removal of non-native plant species, and (3) purchasing wetland credits from a mitigation bank within the San Luis Rey River watershed. Mitigation for temporary impacts is proposed at a 1:1 ratio and will be revegetated in place. Mitigation for permanent impacts is proposed at a 3:1 ratio and will be implemented through restoration of lands in the project impact area outside of the Caltrans ROW and through purchase of off-site mitigation credit (see Table 4).

As detailed in the Conceptual Mitigation Plan (see Appendix B), mitigation for impacts to non-native riparian have been combined with mitigation for impacts to disturbed southern riparian scrub and described in Section 4.1.2.4 above.

4.1.3.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to riparian habitat. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to riparian habitat so that no net loss is achieved. The project would mitigate its permanent and temporary impacts to riparian habitat (disturbed southern riparian scrub and non-native riparian) at a greater ratio through a combination of purchase of off-site mitigation credits and project-specific habitat re-establishment, enhancement, and restoration, resulting in creation and enhancement of higher quality native riparian habitat.

4.1.4 Discussion of Open Water

Open water near a river's mouth may fluctuate from a freshwater to brackish or marine system depending on rainfall, tidal influence, and physical barriers (e.g., sandbars). As a result, these areas may support a myriad of aquatic species including freshwater, anadromous, and coastal pelagic fishes. The open water may also provide foraging habitat for a wide variety of animal species including shorebirds and raptors.

The open water within the BSA is subject to jurisdiction by USACE under Section 404 of the CWA, CDFW under Sections 1600-1616 of the State Fish and Game Code, RWQCB under Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act, and CCC under Sections 13577 and 30107.5 of the California Coastal Act. These impacts are addressed further in Section 4.1.7.

4.1.4.1 Survey Results

Within the BSA, the open water is associated with a riverine system (San Luis Rey River) and may occasionally be subject to tidal influence (estuarine); however, it appears to have maintained a freshwater-dominant system for the majority of the past five years as a result of removal of a culvert at the river mouth which had provided regular connection to the ocean. Surveys conducted in 2015 occurred prior to the recent re-establishment of the ocean connection at the river mouth, and thus found only non-native freshwater fish and invertebrate species inhabiting this portion of the river. Storm events in the 2016–2017 wet season have breached and/or washed out a portion of the sandbar, potentially shifting the system back to a more brackish or estuarine scenario and surveys conducted in 2017 found a wider variety of marine species present. The mouth of the river was once again observed to be closed during fish surveys conducted in September and October of 2021.

4.1.4.2 Project Impacts

Alternative 1

As discussed in Section 4.1, within open water, only the footprint of the maximum number of piles/piers to be installed within the water is counted as permanent impact. This is estimated as a worst-case scenario of the installation of 110 square feet for new supports and the removal of approximately 145 square feet of old supports for a net decrease of total permanent bridge footprint. Based on this assessment, Project Alternative 1 would result in direct permanent impacts to approximately 0.003 acre (110 square feet) for installation of new bridge supports and direct temporary impacts to 0.80 acre of open water (see Table 4). However, bridge replacement would result in a net decrease of permanent impact to open water, because the replacement bridge design includes supports with a smaller overall footprint in open water than the existing bridge. As the existing bridge has one 145-square-foot support in open water, the net decrease is approximately 35 square feet. The existing support would be removed to several feet below the existing ground surface.

Direct temporary impacts may also occur as a result of construction activity if hazardous materials, sediment, or other construction-related runoff enters the river. Release of pollutants or sedimentation may reduce water quality.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to approximately 0.003 acre (110 square feet) for installation of new bridge supports and direct temporary impacts to 0.83 acre of open water (see Table 4). However, bridge replacement would result in a net decrease of permanent impact to open water, because the replacement bridge design includes supports with a smaller overall footprint in open water than the existing bridge. As the existing bridge has one 145-square-foot support in open water, the net decrease is approximately 35 square feet. The existing support would be removed to several feet below the existing ground surface.

Direct temporary impacts may also occur as a result of construction activity if hazardous materials, sediment, or other construction-related runoff enters the river. Release of pollutants or sedimentation may reduce water quality.

Habitat Enhancement Area

No direct permanent impacts to open water are anticipated as a result of habitat enhancement activities.

No direct temporary impacts are anticipated as a result of enhancement activities. Any herbicide used would be approved for use within wetland habitats. If substantial biomass removal and ground disturbance is required, appropriate best management practices (BMP) will be implemented within mitigation areas to prevent runoff from the site, as discussed in the Conceptual Mitigation Plan (see Appendix B).

4.1.4.3 Avoidance and Minimization Efforts

As mentioned in Section 4.1.1.3, the project has been designed to keep permanent impacts to the minimum necessary to fulfill the project purpose and need. Implementation of BIO-1 through BIO-5, described in Section 4.1.1.3 above, would minimize impacts to open water.

Avoidance and minimization measures associated with implementation and maintenance of habitat restoration are discussed in the Conceptual Mitigation Plan (see Appendix B).

4.1.4.4 Compensatory Mitigation

Temporary impacts to open water will be mitigated at a 1:1 ratio through restoration of temporary impact areas to pre-construction conditions (i.e., removal of temporary structures and recontouring, as needed). As replacement of the bridge will result in a net decrease in the footprint of bridge supports that occur within open water, no compensatory mitigation is proposed for permanent impacts to open water.

4.1.4.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to open water. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts so that no net loss of open water (non-wetland waters) is achieved. The project would result in no net loss of open water and, therefore, would not contribute to cumulative impacts on this resource.

4.1.5 Discussion of Diegan Coastal Sage Scrub

Diegan coastal sage scrub is a community that supports a diverse assemblage of native California plants and animals. However, human activity has substantially reduced the extent of this community in southern California to the point where conservation action is needed to protect species that rely on this community.

4.1.5.1 Survey Results

The Diegan coastal sage scrub within the BSA occurs on either side of the existing bike path west of the Coast Highway Bridge and on the slope between the river and SR-76. Much of the disturbed Diegan coastal sage scrub within the BSA occurs along a steep slope east of the Coast Highway Bridge in the northeastern portion of the BSA and in a couple small patches adjacent to or bordered by development.

The Diegan coastal sage scrub within the BSA is known to support a variety of rare CNPS-ranked plant species, including Lewis' evening-primrose, variegated dudleya (*Dudleya variegata*), and sticky dudleya, and supports the federally-threatened coastal California gnatcatcher. It also provides potentially suitable habitat for multiple rare reptile and avian species. The Diegan coastal sage scrub and disturbed Diegan coastal sage scrub within the BSA ranges from low to moderate ecological value, with the lowest value in areas surrounded by development and the higher value in the larger stands with connectivity to other native vegetation along the river.

4.1.5.2 Project Impacts

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.11 acre of Diegan coastal sage scrub, and direct temporary impacts to 1.00 acre of Diegan coastal sage scrub and 0.17 acre of disturbed Diegan coastal sage scrub (see Table 4). These impacts include areas of moderate habitat quality.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.23 acre of Diegan coastal sage scrub, and direct temporary impacts to 0.88 acre of Diegan coastal sage scrub and 0.17 acre of disturbed Diegan coastal sage scrub (see Table 4). These impacts include areas of moderate habitat quality.

Habitat Enhancement Area

Habitat enhancement will not result in impacts to Diegan coastal sage scrub or disturbed Diegan coastal sage scrub. These communities are not located within or adjacent to the Habitat Enhancement Area.

4.1.5.3 Avoidance and Minimization Efforts

As mentioned in Section 4.1.1.3, the project has been designed to keep permanent impacts to the minimum necessary to fulfill the project purpose and need. Implementation of BIO-1 and BIO-2, described in Section 4.1.1.3 above, would minimize impacts to Diegan coastal sage scrub.

4.1.5.4 Compensatory Mitigation

Mitigation for temporary and permanent impacts to Diegan coastal sage scrub and disturbed Diegan coastal sage scrub will be accomplished by: (1) creating and restoring habitat of equal or greater value within temporary project impact areas and (2) purchasing credits from a mitigation bank within the San Luis Rey River watershed. Mitigation for temporary impacts is proposed at a 1:1

ratio and will be revegetated in place. Mitigation for permanent impacts is proposed at a 3:1 ratio and will be implemented through restoration of lands in the project impact area outside of the Caltrans ROW (see Table 4).

As detailed in the Conceptual Mitigation Plan (see Appendix B), temporary impacts to Diegan coastal sage scrub and disturbed Diegan coastal sage scrub will be mitigated through restoration of temporary impact areas to pre-construction conditions. Permanent impacts to Diegan coastal sage scrub will be mitigated through creation of Diegan coastal sage scrub (0.33 acre for Alternative 1; 0.69 acre for Alternative 2; see Table 4) in upland areas that currently support disturbed habitat. These creation areas occur beneath the existing Coast Highway Bridge and have been maintained mostly free of vegetation. However, these areas provide suitable conditions to support Diegan coastal sage scrub once the existing bridge is demolished. In addition, some of these areas have connectivity with existing stands of disturbed Diegan coastal sage scrub.

4.1.5.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to Diegan coastal sage scrub. In accordance with State and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to Diegan coastal sage scrub. The proposed project would mitigate its permanent impacts to Diegan coastal sage scrub at a 3:1 ratio, which would include creation at a ratio greater than 2:1 and Diegan coastal sage scrub credit purchase within the San Luis Rey River watershed for the remaining acreage requirement. This project would result in no net loss of Diegan coastal sage scrub.

4.1.6 Discussion of Wildlife Movement Corridors/Habitat Connectivity

Habitat linkages and wildlife corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife travel. Habitat linkages and wildlife corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas; and facilitate the exchange of genetic traits between populations (Beier and Loe 1992). Wildlife movement corridors are considered sensitive by resource and conservation agencies. The San Luis Rey River is identified as a Biological Core and Linkage Area in the North County MHCP (AMEC Earth & Environmental, Inc. et al. 2003).

4.1.6.1 Survey Results

The lower San Luis Rey River in the vicinity of the BSA serves as a movement corridor for terrestrial and avian wildlife species. Although the portion of the river that occurs within and adjacent to the BSA is immediately surrounded by urban development to the north and south, the floodplain and adjacent slopes support a variety of native riparian and upland habitats, providing cover and movement opportunities for many terrestrial species.

Unlike for terrestrial and avian wildlife species, the portion of the San Luis Rey River that occurs within and adjacent to the BSA provides only intermittent connectivity for fish and other aquatic species between the river and canyon systems and the ocean.

4.1.6.2 Project Impacts

The project would not result in direct permanent impacts to wildlife movement along the San Luis Rey River. The replacement bridge design will include installation of a maximum of seven piers with two columns each for a total of 14 columns at ground level, and a minimum of four support points at ground level. The maximum number of columns within the water is two. None of the possible bridge designs is anticipated to substantially obstruct movement of terrestrial or aquatic species.

Direct and indirect temporary impacts may occur to wildlife movement as a result of vegetation removal, construction activity, and habitat restoration/enhancement. Removal or trampling of vegetation during construction would temporarily decrease cover within an approximate 150-foot-long portion of the wildlife corridor along the San Luis Rey River, and widen an existing mostly unvegetated 250-foot stretch of riverbank beneath the existing Coast Highway and I-5 bridges. However, this vegetation loss and associated potential impacts to wildlife movement would be temporary, as all temporary impact areas will be revegetated following completion of bridge construction, restoring the area to functionally pre-construction conditions. Construction activity (24 to 30 months long) would not prevent but may deter wildlife from using or passing through the area due to increased human activity level and noise. In addition, no construction-related fencing would preclude animal passage entirely, and activity levels within work areas would return to pre-construction conditions following completion of bridge construction.

Impacts to movement of aquatic species would be similar to those of terrestrial species. Where pile placement occurs within open water, pile driving and construction of the bridge piles may temporarily deter aquatic species from the work area but would not be expected to completely obstruct passage. Potential hydroacoustic effects on fish species are discussed further in Sections 4.3.1.2 and 4.3.2.2.

4.1.6.3 Avoidance and Minimization Efforts

As mentioned in Section 4.1.1.3, the project has been designed to keep permanent impacts to the minimum necessary to fulfill the project purpose and need, and has been designed to maintain flow within the San Luis Rey River during construction. Implementation of BIO-1 and BIO-2, described in Section 4.1.1.3 above, would minimize impacts to wildlife movement, and the following additional measure will be employed during project construction to further minimize potential impacts to wildlife movement:

BIO-6. Temporary construction fencing shall be configured so that at least one unobstructed land passage remains open on each side of the river to facilitate wildlife movement.

4.1.6.4 Compensatory Mitigation

Mitigation for temporary and permanent impacts to native vegetation communities will largely be accomplished by the following on-site measures: (1) creating, re-establishing, and/or restoring habitat of equal or greater value within temporary project impact areas and (2) enhancing

degraded riparian/wetland habitats immediately adjacent to the project impact area through the removal of non-native plant species (see Table 4).

On-site habitat-based mitigation will ensure that the potential impacts to wildlife movement are temporary. No net loss of native vegetation will result from either project alternative.

4.1.6.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to wildlife movement. Following completion of construction, wildlife movement would not be constrained or hindered within the BSA.

4.1.7 Discussion of Jurisdictional Wetlands and Waters

In accordance with Section 404 of the CWA, USACE regulates the discharge of dredged or fill material into waters of the U.S. The term "waters of the United States" is defined as:

- All waters currently used, or used in the past, or which may be susceptible to be used in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation, or destruction of which could affect foreign commerce including any such waters:
    - which could be used by interstate or foreign travelers for recreational or other purposes; or
    - from which fish or shellfish are, or could be, taken and sold in interstate or foreign commerce; or
    - which are used or could be used for industries in interstate commerce;
- All other impoundments of waters otherwise defined as waters of the U.S. under the definition;
- Tributaries of waters identified above;
- the territorial seas; and
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in the paragraphs above [33 CFR Part 328.3(a)].

Under sections 1600–1607 of the CFGC, CDFW regulates activities that would divert or obstruct the natural flow or would substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. CDFW has jurisdiction over riparian habitats associated with watercourses. Jurisdictional waters are delineated by the outer edge of riparian vegetation or at the top of the bank of streams or lakes, whichever is wider.

RWQCB is the regional agency responsible for protecting water quality in California. The jurisdiction of this agency includes all waters of the state and all waters of the U.S. as mandated by both the federal CWA and the California Porter-Cologne Water Quality Control Act. State waters are all waters that meet one of three criteria (hydrology, hydric soils, or wetland vegetation), and generally include but are not limited to, all waters under the jurisdiction of USACE and CDFW.

The CCC is the state agency responsible for enforcing the coastal protection provisions detailed in Coastal Act within the Coastal Zone. CCC wetlands are determined using the "one parameter definition" established in the California Code of Regulations (14 California Code of Regulations Section 13577).

4.1.7.1 Survey Results

As presented in the Jurisdictional Waters/Wetland Delineation Report for the Proposed Coast Highway (Hill Street) Bridge Replacement Project (Appendix F) and shown on Appendix A: Figures 7a through 7f, resources under the jurisdiction of USACE, CDFW, RWQCB, and CCC were identified within the project impact area. These include wetland waters of the U.S., non-wetland waters of the U.S, State streambed, and adjacent wetlands/riparian habitat.

4.1.7.2 Project Impacts

Direct permanent and temporary impacts to jurisdictional wetlands and water for each project alternative are presented in Table 5.

Table 5: Jurisdictional Wetland/Waters Impacts by Project Alternative.

Jurisdictional Waters	Permanent Impacts in Acres	Temporary Impacts in Acres
ALTERNATIVE 1		
USACE Jurisdiction		
Non-wetland Waters of the U.S.	– [1]	0.80 (228 linear feet)
Wetland	0.25	1.06
USACE Total Impacts	**0.25**	**1.86**
CDFW/RWQCB Jurisdiction		
Streambed	– [1]	0.80 (228 linear feet)
State Wetlands (Riparian Habitat)	0.32	1.15
CDFW/RWQCB Total Impacts	**0.32**	**1.95**
CCC Jurisdiction		
Wetlands	0.32	1.95
CCC Total Impacts	**0.32**	**1.95**

Jurisdictional Waters	Permanent Impacts in Acres	Temporary Impacts in Acres
ALTERNATIVE 2		
USACE Jurisdiction		
Non-wetland Waters of the U.S.	– [1]	0.83 (227 linear feet)
Wetland	0.35	0.96
USACE Total Impacts	**0.35**	**1.79**
CDFW/RWQCB Jurisdiction[2]		
Streambed	–[1]	0.83 (227 linear feet)
State Wetlands (Riparian Habitat)	0.40	1.07
CDFW/RWQCB Total Impacts	**0.40**	**1.89**
CCC Jurisdiction		
Wetlands [3]	0.40	1.89
CCC Total Impacts	**0.40**	**1.89**

[1] In worst-case-scenario, replacement bridge will result in approximately 110 square feet of permanent impact to non-wetland waters/streambed from installation of supports. However, removal of the existing bridge will entail removal of one bridge support (with an approximate footprint of 145 square feet) from non-wetland waters/streambed, resulting in a net decrease in the permanent footprint of the bridge within non-wetland waters/streambed.
[2] CDFW/RWQCB area of jurisdiction overlaps all USACE jurisdictional waters.
[3] CCC Wetlands overlap all CDFW/RWQCB area of jurisdiction.

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.25 acre of USACE wetland, 0.32 acre of State wetlands (CDFW/RWQCB riparian habitat), and 0.32 acre of CCC wetlands. Project Alternative 1 would also result in direct permanent impacts to approximately 0.003 acre (110 square feet) of USACE non-wetland waters of the U.S./CDFW streambed/RWQCB streambed. However, as bridge replacement would entail removal of an existing bridge support (with an approximate footprint of 145 square feet) that is currently located within non-wetland waters/streambed, the net result is a decrease in the bridge's footprint within non-wetland waters/streambed. The existing support would be removed to several feet below the existing ground surface.

Direct temporary impacts would include 0.80 acre/228 linear feet of USACE non-wetland waters of the U.S./CDFW streambed/RWQCB streambed; 1.06 acre of USACE wetland; 1.15 acre of State wetlands (CDFW/RWQCB riparian habitat); and 1.95 acre of CCC wetlands.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.35 acre of USACE wetland, 0.40 acre of state wetlands (CDFW/RWQCB riparian habitat), and 0.40 acre of CCC wetlands. Project Alternative 2 would also result in direct permanent impacts to approximately 0.003 acre (110 square feet) of USACE non-wetland waters of the U.S./CDFW streambed/RWQCB streambed. However, as installation of the replacement bridge will entail removal of an existing bridge support (with an approximate footprint of 145 square feet) that is currently located within non-wetland

waters/streambed, the net result is a decrease in the bridge's footprint within non-wetland waters/streambed.

Direct temporary impacts would include 0.83 acre/227 linear feet of USACE non-wetland waters of the U.S./CDFW streambed/RWQCB streambed; 0.96 acre of USACE wetland; 1.07 acre of State wetlands (CDFW/RWQCB riparian habitat); and 1.89 acre of CCC wetlands.

Alternatives 1 and 2

Direct temporary impacts under either alternative may also occur as a result of construction activity if hazardous materials, sediment, or other construction-related runoff enter the on-site wetlands or waters.

Habitat Enhancement Area

Implementation of habitat enhancement would result in conversion of disturbed southern riparian scrub and non-native riparian habitat to southern riparian scrub, all within areas under the jurisdiction of USACE, CDFW, RWQCB, and/or CCC. Direct impacts would include targeted removal of non-native plant species. However, as the non-native species would be replaced with native plant species, any potential adverse effects would be considered temporary. The beneficial effects of conversion to riparian habitat dominated by native species would outweigh any temporary adverse effects and result in an increase in habitat quality for wildlife species.

No direct temporary impacts are anticipated as a result of enhancement activities. Any herbicide used would be approved for use within wetland habitats. If substantial biomass removal and ground disturbance is required, appropriate BMPs will be implemented within mitigation areas to prevent runoff from the site, as discussed in the Conceptual Mitigation Plan (see Appendix B).

4.1.7.3 Avoidance and Minimization Efforts

As mentioned in Section 4.1.1.3, the project has been designed to keep permanent impacts to the minimum necessary to fulfill the project purpose and need. Implementation of BIO-1 through BIO-5, described in Section 4.1.1.3 above, would minimize impacts to jurisdictional wetlands and waters.

4.1.7.4 Compensatory Mitigation

Temporary and permanent impacts to resources under the jurisdiction of USACE, CDFW, RWQCB, and CCC will require authorization from these agencies and implementation of associated mitigation measures. Compensatory mitigation would be accomplished through implementation of the Conceptual Mitigation Plan (see Appendix B), which includes on-site re-establishment and rehabilitation of wetland and riparian habitats; and establishment through the purchase of off-site mitigation credits. Implementation of the Conceptual Mitigation Plan and mitigation credit purchase would result in no net loss of jurisdictional resources and would result in a net gain of high quality native riparian habitats within the Coastal Zone.

4.1.7.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to jurisdictional wetlands or waters. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to jurisdictional resources so that no net loss is achieved. The project would mitigate its permanent impacts to jurisdictional wetlands and waters at a minimum 3:1 ratio through a combination of project-specific habitat re-establishment, creation, enhancement, and restoration, resulting in no net loss of native habitat.

4.1.8 Discussion of Coastal Environmentally Sensitive Habitat Areas

The CCC is the state agency responsible for enforcing the coastal protection provisions detailed in Coastal Act within the Coastal Zone. The CCC's ESHA are determined using the definition from Section 30107.5 of the California Coastal Act: "Any area in which plant or animal life or their habitats are either especially rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments."

4.1.8.1 Survey Results

As shown on Appendix A: Figures 7a through 7f, CCC's ESHA was identified within the project impact area and includes all jurisdictional wetland/waters, including open water, freshwater marsh, southern riparian scrub, and areas of disturbed habitat which are mapped as jurisdictional wetland/waters, as well as Diegan coastal sage scrub and habitat known to support multiple rare plant and avian species.

4.1.8.2 Project Impacts

Alternative 1

Direct impacts to ESHA include 0.43 acre of permanent and 3.11 acre of temporary.

Alternative 2

Direct impacts to ESHA include 0.63 acre of permanent and 2.94 acre of temporary.

Alternatives 1 and 2

Direct temporary impacts under either alternative may also occur as a result of construction activity if hazardous materials, sediment, or other construction-related runoff enter the on-site wetlands or waters.

Habitat Enhancement Area

Implementation of habitat enhancement would result in conversion of disturbed southern riparian scrub and non-native riparian habitat to southern riparian scrub, all within areas mapped as ESHA. Direct impacts would include targeted removal of non-native plant species. However, as the non-native species would be replaced with native plant species, any potential adverse effects would be considered temporary. The beneficial effects of conversion to riparian habitat dominated by native species would outweigh any temporary adverse effects and result in an increase in habitat quality for wildlife species.

No direct temporary impacts are anticipated as a result of enhancement activities. Any herbicide used would be approved for use within wetland habitats. If substantial biomass removal and ground disturbance is required, appropriate best management practices (BMP) will be implemented within mitigation areas to prevent runoff from the site, as discussed in the Conceptual Mitigation Plan (see Appendix B).

4.1.8.3 Avoidance and Minimization Efforts

As mentioned in Section 4.1.1.3, the project has been designed to keep permanent impacts to the minimum necessary to fulfill the project purpose and need. Implementation of BIO-1 through BIO-5, described in Section 4.1.1.3 above, would minimize impacts to ESHA.

4.1.8.4 Compensatory Mitigation

Temporary and permanent impacts to resources under the jurisdiction of CCC will require authorization from this agency and implementation of associated mitigation measures. Compensatory mitigation would be accomplished through implementation of the Conceptual Mitigation Plan (see Appendix B), which includes on-site re-establishment and rehabilitation of wetland and riparian habitats and creation and restoration of Diegan coastal sage scrub; and establishment through the purchase of off-site wetland mitigation credits. Implementation of the Conceptual Mitigation Plan and mitigation credit purchase would result in no net loss of jurisdictional resources and would result in a net gain of native riparian habitats within the Coastal Zone.

4.1.8.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to ESHA. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to jurisdictional resources so that no net loss is achieved. The project would mitigate its permanent impacts to jurisdictional wetlands and waters and upland habitat included in ESHA at a minimum 3:1 ratio through a combination of project-specific habitat re-establishment, creation, enhancement, and restoration, resulting in no net loss of native habitat.

4.2 Special Status Plant Species

Plant species are considered sensitive if they (1) are listed by state or federal agencies as threatened or endangered or are proposed for listing; (2) have a California Native Plant Society Rare Plant Rank (CRPR) of 1B (considered endangered throughout its range), 2B (considered endangered in California but more common elsewhere), 3 (lacking sufficient distribution, endangerment, and/or taxonomic information), or 4 (limited distribution) of the CNPS Inventory of Rare and Endangered Vascular Plants of California (2021); (3) are covered under the North County MHCP (AMEC Earth & Environmental, Inc. et al. 2003); or (4) are considered rare, endangered, or threatened by the State of California (CDFW 2023a–d, Appendix C) or local conservation organizations or specialists.

As discussed in Appendix G and shown on Appendix A: Figures 6a and 6b, the following special status plant species were observed within or adjacent to the BSA: San Diego ambrosia (*Ambrosia pumila*), sticky dudleya, variegated dudleya, Nuttall's acmispon (*Acmispon prostratus*), San Diego marsh-elder, Lewis' evening-primrose, and southwestern spiny rush. Project impacts, avoidance and minimization measures, and mitigation for each of these species are discussed in detail below. Observations of these seven species and assessments for an additional 38 special status plant species' potential to occur are presented in Table 3. These assessments include the following federally listed species: coastal dunes milk-vetch, San Diego button-celery, San Diego thornmint (*Acanthomintha ilicifolia*), and spreading navarretia. In summary, none of these additional 38 special status plant species is expected to occur within the BSA due to lack of suitable habitat and/or lack of detections during the 2015, 2017, and 2021 rare plant surveys.

4.2.1 Discussion of San Diego Ambrosia

San Diego ambrosia is a federally listed endangered, a CRPR 1B.1 species (seriously threatened in California and elsewhere), and an MHCP-covered species. It is a rhizomatous herb in the Asteraceae family that typically blooms from April to October. This species typically is found in disturbed areas along historic floodplains with sandy loam or clay soils, and sometimes in alkaline areas. This species is also reported from chaparral, coastal sage scrub, grassland, and around vernal pools. San Diego ambrosia is known from Riverside and San Diego counties as well as Baja California, Mexico, at elevations between 65 and 1,365 feet amsl. This species is threatened by non-native plant species, road maintenance, foot traffic, vehicle impacts, and development (CNPS 2016, NatureServe 2015).

4.2.1.1 Survey Results

An approximate total of 675 individual San Diego ambrosia plants were observed just outside the BSA in a scattered patch in the Diegan coastal sage scrub along the southern bank of the San Luis Rey River during rare plant surveys conducted in 2015 (see Appendix A: Figures 6a and 6b). Suitable habitat for this species does extend into the eastern edge of the BSA. However, the individuals observed in this area appear to be part of an ongoing revegetation effort along the southern bank of the San Luis Rey River and no individuals of this species were identified in the BSA during surveys conducted in 2015, 2017, or 2021. Therefore, natural populations of this species are not anticipated on site, and this species has a low potential to occur within the immediate project impact area.

4.2.1.2 Project Impacts

Alternatives 1 and 2

No direct or indirect permanent or temporary impacts to San Diego ambrosia are anticipated from construction of either project alternative, as this species was not observed within the project impact area for either alternative. However, as this species has a low potential to occur within the project impact area due to dispersal over time, several measures would be required to ensure avoidance of or mitigate for impacts to this species.

Habitat Enhancement Area

No direct or indirect permanent or temporary impacts to San Diego ambrosia would result from habitat enhancement activities, as this species was not observed and is not expected to occur within the Habitat Enhancement Area.

4.2.1.3 Avoidance and Minimization Efforts

Implementation of BIO-1 and BIO-2, described in Section 4.1.1.3 above, would avoid impacts to San Diego ambrosia by keeping construction activity within approved work limits. The following additional measures are included to minimize impacts to potentially occurring individuals within the project impact area:

BIO-7. Conduct a focused rare plant survey in the spring prior to the start of construction to confirm extent of on-site populations of special status plant species.

BIO-8. Prior to initiation of construction activities, a qualified biologist will flag or fence special status plant species that occur within the temporary impact areas as confirmed during the focused rare plant survey (see measure BIO-7). Special status plant species will be avoided to the maximum extent feasible within the temporary impact areas.

BIO-9. Any special status plant species that cannot be avoided within temporary impact areas will be salvaged for transplant or included in the seed or plant palette for revegetation. Candidates for salvage/transplant include sticky dudleya, variegated dudleya, and San Diego ambrosia. Species to be included in the seed or plant palette include San Diego marsh-elder Nuttall's acmispon, and Lewis' evening-primrose. If project timing allows, seed should be collected from individuals within the project impact areas the year prior to start of construction.

4.2.1.4 Compensatory Mitigation

Restoration, re-establishment, and creation of Diegan coastal sage scrub and southern riparian scrub within temporary work areas in accordance with the Conceptual Mitigation Plan (see Appendix B) will restore suitable habitat for this species and include replacement of impacted individuals.

4.2.1.5 Cumulative Impacts

As impacts to San Diego ambrosia would be avoided, the project would not contribute to cumulative impacts to this species.

4.2.2 Discussion of Sticky Dudleya

Sticky dudleya is a CRPR 1B.2 species (moderately threatened in California and elsewhere) and an MHCP-covered species. It is a perennial herb in the Crassulaceae family that typically blooms from May to June. This species is found in rocky areas in coastal bluff scrub, chaparral, coastal sage scrub, and cismontane woodland. Sticky dudleya is known from Orange and San Diego counties as well as from Baja California, Mexico. It occurs at elevations between 30 and 1,805 feet amsl. This species is threatened by development and road construction (CNPS 2015, NatureServe 2015).

4.2.2.1 Survey Results

Eight individual sticky dudleya were observed just outside the BSA in a scattered patch in the Diegan coastal sage scrub along the southern bank of the San Luis Rey River (see Appendix A: Figures 6a and 6b). The individuals observed in this area appear to be part of an ongoing revegetation effort along the southern bank of the San Luis Rey River.

Additional individuals of this species were detected incidentally during the jurisdictional wetland/waters delineation along the slope north of the river and east of I-5, approximated on Appendix A: Figures 6a and 6b, and numbers were estimated at hundreds of individuals, within the BSA but outside of the project impact area. In 2017, this area was resurveyed and 24 individuals were detected and redetected in 2021. Based on a review of historic aerial imagery and the presence of other occurrences recorded in CNDDB within one mile of the BSA (see Appendix C), these individuals are likely part of a naturally occurring population. Therefore, there is potential for additional individuals to occur within the BSA and project impact area east of I-5.

4.2.2.2 Project Impacts

Alternatives 1 and 2

Potential direct or indirect permanent or temporary impacts may occur to sticky dudleya from construction of either project alternative, as this species has potential to occur within the northeastern edge of the project impact area. Therefore, several measures would be required to ensure avoidance of or mitigate for impacts to this species.

Habitat Enhancement Area

No direct or indirect permanent or temporary impacts to sticky dudleya would result from habitat enhancement activities, as this species was not observed and is not expected to occur within the Habitat Enhancement Area.

4.2.2.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 7, 8, and 9 described in Sections 4.1.1.3 and 4.2.1.3 above, would avoid and/or minimize impacts to sticky dudleya.

4.2.2.4 Compensatory Mitigation

Restoration and creation of Diegan coastal sage scrub within temporary work areas in accordance with the Conceptual Mitigation Plan (see Appendix B) will restore suitable habitat for this species and include replacement of impacted individuals.

4.2.2.5 Cumulative Impacts

Implementation of the proposed avoidance and minimization measures and on-site creation and restoration is anticipated to result in no substantial loss of sticky dudleya from the natural population found on site. Therefore, the project would not contribute to cumulative impacts to this species.

4.2.3 Discussion of San Diego Marsh-elder

San Diego marsh-elder is a CRPR 2B.2 species (moderately threatened in California but more common elsewhere) and an MHCP-covered species. It is a perennial herb in the Asteraceae family that typically blooms from April to October. This species is found along ephemeral drainages, alkali marshes, and playas. San Diego marsh-elder is known from San Diego County and from Baja California, Mexico, at elevations between 30 and 1,640 feet amsl. This species is threatened by waterway channelization, coastal development, non-native plant species, and vehicle activity (CNPS 2015, NatureServe 2015).

4.2.3.1 Survey Results

Thirty-two individual San Diego marsh-elder were observed in three locations within and adjacent to the BSA during rare plant surveys conducted in 2015 (see Appendix A: Figures 6a and 6b). Only one observation was within the project impact area, at the edge of disturbed habitat and developed land, in the northern portion along Carmelo Drive. The other two locations were along the southern bank of the San Luis Rey River, outside the project impact area. The individuals observed along the southern bank of the San Luis Rey River appear to be part of an ongoing revegetation effort in this area based on on-site evidence. These areas were resurveyed in 2017 and 2021 and 14 individuals were detected.

Suitable habitat for this species also occurs north of the river and east of I-5, in areas that were not included in rare plant surveys conducted in 2015; however, this species was not detected during surveys conducted in 2017 or 2021.

4.2.3.2 Project Impacts

Alternatives 1 and 2

Direct permanent or temporary impacts to one San Diego marsh-elder may result from construction of either project alternative, as this individual occurs within the temporary impact area. However, as this one individual occurs as an outlier in an upland, disturbed area, impacts to this individual would not threaten the long-term survival of the on-site, local, or regional populations.

Habitat Enhancement Area

No direct or indirect permanent or temporary impacts to San Diego marsh-elder would result from habitat enhancement activities, as this species was not observed within the Habitat Enhancement Area. In addition, no removal of native plant species is proposed within the Habitat Enhancement Area.

4.2.3.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 7, 8, and 9, described in Sections 4.1.1.3 and 4.2.1.3 above, would avoid and/or minimize impacts to San Diego marsh-elder.

4.2.3.4 Compensatory Mitigation

Restoration and re-establishment of southern riparian scrub and freshwater marsh within temporary work areas in accordance with the Conceptual Mitigation Plan (see Appendix B) will restore suitable habitat for this species and include replacement of impacted individuals.

4.2.3.5 Cumulative Impacts

Implementation of the proposed avoidance and minimization measures and on-site revegetation is anticipated to result in no substantial loss of San Diego marsh-elder from the natural population found on site. Therefore, the project would not contribute to cumulative impacts to this species.

4.2.4 Discussion of Lewis' Evening-primrose

Lewis' evening-primrose is a CRPR 3 species (more information is needed before accurately ranking this species). It is an annual herb in the Onagraceae family that blooms from March to May. This species typically is found in sandy or clay soils associated with coastal dunes as well as in coastal sage scrub, grassland, and foothill woodland habitats with suitable soils. Lewis' evening-primrose is known from southern California in Los Angeles, Orange, Riverside, San Diego, San Luis Obispo, and Ventura counties and into Baja California, Mexico. It is found at elevations between 0 and 985 feet amsl (CNPS 2015, NatureServe 2015).

Known extant populations of this species within San Diego County are scattered with likely only one large population remaining near San Dieguito Lagoon (Reiser 2001). Due to this species' severe decline in San Diego County, any populations of substantial and self-sustaining size should be prioritized for protection (Reiser 2001).

4.2.4.1 Survey Results

A total of 164 individual Lewis' evening-primrose was observed within the BSA in scattered patches in the Diegan coastal sage scrub immediately adjacent to the paved bike path that runs along the southern bank of the San Luis Rey River in 2015 and were observed again during surveys conducted in 2017 and 2021 (see Appendix A: Figures 6a and 6b). Approximately 60 of these individuals occur within the project impact area. All individuals appear to be naturally occurring.

4.2.4.2 Project Impacts

Alternatives 1 and 2

Direct permanent or temporary impacts to approximately 60 Lewis' evening-primrose may result from construction of either project alternative, as these individuals are located within the temporary impact area. The exact count of individuals impacted may vary from this estimate, as this is an annual species whose population fluctuates annually due to variation in weather conditions. Based on 2015 survey results, the potentially impacted individuals represent a maximum of 37 percent of the on-site population. The percentage may be lower if additional individuals are

present within the adjacent, suitable, and unsurveyed areas outside and west of the BSA. To increase the likelihood that this on-site population remains self-sustaining, several measures would be required to avoid, minimize, or mitigate for impacts to this species.

Habitat Enhancement Area

No direct or indirect permanent or temporary impacts to Lewis' evening-primrose would result from habitat enhancement activities, as this species was not observed and is not expected to occur within the Habitat Enhancement Area.

4.2.4.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 7, 8, and 9, described in Sections 4.1.1.3 and 4.2.1.3 above, would avoid and/or minimize impacts to Lewis' evening-primrose.

4.2.4.4 Compensatory Mitigation

Restoration and creation of Diegan coastal sage scrub within temporary work areas in accordance with the Conceptual Mitigation Plan (see Appendix B) will restore suitable habitat for this species and include this species within the plant palette of the Diegan coastal sage scrub seed mix. All available Lewis' evening primrose seed from within the temporary impact areas of the project impact area will be collected prior to project impact. Additional seed from within the project vicinity will be collected and will be no more than 5 percent of the total available seed.

4.2.4.5 Cumulative Impacts

With implementation of the proposed avoidance and minimization measures, and on-site habitat creation and restoration, the project is anticipated to result in no substantial loss of Lewis' evening-primrose from the natural population found on site. Therefore, the project would not contribute to cumulative impacts to this species.

4.2.5 Discussion of Southwestern Spiny Rush

Southwestern spiny rush is a CRPR 4.2 species (limited distribution and moderately threatened in California). It is a rhizomatous herb in the Juncaceae family that blooms from May to June. This species typically is found along ephemeral drainages, alkaline marshes and seeps, mesic areas of coastal dunes, and coastal salt marsh. Southwestern spiny rush is known from southern California in Imperial, Los Angeles, Orange, Santa Barbara, San Diego, San Luis Obispo, and Ventura counties; from Nevada, Arizona, and Georgia; and from Baja California, Mexico; as well as into South America. It is found at elevations between 10 and 2,955 feet amsl. This species is threatened by development and flood control activities (CNPS 2015, NatureServe 2015).

4.2.5.1 Survey Results

A total of 123 individual southwestern spiny rush was observed within the BSA scattered within the non-native riparian community along the northern bank of the San Luis Rey River with many of these individuals remapped during surveys conducted in 2017 and 2021 (see Appendix A: Figures 6a and 6b). All individuals occur outside the project impact area; 120 individuals occur within the Habitat Enhancement Area. All individuals appear to be naturally occurring.

4.2.5.2 Project Impacts

Alternatives 1 and 2

No direct or indirect permanent or temporary impacts to southwestern spiny rush would result from construction of either project alternative, as this species was not observed and is not expected to occur within either project impact area.

Habitat Enhancement Area

No permanent direct impacts are anticipated to occur to southwestern spiny rush as a result of habitat enhancement activities. Temporary direct impacts may occur during habitat enhancement activities (e.g., trampling from pedestrian access, damage to adjacent vegetation during removal of large specimens of non-native species, herbicide overspray). However, these potential temporary impacts would likely be very minor and outweighed by the beneficial effects of removing invasive species from the river system and increasing opportunities for establishment of native species such as southwestern spiny rush. In addition, herbicide would only be applied by a contractor holding a valid State of California Qualified Applicator License in a targeted and controlled manner, as outlined in the Conceptual Mitigation Plan (see Appendix B), decreasing the potential for over-spray or runoff.

4.2.5.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 7, 8, and 9, described in Sections 4.1.1.3 and 4.2.1.3 above, would avoid impacts to southwestern spiny rush by keeping construction activity within approved work limits.

4.2.5.4 Compensatory Mitigation

As no impacts would occur to southwestern spiny rush, no species-specific mitigation is required.

4.2.5.5 Cumulative Impacts

As no impacts would occur to southwestern spiny rush, the project would not contribute to cumulative impacts to this species.

4.2.6 Discussion of Variegated Dudleya

Variegated dudleya is a CRPR 1B.2 species (moderately threatened in California and elsewhere). It is a perennial herb in the Crassulaceae family that typically blooms from May to June. It occurs in coastal sage scrub, grassland, and chaparral habitats below 500 feet. It usually grows in stony places lacking shrub cover, on isolated rocky substrate in grasslands, and on mima mounds near vernal pools. It often occurs on gravelly loam soils (Reiser 2001). Variegated dudleya is known from San Diego County to Baja California, Mexico. Urban growth, development, and road construction threatens the continued existence of variegated dudleya in San Diego County (Reiser 2001; CNPS 2015, NatureServe 2015).

4.2.6.1 Survey Results

Two individual variegated dudleya were observed in the disturbed Diegan coastal sage scrub along the trail that runs along the northern bank of the San Luis Rey River east of I-5 (see Appendix A: Figures 6a and 6b), within the BSA but outside the project impact area. These individuals were only

identified during the 2017 rare plant survey within a larger patch of sticky dudleya. These individuals were not relocated during the 2021 survey, although it is assumed that they are still present within the survey area.

4.2.6.2 Project Impacts

Alternatives 1 and 2

Potential direct or indirect permanent or temporary impacts may occur to variegated dudleya from construction of either project alternative, as this species has potential to occur within the northeastern edge of the project impact area.

Habitat Enhancement Area

No direct or indirect permanent or temporary impacts to variegated dudleya would result from habitat enhancement activities, as this species was not observed and is not expected to occur within the Habitat Enhancement Area.

4.2.6.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 7, 8, and 9 described in Sections 4.1.1.3 and 4.2.1.3 above, would avoid and/or minimize impacts to variegated dudleya.

4.2.6.4 Compensatory Mitigation

Restoration and creation of Diegan coastal sage scrub within temporary work areas in accordance with the Conceptual Mitigation Plan (see Appendix B) will restore suitable habitat for this species.

4.2.6.5 Cumulative Impacts

Implementation of the proposed avoidance and minimization measures and on-site creation and restoration is anticipated to result in no substantial loss of variegated dudleya from the natural population found on-site. Therefore, the project would not contribute to cumulative impacts to this species.

4.2.7 Discussion of Nuttall's Acmispon

Nuttall's acmispon is a CRPR 1B.1 species (seriously threatened in California and elsewhere), and an MHCP-covered species. It is a prostrate annual or biennial herb in the Fabaceae family that blooms from March to June. Nuttall's acmispon is distributed coastally in San Diego County and Baja California below 100 feet elevation. Coastal dunes, particularly protected back dunes, are the preferred habitat for this species (Reiser 2001). In San Diego County it has been found from Border Fields State Park to north of the Santa Margarita River on Camp Pendleton (Reiser 2001). Nuttall's acmispon is threatened by development, non-native plants, land management activities, and recreational use of beaches (CNPS 2012).

4.2.7.1 Survey Results

A total of two individual Nuttall's acmipson was observed adjacent to the BSA in in the Diegan coastal sage scrub immediately adjacent to the paved bike path that runs along the southern bank of the San Luis Rey River (see Appendix A: Figures 6a and 6b). Three individuals were detected

during surveys conducted in 2021, both within and adjacent to the BSA in the same general vicinity. All individuals appear to be naturally occurring.

4.2.7.2 Project Impacts

Alternatives 1 and 2

Direct permanent or temporary impacts to approximately three Nuttall's acmispon may result from construction of either project alternative, as several of these individuals are located within the temporary impact area. The exact count of individuals impacted may vary from this estimate, as this is an annual species whose population fluctuates annually due to variation in weather conditions. To increase the likelihood that this on-site population remains self-sustaining, several measures would be required to avoid, minimize, or mitigate for impacts to this species.

Habitat Enhancement Area

No direct or indirect permanent or temporary impacts to Nuttall's acmispon would result from habitat enhancement activities, as this species was not observed and is not expected to occur within the Habitat Enhancement Area.

4.2.7.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 7, 8, and 9, described in Sections 4.1.1.3 and 4.2.1.3 above, would avoid and/or minimize impacts to Nuttall's acmispon.

4.2.7.4 Compensatory Mitigation

Restoration and creation of Diegan coastal sage scrub within temporary work areas in accordance with the Conceptual Mitigation Plan (see Appendix B) will restore suitable habitat for this species and include this species within the plant palette of the Diegan coastal sage scrub seed mix. All available seed from within the temporary impact areas of the project impact area will be collected prior to project impact. Additional seed from within the project vicinity will be collected and will be no more than 5 percent of the total available seed.

4.2.7.5 Cumulative Impacts

With implementation of the proposed avoidance and minimization measures, and on-site habitat creation and restoration, the project is anticipated to result in no substantial loss of Nuttall's acmispon from the natural population found on site. Therefore, the project would not contribute to cumulative impacts to this species.

4.3 Special Status Animal Species Occurrences

Wildlife species are considered sensitive if they (1) are listed by state or federal agencies as threatened or endangered or are proposed for listing; (2) are state Species of Special Concern or Fully-Protected; (3) are covered under the North County MHCP (AMEC Earth & Environmental, Inc. et al. 2003); or (4) are considered rare, endangered, or threatened by the State of California (CDFW 2023 c and d), CNDDB (see Appendix C), or local conservation organizations or specialists.

Raptors (birds of prey) and active raptor nests are protected by the CFGC 3503.5, which states that it is "unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird" unless authorized.

As reported in Appendices L through N and shown on Appendix A: Figures 6a and 6b, the following special status wildlife species were detected within the BSA during 2015, 2017, and 2021 focused surveys: light-footed Ridgway's rail, yellow warbler, western least bittern, olive-sided flycatcher, Clark's marsh wren, yellow-breasted chat, least Bell's vireo, and coastal California gnatcatcher. The following sections provide the results of focused surveys, impact analyses, and avoidance, minimization, and mitigation measures for these species.

Survey work, impact analyses, and avoidance, minimization, and mitigation measures for an additional nine species or groups of species with potential to occur or with mapped critical habitat within the BSA are also provided in the following sections. These species include tidewater goby; southern steelhead; groundfish, pelagic fish, and other Pacific coast salmon species; special status reptiles; southwestern willow flycatcher; migratory birds and raptors; western mastiff bat; and Pacific pocket mouse (*Perognathus longimembris pacificus*).

The remaining federally listed species that were identified on the USFWS and NMFS lists (see Appendix C) are only addressed in Table 3, as no suitable habitat for these species was identified within the BSA: San Diego fairy shrimp (*Branchinecta sandiegonensis*), Riverside fairy shrimp (*Streptocephalus woottoni*), California least tern, western snowy plover, and Stephens' kangaroo rat (*Dipodomys stephensi*). For the avian species, suitable foraging habitat may occur within the BSA, but no suitable *nesting* habitat was identified within or adjacent to the BSA.

4.3.1 Discussion of Tidewater Goby

The tidewater goby is a small fish (less than 50 millimeters or 2.0 inches standard length) that primarily inhabits the benthic waters of coastal estuaries, lagoons, and marshes of California. Its habitat is characterized by shallow, brackish basins, usually in areas of reduced tidal influence (Swift et al. 1989). The tidewater goby exhibits a preference for a sand substrate component for breeding, but this species is also found on rocky, mud, and silt substrates. The tidewater goby lives to about one year of age and generally spends its entire life within estuaries, lagoons, or in freshwater habitats adjacent to these bodies of water (Swift et al. 1989). As part of its annual life cycle, this species can occur in high densities one year and be virtually absent in another.

The tidewater goby enters marine environments primarily through flushing events that are associated with the breaching of sandbars following high rainfall periods. These flushing events are thought to be the primary means for previously unoccupied habitats to be colonized (Lafferty et al. 1999). The tidewater goby is known to persist at least for short periods over a wide range of environmental conditions. These conditions include freshwater to hypersaline conditions (0 to 55 parts per thousand salinity), both anoxic and hypoxic conditions (dissolved oxygen ranging from 1.5 to 20.0 milligrams per liter), varied water depths from 25 to 200 centimeters (9.8 to 78.7 inches), and water temperatures from 8.0 to 35 degrees Celsius or 46 to 95 degrees Fahrenheit (USFWS 2007).

The tidewater goby has been documented in at least 135 localities; however, in recent years, several of these documented populations have been considered extirpated or in decline (USFWS 2005). Various factors have led to the decline of this species, including the introduction of non-native species and habitat degradation. Because of the population declines and current threats to this species, the USFWS listed the tidewater goby as endangered in 1994 under the ESA. In 2005, the San Luis Rey River was identified as a potential reintroduction site in the Tidewater Goby Recovery Plan (USFWS 2005), and in 2013, it was designated as critical habitat for the species (USFWS 2013a).

4.3.1.1 Survey Results

Historically, tidewater goby has been known to occur in the San Luis Rey River; however, focused survey work has been limited. Between 2000 and 2021, results of tidewater goby surveys in the San Luis Rey River have mostly been negative, with no tidewater goby detected in 2000, 2011, 2013 (MBC Applied Environmental Sciences 2000), or 2015, 2017, or 2021 (see Appendix H). However, tidewater goby was detected in the San Luis Rey River in 2010 (Lafferty, 2010 as cited in USFWS 2013b).

With the high storm flows in the 2016–2017 wet season, the connection between the San Luis Rey River and Pacific Ocean has at least temporarily been restored, as seen in January 2017 aerial imagery and again confirmed during a site visit in March 2017. Between 2017 and 2021, the mouth was closed during the fall of 2018, but reopened during the fall/winter of both 2019 and 2020. The mouth was closed during the 2021 surveys (see Appendix H). Tidewater goby has shown an ability to recolonize sites that are in close proximity to known occupied sites, and thus with periodic breachings, there is some potential for this species to re-establish within the San Luis Rey River during the years when the mouth is open.

Designated Final Critical Habitat (FCH) for tidewater goby is mapped along the San Luis Rey River within the BSA (Appendix A: Figure 8). The physical or biological features required for tidewater goby is defined as:

(1) Persistent, shallow (in the range of approximately 0.3 to 6.6 feet (0.1 to 2 meter), still-to-slow-moving lagoons, estuaries, and coastal streams with salinity up to 12 parts per thousand, which provide adequate space for normal behavior and individual and population growth that contain one or more of the following:

   (a) Substrates (e.g., sand, silt, mud) suitable for the construction of burrows for reproduction;

   (b) Submerged and emergent aquatic vegetation, such as *Potamogeton pectinatus*, *Ruppia maritima*, *Typha latifolia*, and *Scirpus* spp., that provides protection from predators and high flow events; or

   (c) Presence of a sandbar(s) across the mouth of a lagoon or estuary during the late spring, summer, and fall that closes or partially closes the lagoon or estuary, thereby providing relatively stable water levels and salinity (USFWS 2013a).

At the time of 2021 protocol surveys, the portion of the San Luis Rey River downstream of the Coast Highway Bridge contained very few areas of suitable tidewater goby habitat upstream or downstream of the proposed project site, which requires soft mud or soft sand for gobies to create burrows. The dominant habitat observed included hard compact sand, rooted vegetation and desiccated rooted vegetation. The physical or biological features were present with water depths less than 2 meters (6.6 feet), submergent and emergent vegetation, and the sandbar at the river mouth, which at the time of the survey was completely closing off the lagoon from the ocean.

4.3.1.2 Project Impacts

Alternatives 1 and 2

The San Luis Rey River is not currently considered occupied by tidewater goby. If no tidewater goby are present within the San Luis Rey River at the time of bridge construction, no direct or indirect impacts are anticipated to occur to this species.

If this species is present within the river at the time of bridge construction, potential direct impacts to the species may occur during pile driving and construction of the temporary falsework and trestle piles that take place within the open water of the river. As tidewater goby is a resident species within estuarine or tidal habitats, direct impacts have potential to occur year-round. However, the likelihood of direct mortality is low, as individual juvenile and adult fish are mobile and would likely be able to avoid slow moving project activity within the water column. Burrows that support eggs may occur within the immediate work area. However, as the best quality habitat for this species occurs closest to the river mouth, outside the project impact area, the potential for burrows is greater downstream and outside the project impact area. The permanent footprint of the piles (110 square feet total) is not anticipated to result in a substantial loss of suitable breeding habitat.

Hydroacoustic effects from in-water pile driving may also directly impact this species. In general, potential effects of pile driving noise range from behavioral changes (e.g., startle response, avoidance of noise sources) to physical injury (e.g., auditory and non-auditory tissue damage, hearing loss) to mortality. As shown in the bioacoustics technical memorandum prepared for this project (Appendix I), the projected peak pressure levels and accumulated sound exposure level (SEL) may exceed the NMFS cumulative SEL of 183 decibels (dB) (for fish less than 2 grams), for up to 681 feet from each pile within the water; which equates to all open within the project impact area. Pile driving activities are temporary and sporadic and will be completed within a window of approximately 10 days. Survey results indicate this species is not currently present and that the best quality habitat for this species is nearest the river mouth, outside the project impact area; however, impacts could occur if any individuals were to recolonize the area prior to the start of construction.

Indirect temporary impacts may also occur as a result of construction activity if hazardous materials, sediment, or other construction-related runoff enters the river. Release of pollutants or sedimentation may reduce water quality, which could have an adverse effect on fish within and downstream of the project impact area.

No long-term impacts are anticipated to occur to this species as a result of either project alternative. Whichever bridge alignment or configuration is chosen, the replacement bridge will not prevent movement of aquatic species along the San Luis Rey River and is not anticipated to have any long-term effect on water quality or flow.

Although each project alternative may result in direct permanent and temporary impacts to designated FCH for tidewater goby, the bridge replacement will result in no net loss of open water or streambed, and impacted vegetation will be restored on site. Therefore, no permanent loss of breeding habitat is anticipated. All temporarily impacted areas will be returned to pre-construction conditions upon project completion.

Habitat Enhancement Area

No direct permanent impacts to tidewater goby are anticipated as a result of habitat enhancement activities.

No direct temporary impacts are anticipated as a result of enhancement activities. Any herbicide used would be approved for use within wetland habitats. If substantial biomass removal and ground disturbance is required, appropriate BMPs will be implemented within mitigation areas to prevent runoff from the site, as discussed in the Conceptual Mitigation Plan (see Appendix B).

4.3.1.3 Avoidance and Minimization Efforts

If tidewater goby is determined to be absent from the San Luis Rey River at the time of construction, no species-specific avoidance or minimization measures are required.

If tidewater goby is determined to be present within the San Luis Rey River at the time of construction, implementation of BIO-1 through BIO-5, described in Section 4.1.1.3 above, would avoid and/or minimize adverse effects on water quality, which could result in indirect impacts to tidewater goby. The following additional measure is included to address potential direct impacts to the species:

> BIO-10. The season prior to conducting work within the water of the San Luis Rey River, a team of qualified biologists, including at least one USFWS 10(a)(1)(A) permitted tidewater goby biologist, shall conduct fish surveys according to the USFWS Tidewater Goby Survey Protocol (USWFS 2006a) prior to initiation of work within the river. This will include two sampling periods between July 1 and October 31, at least 30 days apart. Additionally, the protocol states:
>
> > If gobies are not found within the two survey periods, and the project will not be completed within 60 days of the last survey, a pre-project clearance survey may be required for any part of the proposed project area that may affect the tidewater goby. The need for this survey will be evaluated on a case-by-case basis between the applicant and our field office [USFWS] that has jurisdiction over the area of interest.

If tidewater goby is determined to be present within the San Luis Rey River, pile driving and construction of the bridge piles should take place behind a system of cofferdams and bubble curtains. Cofferdams will be installed along the banks of the river for work around the piers and supports on land while bubble curtains will be used for work on the piers and supports within the

river. A 40-foot-wide channel shall be maintained within the middle of the existing river channel. Waters within the cofferdam shall be seined/pumped through fish screens by a qualified biologist during dewatering to remove and return any native fish to the river.

4.3.1.4 Compensatory Mitigation

No species-specific compensatory mitigation is proposed. Restoration of temporary work areas to pre-construction conditions will avoid impacts to this species beyond those that may occur during construction activities.

4.3.1.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to tidewater goby. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to this species. As all potential project impacts to this species and its habitat are temporary, the project it is not expected to substantially contribute to cumulative impacts.

4.3.2 Discussion of Southern Steelhead

The southern California steelhead Distinct Population Segment, including all naturally spawned populations of steelhead (and their progeny) in streams from the Santa Maria River to Malibu Creek, were listed as federally endangered in 1997, as a result of major population reductions region-wide (USFWS 1997b). A Southern Range Extension to include streams as far south as San Diego County was promulgated on May 1, 2002 (USFWS 1999), and reaffirmed January 5, 2006 (USFWS 2006b). The Southern California Steelhead Recovery Plan (NMFS 2012) designates the San Luis Rey River watershed as a high priority for recovery of the species. Under the plan, the immediate objectives are to increase steelhead abundance and to preserve the variety of life history strategies that characterize steelhead populations. To meet these objectives, the plan uses a Threat Assessment Process to identify, prioritize, and compare threats among southern California watersheds and to examine the possibilities for mitigation. As a result of this process, the plan categorizes the San Luis Rey River as a high priority, or Core 1, basin. Core 1 population designation is based on several factors, including:

> …the intrinsic potential of the population in an unimpaired condition, the role of the population in meeting the spatial and/or redundancy viability criteria, the conditions of the population, the severity of threats facing the populations, the potential ecological or genetic diversity the watershed and population could provide to the species, and the capacity of the watershed and population to respond to the critical recovery actions needed to abate those threats. Core 1 populations form the nucleus of the recovery strategy (NMFS 2012).

However, there are many obstacles to steelhead recovery in the San Luis Rey River. Most notably, the over-allocation of water diversions in the basin not only results in less than suitable spawning, rearing, and passage flows in the main-stem San Luis Rey River but also results in premature (on a seasonal basis) dewatering of many miles of main-stem channel. These, combined with agricultural crossings and other barriers resulting either from (1) lower than suitable instream flows caused by upstream diversion, (2) historic channel modifications throughout the basin from agricultural or industrial practices, or (3) gravel mining operations that have acted to reroute the San Luis Rey stream flows into the old Fenton ponds, have further exacerbated the problem of successful upstream passage of adult steelhead, which is currently only infrequently possible during years of high flow.

4.3.2.1 Survey Results

As summarized in Appendix H, historically, reports of steelhead in the San Luis Rey River were largely anecdotal. One of the most recent detections of this species in the San Luis Rey River was from 2007 and included an observation of an adult steelhead in a pool near College Avenue, approximately seven miles upstream of the Coast Highway Bridge. No southern steelhead were detected during fish surveys conducted in 2000 (MEC Analytical Systems, Inc. 2003), 2015, 2017, and 2021 (see Appendix H).

Based on 2015, 2017, and 2021 survey results, the BSA lacks suitable spawning and rearing habitats for southern steelhead. The BSA would likely only serve as a movement corridor during sustained periods of high flow through which adult southern steelhead could migrate upstream in search of spawning habitat in the upper San Luis Rey River tributaries or juveniles may pass from upstream rearing habitat to the Pacific Ocean. With the periodic reconnection of the river to the ocean over the last few years during high storm flows, conditions may have been suitable to allow for movement of salmonids through the BSA; however, during 2021 the connection remained closed. In addition, due to the less than suitable spawning and/or rearing habitat and inconsistent passage flows, and lack of large enough source population or nearby refugia populations, the likelihood of occurrence/re-colonization for this species remains low (see Appendix H).

The portion of the San Luis Rey River that lies within the BSA is located within an EFH designation for Pacific Coast Salmon (Pacific Fishery Management Council [PFMC] 2014a).

4.3.2.2 Project Impacts

Alternatives 1 and 2

The San Luis Rey River is not currently considered occupied by southern steelhead. If no southern steelhead are present within the San Luis Rey River at the time of bridge construction, no direct or indirect impacts are anticipated to occur to this species.

If southern steelhead are present within the San Luis Rey River at the time of bridge construction, potential direct impacts may occur during pile driving and construction of the temporary falsework and trestle piles that take place within the open water of the river. The BSA represents a movement corridor that would mostly be used during adult and juvenile migrations. Therefore, direct impacts would only have potential to occur during migration, which typically occurs between October and June. In addition, the likelihood of direct mortality is low, as this species has a low potential to

occur within the BSA. In addition, individual juvenile and adult fish are mobile and would likely be able to avoid slow moving project activity within the water column. No direct impact to spawning habitat is anticipated, as no suitable spawning habitat was identified within the project impact area.

Hydroacoustic effects from in-water pile driving may also directly impact this species. In general, potential effects of pile driving noise range from behavioral changes (e.g., startle response, avoidance of noise sources) to physical injury (e.g., auditory and non-auditory tissue damage, hearing loss) to mortality. As shown in the bioacoustics technical memorandum prepared for this project (see Appendix I), the projected peak pressure levels and accumulated SEL may exceed the NMFS cumulative SEL of 187 dB (for fish greater than 2 grams), for up to 369 feet from each pile in the water, which equates to all open water within the project impact area. Pile driving activities are temporary and sporadic and will be completed within a window of approximately 10 days. Survey results indicate this species is not currently present and that the best quality habitat for this species is nearest the river mouth, outside the project impact area; however, impacts could occur if any individuals were to recolonize the area prior to the start of construction.

Indirect temporary impacts may also occur as a result of construction activity if hazardous materials, sediment, or other construction-related runoff enters the river. Release of pollutants or sedimentation may reduce water quality, which could have an adverse effect on fish within and downstream of the project impact area.

No long-term impacts are anticipated to occur to this species of EFH as a result of either project alternative. Whichever bridge alignment or configuration is chosen, the replacement bridge will not prevent movement of aquatic species along the San Luis Rey River and is not anticipated to have any long-term effect on water quality or flow.

Habitat Enhancement Area

No direct permanent impacts to southern steelhead are anticipated as a result of habitat enhancement activities.

No direct temporary impacts are anticipated as a result of enhancement activities. Any herbicide used would be approved for use within wetland habitats. If substantial biomass removal and ground disturbance is required, appropriate BMPs will be implemented within mitigation areas to prevent runoff from the site, as discussed in the Conceptual Mitigation Plan (Appendix B).

4.3.2.3 Avoidance and Minimization Efforts

If southern steelhead is determined to be absent from the San Luis Rey River at the time of construction, no species-specific avoidance or minimization measures are required.

If southern steelhead is determined to be present within the San Luis Rey River at the time of construction, implementation of BIO-1 through BIO-5, described in Section 4.1.1.3 above, would avoid and/or minimize adverse effects on water quality, which could result in indirect impacts to this species. The following additional measure is included to further address potential direct impacts to the species:

BIO-11. Focused surveys for steelhead will be conducted concurrently with tidewater goby surveys the season prior to start of construction (see BIO-10). In addition, up to 7 days prior to conducting work within the water of the San Luis Rey River, a team of qualified biologists, shall conduct focused fish surveys according to the accepted protocols. If southern steelhead is determined to be present within the San Luis Rey River, in-water pile driving should take place between July 1 and September 30 to the greatest extent possible in order to avoid or minimize work within the principal migration period of southern steelhead.

Pile driving and construction of the bridge piles should take place behind a system of cofferdams and bubble curtains. Cofferdams will be installed along the banks of the river for work around the piers and supports on land while bubble curtains will be used for work on the piers and supports within the river. A 40-foot-wide channel shall be maintained within the middle of the existing river channel. Waters within the cofferdam shall be seined/pumped through fish screens by a qualified biologist during dewatering to remove and return any native fish to the river.

4.3.2.4 Compensatory Mitigation

No species-specific compensatory mitigation is proposed. Restoration of temporary work areas to pre-construction conditions will avoid impacts to this species beyond those that may occur during construction activities.

4.3.2.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to southern steelhead. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to this species. As the proposed project only has potential to result in temporary impacts to individuals of this species with no impacts to spawning habitat, the project is not expected to substantially contribute to cumulative impacts.

4.3.3 Discussion of Groundfish, Pelagic Fish, and Other Pacific Coast Salmon Species

The Magnuson-Stevens Act defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth and maturity." The portion of the San Luis Rey River that lies within the BSA is located within an EFH designation for the following three Fishery Management Plans: Pacific Coast Groundfish (PFMC 2014b), Coastal Pelagic Species (PFMC 2011), and Pacific Coast Salmon (PFMC 2014a).

4.3.3.1 Survey Results

Because the river was closed off from the Pacific Ocean and lacked a marine influence when surveys were conducted in 2017 and 2021, the species managed under the EFH designations were not expected to be present in the BSA at that time (see Appendix I). However, as seen on historic

aerial imagery, the sandbar at the mouth of the San Luis Rey River has opened temporarily over the years. In the event the San Luis Rey River experiences periods of sustained tidal marine influence, a low potential exists for EFH species to be present. These species would likely include coastal pelagic species, such as northern anchovy (*Engraulis mordax*) and Pacific sardine (*Sardinops sagax*). There is a minimal expectation that groundfish species or salmon species would likely be present even if the lagoon were open to tidal influences.

4.3.3.2 Project Impacts

Alternatives 1 and 2

Alternative 1 would result in direct temporary impacts to 0.80 acre of open water and streambed and Alternative 2 would result in direct temporary impacts to 0.83 acre of open water and streambed, with no net permanent impact for either alternative. No other permanent modifications to the main river channel (supporting standing or flowing water) are proposed, and all temporary impact areas will be revegetated and re-contoured to pre-construction conditions.

Indirect temporary impacts may also occur as a result of construction activity if hazardous materials, sediment, or other construction-related runoff enter the river. Release of pollutants or sedimentation may reduce water quality, which could have an adverse effect on fish within and downstream of the project impact area.

Habitat Enhancement Area

No direct permanent impacts to fish or fish habitat are anticipated as a result of habitat enhancement activities.

No direct temporary impacts are anticipated as a result of enhancement activities. Any herbicide used would be approved for use within wetland habitats. If substantial biomass removal and ground disturbance is required, appropriate BMPs will be implemented within mitigation areas to prevent runoff from the site, as discussed in the Conceptual Mitigation Plan (Appendix B).

4.3.3.3 Avoidance and Minimization Efforts

Implementation of BIO-1 through 5, 10, and 11, described in Sections 4.1.1.3, 4.3.1.3, and 4.3.2.3 above, would avoid and/or minimize adverse effects on water quality and direct impacts to fish species.

4.3.3.4 Compensatory Mitigation

No species-specific compensatory mitigation is proposed. Restoration of temporary work areas to pre-construction conditions will avoid impacts to this species beyond those that may occur during construction activities.

4.3.3.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to fish species. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts. As the proposed project only has potential to result in temporary impacts to fish habitat, the project is not expected to substantially contribute to cumulative impacts.

4.3.4 Discussion of Special Status Reptiles

The following four special status reptile species have moderate to high potential to occur within the BSA: Coronado skink (*Eumeces skiltonianus interparietalis*), two-striped garter snake (*Thamnophis hammondii*), south coast garter snake (*T. sirtalis* ssp. *novum*), and red-diamond rattlesnake (*Crotalus ruber*).

Coronado skink is a CDFW Species of Special Concern. The Coronado skink ranges from central Riverside County south to Baja California, Mexico (Jennings and Hayes 1994). In San Diego County, the Coronado skink is found in a variety of plant communities including grassland, open woodland, forest, and broken chaparral habitats and is often associated with mesic areas. The Coronado skink is diurnal and most active from early spring until fall; breeding occurs in June or July (Jennings and Hayes 1994). The diet of the Coronado skink consists of moths, beetles, crickets, grasshoppers, and leafhoppers. This species is threatened by habitat loss and fragmentation resulting from urbanization and agriculture.

Two-striped garter snake is a CDFW Species of Special Concern. It ranges from San Luis Obispo County south to El Rosario in Baja California, Mexico, from sea level to 8,000 feet (Jennings and Hayes 1994). It is normally found in or near permanent fresh water, inhabiting streams, ponds, and lakes throughout its range (Stebbins 2003) and can even be found in vernal pools. The two-striped garter snake inhabits riparian areas during spring and summer, and moves to adjacent coastal sage scrub and grasslands during the winter (Jennings and Hayes 1994). The two-striped garter snake begins breeding in April and continues throughout the summer months. Adults feed on tadpoles, toads, insect larvae, fish, fish eggs, and earthworms. Population declines in the two-striped garter snake are generally attributable to impacts related to the loss of natural wetlands and increased development near and within suitable habitat.

Common garter snake (*Thamnophis sirtalis*, southern populations) is a CDFW Species of Special Concern. This species was historically known from localities along the southern coastal plain from the Santa Clara River Valley in Ventura County to around San Pasqual in San Diego County; however, distribution is thought to have drastically been reduced. Of six extant locations reported in 1994, several are thought to be extirpated, with only populations near Lake Henshaw and Santa Clara River are thought to remain (Thompson and Shaffer 2016). However, several individuals were reported in CNDDB along the San Luis Rey River in 2006 and 2009, north of Foussat Road, approximately 3 miles upstream from the project area (see Appendix C). The historical elevation range is from near sea level to approximately 2,700 feet at Lake Henshaw in San Diego County. This species is thought to be restricted in southern California to marsh and upland habitats near permanent water and riparian vegetation and may avoid restored marshlands. Population declines in the common garter snake are generally attributable to anthropogenic and natural habitat loss, e.g., urbanization, flooding (Thompson and Shaffer 2016).

Red diamond rattlesnake is a CDFW Species of Special Concern. This species occurs from sea level to about 4,000 to 5,000 feet on both sides of the Peninsular Ranges from southern San Bernardino County south through western Riverside and San Diego counties to Baja California, Mexico (Jennings and Hayes 1994). It inhabits coastal sage scrub, chaparral, and pinyon–juniper woodland particularly where there are abundant rock outcrops (Jennings and Hayes 1994; Lemm 2006). This species is active year round with peak activity occurring in April and May, and breeding from February through September (Jennings and Hayes 1994). Its diet consists principally of small mammals, lizards, birds, and other snakes. Population declines of the red diamond rattlesnake are generally attributable to a reduction of habitat in the snake's restricted range due to urbanization and agriculture.

4.3.4.1 Survey Results

No special status reptile species were observed during any of the surveys conducted in 2015, 2017, or 2021.

No historical occurrence records for Coronado skink exist within two miles of the project impact area. However, suitable habitat is present within and adjacent to the BSA for this species. The open to dense scrub habitat and wooded areas adjacent to water provide suitable habitat for Coronado skink.

County of San Diego (2021) and CNDDB (see Appendix C) database records existing for two-striped garter snake, common garter snake, and red-diamond rattlesnake record these species in the vicinity of the BSA. For two-striped garter snake and common garter snake, the BSA provides a permanent water source with freshwater marsh and riparian scrub habitats for refuge and foraging. The Diegan coastal sage scrub and disturbed Diegan coastal sage scrub provide suitable habitat for red-diamond rattlesnake.

4.3.4.2 Project Impacts

Vegetation removal, grubbing, grading, and excavation activities associated with the proposed project may result in direct impacts to individual Coronado skink, two-striped garter snake, common garter snake, and red-diamond rattlesnake. Direct impacts to vegetation communities on site may also result in indirect impacts to special status reptile species through removal of suitable habitat.

Alternatives 1 and 2

Although direct impacts to special status reptile species have potential to occur, these impacts would occur within a small amount of habitat relative to the available habitat along the river corridor, and much of the impacted habitat is already subject to ongoing disturbance from activity associated with the bike path and transients. Therefore, the number of affected individuals would likely be very low, and this loss would not likely impact the regional long-term survival of Coronado skink, common garter snake, two-striped garter snake, or red-diamond rattlesnake.

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.02 acre of freshwater marsh, 0.07 acre of disturbed southern riparian scrub, 0.23 acre of non-native riparian, and 0.11 acre of Diegan coastal sage scrub; and direct temporary impacts to 0.09 acre freshwater marsh, 0.65 acre disturbed riparian scrub, 0.42 acre non-native riparian, 1.00 acre Diegan coastal sage scrub, and 0.17 acre disturbed Diegan coastal sage scrub. This would result in removal of potentially suitable habitat for special status reptile species. However, implementation of the Conceptual Mitigation Plan (see Appendix B) would result in no net loss of native vegetation on site; therefore, only a temporal loss of habitat would result.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.02 acre of freshwater marsh, 0.19 acre of disturbed southern riparian scrub, 0.19 acre of non-native riparian, and 0.23 acre of Diegan coastal sage scrub; and direct temporary impacts to 0.08 acre freshwater marsh, 0.53 acre disturbed riparian scrub, 0.46 acre non-native riparian, 0.88 acre Diegan coastal sage scrub, and 0.17 acre disturbed Diegan coastal sage scrub. This would result in removal of potentially suitable habitat for special status reptile species. However, implementation of the Conceptual Mitigation Plan (see Appendix B) would result in no net loss of native vegetation on site; therefore, only a temporal loss of habitat would result.

Habitat Enhancement Area

No permanent direct impacts are anticipated to occur to special status reptile species as a result of habitat enhancement activities. Temporary direct impacts to suitable habitat may occur during habitat enhancement activities (e.g., trampling from pedestrian access, damage to vegetation during removal of large specimens of non-native species, herbicide overspray). However, these potential temporary impacts would likely be very minor and outweighed by the beneficial effects of removing invasive species from the river system and increasing the quality of on-site habitat.

4.3.4.3 Avoidance and Minimization Efforts

Implementation of BIO-1 and BIO-2, described in Section 4.1.1.3 above, would minimize direct impacts to special status reptile species so that no substantial long-term adverse effects would occur to survival of the local or regional populations of Coronado skink, common garter snake, two-striped garter snake, or red-diamond rattlesnake.

4.3.4.4 Compensatory Mitigation

No species-specific compensatory mitigation is proposed. Creation, restoration, and re-establishment of habitat in temporary work areas would restore on-site suitable habitat for these species.

4.3.4.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to special status reptile species. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to suitable habitat for these species. Considering the amount of habitat available for these species in the region relative to the amount of temporarily impacted habitat in the BSA, with implementation of the avoidance, minimization, and mitigation measure detailed above, the project will not substantially contribute to cumulative effects for special status reptile species.

4.3.5 Discussion of Light-footed Ridgway's Rail

Light-footed Ridgway's rail is federally and state listed as endangered, a CDFW fully-protected species, and an MHCP-covered species. Light-footed Ridgway's rail is a slender, tawny-breasted bird with grayish edges on brown centered back feathers, olive wing coverts, vertical white bars on the flanks, a white stripe over the eye, and a partially orange bill. This species occurred historically along the coast of southern California from Carpinteria Marsh in Santa Barbara County south to San Quintín, Baja California, Mexico (Grinnell and Miller 1944, USFWS 1994a).

The light-footed Ridgway's rail is a permanent resident of coastal salt marsh traversed by tidal sloughs, usually characterized by cordgrass (*Spartina foliosa*) and pickleweed (*Salicornia* spp.) (Grinnell and Miller 1944, USFWS 1994a). Light-footed Ridgway's rail have also nested in freshwater marsh characterized by cattails (*Typha* sp.) and bulrush at Buena Vista, Agua Hedionda, Batiquitos, San Elijo, and San Dieguito Lagoons in San Diego County (Zembal et al. 2014; and in spiny rush (*Juncus acutus*) at Naval Air Station Point Mugu.

Light-footed Ridgway's rail forages primarily on crustaceans when present. They will also feed on mollusks, small fish, aquatic insects, grasshoppers, small vertebrates, and in some cases, seeds (Eddleman and Conway 1998). Light-footed Ridgway's rail forages within emergent vegetation or along the ecotone between mudflats and marsh (Zembal and Fancher 1988), and in the central drains of tidal creeks at low tide. Surface gleaning and shallow probing comprise approximately 90 percent of foraging time, while probing deep into the substrate occurs infrequently (Zembal and Fancher 1988).

Populations of light-footed Ridgway's rail have undergone decline in the U.S. due to the rail's limited distribution and destruction and degradation of coastal salt marsh habitat. The statewide population in 2020 was reported to be 362 pairs in 19 marshes, which represents a decline from the all-time high of 656 pairs in 2016 and 514 pairs in 2017 (Zembal et al. 2020). The 2020 total is only slightly more the 308 pairs in 2019, which represents the lowest total reported since 2009. Forty-one percent of the 2020 pairs were found in two coastal salt marsh complexes at Upper Newport Bay and the Tijuana Marsh National Wildlife Refuge.

Described as "formerly common in all coastal marshes" by Grinnell and Miller (1944), the light-footed Ridgway's rail has not been a common bird species at San Luis Rey River in recent history. Since the light-footed Ridgway's rail range-wide survey was initiated in 1980, this species has been detected at the river mouth, main river channel, and Guajome Lake. Only one pair was detected in 1992 in the freshwater marsh at the river mouth. At Guajome Lake, one pair was mapped in 1983, and two pairs were detected in 1984 (Zembal et al. 2014).

4.3.5.1 Survey Results

Recent detections of light-footed Ridgway's rail within or adjacent to the BSA have been restricted to the north side of the San Luis Rey River, west of the Coast Highway Bridge. One pair of light-footed Ridgway's rail was detected on the north side of the San Luis Rey River bank between I-5 and the railroad tracks in 2014 (Zembal et al. 2014), and one pair of light-footed Ridgway's rail was detected in the same vicinity (in the BSA) during 2015 protocol surveys (see Appendix A: Figures 6a and 6b; Appendix J). No light-footed Ridgway's rails were detected in either the 2017 or the 2021 surveys (see Appendix J).

Surveys of the lower reach of the San Luis Rey River between I-5 and College Boulevard, approximately seven miles upstream, have occurred annually since 2010. One pair of light-footed Ridgway's rail was detected in the upstream reach of the San Luis Rey River in 2010 near Foussat Road. One advertising male and one single clappering rail were also detected during a 2010 survey farther upstream. Three pairs of light-footed Ridgway's rail were detected in 2011. Three pairs and one advertising male were detected in 2012, and four pairs were detected in 2013 and 2014 (Konecny 2014, Zembal et al. 2014). The closest detection east of the Coast Highway Bridge in 2015 was approximately two miles upstream (Konecny Biological Services 2015). In 2016, no light-footed Ridgway's rail were detected between the Coast Highway Bridge and College Boulevard (Konecny Biological Services 2016) and surveys conducted in 2020 reported that there have been no detection of breeding rails since 2015 (Konecny Biological Services 2020).

The large stand of freshwater marsh that occurs north of the river and west of the Coast Highway Bridge is considered occupied by light-footed Ridgway's rail based on presence of suitable habitat and historic detection. In addition, all areas of adjacent non-native riparian are considered foraging/refugia habitat for this species. Currently, it is estimated that the BSA supports one pair of light-footed Ridgway's rail.

4.3.5.2 Project Impacts

The proposed direct impacts to freshwater marsh, disturbed southern riparian scrub, and non-native riparian; construction activity; and habitat enhancement may result in indirect impacts to light-footed Ridgway's rail.

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.02 acre and direct temporary impacts to 0.09 acre of freshwater marsh. These impacts are restricted to a narrow fringe of freshwater marsh that has not been shown and is not expected to support nesting light-footed Ridgway's rail. However, the impacted freshwater marsh may contribute to foraging/refugia habitat for this species.

Project Alternative 1 would also result in direct permanent impacts to 0.07 acre of disturbed southern riparian scrub and 0.23 acre of non-native riparian, and direct temporary impacts to 0.65 acre of disturbed southern riparian scrub and 0.42 acre of non-native riparian, resulting in an additional 0.30 acre of permanent and 1.07 acre of temporary impacts to suitable foraging/refugia habitat for light-footed Ridgway's rail.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.02 acre and direct temporary impacts to 0.08 acre of freshwater marsh. These impacts are restricted to freshwater marsh of low to moderate habitat quality. As with project Alternative 1, these impacts are restricted to a narrow fringe of freshwater marsh that has not been shown and is not expected to support nesting light-footed Ridgway's rail. However, the impacted freshwater marsh may contribute to foraging/refugia habitat for this species.

Project Alternative 2 would also result in direct permanent impacts to 0.19 acre each of disturbed southern riparian scrub and non-native riparian, as well as direct temporary impacts to 0.53 acre of disturbed southern riparian scrub and 0.46 acre of non-native riparian. This would result in an additional 0.38 acre of permanent impact and 0.99 acre of temporary impact to suitable foraging/refugia habitat for light-footed Ridgway's rail.

Alternatives 1 and 2

The construction duration is currently estimated at 24 to 30 months, beginning in 2024. With this schedule, construction could overlap two breeding seasons for light-footed Ridgway's rail. If the start date were to change, based on duration alone, project construction has the potential to overlap up to three breeding seasons for light-footed Ridgway's rail. Therefore, direct temporary impacts to breeding light-footed Ridgway's rail may occur as a result of construction noise. Noise modeling within the BSA indicates that construction activities, including paving and pile driving, would temporarily increase noise levels above ambient between 0.3 and 0.4 acre of freshwater marsh habitat (i.e., suitable nesting habitat) for Alternatives 1 and 2; and temporarily increase noise levels above ambient to between an additional 0.4 and 0.9 acre of non-native riparian (i.e., suitable foraging/refugia habitat) under both Alternatives 1 and 2. As demonstrated in the noise modeling, noise levels may exceed the ambient 70 A-weighted decibel (dBA) at an approximate maximum distance of 300 feet downstream of the existing Coast Highway Bridge, and 575 feet upstream of the existing bridge for both Alternatives (Appendix K).

Following completion of construction, operational noise is not expected to result in any indirect noise impacts. The project is a bridge replacement and will not increase capacity, add lanes, or substantially widen the bridge. Therefore, as shown in the noise analysis (see Appendix K), no substantial change in traffic noise or affected habitat is anticipated.

Habitat Enhancement Area

No permanent direct impacts are anticipated to occur to light-footed Ridgway's rail as a result of habitat enhancement activities. Temporary direct impacts to suitable refugia/foraging habitat may occur during habitat enhancement activities (e.g., trampling from pedestrian access, damage to vegetation during removal of large specimens of non-native species, herbicide overspray). However, these potential temporary impacts would likely be very minor and outweighed by the beneficial effects of removing invasive species from the river system and increasing the quality of on-site habitat.

Temporary direct impacts may occur to individual light-footed Ridgway's rail during habitat enhancement activities. Specifically, individual rails, if present, may be flushed by pedestrian activity within riparian habitat that serves as refugia/foraging habitat for the species. However, no activity associated with habitat enhancement is proposed within the large stand of suitable nesting habitat (freshwater marsh), and enhancement activities within the riparian habitat will be infrequent and sporadic. In addition, this area is already subject to transient activity. Therefore, any temporary disturbances would again be outweighed by the long-term beneficial effects of removing invasive species and increasing habitat quality for native wildlife.

4.3.5.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, and 6 described in Sections 4.1.1.3 and 4.1.6.3 above, would minimize impacts to light-footed Ridgway's rail. The following additional measures are included to further avoid and/or minimize impacts to this species:

BIO-12. Construction during the avian nesting season (January 1 through September 30, which represents a combined nesting season to cover potential early nesting activity of raptor species and the late nesting season of light-footed Ridgway's rail) shall be limited to daylight hours to avoid any lighting impacts to nesting birds. Outside the nesting season, construction lighting will be the lowest illumination necessary to allow for safe completion of work and directed away or shielded from the adjacent habitat within the river corridor.

BIO-13. All waste must be removed from the project area. All food-related trash shall be enclosed in sealed wildlife-proof containers and removed from the site daily. All construction-related debris, excess materials, and building materials shall be removed from the project site for disposal at an authorized landfill or other disposal site in compliance with federal, state, and local laws and regulations.

BIO-14. No pets of project personnel shall be allowed on the project site.

BIO-15. All clearing/grubbing of vegetation, for both construction and implementation of the Conceptual Mitigation Plan (see Appendix B), shall take place between October 1 and December 31, outside the combined avian nesting season. Construction may occur during the bird breeding season.

a. A qualified biologist will be on-site during: a) initial vegetation clearing/grubbing; b) daily during project construction within the river corridor; and c) weekly during project construction outside of the river corridor but within 500 feet of rail and vireo habitat, to monitor compliance with all measures. The qualified biologist will either hold a valid USFWS Section 10(a) permit and CDFW MOU for specific species and/or be approved as qualified by the regulatory agencies. The qualified biologist will perform the following duties: Outside the bird breeding season, perform a minimum of three focused pre-construction surveys, on separate days, to determine the presence of the species in the project impact footprint. Surveys will begin a maximum of 7 days prior to performing vegetation clearing/grubbing, and one survey will be conducted the day immediately prior to the initiation of vegetation clearing. If any individuals are found in the project impact footprint, the biological monitor will direct construction personnel to

begin vegetation clearing/grubbing in an area away from the birds. During project construction within the river corridor, before each workday begins, check to see if the species has entered the active work area. If any individuals are found within the active work area, direct construction personnel to begin work in an area away from the species. It will be the responsibility of the Biological Monitor to implement measures (e.g., direct vegetation clearing away from individuals, flush birds out of the active work area, temporarily close or constrain the rail movement pathway as necessary) to avoid death and injury of the species from vegetation clearing/grubbing and construction work. The Biological Monitor will also record the number and location of individuals disturbed by vegetation clearing/grubbing and project construction. The project proponents will notify the USFWS at least 7 days prior to initiation of surveys and within 24 hours of locating any of the species within the project footprint.

b. During the bird breeding season, perform a minimum of three focused pre-construction surveys, on separate days, in and adjacent to suitable habitat for the the species to determine the presence of the species in or within 500 feet of the project impact footprint. Surveys will begin a maximum of 7 days prior to performing construction within 500 feet of suitable habitat during the breeding season, and one survey will be conducted the day immediately prior to the initiation of construction within 500 feet of suitable habitat during the breeding season. Additional surveys will be done once a week during project construction within 500 feet of suitable habitat during the breeding season. These additional surveys may be suspended as approved by the USFWS.

c. Noise monitoring will occur during the breeding season and be reported daily to the regulatory agencies. If the qualified biologist suspects that avoidance and minimization measures are ineffective, and project activities may be adversely affecting more birds than anticipated, culpable activities will be suspended within 500 feet of active nests until nesting activity is completed and fledglings are no longer in the area or until effective avoidance and minimization measures can be identified, implemented, and demonstrated to be effective. If measures cannot be identified, implemented, and demonstrated to be effective to avoid adverse effects to the species, then project construction will stop until consultation has been completed with the regulatory agencies to address unanticipated impacts to the species.

BIO-16. A qualified biologist will be on-site during: a) initial vegetation clearing/grubbing; b) daily during project construction within the river corridor; and c) weekly during project construction outside of the river corridor but within 500 feet of suitable habitat, to monitor compliance with all measures. The qualified biologist will either hold a valid USFWS Section 10(a) permit and CDFW MOU for specific species and/or be approved as qualified by the regulatory agencies. The qualified biologist will perform the following duties:

a. Outside the bird breeding season, perform a minimum of three focused pre-construction surveys, on separate days, to determine the presence of the species in the project impact footprint. Surveys will begin a maximum of 7 days prior to performing vegetation clearing/grubbing, and one survey will be conducted the day

immediately prior to the initiation of vegetation clearing. If any individuals are found in the project impact footprint, the biological monitor will direct construction personnel to begin vegetation clearing/grubbing in an area away from the birds. During project construction within the river corridor, before each workday begins, check to see if the species has entered the active work area. If any individuals are found within the active work area, direct construction personnel to begin work in an area away from the species. It will be the responsibility of the Biological Monitor to implement measures (e.g., direct vegetation clearing away from individuals, flush birds out of the active work area, temporarily close or constrain the movement pathway as necessary) to avoid death and injury of the species from vegetation clearing/grubbing and construction work. The Biological Monitor will also record the number and location of individuals disturbed by vegetation clearing/grubbing and project construction. The project proponents will notify the USFWS at least 7 days prior to initiation of surveys and within 24 hours of locating any individuals within the project footprint.

b. During the bird breeding season, perform a minimum of three focused pre-construction surveys, on separate days, in and adjacent to suitable habitat the rail or vireo to determine the presence of the species in or within 500 feet of the project impact footprint. Surveys will begin a maximum of 7 days prior to performing construction within 500 feet of suitable habitat during the breeding season, and one survey will be conducted the day immediately prior to the initiation of construction within 500 feet of suitable habitat during the breeding season. Additional surveys will be done once a week during project construction within 500 feet of suitable habitat during the breeding season. These additional surveys may be suspended as approved by the USFWS.

c. Noise monitoring will occur during the breeding season and be reported daily to the regulatory agencies. If the qualified biologist suspects that avoidance and minimization measures are ineffective, and project activities may be adversely affecting more birds than anticipated, culpable activities will be suspended within 500 feet of active nests until nesting activity is completed and fledglings are no longer in the area or until effective avoidance and minimization measures can be identified, implemented, and demonstrated to be effective. If measures cannot be identified, implemented, and demonstrated to be effective to avoid adverse effects to the species, then project construction will stop until consultation has been completed with the regulatory agencies to address unanticipated impacts to the species.

4.3.5.4 Compensatory Mitigation

Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of marsh and riparian habitat in temporary work areas, would restore on-site suitable refugia/foraging habitat for this species. In addition, the proposed habitat enhancement and conversion of non-native riparian to southern riparian scrub would likely have a long-term beneficial effect on nesting habitat for light-footed Ridgway's rail by controlling the spread of non-native invasive plant species.

4.3.5.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to light-footed Ridgway's rail. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to this species and its habitat. No permanent loss of suitable nesting habitat would result from the project. An overall increase in acreage of high quality refugia/foraging habitat quality is expected following implementation of the Conceptual Mitigation Plan (see Appendix B), and removal of non-native plant species is anticipated to have a long-term beneficial effect on the species' nesting and foraging habitat.

4.3.6 Discussion of Least Bell's Vireo

The least Bell's vireo is a small, olive-gray colored, migratory songbird that is federally and State-listed as endangered. One of four subspecies of Bell's Vireo, the least Bell's vireo is endemic to California and Baja California, Mexico. This highly migratory species arrives in California in mid-March and departs by late September to fly south to wintering grounds near the tip of Baja California, Mexico. This species formally bred in lowland riparian habitat ranging from coastal Southern California through the Sacramento and San Joaquin Valleys as far north as Redbluff, and other scattered locations east of the Sierra Nevada (USFWS 1998; Grinnell and Miller 1986).

The least Bell's vireo is dependent upon riparian habitat during the breeding season and prefers willow-dominated woodland or scrub that typically exists along streams and rivers. Other habitat types used include Baccharis scrub, mixed oak/willow woodland, mesquite woodland, and elderberry scrub. Habitat characteristics that appear to be essential for vireo occupation include dense cover from 3 to 6 feet in height for nesting and foraging, and a stratified canopy providing both foraging habitat and song perches for territorial advertisement.

By the time least Bell's vireo was listed by the CDFW in 1984 it had been extirpated from much of its former range and was restricted to eight counties south from Santa Barbara with just 300 pairs statewide (Unitt 2004). Declines were caused by widespread clearing of riparian habitat combined with brood parasitism by brown-headed cowbirds, whose increase in California was as dramatic as the species' decline. Currently, with restriction of habitat destruction, extensive cowbird trapping, and protection from the federal and State Endangered Species Acts, populations have recovered in some areas of cismontane southern California. Populations are expanding into former ranges, with the northernmost sighting from Santa Clara County, California (Brown 1993, Kus 2002). San Diego County holds the largest breeding population of least Bell's vireo in the State, where it is a fairly common breeder in appropriate habitats, primarily in the coastal lowlands (Unitt 2004).

4.3.6.1 Survey Results

No least Bell's vireo were detected within the BSA during protocol presence/absence surveys conducted during the 2015 or 2021 breeding seasons; however, a number of vireo were detected on the northern bank of the San Luis Rey river east of the I-5 bridge in 2017 (Appendix L).

Within the BSA, the non-native riparian provides low quality habitat for the least Bell's vireo, because it contains a high level of disturbance and high density of non-native plant species not typically associated with the species' preferred habitat. The disturbed southern riparian scrub provides moderate quality habitat for the least Bell's vireo, because it is dominated by native riparian species typically associated with the species but also contains a low to moderate level of disturbance and a low to moderate density of non-native plant species not typically associated with the species' preferred habitat. This species is not expected to nest within the immediate project impact area.

FCH for least Bell's vireo is mapped within the western extent of the BSA (see Appendix A: Figure 8). However, only the very western tip of the project impact area occurs within mapped FCH for this species. This portion of the project impact area comprises eucalyptus woodland, disturbed habitat, and urban/developed (landscaped) land and is included within a temporary staging area. Physical or biological features required for least Bell's vireo are described as "riparian woodland vegetation that generally contains both canopy and shrub layers and includes some associated upland habitats" (USFWS 1994b).

4.3.6.2 Project Impacts

The riparian habitat within the BSA has been variously occupied by least Bell's vireo based on the 2015, 2017, and 2021 surveys, with the most recent surveys being negative; however, the disturbed southern riparian scrub and non-native riparian provide suitable habitat for this species. If least Bell's vireo is present within the BSA at the time of construction, the proposed direct impacts to disturbed southern riparian scrub and non-native riparian; construction activity; and habitat enhancement may result in direct and indirect impacts to this species.

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.07 acre of disturbed southern riparian scrub and 0.23 acre of non-native riparian, as well as temporary impacts to 0.65 acre of disturbed riparian scrub and 0.42 acre of non-native riparian, resulting in 0.30 acre of permanent and 1.07 acre of temporary impacts to suitable nesting and foraging habitat for least Bell's vireo.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.19 acre of disturbed southern riparian scrub and 0.19 acre of non-native riparian, as well as direct temporary impacts to 0.53 acre of disturbed southern riparian scrub and 0.46 acre of non-native riparian. This would result in 0.38 acre of permanent impact and 0.99 acre of temporary impact to suitable nesting and foraging habitat for least Bell's vireo.

Alternatives 1 and 2

The construction duration is currently estimated at 24 to 30 months, which may overlap two breeding seasons (March 15 to September 15) for least Bell's vireo. Therefore, if this species is present within 300 feet or 575 feet upstream of the existing bridge, indirect temporary impacts to breeding least Bell's vireo may occur as a result of construction activity and noise. Noise modeling within the BSA indicates that pile-driving, construction, and paving and paving activities for both Alternatives 1 and 2, would temporarily increase noise levels above ambient within a small area (0.6–0.8 acre) of disturbed southern riparian scrub or non-native riparian (i.e., suitable and/or occupied nesting habitat for this species) beyond the existing ambient traffic noise on I-5 (see Appendix K).

Following completion of construction, no ongoing operational noise impacts are anticipated. The project is a bridge replacement and will not increase capacity, add lanes, or substantially widen the bridge. Therefore, as shown in the noise analysis (see Appendix K), no substantial change in operational traffic noise is anticipated.

As least Bell's vireo is a migratory species that is unlikely to occur in the project area outside the breeding season, indirect noise impacts to this species are not anticipated outside the breeding season.

Although FCH is mapped in the westernmost extent of the project impact area, this portion of the impact area does not support the physical or biological features required for least Bell's vireo. Therefore, no impacts are anticipated to occur to FCH for least Bell's vireo.

Habitat Enhancement Area

Although habitat enhancement measures would remove non-native trees that may provide suitable nesting sites for least Bell's vireo, no direct impacts are anticipated to occur to individual least Bell's vireo or active nests belonging to this species. The Conceptual Mitigation Plan includes measures for avoidance of active nests (see Appendix B).

Temporary direct impacts to suitable nesting and foraging habitat may occur during habitat enhancement activities (e.g., trampling from pedestrian access, damage to vegetation during removal of large specimens of non-native species, herbicide overspray). However, these potential temporary impacts would likely be very minor and outweighed by the beneficial effects of removing invasive species from the river system and increasing the quality of on-site habitat, thereby providing additional potential suitable nesting habitat for this species that has consistently been nesting along the San Luis Rey River upstream of I-5.

4.3.6.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 12, 13, 14, 15, and 16, described in Sections 4.1.1.3 and 4.3.5.3 above, would avoid and minimize impacts to least Bell's vireo.

4.3.6.4 Compensatory Mitigation

Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of riparian habitat in temporary work areas, would restore on-site

suitable nesting and foraging habitat for this species. In addition, the proposed habitat enhancement and associated conversion of non-native riparian to southern riparian scrub would likely have a long-term beneficial effect on this species by increasing the quality of nesting habitat on site.

4.3.6.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to least Bell's vireo. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to this species and its habitat. Although the proposed project would result in permanent and temporary loss of suitable nesting habitat for least Bell's vireo, implementation of the Conceptual Mitigation Plan would re-establish and restore suitable habitat within temporary impact areas and enhance the existing riparian habitat that occurs on site (see Appendix B). The project would ultimately result in an increase in acreage of high quality nesting habitat for this species.

4.3.7 Discussion of Southwestern Willow Flycatcher

The southwestern willow flycatcher is a small, olive-colored, migratory songbird that is federally and State-listed as endangered. One of four subspecies of willow flycatcher, it is distinguished by breeding distribution, song, call and plumage. The southwestern willow flycatcher is a neotropic migrant that is endemic to the Americas and is a summer breeding resident in the southwestern U.S., specifically within Arizona, New Mexico, southern California, southern portions of Nevada and Utah, southwestern Colorado, far western Texas, and extreme northwestern Mexico (USFWS 2002). It is the only race of willow flycatcher that is known to breed in southern California, ranging from Kern County to San Diego County. This species arrives on breeding territories by late April to early May and migrates southward again to wintering areas in southern Mexico, Central America, and northern South America in August and September. The two other subspecies of willow flycatcher (e.g., *E. t. brewsteri* and *E. t. adastus*) migrate through southern California in the spring and fall to and from their breeding grounds in northern California.

The southwestern willow flycatcher typically breeds in patchy to dense, well-developed riparian woodlands that occur along streams, rivers, lakes, or other wetlands, are below 8,000 feet in elevation, and provide surface water and/or saturated soil during mid-summer (Sedgwick 2000; Sogge et al. 1997; USFWS 2002). Typical breeding habitat for southwestern willow flycatcher is composed of native riparian plant species such as willows (Salix spp.) and mule fat in patches at least two acres in size or in linear-shaped habitats at least 10 meters (33 feet) wide (Sogge et al. 1997). However, the species has also been observed successfully breeding in riparian communities dominated by extensive patches of non-native species such as tamarisk (*Tamarix ramosissima*) and Russian olive (*Eleagnus angustifolia*) (USFWS 2002).

Once a common species in southern California, in the early 20th century the southwestern willow flycatcher population collapsed from the combined effects of habitat loss and nest parasitism by brown-headed cowbird (Craig and Williams 1998; Garret and Dunn 1981; Sedgwick 2000; Unitt

2004; USFWS 2002). Currently, in southern California it breeds locally at 75 known sites within 18 drainages from San Diego to Santa Barbara and Kern counties and the Owens Valley, most notably within the San Luis Rey, Santa Ana, Santa Ynez, Owens, and Kern rivers, which support approximately 70 percent of known territories (Sogge et. al. 2003). Currently, of the estimated 200 breeding pairs in southern California nearly half of them occur in San Diego County, primarily along the upper San Luis Rey River (Unitt 2004).

4.3.7.1 Survey Results

No southwestern willow flycatchers were detected within the BSA during protocol presence/absence surveys conducted during the 2015, 2017, or 2021 breeding seasons (see Appendix L and M). In addition, this species was not detected west of or near I-5 during protocol surveys and monitoring conducted between 1989 and 2002 (MEC Analytical Systems, Inc. 2003). The closest southwestern willow flycatcher detected in 2020 was over 10 miles upstream of the project impact area in the Bonsall area and consisted of a single male unpaired resident (Allen and Kus 2021). During surveys conducted in 2020 between I-5 and College Boulevard, no southwestern willow flycatchers were detected, representing the 14 consecutive year within no breeding individuals detected during focused surveys (Houston, et al 2021)

Within the BSA, potentially suitable habitat for this species is of low quality. The non-native riparian contains a high level of disturbance and high density of non-native plant species not typically associated with the species' preferred habitat. The disturbed southern riparian scrub is dominated by native riparian species typically associated with the species; however, the vegetation community also contains a low to moderate level of disturbance and a low to moderate density of non-native plant species not typically associated with the species' preferred habitat. In addition, the stands of riparian scrub in the BSA provide smaller patch sizes than what typically supports this species. Southwestern willow flycatcher is not expected to nest within the non-native riparian or disturbed southern riparian scrub on site; only very occasional transient individuals have potential to occur within the BSA.

FCH for southwestern willow flycatcher is mapped along the portion of the San Luis Rey River that occurs within the BSA (see Appendix A: Figure 8). The portion of the project impact area that falls within mapped FCH for southwestern willow flycatcher comprises non-native riparian, disturbed southern riparian scrub, freshwater marsh, open water, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, disturbed habitat, eucalyptus woodland, and urban/developed land. Only the non-native riparian and disturbed southern riparian scrub have potential to provide the physical or biological features required by this species.

As defined by the USFWS (2013b), the physical or biological features required for southwestern willow flycatcher include:

> (1) Riparian vegetation. Riparian habitat along a dynamic river or lakeside, in a natural or manmade successional environment (for nesting, foraging, migration, dispersal, and shelter) that is comprised of trees and shrubs (that can include Goodding's willow, … arroyo willow, red willow, … tamarisk, Russian olive, … stinging nettle, …) and some combination of:

> Dense riparian vegetation with thickets of trees and shrubs that can range in height from about 2 to 30 meters (about 6 to 98 feet). … tall-stature thickets are found at middle- and lower-elevation riparian forests;
>
> Areas of dense riparian foliage at least from the ground level up to approximately 4 meters (13 feet) above ground or dense foliage only at the shrub or tree level as a low, dense canopy;
>
> Sites for nesting that contain a dense (about 50 percent to 100 percent) tree or shrub (or both) canopy (the amount of cover provided by tree and shrub branches measured from the ground);
>
> Dense patches of riparian forests that are interspersed with small openings of open water or marsh or areas with shorter and sparser vegetation that creates a variety of habitat that is not uniformly dense. Patch size may be as small as 0.1 hectare (0.25 acre) or as large as 70 hectare (175 acres).

(2) Insect prey populations. A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, which can include: flying ants, wasps, and bees (Hymenoptera); dragonflies (Odonata); flies (Diptera); true bugs (Hemiptera); beetles (Coleoptera); butterflies, moths, and caterpillars (Lepidoptera); and spittlebugs (Homoptera) (USFWS 2013b).

Due to past channelization of the San Luis Rey River, the segment of the river that occurs within and adjacent to the project impact area does not represent the typical dynamic system found in natural river floodplains in southern California. This segment of the river is constrained, with some portions of the upper banks west of the Coast Highway Bridge lined with concrete and narrow floodplain terraces. However, the non-native riparian and disturbed southern riparian scrub found within the BSA do provide a variety of vegetation density, height, and cover and may contribute to the physical or biological features of critical habitat identified for southwestern willow flycatcher.

4.3.7.2 Project Impacts

Alternatives 1 and 2

The riparian habitat within the BSA is not currently considered occupied by southwestern willow flycatcher, based on surveys within the survey area conducted in 2015, 2017, or 2021 and no individuals have been reported within ten miles of the project impact area in the last 14 years (Houston et al, 2021). This species is not expected to nest within the BSA. Therefore, no direct or indirect impacts are anticipated to occur to individuals of this species.

Furthermore, following completion of construction, no ongoing indirect noise impacts would have potential to occur. The project is a bridge replacement and will not increase capacity, add lanes, or substantially widen the bridge. Therefore, as shown in the noise analysis (see Appendix K), no substantial change in traffic noise is anticipated.

Alternative 1

FCH for southwestern willow flycatcher is mapped along the San Luis Rey River within the project impact area. Direct impacts to non-native riparian and disturbed southern riparian scrub would result in direct permanent and temporary impacts to FCH for southwestern willow flycatcher. Project Alternative 1 would result in direct permanent impacts to 0.07 acre of disturbed southern riparian scrub and 0.23 acre of non-native riparian, as well as temporary impacts to 0.65 acre of disturbed riparian scrub and 0.42 acre of non-native riparian, resulting in 0.30 acre of permanent and 1.07 acre of temporary impacts to FCH for southwestern willow flycatcher.

Alternative 2

FCH for southwestern willow flycatcher is mapped along the San Luis Rey River within the project impact area. Direct impacts to non-native riparian and disturbed southern riparian scrub would result in direct permanent and temporary impacts to FCH for southwestern willow flycatcher. Project Alternative 2 would result in direct permanent impacts to 0.19 acre of disturbed southern riparian scrub and 0.19 acre of non-native riparian, as well as direct temporary impacts to 0.53 acre of disturbed southern riparian scrub and 0.46 acre of non-native riparian. This would result in 0.38 acre of permanent impact and 0.99 acre of temporary impact to FCH for southwestern willow flycatcher.

Habitat Enhancement Area

As southwestern willow flycatcher is not expected to nest within the BSA, no adverse direct or indirect impacts are anticipated to occur to this species as a result of habitat enhancement activities. Only beneficial effects to this species and its FCH are anticipated from removal of non-native invasive species from the river system. Habitat enhancement would likely increase the quality of on-site habitat for this species and provide additional potential suitable nesting habitat.

4.3.7.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 12, 13, 14, and 15, described in Sections 4.1.1.3 and 4.3.5.3 above, would avoid and minimize impacts to southwestern willow flycatcher and its FCH.

4.3.7.4 Compensatory Mitigation

Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of riparian habitat in temporary work areas, would restore on-site riparian habitat within FCH for southwestern willow flycatcher. In addition, the proposed habitat enhancement and associated conversion of non-native riparian to southern riparian scrub would likely have a long-term beneficial effect on this species by increasing the quality of potential nesting habitat on site.

4.3.7.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to southwestern willow flycatcher. In accordance with federal, State, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to this species and its habitat. Although the proposed project would result in permanent and temporary loss of riparian habitat within FCH for southwestern willow flycatcher, implementation of the Conceptual Mitigation Plan would re-establish and restore suitable habitat within temporary impact areas and enhance the existing riparian habitat that occurs on site (see Appendix B). The project would ultimately result in an increase in acreage of high quality nesting habitat for this species.

4.3.8 Discussion of Coastal California Gnatcatcher

The coastal California gnatcatcher is a federally listed threatened species, a CDFW Species of Special Concern, and an MHCP-covered species. One of three subspecies of the California gnatcatcher, the coastal California gnatcatcher occurs on coastal slopes and foothills in southern Ventura County, Los Angeles County, Orange County, southwestern San Bernardino County, western Riverside County, and San Diego County, and northwestern Baja California, Mexico (Atwood 1990). This species typically inhabits coastal sage scrub dominated by California sagebrush (Atwood 1990). Other plant species important for the nesting and foraging of this species include California buckwheat, white sage (*Salvia apiana*), black sage, coyote brush, and broom baccharis (*Baccharis sarothroides*). Chamise (*Adenostoma fasciculatum*) habitats may also support breeding pairs, especially where coastal sage scrub may occur nearby or form a component of the habitat (Bontrager 1991). The coastal California gnatcatcher breeding season extends from mid-February through the end of August, with peak nesting activity occurring from mid-March through mid-May (Mock et al. 1990).

Primary threats to the coastal California gnatcatcher include loss, fragmentation, and adverse modification of habitat from urban and agricultural development; wildfire; invasive non-native plants; grazing; nest predation; and brood parasitism by brown-headed cowbirds (Mock et al. 1990).

4.3.8.1 Survey Results

No coastal California gnatcatchers were detected within the BSA during protocol presence/absence surveys conducted in 2000 (MEC Analytical Systems, Inc. 2003) nor during the 2015, 2017, and 2021 breeding seasons (Appendix N). However, this species was incidentally detected through vocalization during rare plant surveys in 2021 within the BSA but outside of the project impact area and CNDDB notes that this species has been detected and reported within one mile of the BSA (see Appendix C).

The Diegan coastal sage scrub within the BSA provides moderate to high quality habitat for the coastal California gnatcatcher. Areas that provide high quality habitat supports a plant species composition, height, and density typically associated with the species. Areas that provide moderate quality habitat for this species support components of the community typically associated with the species but also contain woody, riparian-associated plants species not typically associated with the species.

The disturbed Diegan coastal sage scrub within the BSA provides low quality habitat for the coastal California gnatcatcher, because it supports components of the community typically associated with the species but also contains a high density of disturbance and non-native plant species not typically associated with the species.

Adjacent stands of disturbed southern riparian scrub may provide suitable foraging habitat for coastal California gnatcatcher.

FCH for coastal California gnatcatcher is mapped within the western extent of the BSA (see Appendix A: Figure 8). However, no FCH for this species occurs within the project impact area.

4.3.8.2 Project Impacts

Give the lack of detection of this species during three years of focused surveys, the Diegan coastal sage scrub habitat within the project impact area is not currently considered occupied by coastal California gnatcatcher; however, the Diegan coastal sage scrub and disturbed Diegan coastal sage scrub within the BSA does provide potentially suitable habitat for this species, given the incidental detection. If coastal California gnatcatcher is present within the project impact area, the proposed direct impacts to Diegan coastal sage scrub and disturbed Diegan coastal sage scrub; and construction activity may result in direct and indirect impacts to coastal California gnatcatcher.

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.11 acre of Diegan coastal sage scrub and direct temporary impacts to 1.00 acre of Diegan coastal sage scrub and 0.17 acre of disturbed Diegan coastal sage scrub, resulting in 0.11 acre of permanent and 1.17 acre of temporary impacts to low- to moderate-quality nesting and foraging habitat for coastal California gnatcatcher.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.23 acre of Diegan coastal sage scrub, as well as direct temporary impacts to 0.88 acre of Diegan coastal sage scrub and 0.17 acre of disturbed Diegan coastal sage scrub. This would result in 0.23 acre of permanent impact and 1.05 acre of temporary impact to low- to moderate-quality nesting and foraging habitat for coastal California gnatcatcher.

Alternatives 1 and 2

The construction duration is currently estimated at 24 to 30 months, which may overlap two breeding seasons (February 15 through August 30) for coastal California gnatcatcher. Therefore, if this species is present within 300 feet downstream of the existing Coast Highway Bridge, or 575 feet upstream of the existing bridge, indirect temporary impacts to breeding coastal California gnatcatcher may occur as a result of construction activity and noise. Noise modeling within the BSA indicates that pile-driving, construction, and paving and paving activities for both Alternatives 1 and 2, would temporarily increase noise levels above ambient within approximately 0.7-1.4 acre (Alternative 1) and 0.8–1.3 acre (Alternative 2) of Diegan coastal sage scrub (including the disturbed

form) (i.e., suitable foraging and nesting habitat for this species) beyond the ambient traffic noise on I-5 (see Appendix K).

Following completion of construction, no operational noise impacts are anticipated. The project is a bridge replacement and will not increase capacity, add lanes, or substantially widen the bridge. Therefore, as shown in the noise analysis (see Appendix K), no substantial change in traffic noise is anticipated.

As no FCH for coastal California gnatcatcher is mapped within the project impact area, no impacts are anticipated to occur to FCH for this species.

Habitat Enhancement Area

No permanent or temporary direct or indirect impacts are anticipated to occur to coastal California gnatcatcher as a result of habitat enhancement activities. No suitable nesting habitat for this species occurs within or adjacent to the Habitat Enhancement Area.

4.3.8.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 12, 13, 14, 15, and 16, described in Sections 4.1.1.3 and 4.3.5.3 above, would avoid and/or minimize impacts to coastal California gnatcatcher. The following additional measure is included to further avoid and/or minimize impacts to this species:

4.3.8.4 Compensatory Mitigation

Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of Diegan coastal sage scrub habitat in temporary work areas, would restore on-site suitable nesting and foraging habitat for this species. In addition, the proposed habitat enhancement and associated conversion of non-native riparian to southern riparian scrub would likely have a long-term beneficial effect on this species' habitat by removing non-native invasive plant species from adjacent areas.

4.3.8.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to coastal California gnatcatcher. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to this species and its habitat. Although the proposed project would result in permanent and temporary loss of suitable nesting habitat for coastal California gnatcatcher, implementation of the Conceptual Mitigation Plan would re-establish and restore suitable habitat within temporary impact areas and remove non-native invasive plant species from adjacent areas (see Appendix B). The project would ultimately result in an increase in acreage of high quality nesting habitat for this species.

4.3.9 Discussion of Other Sensitive Birds

An additional four special status bird species were observed during surveys conducted in 2015, 2017, and/or 2021: yellow warbler, western least bittern, olive-sided flycatcher, and Clark's marsh wren.

Yellow warbler is a CDFW Species of Special Concern (CDFW 2023c). Yellow warblers commonly breed in San Diego County and are considered to be a rare winter visitor (Unitt 2004). This species is an obligate riparian species, nesting and foraging almost exclusively in mature riparian corridors on the coastal slopes and within the desert in San Felipe Valley (Unitt 2004). Shuford and Gardali (2008) describe yellow warblers as showing a high degree of site fidelity, with 60 to 64.5 percent of males and 32 to 44 percent of females returning to their previous year's territory. They are often observed in riparian habitat where surface water is evident, although it is not necessary. Nesting occurs from April (Unitt 2004) through early August, and nests are typically three to five feet from the ground (Lowther et al. 1999). This species is declining due to the loss of riparian habitat and as a result of nest parasitism by brown-headed cowbirds (Unitt 2004; Zeiner et al. 2005).

Western least bittern is a CDFW Species of Special Concern (CDFW 2023c). This species is an uncommon to rare and localized resident in San Diego County, although more numerous (or conspicuous) during summer months (Unitt 2004). This species inhabits reedy wetland vegetation and is quite difficult to spot due to the effective camouflage of its coloring. Habitat for the least bittern lies largely at brackish lagoons in the coastal lowland, and in lakes, ponds, and streams inland (Unitt 2004). In San Diego County this species has been known to nest at O'Neill Lake, Camp Pendleton, the San Diego River between Santee and Lakeside, and Lake Murray (Unitt 2004). The diet of the western least bittern consists primarily of small fish and insects (Poole et al. 2009). The decline of this species in San Diego County is directly attributed to loss of freshwater and brackish marshes (Unitt 2004).

Olive-sided flycatcher is a CDFW Species of Special Concern (CDFW 2023c). This species is an uncommon summer visitor to coniferous woodlands in the mountains of San Diego County. Although still uncommon, its range in San Diego County widens during migration (typically May to September) to include lower (Unitt 2004). This species primarily inhabits and breeds in extensive stands of conifers and has been documented at Palomar, Hot Springs, Cuyamaca, Laguna, and Bucksnort mountains. This species has rarely been recorded breeding outside the usual range with one nesting occurrence in a cypress tree at San Elijo Lagoon in 1982. The diet of the olive-sided flycatcher consists primarily of bees and other flying insects (Altman and Sallabanks 2012). Although significant declines in this species' range-wide population have been shown, no clear decline has been recorded in San Diego County. However, with a limited breeding range and consistently small local population, this species is especially susceptible to habitat loss and/or degradation (Unitt 2004).

Clark's marsh wren is a CDFW Species of Special Concern (CDFW 2023c). It is the subspecies of the marsh wren breeding in coastal San Diego County and can be distinguished from other subspecies by its small size, dark rufous rump and scapulars, and mostly black crown. This subspecies known range is restricted to the coastal strip from Los Angeles to San Diego, with possible rare occurrences near Ensenada, Baja California, Mexico. Marsh wrens utilize freshwater and brackish marshes found along lakes, ponds, and rivers, and are known to nest along the San Luis Rey and

Santa Margarita rivers. The diet of Clark's marsh wren includes bugs, moths, and beetles, which they glean from plants near, at, or below the water's surface (Shuford and Gardali 2008). Similar to other wetland-dependent avian species, the Clark's marsh wren has experienced substantial population declines as a result of destruction of marsh habitat in southern California. However, this subspecies has shown an ability to colonize or recolonize areas where marsh habitat has re-established following removal, and areas that have transitioned from salt marsh to freshwater marsh as a result of human activity (Unitt 2004).

4.3.9.1 Survey Results

Multiple yellow warblers were detected in the project impact area and BSA during focused avian surveys conducted in 2015, 2017, and 2021 (see Appendix A: Figures 6a and 6b; Appendix L). Point locations of this species on Appendix A: Figures 6a and 6b may reflect repeated detections of the same individuals on different days and are not intended to represent the quantity of individuals present. This species was utilizing small and large patches of southern riparian scrub and non-native riparian habitat north and south of the river, and east and west of the Coast Highway and I-5 bridges. All disturbed southern riparian scrub and non-native riparian habitat within the BSA is considered suitable nesting habitat for this species.

One detection of western least bittern was recorded in the BSA during focused avian surveys conducted in 2015 within the non-native riparian adjacent to freshwater marsh (see Appendix A: Figures 6a and 6b; Appendix L). This species was not observed in 2017 or 2021. The freshwater marsh within the BSA likely provides suitable nesting habitat, and the freshwater marsh, non-native riparian, and disturbed southern riparian scrub area all considered suitable foraging habitat.

One detection of olive-sided flycatcher was recorded in the project impact area during focused avian surveys in 2015 utilizing a small patch of disturbed southern riparian scrub just east of the I-5 bridges (see Appendix: Figures 6a and 6b; Appendix L). This species was not observed in 2017 or 2021. Although a rare occurrence, this species has been recorded breeding along the coast, outside its typical breeding habitat of coniferous woodlands in San Diego County's mountains. However, this species was only detected during one of 13 focused riparian bird surveys, not observed during subsequent surveys in 2017 and 2021, and the date of this observation was outside the typical nesting season for this species. Therefore, this species was not likely nesting on-site. The disturbed southern riparian scrub, non-native riparian, and eucalyptus woodland within the BSA are considered marginally suitable nesting habitat for this species.

Multiple Clark's marsh wren were detected in the BSA during focused avian surveys conducted in 2015 and 2017 but not observed in 2021 (see Appendix: Figures 6a and 6b; Appendix L). Point locations of this species on Figures 6a and 6b may reflect repeated detections of the same individuals on different days and are not intended to represent the quantity of individuals present. This species was typically found within the large patches of freshwater marsh habitat north of the river, and east and west of the Coast Highway and I-5 bridges. This species was also detected near the edge of disturbed southern riparian scrub on the south side of the river and east of the I-5 bridges. All freshwater marsh within the BSA is considered suitable nesting habitat for this species, and all freshwater marsh, disturbed southern riparian scrub, and non-native riparian is considered suitable foraging habitat.

4.3.9.2 Project Impacts

The proposed direct impacts to disturbed southern riparian scrub, and non-native riparian; construction activity; and habitat enhancement may result in direct and indirect impacts to yellow warbler, western least bittern, olive-sided flycatcher, and Clark's marsh wren. In addition, impacts to freshwater marsh could affect western least bittern and Clark's marsh wren and impacts to eucalyptus woodland could impact olive-sided flycatcher.

Alternative 1

Project Alternative 1 would result in direct permanent impacts to 0.07 acre of disturbed southern riparian scrub and 0.23 acre of non-native riparian, as well as direct temporary impacts to 0.65 acre of disturbed southern riparian scrub and 0.42 acre of non-native riparian, resulting in 0.30 acre of permanent and 1.07 acre of temporary impacts to suitable foraging/refugia habitat for these species.

Project Alternative 1 would also result in temporary impacts to 0.74 acre of eucalyptus woodland, resulting in additional impacts to marginally suitable nesting habitat for olive-sided flycatcher.

Project Alternative 1 would also result in direct permanent impacts to 0.02 acre and direct temporary impacts to 0.09 acre of freshwater marsh. This impacted freshwater marsh may provide suitable nesting or foraging/refugia habitat for western least bittern and Clark's marsh wren.

Alternative 2

Project Alternative 2 would result in direct permanent impacts to 0.19 acre of disturbed southern riparian scrub and 0.19 acre of non-native riparian, as well as direct temporary impacts to 0.53 acre of disturbed southern riparian scrub and 0.46 acre of non-native riparian. This would result in 0.38 acre of permanent impact and 0.99 acre of temporary impact to suitable foraging/refugia habitat for these species.

Project Alternative 2 would also result in direct temporary impacts to 0.74 acre of eucalyptus woodland, resulting in additional temporary impact to marginally suitable nesting habitat for olive-sided flycatcher.

Project Alternative 2 would also result in direct permanent impacts to 0.02 acre and direct temporary impacts to 0.08 acre of freshwater marsh. As with Project Alternative 1, impacted freshwater marsh may provide suitable nesting or foraging/refugia habitat for Clark's marsh wren.

Alternatives 1 and 2

The construction duration is currently estimated at 24 to 30 months, which may overlap two breeding seasons for these species. Therefore, indirect temporary impacts may occur as a result of construction activity and noise.

Noise modeling within the BSA indicates that pile-driving, construction, and paving and paving activities for both Alternatives 1 and 2, would temporarily increase noise levels above ambient within a small area of non-native riparian and freshwater marsh (0.1 acre) (i.e., suitable and/or

occupied nesting habitat) for this species) beyond the existing traffic noise on I-5 (see Appendix K). Thus, in both scenarios, only an additional 0.1 acre of suitable nesting habitat for yellow warbler and olive-side flycatcher and 0.2 acre for western least bittern and Clark's marsh wren would be subjected to the increased noise level, which is not anticipated to result to a substantial impact on the species when spread across the river corridor.

Following completion of construction, no ongoing indirect noise impacts are anticipated. The project is a bridge replacement and will not increase capacity, add lanes, or substantially widen the bridge. Therefore, as shown in the noise analysis (see Appendix K), no substantial change in traffic noise is anticipated.

As yellow warbler and olive-sided flycatcher are migratory species that are unlikely to occur in the project area outside the breeding season, indirect noise impacts to these species are not anticipated outside the breeding season. As western least bittern and Clark's marsh wren are resident species, work occurring outside the breeding season also has the potential to affect behavior, movement, and dispersal along the river corridor. However, as discussed above, based on all survey results, density of these species appears to be low and noise above ambient is minimal during construction and not expected during operation.

Habitat Enhancement Area

No permanent direct impacts are anticipated to occur to these species as a result of habitat enhancement activities. Temporary direct impacts to suitable refugia/foraging habitat may occur during habitat enhancement activities (e.g., trampling from pedestrian access, damage to vegetation during removal of large specimens of non-native species, herbicide overspray). However, these potential temporary impacts would likely be very minor and outweighed by the beneficial effects of removing invasive species from the river system and increasing the quality of on-site habitat.

Temporary direct impacts may occur to individual birds during habitat enhancement activities. Specifically, individuals may be flushed by pedestrian activity within riparian and marsh habitats that serve as refugia/foraging habitat for the species. However, enhancement activities within the riparian and marsh habitats will be infrequent and sporadic, and the Conceptual Mitigation Plan includes avoidance and minimization measures, such as nesting season avoidance and avoidance of active nests (see Appendix B). In addition, this area is already subject to transient activity. Therefore, any temporary disturbances would again be outweighed by the long-term beneficial effects of removing invasive species and increasing habitat quality for native wildlife.

4.3.9.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 12, 13, 14, and 15, described in Sections 4.1.1.3 and 4.3.5.3 above, would avoid and minimize indirect impacts to these species.

4.3.9.4 Compensatory Mitigation

Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of riparian habitat in temporary work areas, would restore on-site suitable nesting and foraging habitat for these species.

4.3.9.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to these species. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to this species' habitat. Although the proposed project would result in permanent and temporary loss of suitable nesting habitat for these species, implementation of the Conceptual Mitigation Plan would re-establish and restore suitable habitat within temporary impact areas and enhance the existing riparian and marsh habitats that occurs on site (see Appendix B). No projects occurring along the San Luis Rey River would be anticipated to impact the preferred nesting habitat of these species. Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of native upland and riparian habitat in temporary work areas, would restore on-site suitable nesting and foraging habitat for bird species.

4.3.10 Discussion of Migratory Birds and Raptors

The MBTA, which is enforced by the USFWS, makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory bird, or attempt such actions, except as permitted by regulation. The take, possession, import, export, transport, sale, purchase, barter, or offering of these activities is prohibited, except under a valid permit or as permitted in the implementing regulations (50 CFR 21.11).

Raptors (birds of prey) and active raptor nests are protected by the CFGC 3503.5, which states that it is "unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird" unless authorized.

4.3.10.1 Survey Results

A variety of common and special status resident and migratory bird species have been observed in and have potential to nest within the BSA. Several special status raptor species were detected during surveys in 2017 and 2021, including Cooper's hawk and osprey.

4.3.10.2 Project Impacts

Alternatives 1 and 2

If vegetation removal takes place during the avian nesting season (January 1 through September 30), direct impacts may occur to nesting migratory birds and raptors. In addition, removal of non-native riparian, disturbed southern riparian scrub, and eucalyptus woodland may result in direct impacts to nesting raptor species.

The construction duration is currently estimated at 24 to 30 months, which may overlap two breeding seasons (January 1 through September 30) for raptors. Therefore, if raptors are nesting within 1,500 feet downstream or upstream of the existing bridge, indirect temporary impacts to

nesting raptors may occur as a result of construction activity and noise. However, noise modeling within the BSA indicates that indirect temporary impacts to breeding birds are not expected to occur as a result of construction noise compared to the existing traffic noise on I-5

Following completion of construction, no ongoing indirect noise impacts are anticipated. The project is a bridge replacement and will not increase capacity, add lanes, or substantially widen the bridge. Therefore, as shown in the noise analysis (see Appendix K), no substantial change in traffic noise is anticipated.

Habitat Enhancement Area

Although habitat enhancement measures would remove non-native trees that may provide suitable nesting sites for migratory birds and raptors, no direct impacts are anticipated to occur to individual active nests. The Conceptual Mitigation Plan (see Appendix B) includes measures for avoidance of active nests.

4.3.10.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 12, 13, 14, 15, and 16, , described in Sections 4.1.1.3 and 4.3.5.3 above, would avoid and/or minimize impacts to migratory birds and raptors.

4.3.10.4 Compensatory Mitigation

Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of native upland and riparian habitat in temporary work areas, would restore on-site suitable nesting and foraging habitat for bird species.

4.3.10.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to migratory birds or raptors. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to nesting birds. Although the proposed project would result in permanent and temporary loss of suitable nesting habitat for various avian species, implementation of the Conceptual Mitigation Plan would re-establish and restore nesting habitat within temporary impact areas and remove non-native invasive plant species from adjacent areas (see Appendix B).

4.3.11 Discussion of Western Mastiff Bat

One bat species, western mastiff bat (*Eumops perotis californicus*), listed as CDFW Species of Special Concern has a moderate potential to occur within the BSA. Western mastiff bat ranges from central California into central Mexico (Williams 1986). In California it has been recorded from Butte County and the Bay Area south along much of the coast and western slope of the Sierra Nevada, throughout the southern California coastal basins, and in the western portion of the desert

(Williams 1986). Western mastiff bat is non-migratory and rare in San Diego County. It occurs in rugged, rocky areas where there are suitable rock crevices or buildings with sufficient shelter for day roosts. It also frequently roosts in buildings (Williams 1986). The western mastiff bat feeds on flying insects, such as wasps and bees. Potential threats to this species include habitat loss to agriculture and urbanization, as well as loss of prey due to insecticide use (Williams 1986).

4.3.11.1 Survey Results

As discussed in Appendix O, bat reconnaissance surveys were conducted in 2016 and 2021. The existing Coast Highway Bridge consists primarily of a single layer of reinforced concrete supported by steel girders; it does not have a hollow structure or open joints or crevices typical of other bridges that bats are able to use. While there are a few small, shallow holes in the bridge along with a few cliff swallow nests that could potentially provide roosting opportunities for a small number of bats, no areas appeared to be able to support an entire bat colony. However, the adjacent I-5 bridges do provide a design that has the potential to be used by bats.

4.3.11.2 Project Impacts

Alternatives 1 and 2

Direct impacts to vegetation within the project impact area may result in temporary impacts to bat foraging habitat.

Although the existing Coast Highway Bridge does not provide obvious potential for roosting bat colonies, removal of the bridge may result in direct impacts to small numbers of roosting bats. In addition, because the I-5 bridges have potential to support bat colonies and are located immediately adjacent to the existing Coast Highway Bridge, demolition and construction activities at the Coast Highway Bridge could potentially result in impacts (e.g., direct take or increased noise, vibrations, night lighting) to bat species that may be utilizing the existing I-5 bridges.

Habitat Enhancement Area

Habitat enhancement measures would remove non-native trees that may provide suitable day roost sites for bat species, and temporary direct impacts would occur to potentially suitable foraging habitat (e.g., trampling from pedestrian access, damage to vegetation during removal of large specimens of non-native species, herbicide overspray). However, these potential temporary impacts would likely be very minor and outweighed by the beneficial effects of removing invasive species from the river system and increasing the quality of on-site habitat.

4.3.11.3 Avoidance and Minimization Efforts

Implementation of BIO-1, 2, 12, 13, and 14, described in Sections 4.1.1.3 and 4.3.5.3 above, would minimize impacts to potentially occurring bat species. The following additional measure is included to further avoid and/or minimize impacts to bats:

> **BIO-17.** The summer prior to initiation of construction activities, pre-construction bat surveys shall be conducted to determine the presence or absence of roosting bats on or within the Coast Highway and I-5 bridges. These surveys shall be conducted by a biologist qualified to identify the species of bats present and shall consist of three nights of surveys within a

two-week period between late July and early August. If surveys determine that no bats are roosting on the Coast Highway or I-5 bridges, no further measures are required.

If bats are found utilizing the Coast Highway or I-5 bridges, the biologist will determine if the bridges are being used for day roosts or maternal roosts. Appropriate avoidance and minimization measures would be implemented, as determined by a qualified biologist based on the species involved, site conditions, and type of work to be conducted, including but not limited to monitoring by a qualified biologist during construction to check for bats leaving the colony during the day and/or implementation of exclusion measures (for day roosts only). If it is determined that construction activity may cause the abandonment of destruction of a maternal roost, construction activity shall be halted or amended (e.g., timing, location, and/or noise restrictions) until the biologist determines that bat pups have left the roost and are able to fend for themselves.

4.3.11.4 Compensatory Mitigation

Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of native upland and riparian habitat in temporary work areas, would restore on-site suitable day roost and foraging habitat for bat species. In addition, the proposed habitat enhancement and associated conversion of non-native riparian to southern riparian scrub would likely have a long-term beneficial effect on foraging habitat by removing non-native invasive plant.

4.3.11.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to bat species. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to bat roost sites. Although the proposed project would result in permanent and temporary loss of suitable day roost and foraging habitat, implementation of the Conceptual Mitigation Plan (see Appendix B) would have a beneficial effect on the habitat by re-establishing and restoring suitable habitat within temporary impact areas and removing non-native invasive plant species.

4.3.12 Discussion of Pacific Pocket Mouse

Pacific pocket mouse is federally endangered, a CDFW Species of Special Concern, and an MHCP-covered species. The Pacific pocket mouse is a small burrowing mammal that is endemic to coastal southern California from Marina del Rey, Los Angeles County, to the extreme south of San Diego County. It is associated with coastal plant communities and has not been found more than two miles inland from the coast or above 600 feet elevation. Historically, the Pacific pocket mouse was known from 29 trapping sites in eight general areas in Los Angeles, Orange, and San Diego counties (USFWS 1994c). In San Diego County, three historic locations for Pacific pocket mouse are known: the San Onofre area, the Santa Margarita River estuary, and the lower Tijuana River valley. Pacific pocket mouse has been found exclusively in sandy soils derived from marine terraces near

the Pacific Ocean. The most common habitat type today is open coastal sage scrub, but it has also been found in coastal strand, coastal dunes, and river alluvium. The largest known population, in Dana Point headlands, Orange County, inhabits vegetation dominated by California buckwheat and California sagebrush (USFWS 1994c). Pacific pocket mice generally hibernate from September through April and breed from April through July. They feed primarily on the seeds of grasses and forbs and may also consume leafy vegetation and soil-dwelling insects (USFWS 1994c). Threats to this species include loss of habitat within its limited range.

4.3.12.1 Survey Results

Multiple Pacific pocket mouse occurrence records from the 1930s exist in the Oceanside area (County of San Diego 2021). One of the closest records of this species consists of a historic observation in the vicinity of the Santa Margarita River mouth, and this population is thought to be extirpated (see Appendix C).

The BSA was found to support potentially suitable habitat and soils for Pacific pocket mouse, which is similar to the findings of Pacific pocket mouse assessments conducted in 1997 and 1998 (Dudek 1997, MEC Analytical Systems, Inc. 2003). However, this habitat is considered marginally suitable and is restricted to the south side of the San Luis Rey River and west of the Coast Highway Bridge. Since the 1997 and 1998 assessments were conducted, a paved bike path has been constructed and upland habitat restoration has been implemented in this area. The development has resulted in an increase in paved surfaces and compacted soils, and the habitat restoration has resulted in an increase in vegetation density, providing less suitable habitat for this species.

Due to the level of past and ongoing disturbance and isolation from other stands of suitable habitat and recorded populations, there continues to be a low potential for Pacific pocket mouse to occur in the BSA. Furthermore, the habitat within the immediate project impact area has a low suitability for this species.

4.3.12.2 Project Impacts

No impact is anticipated to occur to Pacific pocket mouse due to the low likelihood of this species' occurrence and marginal suitability of habitat within the project impact area.

4.3.12.3 Avoidance and Minimization Efforts

No additional species-specific measures are proposed. Implementation of BIO-1, 2, and 13, described in Sections 4.1.1.3 and 4.3.5.3 above, would avoid and minimize impacts to Pacific pocket mouse and potentially suitable habitat for this species.

4.3.12.4 Compensatory Mitigation

Implementation of the Conceptual Mitigation Plan (see Appendix B), which includes creation, restoration, and re-establishment of Diegan coastal sage scrub habitat in temporary work areas, would restore on-site suitable habitat for this species. In addition, the proposed habitat enhancement and associated conversion of non-native riparian to southern riparian scrub would likely have a long-term beneficial effect on this species' habitat by removing non-native invasive plant species from adjacent areas.

4.3.12.5 Cumulative Impacts

Ongoing and anticipated future work within the lower reach of the San Luis Rey River will likely be restricted to flood control and infrastructure maintenance projects. Known ongoing and future projects are summarized in Section 4.1.1.5.

When combined with current, future, and reasonably foreseeable actions in the vicinity of the BSA, implementation of the proposed project is not anticipated to result in adverse cumulative impacts to Pacific pocket mouse. In accordance with federal, state, and local policies, other projects in the region with similar impacts will be required to minimize and/or mitigate impacts to this species and its habitat. Although the proposed project would result in permanent and temporary loss of potentially suitable habitat for Pacific pocket mouse, implementation of the Conceptual Mitigation Plan would re-establish and restore suitable habitat within temporary impact areas and remove non-native invasive plant species from adjacent areas (see Appendix B).

Chapter 5 – Conclusions and Regulatory Determinations

5.1 Federal Endangered Species Act Consultation Summary

Caltrans District 11 obtained the list of threatened and endangered species that may occur in and/or be affected by the North Coast Highway Bridge Replacement project from USFWS on November 18, 2021 and from NMFS on December 10, 2021. The species and critical habitat identified in this list are presented in Table 6 below. As formal Section 7 consultation has not yet been initiated, a preliminary effect determination for each species is presented in the table based on the impact analyses provided in this report.

Table 6: Threatened and Endangered Species Identified by USFWS and NMFS with Potential to Occur and/or Be Affected by the Project.

Species	Federal Status	Critical Habitat within the Project Area	Preliminary Effect Determination
Coastal dunes milk-vetch (*Astragalus tener* var. *titi*)	Endangered	No	No effect
San Diego button-celery (*Eryngium aristulatum* var. *parishii*)	Endangered	No	No effect
San Diego thornmint (*Acanthomintha ilicifolia*)	Threatened	No	No effect
Spreading navarretia (*Navarretia fossalis*)	Threatened	No	No effect
Riverside fairy shrimp (*Streptocephalus woottoni*)	Endangered	No	No effect
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	Endangered	No	No effect
Monarch (*Danaus plexippus*)	Candidate	No	NLAA
Tidewater goby (*Eucyclogobius newberryi*)	Endangered	Final designated	NLAA
Southern steelhead (*Oncorhynchus mykiss irideus*)	Endangered	No	NLAA
North American green sturgeon (*Acipenser medirostris*)	Threatened	No	No effect
California least tern (*Sterna antillarum brownii*)	Endangered	No	No effect
Coastal California gnatcatcher (*Polioptila californica californica*)	Threatened	No	NLAA
Least Bell's vireo (*Vireo bellii pusillus*)	Endangered	Final designated	NLAA
Light-footed Ridgway's (clapper) rail (*Rallus longirostris levipes*)	Endangered	No	NLAA
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Endangered	Final designated	NLAA
Western snowy plover (*Charadrius nivosus* ssp. *nivosus*)	Threatened	No	No effect
Pacific pocket mouse (*Perognathus longimembris pacificus*)	Endangered	No	NLAA
Stephens' kangaroo rat (*Dipodomys stephensi*)	Endangered	No	No effect
Black abalone (*Haliotis cracherodii*)	Endangered	N/A	No effect
White abalone (*Haliotis sorenseni*)	Endangered	N/A	No effect

Species	Federal Status	Critical Habitat within the Project Area	Preliminary Effect Determination
North American green sturgeon (*Acipenser medirostris*) – southern Distinct Population Segment	Threatened	N/A	No effect
Loggerhead turtle (*Caretta caretta*) – North Pacific Ocean Distinct Population Segment	Endangered	N/A	No effect
Green turtle (*Chelonia mydas*) – East Pacific Distinct Population Segment	Threatened	N/A	No effect
Olive Ridley turtle (*Lepidochelys olivacea*)	Threatened	N/A	No effect
Leatherback turtle (*Dermochelys coriacea*)	Endangered	N/A	No effect
Sei whale (*Balaenoptera borealis*)	Endangered	N/A	No effect
Blue whale (*Balaenoptera musculus*)	Endangered	N/A	No effect
Fin whale (*Balaenopteridae physalus*)	Endangered	N/A	No effect
North Pacific right whale (*Eubalaena japonica*)	Endangered	N/A	No effect
Humpback whale (*Megaptera novaeangliae*)	Endangered	N/A	No effect
Killer whale (*Orcinus orca*) – southern resident	Endangered	N/A	No effect
Sperm whale (*Physeter microcephalus*)	Endangered	N/A	No effect
Guadalupe fur seal (*Arctocephalus townsendi*)	Endangered	N/A	No effect
NLAA = may affect, not likely to adversely affect; LAA = may affect, likely to adversely affect			

5.2 Essential Fish Habitat Consultation Summary

The project may adversely affect EFH for groundfish, pelagic fish, or Pacific coast salmon species. However, no net permanent impact to the San Luis Rey River streambed is proposed, and all temporary impact areas will be revegetated and re-contoured to pre-construction conditions.

5.3 California Endangered Species Act Consultation Summary

The following two State listed avian species have potential to occur within the BSA: light-footed Ridgway's rail and least Bell's vireo. With implementation of the avoidance, minimization, and mitigation measures listed in Sections 4.1 and 4.3, no take of State-listed species is anticipated. However, a consistency determination (Section 2080.1 of the CFGC) will be required to ensure the proposed measures would adequately protect the species and avoid "take." The proposed avoidance and minimization measures include general best management practices, pre-construction surveys, biological monitoring during construction, seasonal restrictions, and noise monitoring. The proposed on-site habitat-based mitigation is discussed in the Conceptual Mitigation Plan (see Appendix B).

5.4 Wetlands and Other Waters Coordination Summary

A jurisdictional waters/wetland delineation for the project was conducted in 2021 (see Appendix F). Resources under the jurisdiction of USACE, CDFW, RWQCB, and CCC were identified within the project impact area, including wetland waters of the U.S., non-wetland waters of the U.S, State streambed, adjacent wetlands/riparian habitat, and ESHA. Total jurisdictional areas that occur within the project impact area are presented on Table 5 (see Section 4.1.7.2) and discussed in more detail in Sections 4.1.7 and 4.1.8.

Permanent and temporary impacts to jurisdictional waters may be authorized through permit authorizations from USACE through the Section 404 Permit Program, from CDFW through a 1602 Streambed Alteration Agreement, from RWQCB through a 401 State Water Quality Certification, and from the CCC under a Coastal Development Permit.

Implementation of the Conceptual Mitigation Plan (see Appendix B) will achieve required mitigation for approved impacts to USACE, CDFW, RWQCB, and coastal jurisdictional waters through habitat creation, re-establishment, restoration, and/or enhancement to achieve a no net loss of jurisdictional waters. All mitigation requirements for project Alternatives 1 and 2, would be fulfilled on site through implementation of the Conceptual Mitigation Plan (see Appendix B).

5.5 Invasive Species

Invasive species observed within the BSA are presented in Table 2 in Section 3.1.3.5. Implementation of proposed avoidance and minimization measures BIO-1, 2, 3, and 4, which include general best management practices and biological monitoring during construction, is anticipated to prevent the introduction or spread of invasive species as a result of construction activities. Furthermore, implementation of the Conceptual Mitigation Plan directs active removal of non-native invasive species from the project impact area and adjacent Habitat Enhancement Area (see Appendix B).

5.6 Migratory Bird Treaty Act Summary

The BSA supports a wide variety of resident and migratory avian species. This includes common species such as Anna's hummingbird, mourning dove, song sparrow, lesser goldfinch, California towhee, red-winged blackbird, and great-tailed grackle; as well as special status species such as light-footed Ridgway's rail, western least bittern, yellow warbler, and Clark's marsh wren. Therefore, removal of vegetation during the breeding season (January 1 through September 30) may result in impacts to nesting birds protected by the MBTA.

Implementation of BIO-1, 2, 12, 13, 14, 15, 16, 17, and 18 described in Sections 4.1.1.3, 4.3.5.3, 4.3.6.3, and 4.3.8.3 above, would avoid and/or minimize impacts to migratory birds and raptors.

5.7 California Environmental Quality Act

The project has the potential to impact biological resources. Implementation of the avoidance, minimization, and mitigation measures provided in Chapter 4 and the Conceptual Mitigation Plan (see Appendix B) is anticipated to reduce impacts to a level of less than significant.

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Appendix A – Project Maps

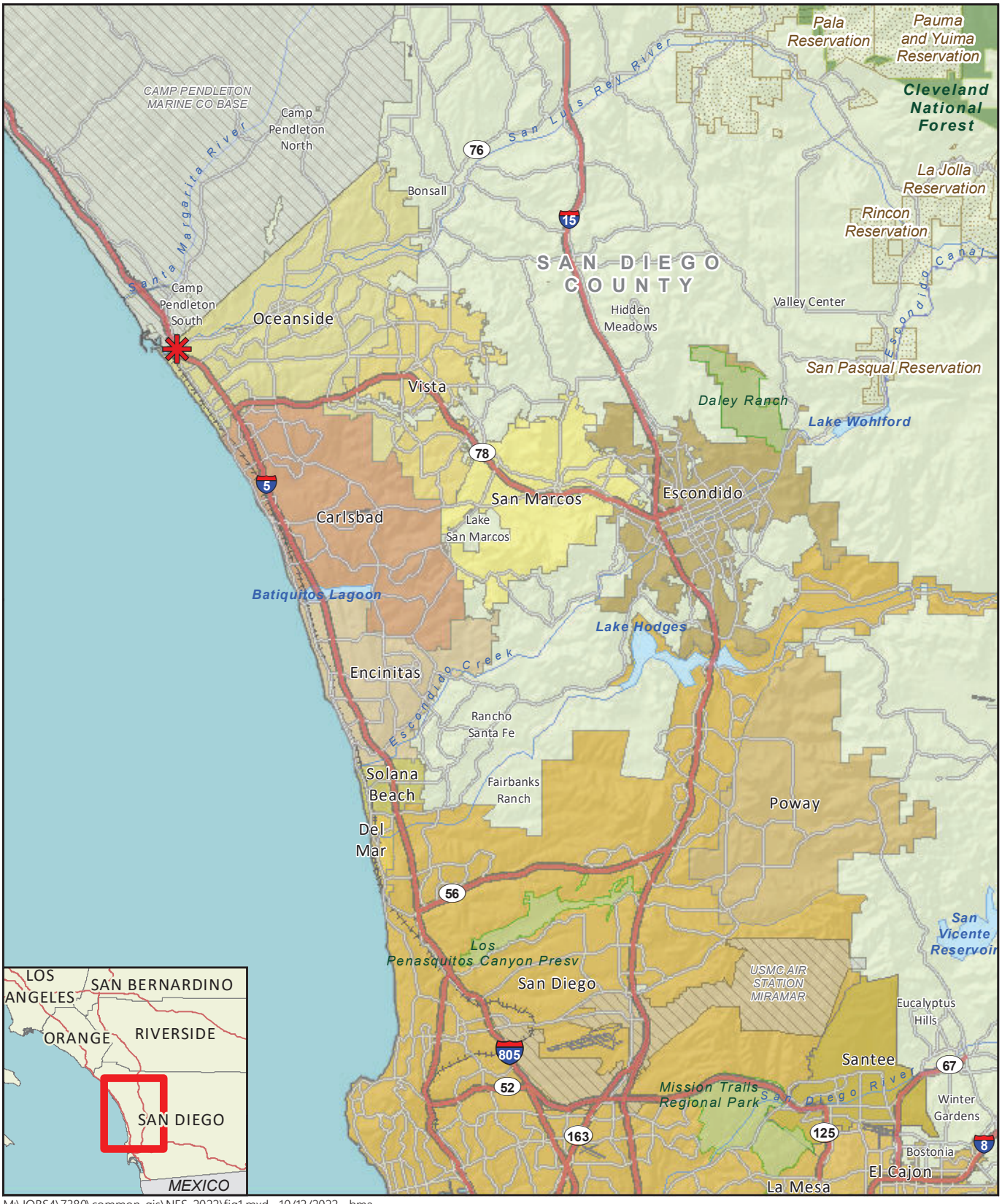
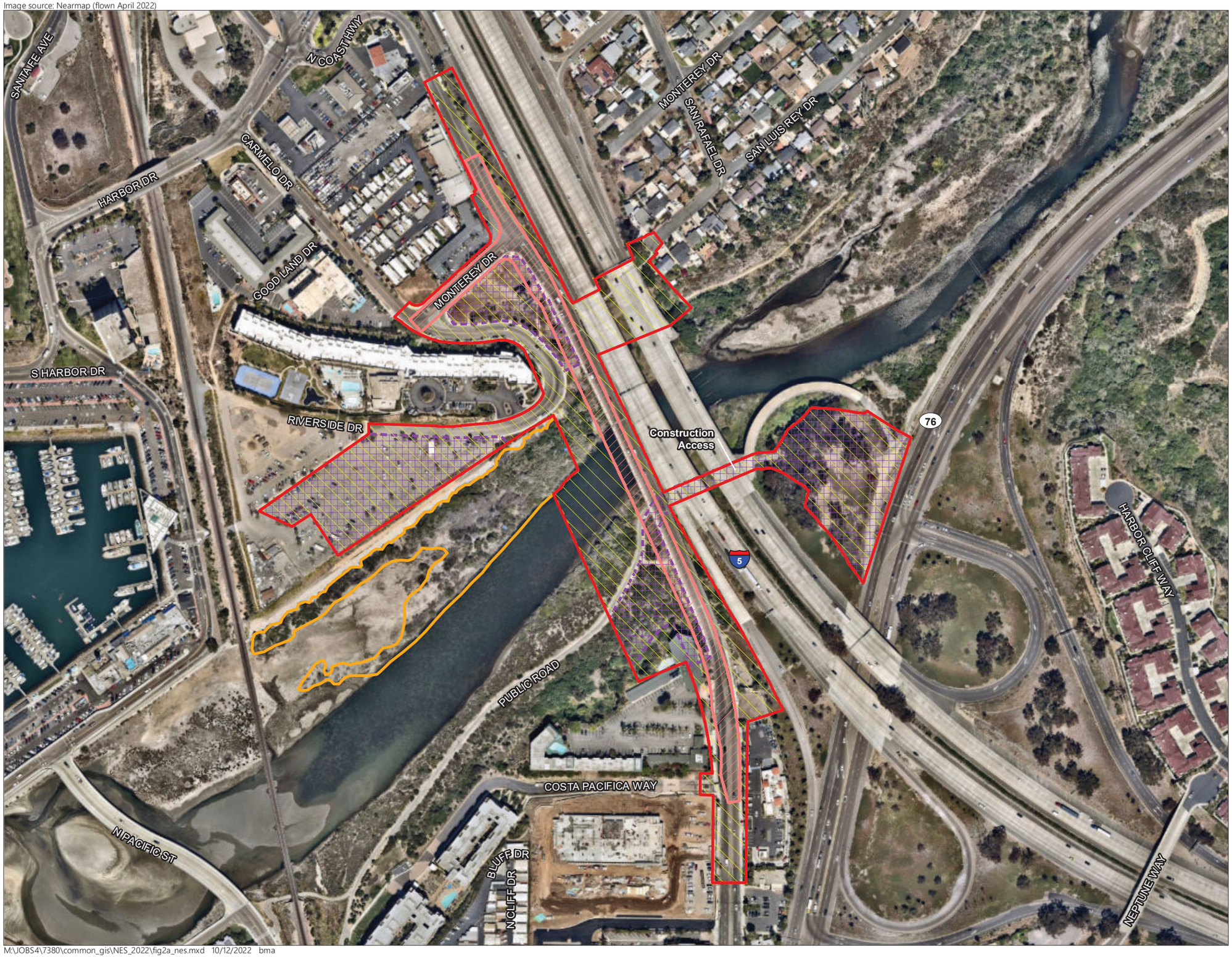


FIGURE 1
Regional Location

Image source: Nearmap (flown April 2022)



- Project Impact Area
- Habitat Enhancement Area (Project Mitigation)
- Alternative 1 Alignment
- Temporary Impacts
- Staging Areas

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FIGURE 2a
Project Impact Area
Alternative 1

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Image source: Nearmap (flown April 2022)



Project Impact Area

Habitat Enhancement Area (Project Mitigation)

Alternative 2 Alignment

Temporary Impacts

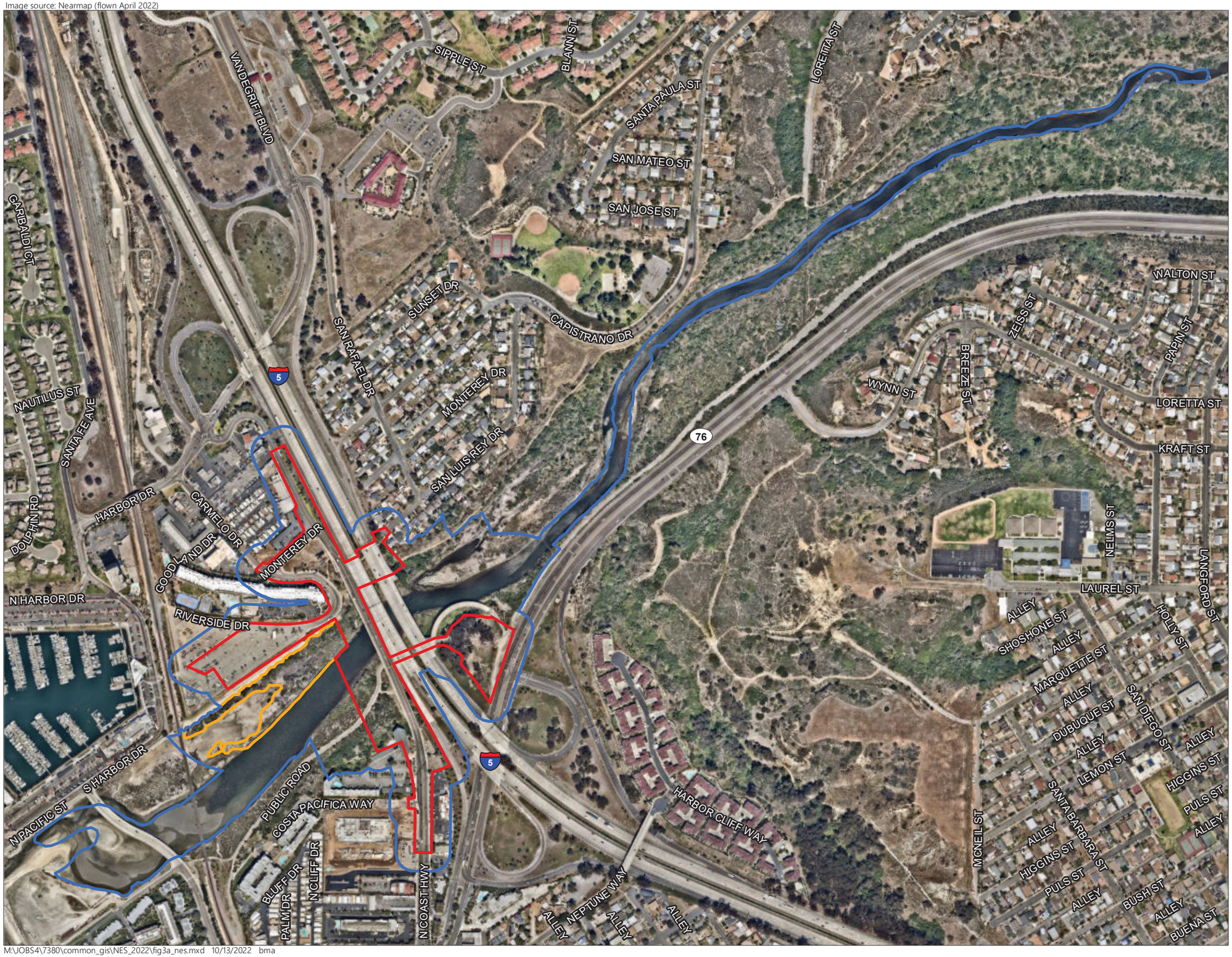
Staging Areas

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FIGURE 2b
Project Impact Area
Alternative 2

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Image source: Nearmap (flown April 2022)



Project Impact Area

Biological Study Area

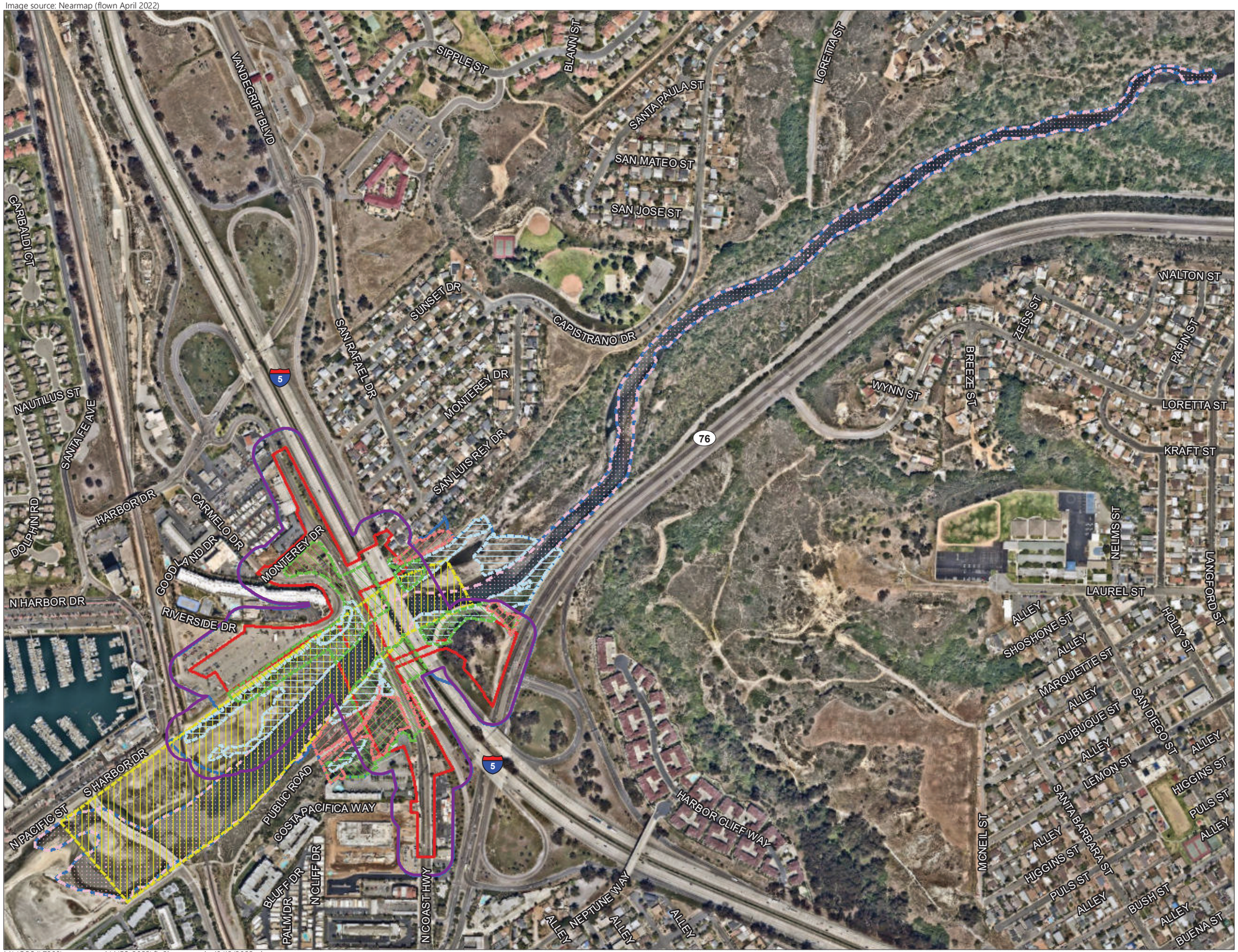
Habitat Enhancement Area (Project Mitigation)

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FIGURE 3a
Biological Study Area and Project Impact Area on Aerial Photograph

Image source: Nearmap (flown April 2022)



Project Impact Area

Biological Study Area

2021 Survey Areas

Coastal California Gnatcatcher

Least Bell's Vireo/
Southwestern Willow Flycatcher

Light-footed Ridgway's Rail

Rare Plants

Fish

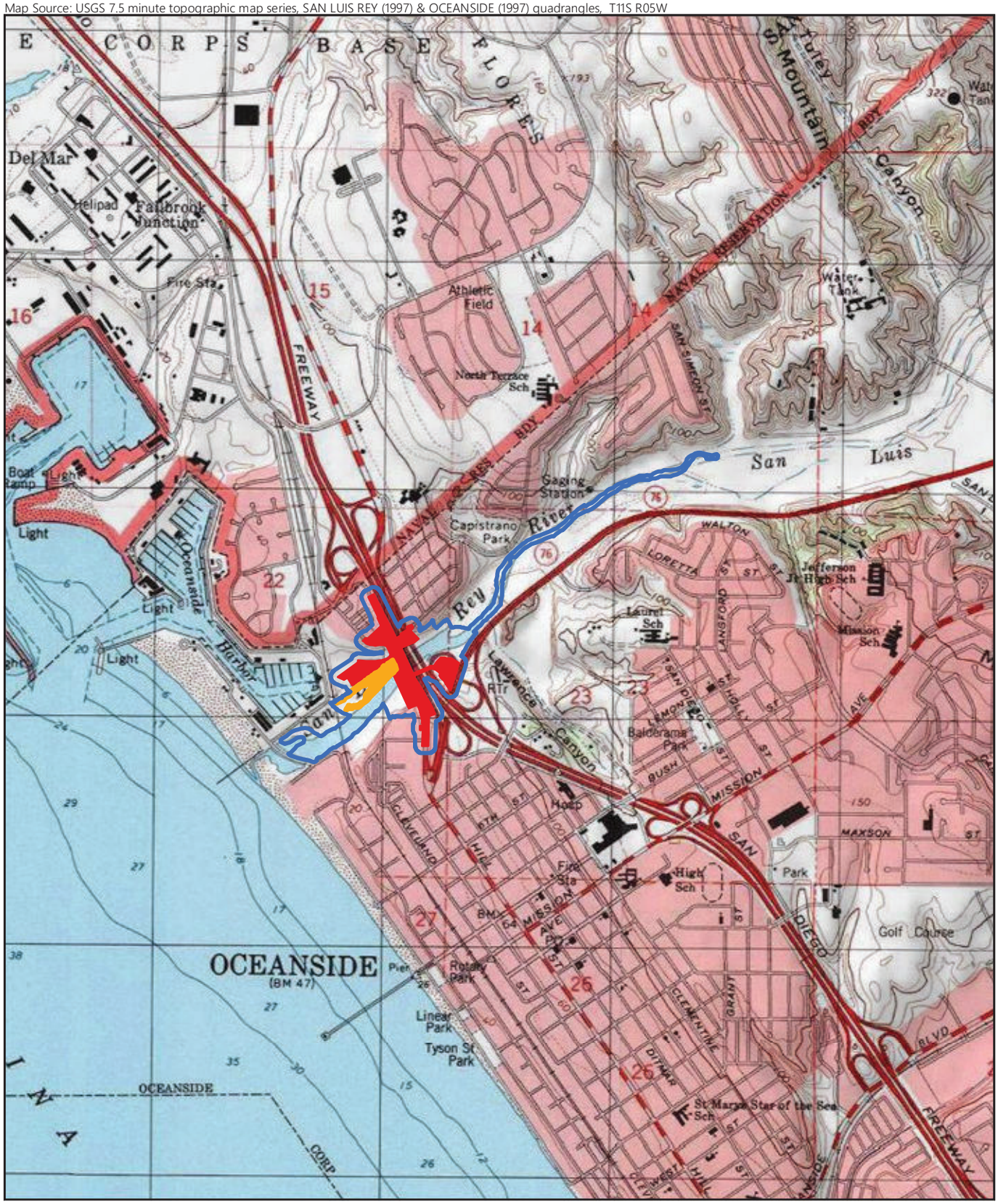
Jurisdictional Wetland/Waters
Review Area

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FIGURE 3b
Biological Survey Areas

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



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0 Feet 2,000

Project Impact Area

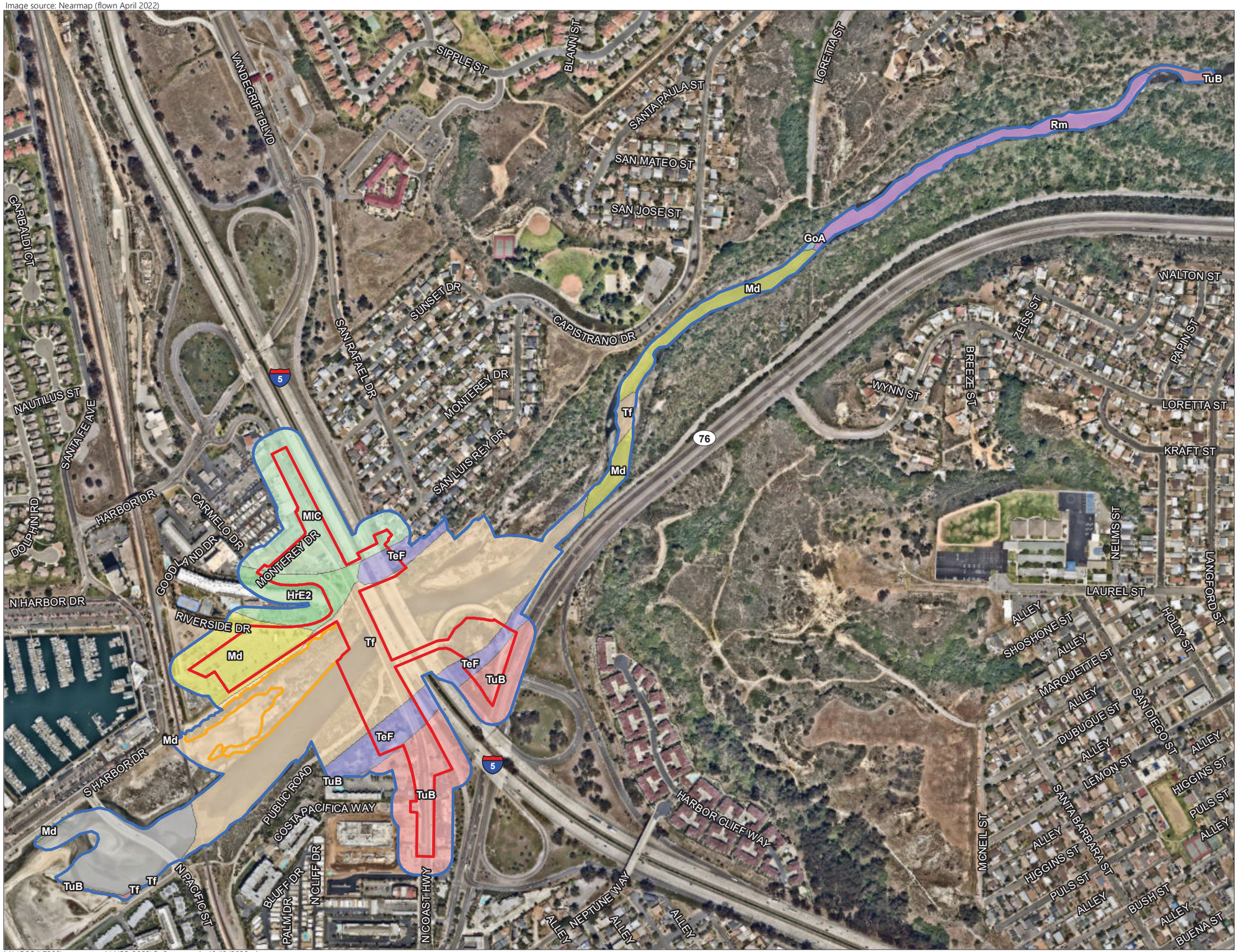
Habitat Enhancement Area (Project Mitigation)

Biological Study Area

FIGURE 4

Biological Study Area and Project Impact Area on USGS Map

Image source: Nearmap (flown April 2022)



Project Impact Area

Biological Study Area

Habitat Enhancement Area (Project Mitigation)

Soil Classification

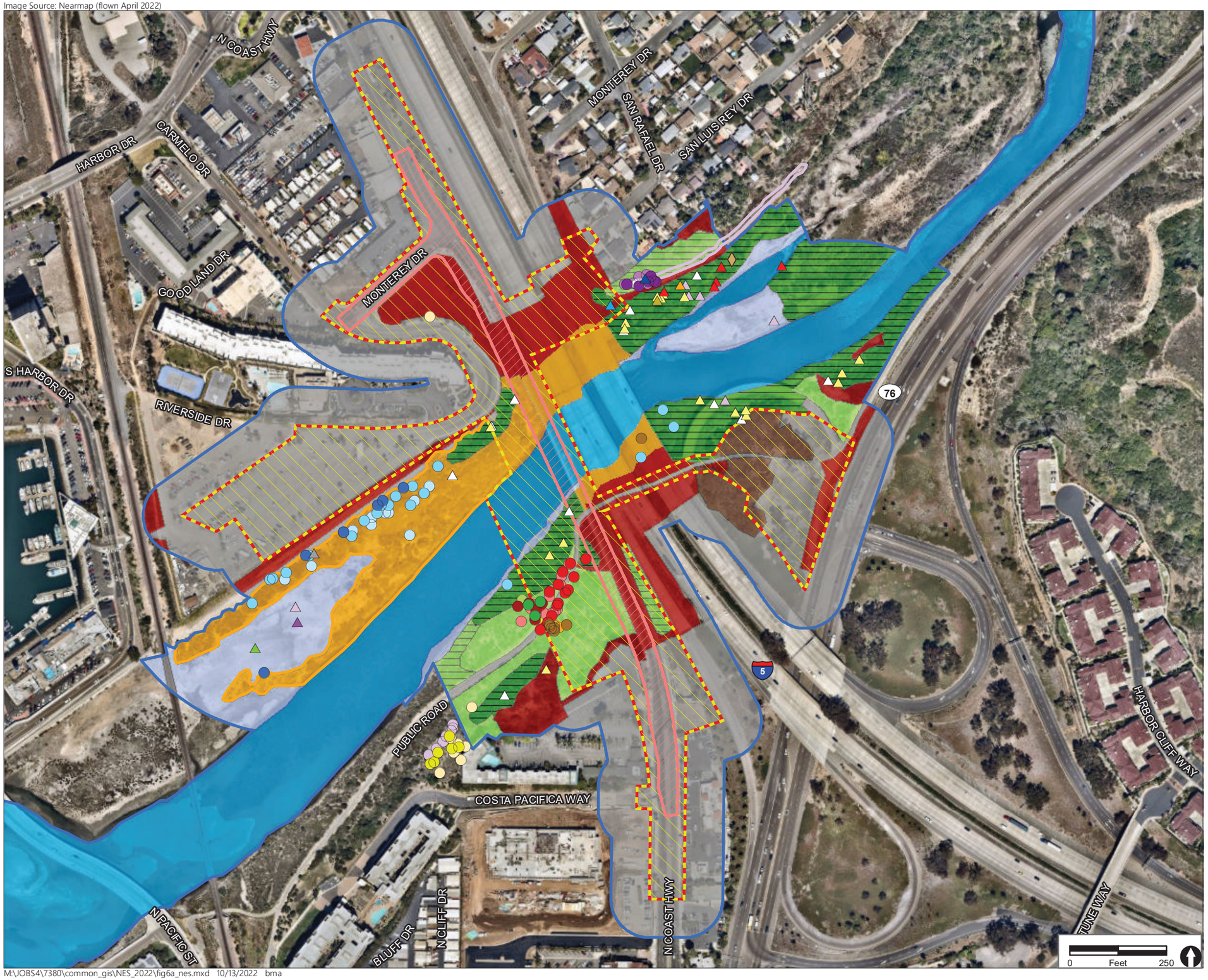
- GoA - Grangeville fine sandy loam, 0-2% slopes
- HrE2 - Huerhuero loam, 15-30% slopes, eroded
- Md - Made land
- MIC - Marina loamy coarse sand, 2-9% slopes
- Rm - Riverwash
- TeF - Terrace escarpments
- Tf - Tidal flats
- TuB - Tujunga sand, 0-5% slopes
- NO DATA/Water

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FIGURE 5
Soil Types Mapped
within Biological Study Area

Image Source: Nearmap (flown April 2022)



Project Impact Area
Biological Study Area
Habitat Enhancement Area (Project Mitigation)
Permanent Impacts
Temporary Impacts

Species Observations

Sensitive Plant Species

2015	2017	2021	
●	●	●	Lewis' Evening-primrose
●			San Diego Ambrosia
●	●	●	San Diego Marsh-elder
●	●	●	Southwestern Spiny Rush
●	●	●	Sticky Dudleya
	●	●	Nuttall's Acmispon
○			Variegated Dudleya

Sensitive Avian Species

△	▲		Clark's Marsh Wren
		▲	Light-footed Ridgway's Rail
		▲	Olive-sided Flycatcher
		▲	Western Least Bittern
△	△	▲	Yellow Warbler
	▲		Yellow-breasted Chat
	▲		Least Bell's Vireo
		▲	Coastal California Gnatcatcher

Avian Parasite

◆ Brown-headed Cowbird

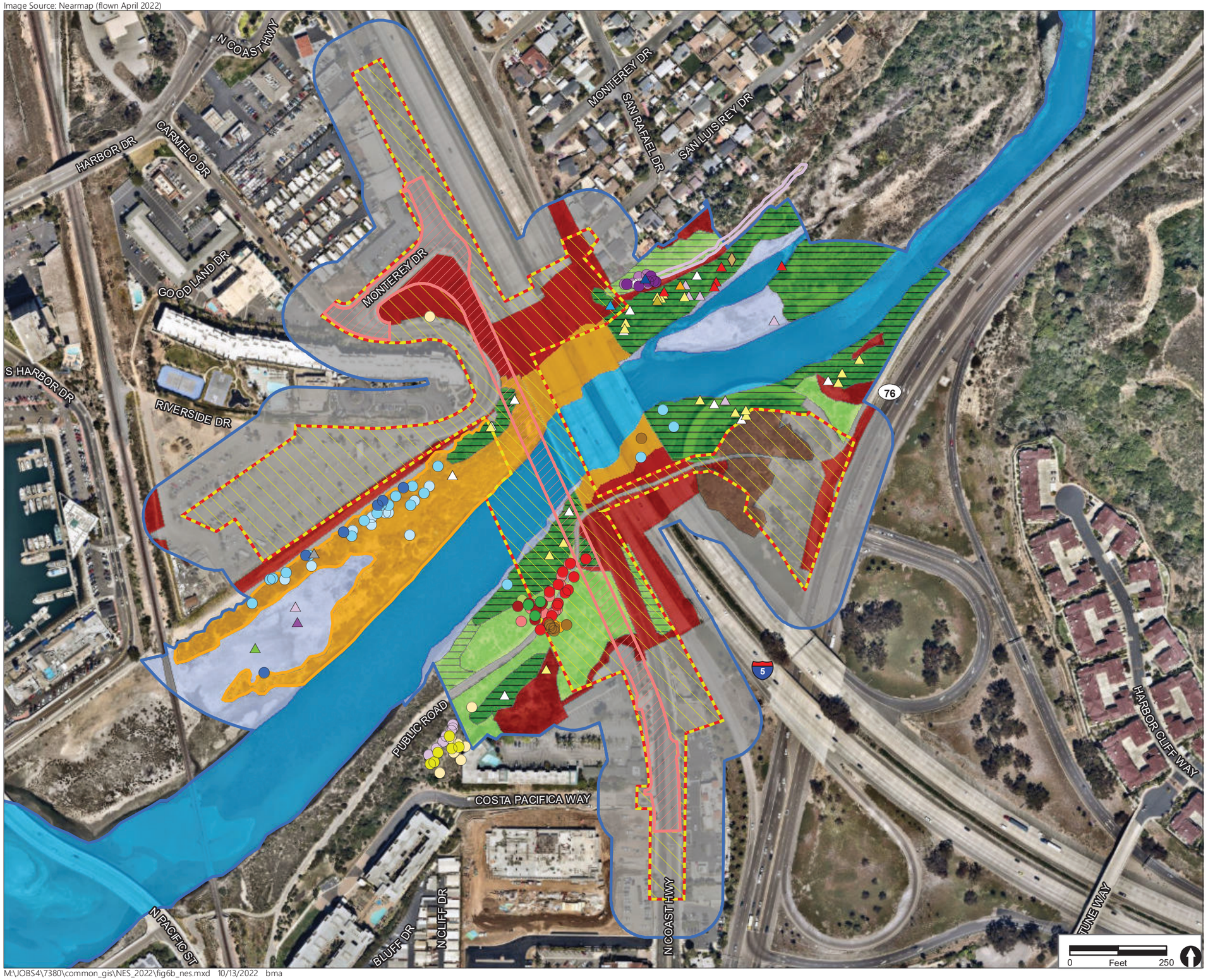
Vegetation Communities and Land Cover Types

- Diegan Coastal Sage Scrub
- Disturbed Diegan Coastal Sage Scrub
- Disturbed Southern Riparian Scrub
- Freshwater Marsh
- Open Water
- Non-native Riparian
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

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FIGURE 6a
Biological Resources within the Biological Study Area and Project Impact Area
Alternative 1

Image Source: Nearmap (flown April 2022)



Project Impact Area
Biological Study Area
Habitat Enhancement Area (Project Mitigation)
Permanent Impacts
Temporary Impacts

Species Observations

Sensitive Plant Species

2015	2017	2021	
●	●	●	Lewis' Evening-primrose
●			San Diego Ambrosia
●	●	●	San Diego Marsh-elder
●	●	●	Southwestern Spiny Rush
●	●	●	Sticky Dudleya
	●	●	Nuttall's Acmispon
	●		Variegated Dudleya

Sensitive Avian Species

△	△	▲	Clark's Marsh Wren
	▲		Light-footed Ridgway's Rail
	▲		Olive-sided Flycatcher
	▲		Western Least Bittern
△	△	▲	Yellow Warbler
	▲		Yellow-breasted Chat
	▲		Least Bell's Vireo
	▲		Coastal California Gnatcatcher

Avian Parasite

◆ Brown-headed Cowbird

Vegetation Communities and Land Cover Types

- Diegan Coastal Sage Scrub
- Disturbed Diegan Coastal Sage Scrub
- Disturbed Southern Riparian Scrub
- Freshwater Marsh
- Open Water
- Non-native Riparian
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

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FIGURE 6b
Biological Resources within the Biological Study Area and Project Impact Area
Alternative 2

Image source: Nearmap (flown April 2022)



- Project Impact Area
- Permanent Impacts
- Temporary Impacts
- Habitat Enhancement Area (Project Mitigation)

Waters of the U.S.

- Wetland
- Non-wetland Waters

0 Feet 250

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FIGURE 7a
Location of Waters of the U.S.
Alternative 1

Image Source: Nearmap (flown April 2022)



Project Impact Area

Permanent Impacts

Temporary Impacts

Habitat Enhancement Area (Project Mitigation)

Waters of the U.S.

Wetland

Non-wetland Waters

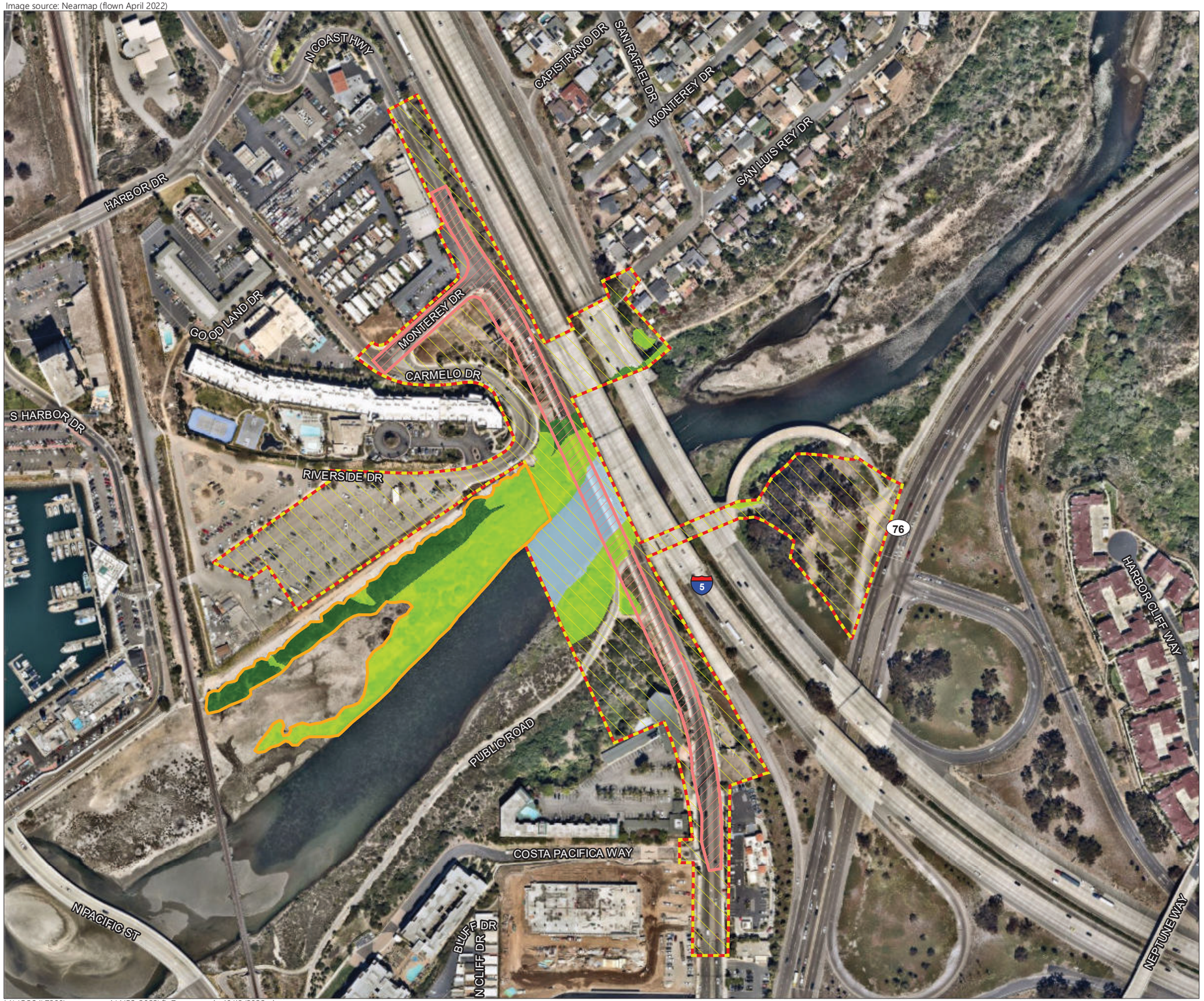
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FIGURE 7b

Location of Waters of the U.S.
Alternative 2

Image source: Nearmap (flown April 2022)



- Project Impact Area
- Permanent Impacts
- Temporary Impacts
- Habitat Enhancement Area (Project Mitigation)

Waters of the State

- Wetland
- Streambed
- Riparian

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FIGURE 7c
Location of Waters of the State
Alternative 1

Image source: Nearmap (flown April 2022)



- Project Impact Area
- Permanent Impacts
- Temporary Impacts
- Habitat Enhancement Area (Project Mitigation)

Waters of the State

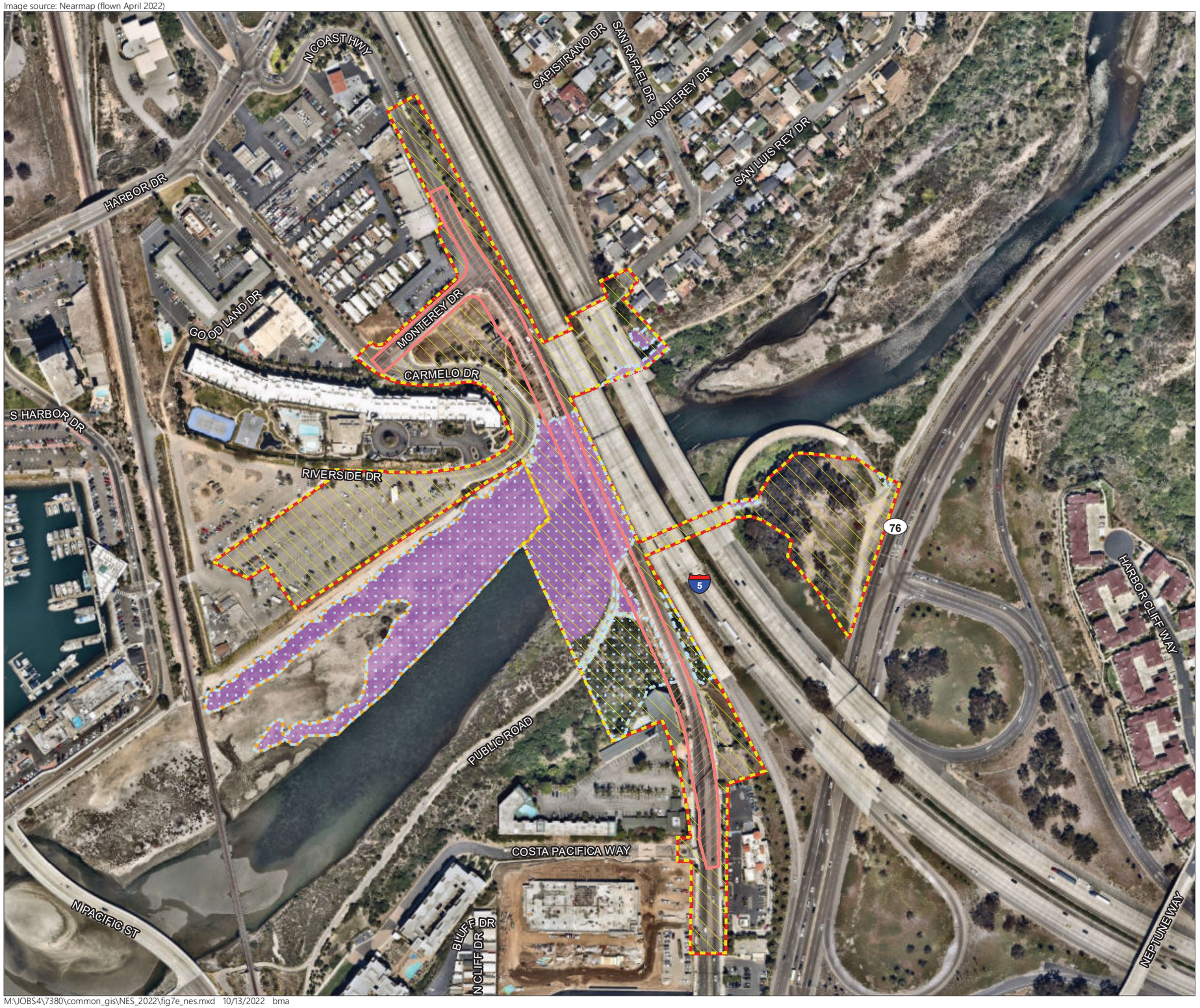
- Wetland
- Streambed
- Riparian

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FIGURE 7d
Location of Waters of the State
Alternative 2

Image source: Nearmap (flown April 2022)



- Project Impact Area
- Permanent Impacts
- Temporary Impacts
- Habitat Enhancement Area (Project Mitigation)
- State Coastal Wetlands
- Environmentally Sensitive Habitat Areas

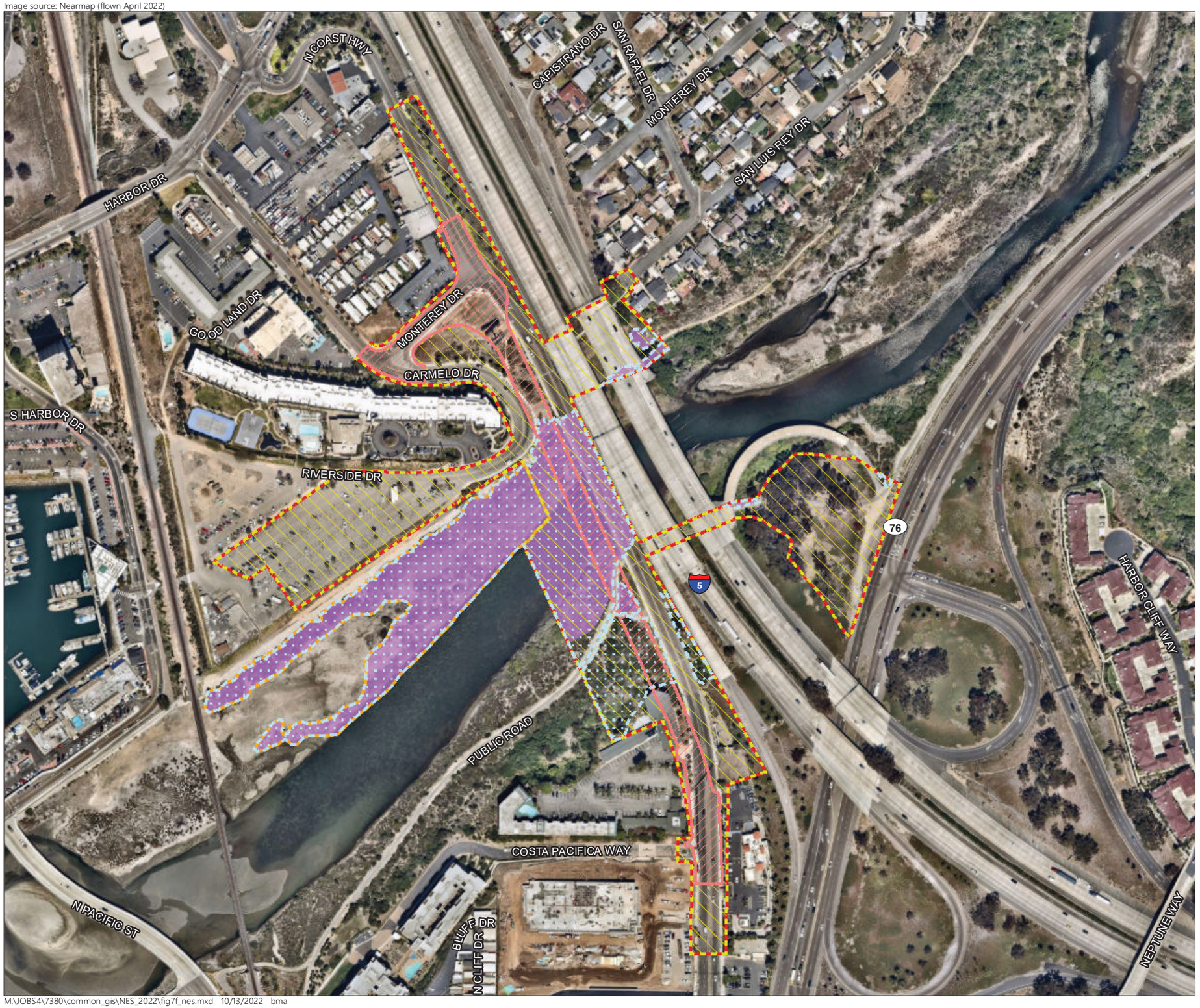
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FIGURE 7e

Location of California Coastal Commission Wetlands and Environmentally Sensitive Habitat Areas (ESHA) - Alternative 1

Image source: Nearmap (flown April 2022)



Project Impact Area

Permanent Impacts

Temporary Impacts

Habitat Enhancement Area (Project Mitigation)

State Coastal Wetlands

Environmentally Sensitive Habitat Areas

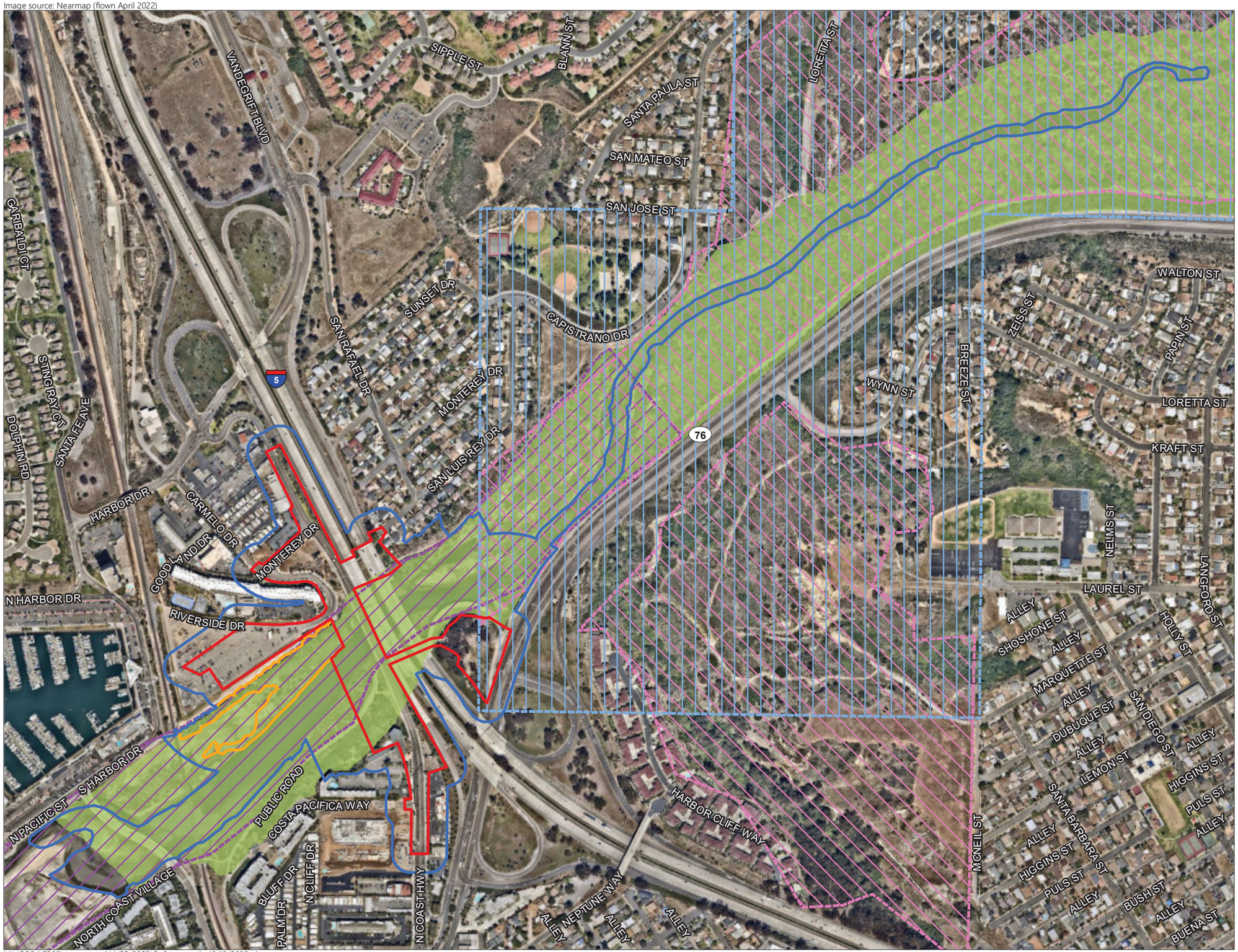
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FIGURE 7f

Location of California Coastal Commission Wetlands and Environmentally Sensitive Habitat Areas (ESHA) - Alternative 2

Image source: Nearmap (flown April 2022)



Project Impact Area

Biological Study Area

Habitat Enhancement Area (Project Mitigation)

Tidewater Goby FCH

Least Bell's Vireo FCH

Coastal California Gnatcatcher FCH

Southwestern Willow Flycatcher FCH

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FIGURE 8

USFWS Critical Habitats near the Biological Study Area and Project Impact Area

Appendix B - Conceptual Mitigation Plan for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement, Oceanside, California

Conceptual Mitigation Plan for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Oceanside, California

Prepared for
Moffatt & Nichol
1660 Hotel Circle North, Suite 500
San Diego, CA 92108
Contact: Mr. Perry Schacht

Prepared by
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RECON Number 7380
April 21, 2023

Meagan Olson, Senior Restoration Ecologist

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12: Performance Standards for Diegan Coastal Sage Scrub 38
13: Monitoring Schedule 42

Acronyms and Abbreviations

BSA	Biological Study Area
Caltrans	California Department of Transportation
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
City	City of Oceanside
CNPS	California Native Plant Society
CWA	Clean Water Act
FCH	Final Critical Habitat
FHWA	Federal Highway Administration
HEA	Habitat Enhancement Area
HBP	Highway Bridge Program
I-5	Interstate 5
NES	Natural Environment Study
PEP	Plant Establishment Period
PIA	Project Impact Area
plan	Conceptual Mitigation Plan
project	Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement
RECON	RECON Environmental, Inc.
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers

1.0 Introduction

This Conceptual Mitigation Plan for the Coast Highway (Hill Street) Bridge (Br. No. 57C0322) over San Luis Rey River Replacement Project (project) has been prepared for the City of Oceanside (City) to serve as a planning tool for the primary purpose of conceptualizing an approach to meet typical performance standards for habitats being restored. This document is conceptual in design and will be finalized following certification of the Natural Environment Study (NES) and permit authorization from applicable regulatory agencies. The objectives in this document have not been approved for implementation.

The project is funded by the federal-aid Highway Bridge Program (HBP) administered by the Federal Highway Administration (FHWA) through the California Department of Transportation (Caltrans) Local Assistance. The replacement bridge will meet current applicable City, American Association of State Highway and Transportation Officials, FHWA, and Caltrans design standards. The bridge would be replaced close to the same location; just immediately west of the current bridge alignment to maintain service on the existing roadway and bridge during construction.

1.1 Project Description

1.1.1 Project Location and Purpose

The project is located in the city of Oceanside, San Diego County, California (Figures 1 and 2). The site is located approximately 0.3 mile south of Harbor Drive, immediately west of and parallel to Interstate 5 (I-5; Figure 3). The general setting is a perennial river surrounded by commercial development and includes roadways, curbs, and a sidewalk on the west side. The bridge currently carries vehicular, bicycle, and pedestrian traffic on the Coast Highway over the San Luis Rey River.

The existing bridge was built in 1929 and is in poor structural condition. At 92 years old, the bridge is past its useful service life. The bridge is a "Fracture Critical" steel truss because it is structurally non-redundant and has steel members loaded in tension. If one of these members fractured, it would cause collapse of a span.

The purpose of this project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable existing structure and replace it with a new bridge designed to current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. The replacement bridge will conform to local, state, and federal environmental and planning policies using the HBP funds.

To prepare the NES (RECON Environmental, Inc. [RECON] 2023), a Biological Study Area (BSA) was identified to include all areas that could be potentially impacted by the project. The BSA was surveyed in 2015, 2016, 2017, and 2021 to determine the existing conditions of the project vicinity. Figure 4 shows the BSA, the Project Impact Area (PIA) where all temporary and permanent impacts for either project alternative will occur, the proposed Habitat Enhancement Area (HEA), the vegetation communities and land cover types present, and special status plant and wildlife species observed.



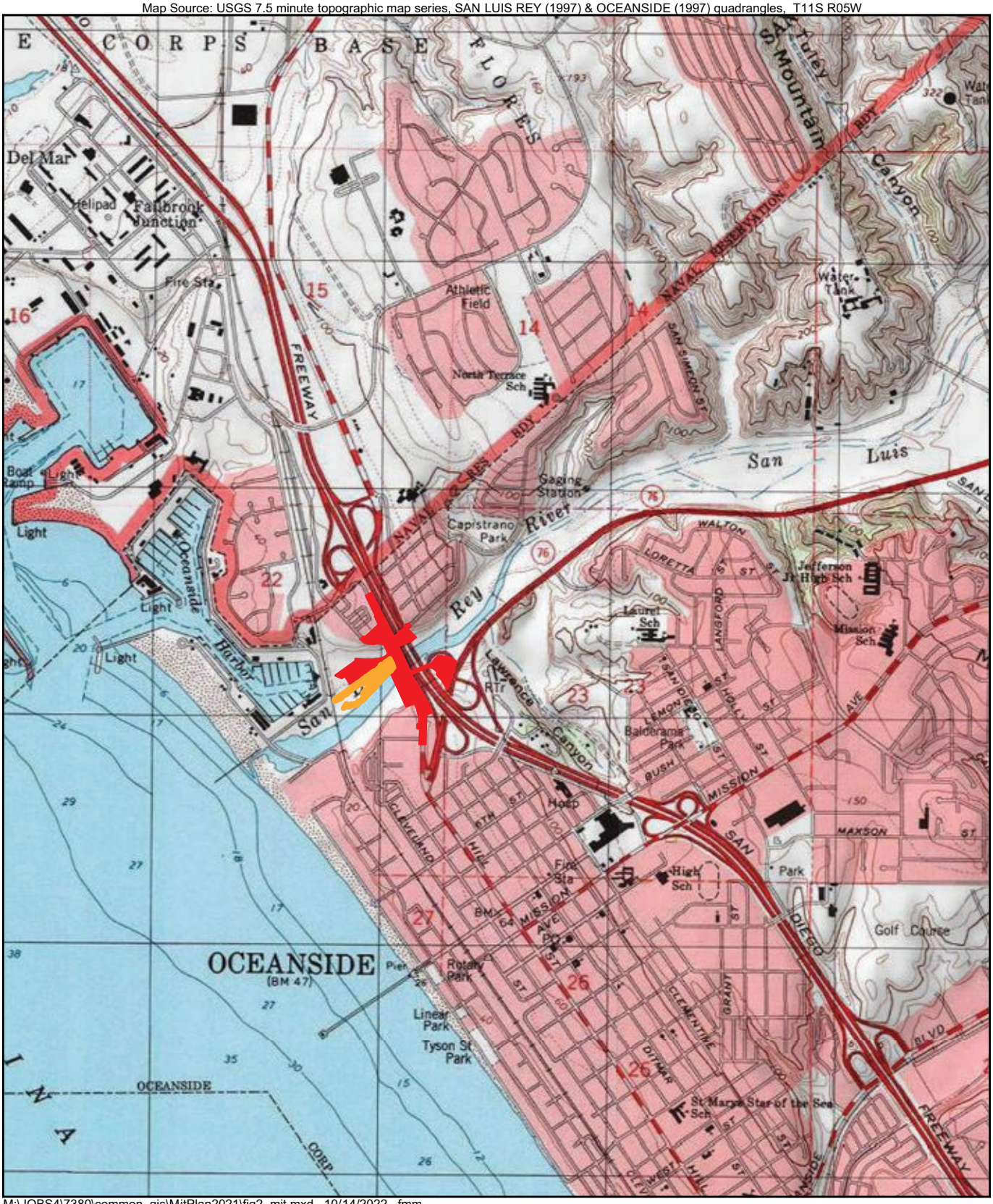
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Project Location

FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



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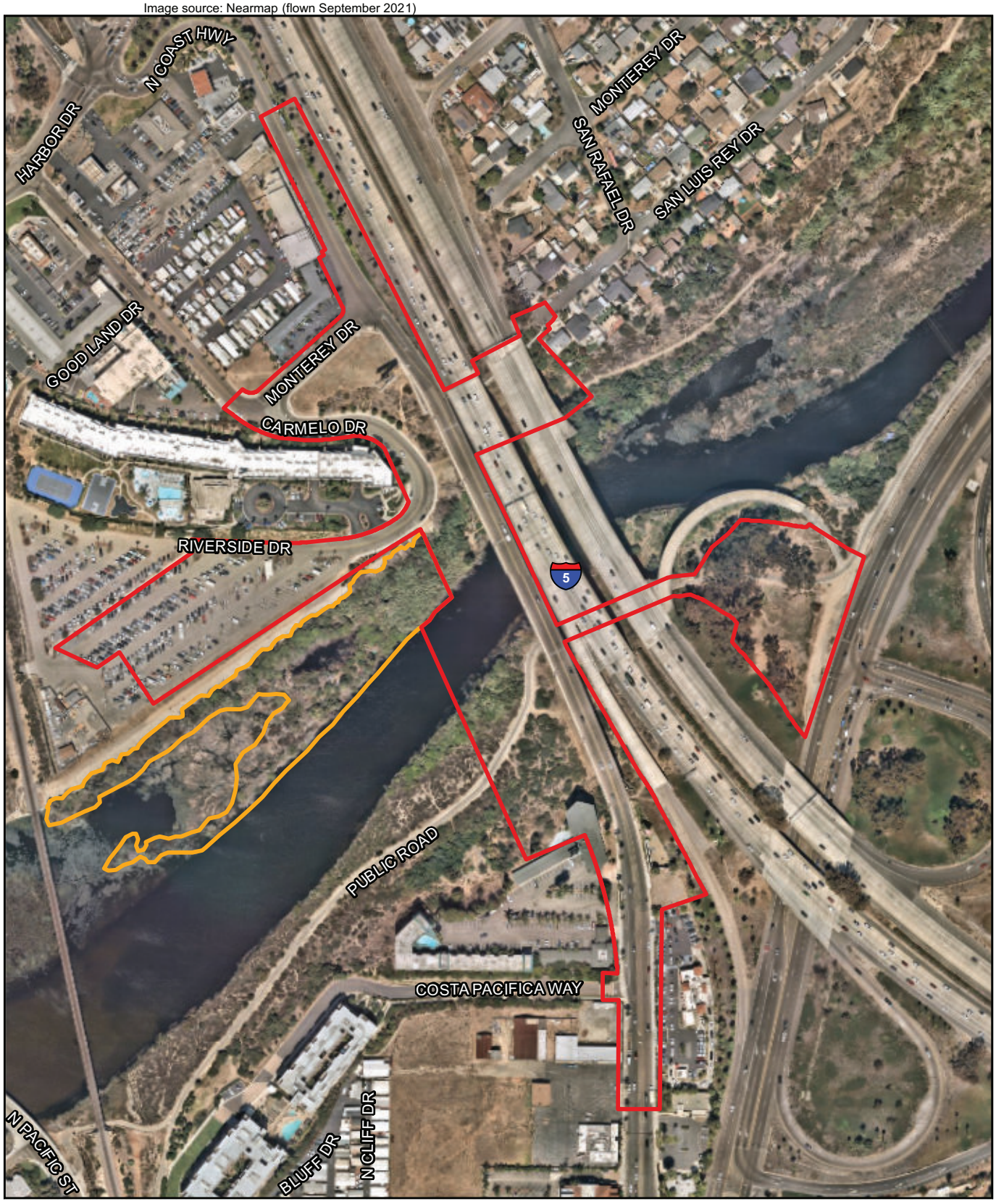
Project Impact Area

Habitat Enhancement Area (Project Mitigation)

FIGURE 2

Project Locaion on USGS Map

Image source: Nearmap (flown September 2021)



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Project Impact Area

Habitat Enhancement Area (Project Mitigation)

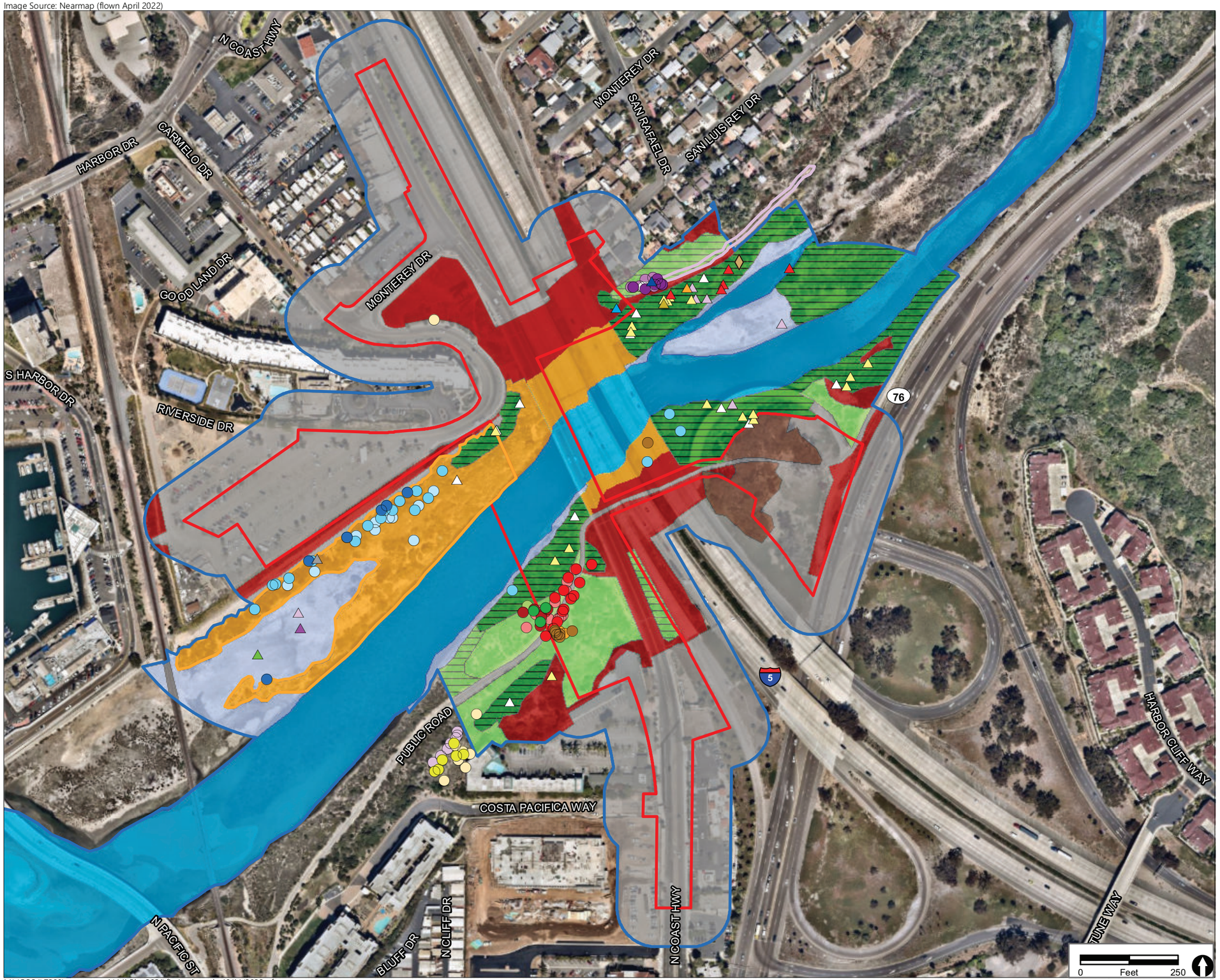
FIGURE 3

Project Location on Aerial Photograph

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Image Source: Nearmap (flown April 2022)



Project Impact Area
Biological Study Area
Habitat Enhancement Area (Project Mitigation)

Species Observations

Sensitive Plant Species

2015	2017	2021	
●	●	●	Lewis' Evening-primrose
●			San Diego Ambrosia
●	●	●	San Diego Marsh-elder
●	●	●	Southwestern Spiny Rush
●	●	●	Sticky Dudleya
	●	●	Nuttall's Acmispon
		○	Variegated Dudleya

Sensitive Avian Species

△	△	△	Clark's Marsh Wren
△			Light-footed Ridgway's Rail
△			Olive-sided Flycatcher
△			Western Least Bittern
△	△	△	Yellow Warbler
		△	Yellow-breasted Chat
		△	Least Bell's Vireo
		△	Coastal California Gnatcatcher

Avian Parasite

◊ Brown-headed Cowbird

Vegetation Communities and Land Cover Types

- Diegan Coastal Sage Scrub
- Disturbed Diegan Coastal Sage Scrub
- Disturbed Southern Riparian Scrub
- Freshwater Marsh
- Open Water
- Non-native Riparian
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

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FIGURE 4
Biological Resources within the Biological Study Area and Project Impact Area

1.1.2 Mitigation Planning

As described in the NES, impacts to native habitat would occur for both build alternatives. For either alternative, mitigation is planned to be accomplished within suitable areas within the PIA and on an adjacent area owned or managed by the City and referred to as the HEA. The HEA, located west of I-5 and the PIA and north of the San Luis Rey River, currently supports non-native riparian and disturbed southern riparian scrub. Areas within the PIA planned for re-establishment, rehabilitation, and restoration currently support freshwater marsh, disturbed southern riparian scrub, non-native riparian, disturbed Diegan coastal sage scrub, and Diegan coastal sage scrub. Areas within the PIA planned for upland creation currently support disturbed habitat (see Figure 4).

1.1.3 Mitigation Requirements

The project will impact upland and wetland habitat as described in the NES prepared for the project (RECON 2023). Mitigation methods for impacted habitats will include creation, re-establishment, enhancement, and restoration. Mitigation within the PIA and adjacent HEA will be used to achieve the majority of the biological mitigation requirements.

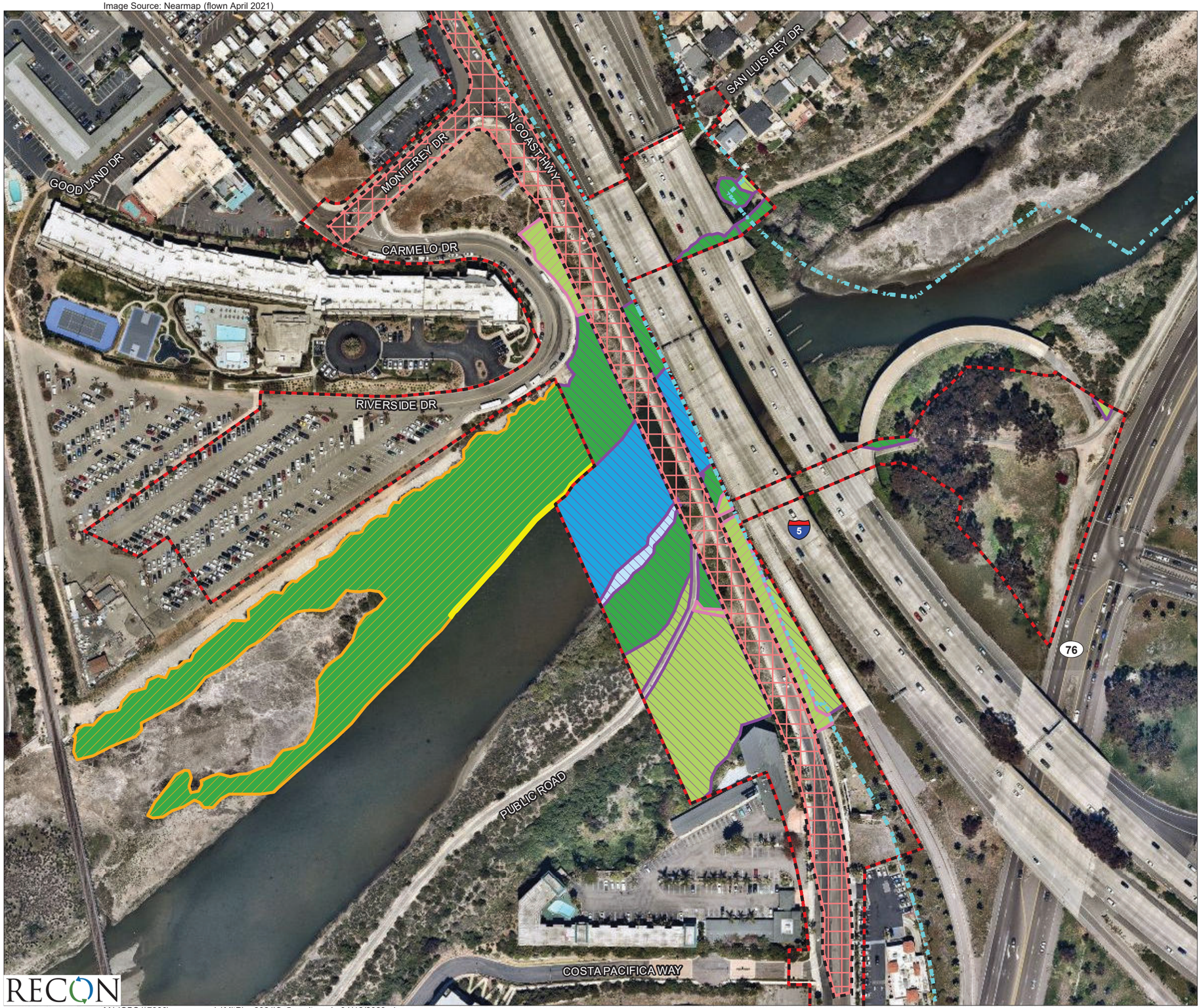
For Alternative 1 mitigation consists of creation of 0.33 acre and restoration of 1.17 acres of Diegan coastal sage scrub; re-establishment of 0.09 acre of freshwater marsh, 1.07 acres of southern riparian scrub; and 0.80 acre of open water and rehabilitation of 0.04 acre of freshwater marsh and 3.20 acres of southern riparian scrub (Figure 5a; Table 1a). An additional purchase of off-site establishment mitigation credit equivalent to 0.02 acre of freshwater marsh and 0.30 acre of southern riparian scrub will be made to ensure no-net loss of wetlands is achieved.

For Alternative 2 mitigation consists of creation of 0.69 acre and restoration of 1.05 acres of Diegan coastal sage scrub; re-establishment of 0.08 acre of freshwater marsh, 0.99 acre of southern riparian scrub, and 0.83 acre of open water, and rehabilitation of 0.04 acre of freshwater marsh and 3.20 acres of southern riparian scrub (Figure 5b; Table 1b). An additional purchase of off-site establishment mitigation credit equivalent to 0.02 acre of freshwater marsh and 0.38 acre of southern riparian scrub will be made to ensure no-net loss of wetlands is achieved.

In order to coincide with optimal growing conditions, mitigation implementation and planting will occur from fall/early winter through the early spring months (October through February).

The mitigation program goals of establishing the desired habitat should be met within the five-year maintenance and monitoring period required for the project. However, it may take 15 years or more for some of the vegetation communities and individual species, particularly within the riparian scrub area, to reach full maturity and habitat value. A timeline for implementation of mitigation activities is presented in Section 5.4.

Image Source: Nearmap (flown April 2021)



Project Boundary

Caltrans ROW

Alternative 1 Existing Bridge Alignment

Alternative 1 Temporary Impact

Temporary Impacts Restoration - Alternative 1

Diegan Coastal Sage Scrub, Restoration (1.17 ac)

Freshwater Marsh, Restoration (0.09 ac)

Southern Riparian Scrub, Restoration (1.07 ac)

Open Water, Restoration* (0.80 ac)

Potential Mitigation - Alternative 1

Diegan Coastal Sage Scrub, Creation (0.33 ac)

Southern Riparian Scrub, Re-establishment (3.20 ac)

Freshwater Marsh, Re-establishment (0.04 ac)

* Approximate location, entire area will not be restored.

0 Feet 150

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FIGURE 5a
Proposed Mitigation Area -
Alternative 1

Table 1a Vegetation Community Temporary and Permanent Impacts and Mitigation for Project Alternative 1						
				Proposed Mitigation		
Vegetation Community	Impacts in Acres	Mitigation Ratio	Mitigation Requirement in Acres	Creation[1]	Rehabilitation[2]	Restoration/ Re-establishment[3]
TEMPORARY IMPACTS						
Wetland Vegetation Communities						
Freshwater marsh	0.09	1:1	0.09	-	-	0.09
Disturbed southern riparian scrub	0.65	1:1	0.65	-	-	1.07[4]
Non-native riparian	0.42	1:1	0.42			
Open water	0.80	1:1	0.80	-	-	0.80
Subtotal Wetland	***1.96***	**–**	***1.96***	**-**	**-**	***1.96***
Upland Vegetation Communities						
Diegan coastal sage scrub	1.00	1:1	1.00	-	-	1.17
Disturbed Diegan coastal sage scrub	0.17	1:1	0.17			
Eucalyptus woodland	0.74	n/a	–	-	-	–
Disturbed habitat	2.60	n/a	–	-	-	–
Urban/ developed	7.32	n/a	–	-	-	–
Subtotal Upland	***11.83***	**–**	***1.17***	**-**	**-**	***1.17***
TOTAL	**13.79**	**–**	**3.13**	**-**	**-**	**3.13**
PERMANENT IMPACTS						
Wetland Vegetation Communities						
Freshwater marsh	0.02	3:1	0.06	0.02[1]	0.04	-
Disturbed southern riparian scrub	0.07	3:1	0.21	0.30[1]	3.20	-
Non-native riparian	0.23	3:1	0.69			
Open water	– [5]	–	–			-
Subtotal Wetland	***0.32***	**–**	***0.96***	***0.32***[1]	***3.24***	**-**
Upland Vegetation Communities						
Diegan coastal sage scrub	0.11	3:1	0.33	0.33	-	-
Disturbed Diegan coastal sage scrub	–	3:1	–			
Eucalyptus woodland	–	n/a	–		-	-
Disturbed habitat	0.69	n/a	–	--	-	-
Urban/ developed	1.38	n/a	–	--	-	-
Subtotal Upland	***2.18***	**–**	***0.33***	***0.33***	**--**	**-**
TOTAL	**2.50**	**–**	**1.29**	**0.65**	**3.24**	**-**

[1] Wetland creation will comprise of purchase of off-site establishment/creation credits to achieve no-net loss.

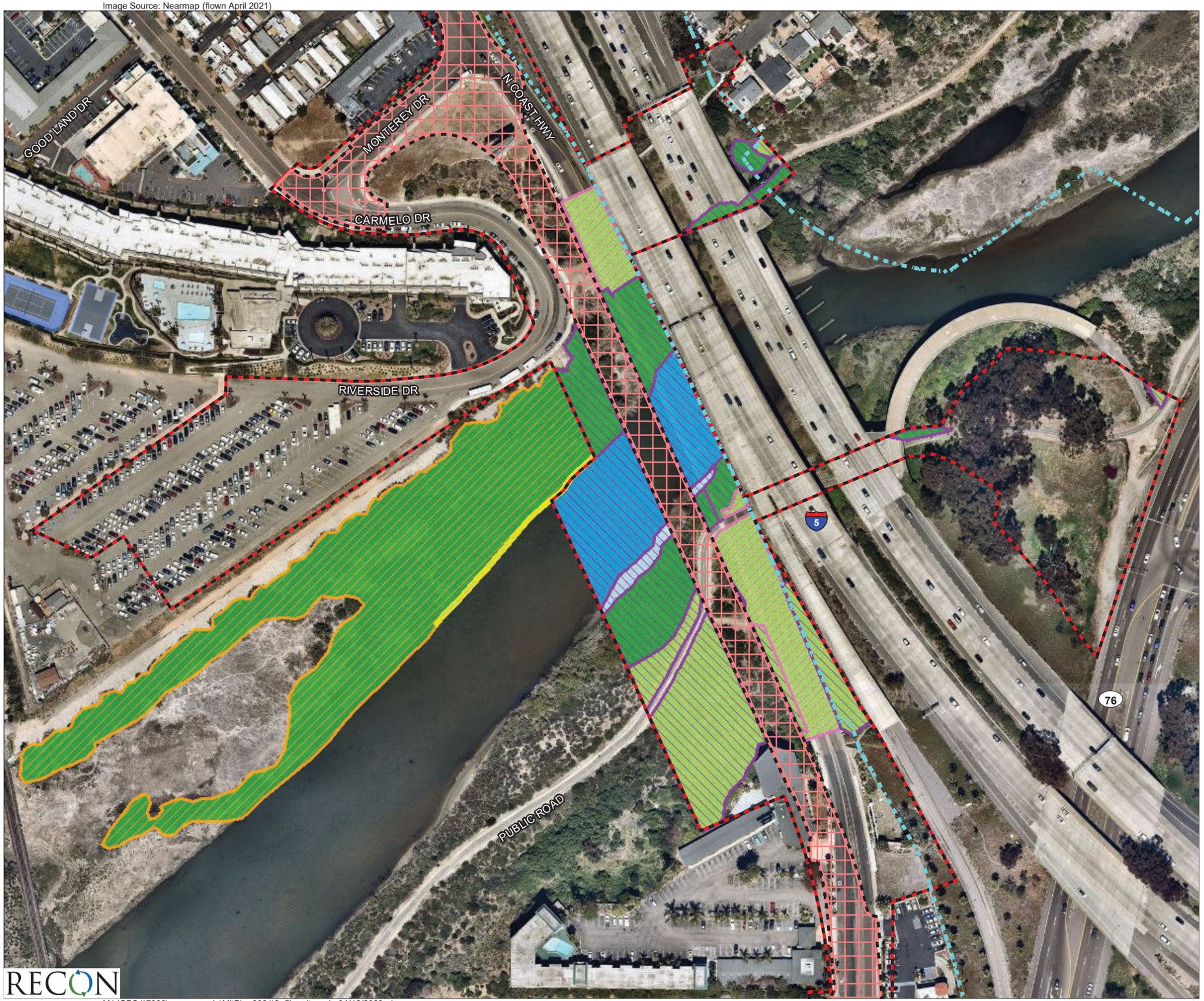
[2] Rehabilitation will take place immediately adjacent to the project impact area within existing disturbed habitats.

[3] Re-establishment/restoration includes revegetation of temporary impact areas to a higher quality version of the former habitat type.

[4] Non-native riparian habitat will be converted to southern riparian scrub habitat.

[5] In the worst-case-scenario, the replacement bridge will result in 110 square feet of permanent impacts to open water from installation of supports. However, removal of the existing bridge will entail removal of one bridge support (with an approximate footprint of 145 square feet) from the open water, resulting in a net decrease in the permanent footprint of the bridge within the open water of the river channel.

Image Source: Nearmap (flown April 2021)



Project Boundary

Caltrans ROW

Alternative 2 New Bridge Alignment

Alternative 2 Temporary Impacts

Temporary Impacts Restoration - Alternative 2

Diegan Coastal Sage Scrub, Restoration (1.05 ac)

Freshwater Marsh, Restoration (0.08 ac)

Southern Riparian Scrub, Restoration (0.99 ac)

Open Water, Restoration* (0.83 ac)

Potential Mitigation - Alternative 2

Diegan Coastal Sage Scrub, Creation (0.69 ac)

Southern Riparian Scrub, Re-establishment (3.20 ac)

Freshwater Marsh, Re-establishment (0.04 ac)

* Approximate location, entire area will not be restored.

0 Feet 150

RECON

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FIGURE 5b
Proposed Mitigation Area - Alternative 2

Table 1b Vegetation Community Temporary and Permanent Impacts and Mitigation for Project Alternative 2						
				Proposed Mitigation		
Vegetation Community	Impacts in Acres	Mitigation Ratio	Mitigation Requirement in Acres	Creation[1]	Rehabilitation[2]	Restoration/ Re-establishment[3]
TEMPORARY IMPACTS						
Wetland Vegetation Communities						
Freshwater marsh	0.08	1:1	0.08	-	-	0.08
Disturbed southern riparian scrub	0.53	1:1	0.53	-	-	0.99[4]
Non-native riparian	0.46	1:1	0.46			
Open water	0.83	1:1	0.83	-	-	0.83
Subtotal Wetland	***1.90***		***1.90***	**-**	**-**	***1.90***
Upland Vegetation Communities						
Diegan coastal sage scrub	0.88	1:1	0.88	-	-	1.05
Disturbed Diegan coastal sage scrub	0.17	1:1	0.17			
Eucalyptus woodland	0.74	n/a	–	-	-	–
Disturbed habitat	2.70	n/a	–	-	-	–
Urban/developed	7.09	n/a	–	-	-	–
Subtotal Upland	***11.58***	**–**	***1.05***	**-**	**-**	***1.05***
TOTAL	**13.48**	**–**	**2.95**	**-**	**-**	**2.95**
PERMANENT IMPACTS						
Wetland Vegetation Communities						
Freshwater marsh	0.02	3:1	0.06	0.02[1]	0.04	-
Disturbed southern riparian scrub	0.19	3:1	0.57	0.38[1]	3.20	-
Non-native riparian	0.19	3:1	0.57			
Open water	– [5]	–	–	-	-	-
Subtotal Wetland	***0.40***		***1.20***	***0.40***[1]	***3.24***	**-**
Upland Vegetation Communities						
Diegan coastal sage scrub	0.23	3:1	0.69	0.69	-	-
Disturbed Diegan coastal sage scrub	–	3:1	–			
Eucalyptus woodland	–	n/a	–	--	-	-
Disturbed habitat	0.58	n/a	–	--	-	-
Urban/developed	1.60	n/a	–	--	-	-
Subtotal Upland	***2.41***	**–**	***0.69***	***0.69***	**-**	**-**
TOTAL	**2.81**	**–**	**1.89**	**1.09**	**3.24**	**-**

[1] Wetland creation will comprise of purchase of off-site establishment/creation credits to achieve no-net loss.

[2] Rehabilitation will take place immediately adjacent to the project impact area within existing disturbed habitats.

[3] Re-establishment/restoration includes revegetation of temporary impact areas to a higher quality version of the former habitat type.

[4] Non-native riparian habitat will be converted to southern riparian scrub habitat.

[5] In the worst-case-scenario, the replacement bridge will result in 110 square feet of permanent impacts to open water from installation of supports. However, removal of the existing bridge will entail removal of one bridge support (with an approximate footprint of 145 square feet) from the open water, resulting in a net decrease in the permanent footprint of the bridge within the open water of the river channel.

1.1.4 Description of Impacts

As described in the NES report prepared for the project, the replacement of the bridge will cause unavoidable permanent and temporary impacts (RECON 2023). Impacts to habitats and natural communities of special concern for each project alternative are discussed below. Tables 1a and 1b include impacts by vegetation community and the proposed mitigation ratios and acreage. Currently, four bridge types are being considered for the replacement bridge. As each bridge may have a different support structure, the worst-case scenario for each alternative was used for the impact analysis. For both Alternative 1 and 2, the full width of the proposed bridge is considered a permanent impact in vegetated areas due to the unknown location of bridge supports, permanent shading effects, and anticipated ongoing vegetation maintenance below the bridge. Within open water, only the footprint of the maximum number of piles/piers to be installed within the water (i.e., two 7-foot-diameter piles/piers, estimated at 40 square feet each) is counted as permanent impact. However, removal of the existing bridge will entail removal of one bridge support (with an approximate footprint of 400 square feet) from the open water, resulting in a net decrease in the permanent footprint of the bridge within the open water of the river channel. Therefore, no net permanent impact to open water would occur.

The remainder of the PIA is included in the temporary impact calculations to account for temporary vegetation removal or trampling, access, staging, temporary construction trestle installation, and any other work areas that will be disturbed only during bridge construction activities.

Vegetation communities impacted by either alternative for the project include freshwater marsh, disturbed southern riparian scrub, non-native riparian, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, eucalyptus woodland, and disturbed habitat. As discussed above, the freshwater marsh within the San Luis Rey channel may provide foraging habitat for the federally and state-endangered and fully protected light-footed Ridgway's rail and other special status avian species. Additionally, the disturbed southern riparian scrub and non-native riparian scrub could support least Bell's vireo and lies within FCH for southwestern willow flycatcher. The disturbed Diegan coastal sage scrub and Diegan coastal sage scrub supports coastal California gnatcatcher, although the project is outside the FCH for this species. Finally, both alternatives will impact or have the potential to impact sensitive plant species including San Diego marsh-elder (*Iva hayesiana*), Lewis' evening-primrose (*Camissoniopsis lewisii*), variegated dudleya (*Dudleya variegata*), and sticky dudleya (*Dudleya viscida*).

For either alternative, all impacts to native habitats including freshwater marsh, southern riparian scrub, and Diegan coastal sage scrub, as well as non-native riparian, will be mitigated through on-site enhancement, re-establishment, creation, or purchase of off-site mitigation credits. Impacts to eucalyptus woodland and disturbed habitat will not be mitigated. Temporary impacts will be mitigated at a 1:1 ratio through revegetation of impacted areas to the same or higher quality version of the former habitat type, and permanent impacts will be mitigated at a minimum 3:1 ratio. In some cases, the acreage for mitigation of a specific habitat exceeds the requirement in order to create a more complete restoration of the mitigation area.

Mitigation for unavoidable impacts from either alternative to sensitive wetland habitats would be accomplished by re-establishing habitat of equal or better value and enhancing degraded wetland habitats, including enhancement within the proposed adjacent HEA.

1.2 Responsible Parties

This Mitigation Plan is being funded and implemented by the City. The City owns or manages the property on which the mitigation site is located. The City is responsible for hiring a restoration biologist to oversee the mitigation implementation.

Permittee:
City of Oceanside, Engineering
300 N. Coast Highway
Oceanside, CA 92054
Contact: David Toschak, P.E.

Preparer of Mitigation Plan:
RECON Environmental, Inc.
3111 Camino del Rio North, Suite 600
San Diego, CA 92108

2.0 Proposed Mitigation

For either alternative, the primary feature of the proposed mitigation is the enhancement of existing riparian habitat (i.e., conversion of non-native riparian to southern riparian scrub and enhancement of disturbed southern riparian scrub) to mitigate for impacts to disturbed southern riparian scrub and non-native riparian. Additional mitigation will be conducted within the PIA and will include the creation and restoration of Diegan coastal sage scrub; re-establishment and restoration of freshwater marsh and southern riparian scrub; and restoration of open water. These habitats will be created, restored, re-established, and enhanced to complement the existing native habitats in the San Luis Rey River.

The mitigation areas proposed for the project include the temporary impact areas within the PIA and a larger area west of the PIA and north of the San Luis Rey River, referred to as the HEA. The HEA is directly adjacent to the PIA and the proposed southern riparian scrub restoration area and consists primarily of non-native riparian habitat. All on-site mitigation areas are located along the San Luis Rey River in the Coastal Zone, but outside of the Caltrans right-of-way.

The existing vegetation communities within the mitigation areas in the PIA and within the HEA include freshwater marsh, disturbed southern riparian scrub, non-native riparian, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, and disturbed habitat. The non-native riparian habitat contains over 50 percent non-native vegetation, and the disturbed stands of native habitats contain non-native vegetation at lesser densities, with non-disturbed habitat containing the least amount of non-native vegetation. The proposed on-site mitigation areas are bounded by urban development to the north and south; however, the mitigation areas occur along the undeveloped San Luis Rey River corridor, which supports continuous stands of native wetland and riparian vegetation and provides connectivity to the coast and multiple inland canyons and large undeveloped areas. The San Luis Rey River runs through the middle of the mitigation areas.

Mitigation available within the HEA includes the opportunity to enhance riparian habitat that is largely dominated by non-native and invasive plant species. This area is appropriate for mitigation, because it is adjacent to the project area; is adjacent to occurrences of sensitive avian species including least Bell's vireo, yellow warbler and olive-sided flycatcher (*Contopus cooperi*); is known to support the sensitive plant species southwestern spiny rush; occurs within FCH for southwestern willow flycatcher; and occurs along a river corridor known to support a substantial population of breeding least Bell's vireo. It also lies within the Coastal Zone and will allow mitigation for project impacts within the Coastal Zone. In addition, the value of restoring this parcel is amplified by the ongoing habitat restoration efforts occurring along a seven-mile stretch of the San Luis Rey River between I-5 and College Boulevard, which is being implemented as part of the U.S. Army Corps of Engineers (USACE) San Luis Rey River Flood Risk Management Project. Enhancement of this stand of riparian habitat may result in increased nesting opportunities for multiple special status avian species known or with potential to occur along the San Luis Rey River.

3.0 Mitigation Program Description

Mitigation ratios are based on sensitivity of the habitat types being impacted and location of impacts and mitigation areas within the Coastal Zone.

3.1 Goal of the Mitigation Plan

RECON, on behalf of the City, has developed this biological mitigation program (plan) for the project. The purpose of this plan is to provide compensatory mitigation for the project's impacts to jurisdictional areas and native uplands in support of the NES. The goal of this plan is to mitigate for impacts to wetland, riparian, and upland habitat through creation, re-establishment, and rehabilitation with the intent of creating habitats that will become self-supporting over time. To achieve these goals, this mitigation program provides the guidelines for specific tasks, including site preparation, implementation, maintenance, and biological monitoring.

To meet the goals outlined by this plan, an intensive restoration effort must be undertaken to create, re-establish, restore, and enhance the target habitat types within the mitigation areas. As discussed in detail below, the focus of the effort will revolve around three primary elements of restoration: biological, chemical, and physical characteristics. In addition, the types of habitat to be restored include two coastal habitats (freshwater marsh and riparian scrub) and one upland habitat (Diegan coastal sage scrub).

3.1.1 Biological

Coastal ecosystems maintain a variety of microhabitats, which support diverse assemblages of biota over many levels of the food web. The various habitat types within the ecosystem provide habitat for the protection, breeding, and foraging of migratory birds, reptiles, fish, amphibians, and insects. The high primary productivity (plant and algal growth) also leads to large amounts of detritus, which feeds the detrital food web consisting of aquatic and benthic (living on the bottom of a body of water) insects and other organisms. The large detritivore community is available as prey for foraging birds. The shallow water within coastal ecosystems allows light penetration to support algal growth

on emergent vegetation. Algae are an excellent food source for snails, shrimp, small fish, and other prey of higher food levels. It is anticipated that the restoration effort will provide significant increases in available native food sources within the system and lead to an increase in wildlife.

Many species of wildlife are dependent on coastal ecosystems during some or all of their lifecycles. Coastal freshwater marshes and riparian scrub habitats within dry regions such as San Diego County are especially important because many species that live in the adjacent shrub vegetation types seek refuge in the marsh and riparian vegetation during the dry season.

Coastal and riparian habitats are often preserved through the regulations (i.e., Sections 401 and 404 of the Clean Water Act (CWA); Section 1600 of the California Fish and Game Code; California Coastal Act) imposed by federal and state agencies. Riparian habitat may facilitate wildlife movement from one area to another, while marsh systems with habitat connectivity maintain populations of migratory animals, provide corridors for gene flow, allow wildlife and plant dispersal to new areas, and provide movement corridors at both the local and regional level. Dispersal into connecting habitats increases the diversity of plants and animals that can be supported. This project will provide a final piece of connectivity between the coastal reach of the San Luis Rey River and the Pacific Ocean by increasing the size and connectivity with the project areas and upstream restoration areas and riparian habitat.

Through implementation of this plan, biological conditions will be restored that encourage the development of plants and lower animals that provide the basis of the food web. The plant growth, plant and insect species diversity, and the use of the restored habitat by animals are ways to measure whether this goal has been met. The monitoring program is discussed in Section 7.0, below.

3.1.2 Chemical

Primary biogeochemical marsh and riparian functions include nutrient cycling and the transformation or elimination of pollutants from water. Coastal ecosystems receive, store, and recycle nutrients that support primary productivity and the lower levels of the food chain. Soluble inorganic nutrients (i.e., nitrogen as nitrate and ammonia, and phosphorus as phosphate) present in the influent are taken up by attached algae and marsh vegetation for growth. The nutrients are subsequently stored as living material until death and decay. Then, the nutrients are held as detritus within the marsh substrate, decomposed to peat, or released as insoluble organic nitrogen and phosphorus. Bound in organic compounds, the nutrients are not immediately available to support algal growth that leads to poor water clarity and quality.

When coastal ecosystems are inundated with water and when soils are saturated, oxidized nitrogen and sulfur can be reduced in the anoxic soil and released in their respective gaseous forms. Generally, the coastal marsh ecosystems within the project area should be saturated year-round, leading to high accumulation of organic nutrient compounds in their substrate and producing high levels of gaseous release, while riparian habitat, due to drying periods, are only seasonally saturated, leading to less accumulation of organic nutrient compounds in their substrates. During this time, toxic conditions induce organic matter to break down and nutrients to be recycled to inorganic forms.

In addition, vegetation growing in these soils hold nitrogen and phosphorus as well as other nutrients and toxins that are filtered out by vegetative uptake and water movement. Natural filtration and

sedimentation that remove imported elements (i.e., macronutrients, heavy metals) and pollutants (i.e., oils, pesticides) from floodwaters, runoff, and precipitation provide a medium for chemical reactions. The removal of toxins and available nutrients greatly improves water quality.

Implementation of this plan will set the physical and some of the biological parameters to allow the restoration of the chemical function and value of the coastal ecosystems.

3.1.3 Physical

Key physical functions of coastal ecosystems include reducing flood risk, sediment trapping, and ground water recharge. The gradual slope of coastal ecosystem terrain and proliferation of vegetation slows flowing water to promote silt deposition and sediment trapping. The reduction in particulate matter improves the water clarity and quality. The riparian zone between aquatic and terrestrial environments provides a catchment or buffer zone for downstream flood control, while the marsh ecosystems provide a dissipation buffer for flood waters and an area for groundwater recharge. The benefits of these physical processes include floodwater attenuation, erosion control, improved water quality, and improved groundwater uptake.

The physical functions within the riparian ecosystem will be restored by replacing the existing stands of invasive plant species with a broad diversity of herbs, shrubs, and trees that are native to the region.

3.2 Types of Habitat to be Created, Restored, and Enhanced

The terms "establishment," "restoration" (including "re-establishment" and "rehabilitation"), and "enhancement" as used in this plan are defined per the USACE regional compensatory mitigation guidelines (USACE 2015) as follows:

1. Establishment (creation): "Manipulation of the physical, chemical, or biological characteristics present at an upland site to develop an aquatic resource that did not previously exist. Establishment results in a gain in aquatic resource area and functions."

2. Restoration: "Manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing the natural/historic functions to a degraded aquatic resource. For the purpose of tracking net gains in aquatic resources area, restoration is divided into two categories: re-establishment and rehabilitation."

   Re-establishment: "Manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions."

   Rehabilitation: "Manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing the natural/historic functions to a degraded aquatic resource.

Rehabilitation results in a gain in aquatic resource function but does not result in a gain in aquatic resource area."

3. Enhancement: "Manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area."

Habitat creation, re-establishment, restoration, and rehabilitation will focus on four vegetation communities, as described in detail below (Table 2). All habitat types will provide benefits to sensitive avian and plant species as well as other wildlife in the provision of forage, cover, and unrestricted movement—aspects that are currently compromised by the dense cover of invasive plant species.

Table 2
Habitat Types to be Created, Restored, or Enhanced

Vegetation Community	Type	Acreage
ALTERNATIVE 1		
Freshwater Marsh	Creation[1], Restoration/Re-establishment, and Rehabilitation	0.15
Southern Riparian Scrub	Creation[1], Restoration/Re-establishment, and Rehabilitation	4.57
Diegan Coastal Sage Scrub	Creation and Restoration/Re-establishment	1.50
Open Water	Restoration/Re-establishment	0.80
TOTAL		**7.02**
ALTERNATIVE 2		
Freshwater Marsh	Creation[1], Restoration/Re-establishment, and Rehabilitation	0.14
Southern Riparian Scrub	Creation[1], Restoration/Re-establishment, and Rehabilitation	4.57
Diegan Coastal Sage Scrub	Creation and Restoration/Re-establishment	1.74
Open Water	Restoration/Re-establishment	0.83
TOTAL		**7.28**

[1] Wetland creation will comprise of purchase of off-site establishment/creation credits to achieve no-net loss.

3.2.1 Freshwater Marsh

Freshwater marsh is being created, restored/re-established, and rehabilitated as part of the mitigation for the project and is considered sensitive and subject to jurisdiction by USACE under Section 404 of the CWA, California Department of Fish and Wildlife (CDFW) under Sections 1600–1616 of the California Fish and Game Code, Regional Water Quality Control Board (RWQCB) under Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act, and California Coastal Commission (CCC) under Sections 13577 and 30107.5 of the California Coastal Act.

Freshwater marsh is a vegetation community dominated by perennial, emergent, herbaceous monocots up to five meters tall. Vegetation cover is often very dense, and these areas are flooded by fresh water (Holland 1986). Characteristic freshwater marsh species found dominating the project area include southern cattail (*Typha domingensis*), willow dock (*Rumex salicifolius*), salt grass (*Distichlis spicata*), California bulrush (*Schoenoplectus californicus*), seaside heliotrope (*Heliotropium curassavicum*), and southwestern spiny rush.

Under Alternative 1, an area of approximately 0.13 acre will be restored/re-established and rehabilitated to provide habitat suitable for breeding and foraging for marsh wildlife species (see Table 2; see Figure 5a). In addition, 0.02 acre in creation credit will be purchased at an off-site mitigation bank. Under Alternative 2, an area of approximately 0.12 acre will be restored/re-established and rehabilitated (see Table 2; see Figure 5b). In addition, 0.02 acre in creation credit will be purchased at an off-site mitigation bank.

3.2.2 Southern Riparian Scrub

Southern riparian scrub is being created, restored/re-established, and rehabilitated as part of the mitigation for the project and is considered sensitive and subject to jurisdiction by USACE under Section 404 of the CWA, CDFW under Sections 1600–1616 of the California Fish and Game Code, RWQCB under Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act, and CCC under Sections 13577 and 30107.5 of the California Coastal Act.

Riparian scrub is a vegetation community that contains a dense canopy ranging in height from approximately 15 to 20 feet and is dominated by willow species (*Salix* spp.). The representative species typically grow in loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows. Characteristic species include Hinds willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), mule fat (*Baccharis salicifolia*), southern cattail (*Typha domingensis*), California bulrush (*Schoenoplectus californicus*), western poison oak (*Toxicodendron diversilobum*), and coyote brush (*Baccharis pilularis*).

Under Alternative 1, an area of approximately 4.29 acres will be restored/re-established and rehabilitated to provide habitat suitable for breeding and foraging for riparian wildlife species (see Table 2; see Figure 5a). In addition, 0.30 acre in creation credit will be purchased at an off-site mitigation bank. Under Alternative 2, an area of approximately 4.19 acres will be restored/re-established and rehabilitated (see Table 2; see Figure 5b). In addition, 0.38 acre in creation credit will be purchased at an off-site mitigation bank.

3.2.3 Diegan Coastal Sage Scrub

Diegan coastal sage scrub is being created and restored/re-established as part of the mitigation for the project and is considered sensitive by federal, state, and local resource agencies. Diegan coastal sage scrub is the southern form of coastal sage scrub and is a plant community composed of low growing, aromatic, drought-deciduous soft-woody shrubs that have an average height of approximately three to four feet. This plant community is typically dominated by facultatively drought-deciduous species such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), and white sage (*Salvia apiana*). This vegetation community is typically found on low moisture-availability sites with steep, xeric slopes or clay rich soils that are slow to release stored water. These sites often include drier south- and west-facing slopes and occasionally north-facing slopes, where the community can act as a successional phase of chaparral development (Holland 1986).

Under Alternative 1, an area of approximately 1.50 acres will be created and restored/re-established to provide habitat suitable for breeding and foraging for upland wildlife species (see Table 2; see

Figure 5a). Under Alternative 2, an area of approximately 1.74 acres will be created and restored/re-established to provide habitat suitable for breeding and foraging habitat for upland wildlife species (see Table 2; see Figure 5b).

3.2.4 Open Water

Open water is being restored/re-established as part of the mitigation for the project and is subject to jurisdiction by USACE under Section 404 of the CWA, CDFW under Sections 1600–1616 of the California Fish and Game Code, RWQCB under Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act, and CCC under Sections 13577 and 30107.5 of the California Coastal Act.

With the BSA, open water occurs within the main channel of the San Luis Rey River and is associated with a riverine system. Open water near a river's mouth may fluctuate from a freshwater to brackish or marine system depending on rainfall, tidal influence, and physical barriers (e.g., sandbars). As a result, these areas may support a myriad of aquatic species including freshwater, anadromous, and coastal pelagic fishes. The open water may also provide foraging habitat for a wide variety of animal species including shorebirds and raptors.

Under Alternative 1, an area of approximately 0.80 acre will be restored/re-established and under Alternative 2, an area of approximately 0.83 acres will be restored/re-established, to provide habitat suitable for foraging and breeding bird and aquatic wildlife species (see Table 2; Figures 5a and 5b). The open water will be restored/re-established through restoration of temporary impact areas to pre-construction conditions (i.e., removal of temporary structures and recontouring, as needed).

4.0 Implementation Program

4.1 Adaptive Management

An adaptive management approach will be implemented as part of this plan. Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational procedures. If operational procedures are not meeting management goals, methods are adjusted until they are achieved. Adaptive management will consist of the following key elements: establishment of management goals, identification/prioritization of issues that interfere with management goals, assessment of techniques, development/ implementation of a management plan, monitoring and assessment of impacts of management actions, and periodic review of management goals and restoration methods.

4.2 Restoration Techniques

Active restoration is the process of taking specific and intentional actions to re-establish natural processes, vegetation, and habitat of an ecosystem. In the case of this Project, active restoration practices will include site preparation, non-native species removal/treatment, installation of an irrigation system, and introduction of native plant material (container and seed) to encourage the

rapid establishment of target plant species and to supplement natural recruitment of native species from the surrounding areas. The methods and materials for active restoration are described in detail in the following sections and include seed collection and container plant production, planting layout and design, plant and seed specifications, and an irrigation plan.

4.3 Qualified Personnel

4.3.1 Restoration Biologist

An experienced restoration biologist will coordinate the mitigation installation and maintenance activities. The restoration biologist will supervise these activities and provide quality assurance and control including confirming that the site is prepared properly, the invasive plant eradication measures are implemented properly, and that the seeding and planting specifications follow those outlined in this Plan. The restoration biologist will also oversee mitigation measures during the five-year monitoring and maintenance period, including qualitative and quantitative monitoring requirements.

The restoration biologist shall have the following minimum qualifications:

- A bachelor's degree in biology, ecology, botany, horticulture, landscape planning, or related field;
- Knowledge of the vegetation associations proposed for the restoration effort including species identification, composition, canopy, understory, and species' ecological positions;
- A minimum of five years of practical horticultural experience or equivalent study, including plant installation, weeding, pruning, irrigation, and pest control; and
- Knowledge of avian biology, the federal and California Endangered Species Acts, the CWA, the California Coastal Act, and jurisdictional boundaries.

4.3.2 Installation Contractor

An experienced native habitat restoration contractor shall be retained to perform the mitigation installation under the direction of the restoration biologist. The installation contractor must be experienced in installing native wetland habitat mitigation areas in southern California. The installation contractor will be responsible for:

- Ordering specified plant material and seed from appropriate vendors, based on the specifications of the plan;
- Installing the irrigation system to provide water appropriate for each habitat type;
- Installing the plant materials per the specifications of the plan;
- Implementing remedial actions under the direction of the restoration biologist; and
- Holding a valid State of California Qualified Applicator License.

4.4 Implementation Schedule

Site preparation, including weed removal, should begin prior to the onset of the rainy season (October to November) following the completion of construction and should be outside the bird-breeding season (February 15 to September 30). Seed collection should begin immediately and should be conducted during construction to allow for the collection of all seed regardless of flowering and seeding times of each species. Propagation of container plants should be conducted concurrently with seed collection and as seed becomes available to provide enough time to grow container plants to the sufficient size for transplanting.

Immediately following weed removal, the irrigation system shall be installed and deemed fully functional. The mitigation site should be prepared and seeded/planted during the fall and early winter months to take advantage of winter rains and maximize the length of the growing season for the critical first year after installation (November to February). Planting during late spring through early fall months (late May through October) should be avoided if possible, as plants installed during these periods are subject to additional stresses that can greatly increase mortality levels. If planting during the preferred period is not possible, the irrigation plan may need to be revisited to ensure adequate growing conditions.

4.5 Site Preparation

Site preparation will consist of marking the limits of work for the mitigation area as well as the boundaries of each vegetation community to be created and enhanced within the mitigation site. Following the delineation of all areas, the restoration biologist shall identify and flag all sensitive biological resources. Once resources are flagged, non-native vegetation will need to be removed from the entire mitigation site and disposed of off-site at an approved landfill.

4.5.1 Habitat Protection and Monitoring

Monitoring will be conducted during implementation of the mitigation site to minimize impacts to native vegetation, sensitive species, and areas beyond the site limit. Monitoring will be conducted by the restoration biologist. Prior to the commencement of implementation, the restoration biologist shall identify and flag all sensitive biological resources for protection.

Construction fencing shall be installed along the boundaries of the mitigation site prior to vegetation removal. The limits of work shall be clearly demarcated in the field and remain in place for the duration of implementation. In addition, the entire mitigation site will be sign-posted to deter entry on to the site during the five-year maintenance and monitoring period.

4.5.2 Best Management Practices

In order to meet the objectives of the Federal CWA "to restore and maintain the chemical, physical and biological integrity of the Nation's waters," and to meet the goals and objectives of this plan, the proposed mitigation program has adopted Best Management Practices for freshwater marsh, riparian scrub, and Diegan coastal sage scrub mitigation.

These practical, non-regulatory guidelines shall be used during the implementation of the mitigation site, the use of pesticides, and all activities resulting in the alteration of the landscape in order to minimize the environmental impact of mitigation activities. Best management practices offer a flexible, preventive, and non-regulatory approach to protecting water quality during construction operations. The following sections outline mitigation measures that shall be implemented during implementation activities within the mitigation areas. This list is not exhaustive; additional measures may be required at the discretion of the project restoration biologist or regulatory agencies.

4.5.2.1 Water Quality Management Planning and Protection

During implementation and through the duration of the maintenance program, the following measures will be taken in an effort to protect water quality on-site and downstream of the mitigation areas.

- Temporary fencing (with silt barriers) will be installed in areas with high erosion potential, particularly where ground exposed during non-native vegetation removal abuts open water or aquatic habitat.
- The mitigation areas will be kept as clean of debris as possible. All food-related trash items shall be enclosed in sealed containers and regularly removed from the site.
- All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other related activities would occur in designated areas outside of the mitigation areas. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. A spill kit should be on-site and must be used in the event of a spill.

4.5.2.2 Pesticide Treatment

During implementation and through the duration of the maintenance program, the following measures will be taken in an effort to prevent adverse damage from pesticides to the mitigation or adjacent areas.

- Use only U.S. Environmental Protection Agency registered pesticides and comply with all label directions for use.
- Ensure proper transportation, handling, and application according to the label.
- Avoid pesticide application during or right before significant weather events, such as heavy rainfall, which could cause runoff of pesticides.
- Store pesticides according to label directions so that spills and loss are prevented.
- Mix and load pesticides on impermeable surfaces where any accidental spills would not enter surface waters or potentially impact drinking water supplies.
- Contain and clean up spills immediately; report spills to appropriate regulatory agency.
- Dispose of containers properly; recycle if possible.
- Consider alternatives to pesticide use including biological controls and mechanical treatments.

4.5.3 Vegetation Removal

Vegetation removal will occur outside the bird-breeding season and will occur within the mitigation areas to prepare for irrigation system installation followed by container stock and seed installation. Ideally, vegetation removal will occur in approximately October to November when the potential for heavy rainfall events and resulting stream flows are low. However, vegetation removal may occur at any time outside bird-breeding season. To protect against the potential for stream flow to wash cut vegetative material downstream, vegetation removal will not occur when a rain event greater than 0.5 inch is forecasted within 24 hours. All cut material will be removed from the site within 24 hours of being cut. Invasive plant species, including salt cedar (*Tamarix ramossisima*) and giant reed (*Arundo donax*), were noted in high densities throughout the proposed HEA. Following initial removal, belowground biomass that may inhibit the establishment of native species shall be removed, and any resprouts of non-native vegetation should be controlled to limit competition with native plantings. See Section 5.6 on proper control methods for invasive plant species.

4.6 Invasive Plant Species Control Program

The restoration biologist will supervise the control and eradication of invasive plant species from the mitigation areas. Species to be controlled include but are not limited to giant reed, salt cedar, pampas grass (*Cortaderia selloana*), tree tobacco (*Nicotiana glauca*), castor bean (*Ricinus communis*), eucalyptus (*Eucalyptus* spp.), Russian thistle (*Salsola tragus*), and crystalline ice plant (*Mesembryanthemum crystallinum*). Other invasive plant species that may be found on-site shall be eradicated under the guidance of the restoration biologist.

Invasive plant species control will require effort throughout the five-year maintenance and monitoring period to achieve effective control. Many invasive plants require repeated and properly timed control measures. In addition, propagules are likely to wash or blow into the mitigation site and recolonize it. The maintenance program includes an ongoing weed control component (see Section 6.3.1).

The restoration biologist will oversee the weed control operations and determine if, at any time, chemical control is to be used. The type, quantity, and method of herbicide application will be determined by the contractor's qualified licensed professional who will inspect the site and recommend methods of application and rates to the restoration biologist. Pesticide recommendations shall be limited to those appropriate for native habitat restoration, including the use of only aquatic formulated pesticides near open water.

4.6.1 Control Methods

Controlling weeds requires selecting one or more of four control mechanisms—mechanical, cultural, biological, and chemical. Of these four methods, chemical control is anticipated to be the most frequently used within the mitigation areas because herbicides are an economical and effective way to control most wetland weeds in a quick and thorough manner (O'Connor-Marer and Garvey 2001). However, in some cases, the other three methods, or a combination of them, may provide the most effective results.

Control of non-native species is to occur within the entirety of the mitigation areas and within a 50-foot buffer (where appropriate and feasible) surrounding the site to reduce the encroachment potential of invasive weed species.

4.6.1.1 Chemical Control

The use of herbicides to control non-native weeds has both advantages and disadvantages. The use of herbicides is often the quickest and most cost-effective method for controlling invasive plants. Herbicides are easy to apply and require relatively little application time. All herbicides carry labels that are legal documents describing the ingredients, intended use, cautionary statements and health hazards, application rates, and other information. Violations of these instructions are violations of the law and could subject the user to fines and possible imprisonment. Since these labels and their legal uses change, the most recent label should be referenced before any recommendation for herbicide use is made.

Herbicides currently available for application on the target species are limited due to label restrictions and efficacy. However, application of herbicides can be one of the most effective tools for control and long-term management of invasive plants. Herbicides are effective when used alone to control infestations but are often used in conjunction with other techniques such as cutting or mowing. The use of herbicides can substantially increase mortality rates of persistent invasive plants, reducing the need for mechanical excavation of roots and rhizomes and associated soil disturbances. The utility of herbicide application to control these target species can be affected by its relatively high initial cost, restrictions on use in proximity to water, the degree of intermixing of invasive plants with natives, and the presence of sensitive species. These factors can all restrict the type of herbicide allowed, the location and timing of use, and/or the method of application.

A successful herbicide application as a means of control depends primarily upon selecting the appropriate herbicide for the task and adhering to label requirements. Many herbicides are prohibited for use around open water, and most exhibit seasonal variations in effectiveness. The most effective method of application can vary among brands and types of herbicides. Most herbicides perform better with the use of an adjuvant, which is typically added prior to application to increase effectiveness. An adjuvant is a substance other than water which is not in itself an herbicide but which enhances the effectiveness of the herbicide with which it is used. Colorants are also often added to herbicide solutions to enable crews to provide consistent and thorough spray application. Listed below are the herbicides anticipated to be used on the mitigation areas.

Glyphosate is a broad-spectrum, non-selective systemic herbicide. Glyphosate can be used on most invasive species. The U.S. Environmental Protection Agency has approved several glyphosate-based products (i.e., Round-up Custom®, Aquaneat®, Aquapro®) for use in aquatic environments, making glyphosate the primary herbicide for use throughout the mitigation area. Other glyphosate-based products are only approved for use in areas where water is not present (i.e., Roundup®, Buccaneer®, Makaze®, and Prosecutor®). Glyphosate is most effective when used on perennial plants when applied in the late summer and fall when the plant is entering dormancy; this permits transmission of the herbicide to the plant's root system.

Imazapyr is a broad-spectrum imidazolinone herbicide used to control grasses, broadleaves, vines, brambles, brush, and trees. Imazapyr (i.e., Habitat®, Polaris®) can also be used to treat all species in or around surface water. Imazapyr works by disrupting an enzyme (found only in plants) necessary for protein synthesis and interfering with cell growth and DNA synthesis in plants. Moreover, Habitat®, Polaris®, and others are labeled for use in aquatic environments. Unlike glyphosate, there is the potential to damage adjacent non-target plants by transfer between root networks.

Triclopyr, a pyridine, is a selective systemic herbicide used for control of woody and broadleaf plants along rights-of-way, on industrial lands, and on grasslands. Triclopyr can be used to treat salt cedar and pepper trees (*Schinus* sp.) and is a selective systemic herbicide. It has little or no impact on grasses (i.e., giant reed). Triclopyr is the active ingredient in Garlon® and Pathfinder® formulations. Garlon 4® and Pathfinder II® are approved for terrestrial habitats. Garlon 3A® is approved for use in closed aquatic habitats such as wetlands and lakes. It is not allowed for use on streams and rivers. Triclopyr will only be used for foliar application outside USACE jurisdictional areas.

4.6.1.2 Mechanical Control

Mechanical control involves cutting or removing weeds by machine or by hand. Mechanical control provides immediate clearing of the infested area, and no lag time is necessary between removal activities and revegetation. Mechanical control methods are often costly because they are either labor intensive or require the use of heavy machinery.

4.6.1.3 Cultural Control

Cultural control requires altering the environment to inhibit the growth of riparian weeds. These control methods include the control and manipulation of water, nutrients, dyes, bottom barriers, or aeration. Many of these controls are more practical in small bodies of water such as stock ponds, detention basins, or small recreational lakes. No cultural control methods are identified for implementation at this time; however, their use may be relevant in the future under the guidance of the restoration biologist.

4.6.2 Target Invasive Plant Species

This section defines and describes management goals for most invasive plant species expected to occur within the mitigation areas. Each species account includes a brief description of appearance and management recommendations.

4.6.2.1 Giant Reed



Description: Giant reed is a tall perennial grass with large light green to light blue leaves. The species is widespread throughout California at elevations below 1,000 feet and is particularly problematic in coastal drainages. Mature plants can grow up to 20 feet tall and are commonly found in riparian areas, ditches, seeps, and disturbed areas.

Management Recommendations: The key to long-term giant reed removal is killing the root mass. This requires treatment of the plant with a systematic herbicide at appropriate times of year to ensure translocation to the roots. During the post-flowering and pre-dormancy period (usually mid-August to early November), the plants are actively translocating nutrients to the root mass in preparation for winter dormancy. Currently, aquatic glyphosate and aquatic imazapyr are the only effective herbicides that are approved for use in riverine ecosystems. Once the plant is dead, either the biomass may be left in place where populations are sparse or cut down and removed from the site. The cut-stump method may also be used which involves cutting near the base of the stalk. After the stems are cut, a concentrated herbicide must be applied to the cut stem within one to two minutes in order to ensure uptake into the plant's tissues (Monsanto Company 1989).

4.6.2.2 Salt Cedar



Description: Salt cedar is a noxious weed that thrives along streams and riverbanks, lake and pond margins, canals, ditches, and any other area with available surface or subsurface water. Salt cedar is frequently found on saline soils where most native riparian plants are not able to survive (Lovich 2000). Salt cedar has a high reproductive rate, with an individual plant producing up to 500,000 seeds per year (DiTomaso 1996). These seeds are dispersed by wind and water.

Management Recommendations: The cut-stump method is the most effective and frequently used method of salt cedar removal in California. A triclopyr, glyphosate, or imazapyr herbicide should be applied to the cut stump immediately (in less than 30 seconds). This technique usually results in a 90 percent kill rate. All cut material should be bagged and carried off-site. Treatment of mature trees should be avoided during summer months in areas where nesting birds occur.

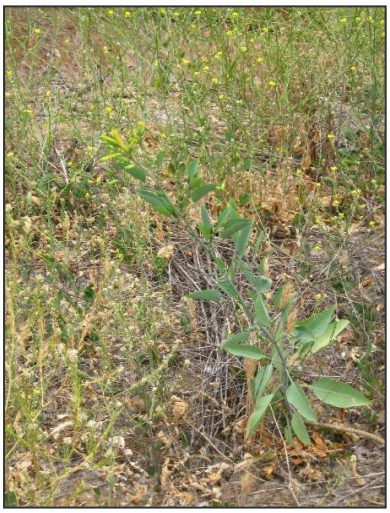
4.6.2.3 Pampas Grass



Description: Pampas grass is a robust tussock grass that grows up to 11 feet in diameter and has flowering stalks that can reach upwards to 13 feet in height. The leaves are gray or bluish green with narrowly tapering tips. Pampas grass is often found in open sunny places that receive added moisture and becomes naturalized as a weed in damp places, depressions, along stream banks, the margins of mangrove swamps, and, in particular, disturbed areas associated with roads, pipeline cuts, and walking trails in forest areas (Global Invasive Species Database 2006).

Management Recommendations: Pulling or hand-grubbing pampas grass seedlings is highly effective. For larger plants, however, a Pulaski (axe on one end and hoe on the other), mattock (pick on one end and hoe on the other), or long-bladed shovel is the safest and most effective way of removing established clumps. A large chainsaw or weed eater can expose the base of the plant, allow better access for removal of the crown, and make disposal of the removed plant more manageable. Control of pampas grass can be achieved by spot treatment with the application of glyphosate (Invasive Plant Science and Management 2008). Fall applications result in better control compared to summer applications.

4.6.2.4 Tree Tobacco



Description: Tree tobacco is a member of the Solanaceae family and is a loose-branching, small, evergreen tree or shrub between six and 18 feet tall. The leaves are thick, rubbery, lance-shaped, and less than 10 inches long. The flowers open at night and are yellow and trumpet shaped, with the stamens attached below the middle of the tube, and bloom year-round. All parts of the plant are extremely poisonous. Tree tobacco is found in open, disturbed flats or slopes below 3,000 feet. First planted as a landscape ornamental, tree tobacco can now be found widespread along roadsides, disturbed sites, waste areas, riparian areas, and recently burned sites.

Management Recommendations: All tree tobacco biomass will be removed from the mitigation areas. Any regrowth of this invasive plant should be controlled with a glyphosate-based herbicide through foliar treatment.

4.6.2.5 Castor Bean



Description: Castor bean is a perennial shrub that grows 3 to 15 feet tall, with large palmately lobed leaves and sharply toothed leaf margins. The leaves are usually deep green but may have a reddish cast. Castor bean spreads by seed and is capable of resprouting from the root crown. Castor bean is frequently found in riparian areas and drainages, where it displaces native plant species. Its seeds are among the first to germinate following fire and disturbance, and the plants grow rapidly, shading out native seeds and seedlings.

Management Recommendations: Small plants in wet, sandy soils may be pulled by hand, making sure to remove the bulk of the root, as plants broken at the root crown will regenerate with multiple shoots. The cut-stump method is most effective for larger plants; stumps should be spot-sprayed with a glyphosate-based herbicide.

4.6.2.6 Eucalyptus



Description: Eucalyptus is a hardwood invasive tree species that spreads by suckers and seeds. It is considered undesirable in natural areas, as it consumes very large amounts of water to fuel its rapid growth. Eucalyptus also burns readily due to its volatile chemical compounds (terpenes and derivatives, furan and pyran compounds, ketones, benzene) and is known to have high fuel loadings for wildfires. It has a tendency to resprout along its trunk within three to six weeks, out-competing native species.

Management Recommendations: The cut-stump method is an effective and a frequently used method of eucalyptus removal. A triclopyr- or glyphosate-based herbicide should be applied to the cut-stump within three minutes of cutting to prevent resprouting. Herbicide injection is also an effective method of eucalyptus removal. Holes are drilled every few centimeters, depending on trunk size, around the entire circumference of the tree using a 5/16-inch (or larger) drill bit at a downward angle through the bark and into the cambium layer. Each hole is filled with a concentrated dose of glyphosate and refilled on bigger trees. Eucalyptus trees as large as 60 to 90 centimeters in diameter can be successfully killed in this manner. Depending on the size of the tree, either the cut-stump or the injection method will be used, which will be decided by the restoration biologist at the time of removal.

4.6.2.7 Russian Thistle



Description: Russian thistle, a member of the Chenopodiaceae family, is a dense intricately branched annual. The plant forms a roundish, bushy clump, growing one to four feet tall. The leaves are 1.25 to 2 inches long, alternate, very slender, and end with a sharp prickly point. Bisexual flowers are in the leaf axils and look like membranous saucers, pink or reddish in the center and no petals. Russian thistle, an extremely common inhabitant of many plant communities in waste and disturbed areas and cultivated fields, blooms from July to October. In the fall, it often breaks off at ground level and tumbles along the ground dropping its seeds, which are black and shining.

Management Recommendations: All Russian thistle biomass should be cut and removed from the mitigation areas. Russian thistle seedlings should be spot-sprayed with a glyphosate-based herbicide.

4.6.2.8 Crystalline Iceplant

Description: Crystalline iceplant, a member of the Aizoaceae family, is a succulent, low-growing annual (biennial) herb with flat, fleshy leaves. The leaves and stems are covered with distinctive minuscule, transparent, blister-like out growths and the small, radial flowers have many narrow petals that range from white to pinkish, depending upon the age of the flower (California Invasive Plant Council 2006). The stems range from green to red and usually trail along the soil surface.

Management Recommendations: Crystalline iceplant occurring within the mitigation areas should be sprayed with herbicide, left in place to desiccate, and then the biomass should be removed. If any of the iceplant becomes re-established prior to plant installation, it should be sprayed with a glyphosate-based herbicide and left in place. Once it has dried out, it should be rolled up and removed from the site.

4.7 Irrigation System Installation

The goal of restoration is to create habitats that will persist over time and be self-supporting. Planting will be timed to occur during the fall and early winter months in order to take advantage of cooler temperatures and seasonal rainfall. The wetland and riparian restoration areas will naturally have saturated soils and adequate water under natural seasonal conditions to provide enough moisture to allow the container plants to become established. However, supplemental water may be used in select locations and in upland areas to assure survival of container plantings until root systems are well enough developed to access groundwater in the dry season. In these cases, water use is expected to be highest during the first growing season, tapering off gradually until no supplemental water is necessary. Supplemental watering will be discontinued at least two years prior to the end of the five-year maintenance program.

A temporary, above ground irrigation system will be designed and installed within the mitigation sites to provide the plants with water as they establish and acclimate to the site. A water source such as a fire hydrant will be required for the irrigation system. The fire hydrant will require the installation of a temporary water meter to track and pay for water usage. The contractor will coordinate with the City's Public Utilities Department for water meter rental and placement. If there are no nearby hydrants, an alternative solution, such as a water truck, will be implemented. The irrigation design must demonstrate appropriate coverage and frequency of watering for plant establishment prior to approval by the restoration biologist.

4.8 Planting Plan

The planting plan for the mitigation site incorporates a combination of container plants, seed, and native volunteer recruitment to create the basic structure of the desired habitat. The planting plan will be based on the specifications defined herein after treatment of invasive plant species. All active restoration areas will be planted using standard horticultural practices, as outlined below.

This section covers activities relating to the installation of the mitigation areas, including seed and container plant sources, seed mix, salvaging of plant material, and seeding specifications. Specifications shall be followed in implementing the mitigation and shall be documented at the end of the installation phase. The final plant installation will be reviewed and approved by the restoration biologist.

The habitat types that are expected to be restored following site preparation include freshwater marsh, riparian scrub, and Diegan coastal sage scrub habitats. Natural recruitment will play a major role in these habitats' becoming established, but container plants will also be introduced into active restoration areas to speed up the revegetation process.

Exact planting design will be determined following site preparation and once the hydrology and topography of the site has been assessed following completion of project construction. Plant palette tables are to be used as guidelines. The proportions and quantities of these species will be determined based on site conditions at the discretion of the restoration biologist.

4.8.1 Freshwater Marsh

This planting plan is for the freshwater marsh restoration/re-establishment and rehabilitation areas under either project alternative. The mitigation of freshwater marsh habitat will include the installation of perennial herbaceous species established from container stock and application of a seed mix. The planting palette for this habitat has been designed to mimic existing freshwater marsh habitat in the area near the bridge. The proposed plant species include traditional freshwater marsh species and a few salt marsh species including but not limited to salt grass, spiny rush, and salt heliotrope. Recommended plant and seed mix consider the presence of salt marsh species observed on-site. All species except southern cattail will be planted from container stock grown from seed or cuttings collected within the project site. Southern cattail is expected to colonize the site naturally from existing populations within the unimpacted adjacent areas. Spacing and densities are presented in Table 3.

After the removal of non-native vegetation, the freshwater marsh mitigation area shall be installed with the container plants and seed listed in Tables 3 and 4. These guidelines are to be used as a reference for container size, maximum number per acre, and spacing. The total number of individual species per acre will be determined by the restoration biologist.

Table 3
Freshwater Marsh Container Plant Palette

Scientific Name	Common Name	Container Size	Percent Composition	Spacing (feet on center)
Anemopsis californica	Yerba mansa	Rose pot	10	2 ft.
Distichlis spicata	Saltgrass	Rose pot	5	3 ft.
Eleocharis macrostachya	Pale spike rush	1-gallon	5	3 ft.
Heliotropium curassavicum	Salt heliotrope	Rose pot	5	3 ft.
Juncus acutus	Spiny rush	1-gallon	15	6 ft.
Juncus mexicanus	Mexican rush	1-gallon	5	3 ft.
Pluchea odorata	Salt marsh fleabane	1-gallon	5	3 ft.
Rumex salicifolius	Willow dock	1-gallon	5	3 ft.
Bolboschoenus maritimus	Alkali bulrush	1-gallon	7	3 ft.
Schoenoplectus californicus	California bulrush	1-gallon	8	3 ft.

Table 4
Freshwater Marsh Seed Mix

Scientific Name	Common Name	Pounds/Acre
Anemopsis californica	Yerba mansa	8
Artemisia douglasiana	Mugwort	3
Eleocharis macrostachya	Pale spike rush	4
Juncus acutus	Spiny rush	2
Juncus dubius	Mariposa rush	2
Pluchea odorata	Salt marsh fleabane	3
TOTAL		22

4.8.2 Southern Riparian Scrub

Southern riparian scrub will be planted with willow species and mule fat along with various understory species typically found within riparian scrub habitat. Willows and mule fat will be planted from one-gallon containers installed on approximately 10-foot centers. Containers will be planted in augered holes to facilitate taproot development. Container stock will be planted in groups to allow open areas for seeded understory plants. Shrub and grass species are also included in the planting palette, and include southwestern spiny rush, San Diego marsh elder, and giant wild rye (*Elymus condensatus*). These species, among others, will provide native plant diversity and food sources for wildlife.

Several species will also be seeded. Some of these species include western ragweed (*Ambrosia psilostachya*), Palmer's sagewort (*Artemisia palmeri*), Douglas mugwort (*Artemisia douglasiana*), and

creeping wild rye (*Elymus triticoides*). Seeds will be collected within the project area or within a 15-mile radius of the project to retain genetic integrity.

The restoration biologist will determine the total number of individual species per acre. For areas immediately under the bridge or partially shaded by the bridge, only low-growing and shade tolerant shrub species will be planted.

Table 5 includes guidelines to be used as a reference for container size, maximum number per acre, and spacing, and Table 6 includes a recommended seed mix for the riparian scrub area.

Table 5
Southern Riparian Scrub Container Plant Palette

Scientific Name	Common Name	Container Size	Percent Composition	Spacing (feet on center)
Artemisia palmeri	Palmer's sagewort	1-gallon	3	3
Baccharis salicifolia	Mule fat	1-gallon	20	10
Iva hayesiana	San Diego marsh-elder	1-gallon	10	6
Elymus condensatus	Giant rye grass	1-gallon	10	3
Muhlenbergia rigens	Deer grass	1-gallon	5	3
Pluchea odorata	Salt marsh fleabane	1-gallon	4	3
Pluchea sericea	Arrow-weed	1-gallon	3	3
Salix exigua	Narrow-leaved willow	1-gallon	5	10
Salix gooddingii	Goodding's black willow	1-gallon	4	10
Salix laevigata	Red willow	1-gallon	10	10
Salix lasiolepis	Arroyo willow	1-gallon	10	10
Sambucus mexicana	Blue elderberry	1-gallon	3	10
Vitis girdiana	Desert wild grape	1-gallon	4	3

Table 6
Southern Riparian Scrub Seed Mix

Scientific Name	Common Name	Pounds/Acre
Ambrosia psilostachya	Western ragweed	4
Artemisia douglasiana	Mugwort	5
Artemisia palmeri	Palmer's sagewort	2
Baccharis salicifolia	Mule fat	4
Eleocharis macrostachya	Pale spike-rush	2
Elymus triticoides	Creeping wild rye	5
Iva hayesiana	San Diego marsh elder	4
Juncus acutus ssp. *leopoldii*	Southwestern spiny rush	2
Muhlenbergia rigens	Deer grass	3
Oenothera elata ssp. hookeri	Hooker's evening primrose	1
Pluchea odorata	Salt marsh fleabane	2
Pluchea sericea	Arrow-weed	2
TOTAL		6

4.8.3 Diegan Coastal Sage Scrub

Diegan coastal sage scrub will be planted with California sagebrush, California buckwheat, coast goldenbush (*Isocoma menziesii)*, and black sage (*Salvia mellifera*) with smaller perennial species already known to occur on-site. Container stock will be planted in groups to allow open areas for seeded understory plants. Smaller perennials and grass species are also included in the planting palette, and include western ragweed, salt grass, and purple needlegrass (*Stipa pulchra*). These species, among others, will provide native plant diversity and food sources for wildlife. The restoration biologist will determine the total number of individual species per acre. All container plants will be planted from one-gallon containers and Table 7 includes guidelines to be used as a reference for container size, maximum number per acre, and spacing.

Table 7
Diegan Coastal Sage Scrub Container Plant Palette

Scientific Name	Common Name	Container Size	Percent Composition	Spacing (feet on center)
Ambrosia psilostachya	Western ragweed	1-gallon	5	3
Artemisia californica	California sagebrush	1-gallon	15	8
Distichlis spicata	Salt grass	Rose pot	5	–
Encelia californica	California encelia	1-gallon	12	8
Eriogonum fasciculatum	California buckwheat	1-gallon	13	6
Isocoma menziesii	Coast goldenbush	1-gallon	15	8
Mimulus aurantiacus	Bush monkeyflower	1-gallon	10	8
Stipa pulchra	Purple needlegrass	1-gallon	5	3
Salvia apiana	White sage	1-gallon	5	6
Saliva mellifera	Black sage	1-gallon	15	10

Some species planted as container plants will also be seeded to provide diverse vegetative structure (Table 8). In addition, several perennial and annual herb species will be introduced to the site as seed and include beach evening primrose (*Camissoniopsis cheiranthifolia*), fascicled tarweed (*Deinandra fasciculata),* California poppy (*Eschscholzia californica*), alkali heliotrope (*Heliotropium curassavicum*), arroyo lupine (*Lupinus succulentus),* little California melic (*Melica imperfecta*), great marsh evening primrose (*Oenothera elata*), and blue-eyed grass (*Sisyrinchium bellum*). Seeds will be collected within the project area or within a 15-mile radius of the project to retain genetic integrity.

Table 8
Diegan Coastal Sage Scrub Seed Mix

Scientific Name	Common Name	Pounds/Acre
Acmispon prostrates	Nuttall's acmispon	TBD[1]
Ambrosia psilostachya	Western ragweed	0.75
Artemisia californica	California sagebrush	3.5
Artemisia douglasiana	Mugwort	0.75
Baccharis pilularis	Coyote brush	0.5
Camissoniopsis cheiranthifolia	Beach evening-primrose	1.5
Camissoniopsis lewisii	Lewis' evening primrose	TBD[1]
Deinandra fasciculata	Fascicled tarweed	0.5

Table 8 Diegan Coastal Sage Scrub Seed Mix		
Scientific Name	Common Name	Pounds/Acre
Encelia californica	California encelia	3.5
Eschscholzia californica	California poppy	1.75
Heliotropium curassavicum	Alkali heliotrope	1.0
Iva hayesiana	San Diego marsh-elder	TBD[1]
Lupinus succulentus	Arroyo lupine	1.5
Melica imperfecta	Little California melic	2.0
Oenothera elata	Great marsh evening-primrose	0.5
Stipa pulchra	Purple needlegrass	2.5
Sisyrinchium bellum	Blue-eyed grass	2.0
TOTAL		22.25
[1]All available seed from these species within the PIA temporary impact areas will be collected. Additional seed from within the project vicinity will be collected and will be no more than 5 percent of the total available seed.		

4.9 Specifications

This section addresses all activities relating to the installation of the mitigation program, including source material (seed and cutting collection, and plant production), substitutions, plant inspections, container plant practices, seeding specifications, cutting specifications, and guarantees. Specifications shall be followed in implementing the mitigation project and shall be included as part of the construction document specifications package. The mitigation installation will be reviewed and approved by the restoration biologist.

4.9.1 Source Material

4.9.1.1 Seed and Cutting Collection

As soon as possible, concurrent with construction, and continuing as needed for the duration of the maintenance and monitoring period, native seed and willow pole cuttings will be collected in and around the project area, as directed by the restoration biologist. In the first year, seed collection should focus primarily on the species included in Tables 5 through 8, but the restoration biologist will endeavor to collect seed from all native species that may be found in the habitat types that will be restored. Seed will only be collected outside the project area if there is not sufficient seed present in the project area or if additional species are needed. Seed and cutting collection areas will be limited to a 15-mile radius around the project area and within the San Luis Rey River watershed, but it is likely that all of the source material will come from within the PIA. Any individuals of sticky dudleya, variegated dudleya, or San Diego ambrosia (*Ambrosia pumila*) that will be directly impacted within the temporary impacts areas of the PIA will be salvaged for transplantation to the extent feasible.

4.9.1.2 Plant Production

Container plants will be grown at an off-site nursery that specializes in producing high-quality native plant species for habitat restoration projects. Container plant production will begin as seed and cuttings become available for propagation. If project-specific seed is not available at the appropriate time for container plant propagation, container plants will be sourced from within San Diego County, as close to the project site as practicable. Native soil will be used in the plant containers. If more native soil is needed than is available to fill plant containers, each container should receive some native soil mixed with an appropriate commercial nursery soil mix. The native soil in the container mix will inoculate mycorrhizae (fungi) and other microorganisms to the plant, which enhances native plant growth. The mycorrhizae present in native soil are superior to commercially available mycorrhizae since it possesses specific fungus-plant associations to the types of plants being planted and may inhibit ruderal plant growth. Container plants should be grown outdoors and in full sunlight. Prior to container plants being delivered to the project site, they should be hardened off from water, so they may be able to sustain themselves under potential drought conditions once planted.

4.9.2 Substitutions

The installation contractor is expected to secure the necessary plant material prior to the expected planting date. In general, no substitutions above 10 percent of any specified species number will be allowed and must be approved in advance by the restoration biologist.

4.9.3 Plant Inspections

All plants will be inspected by the restoration biologist and approved as healthy, disease free, and of proper size prior to planting. In addition, the restoration biologist will approve the final layout of all plant materials in the field prior to planting.

4.9.4 Container Plant Practices

Container plants will be planted using standard horticultural practices, using a hole at least twice the diameter of the root ball and leaving the plant crown one to two inches above grade after planting. All plants will be thoroughly watered in their pots before planting, and the soil in all planting holes will be thoroughly wetted before planting. The restoration biologist may specify additional soil amendments, as necessary.

4.9.5 Seeding Specifications

Seeding activities in the mitigation areas will occur after all container plants have been installed and initial weed eradication is complete. The mitigation areas may be hand-seeded with the seed mixes shown in Tables 4, 6, and 8. Seeding activities will proceed only after the restoration biologist certifies that the site preparation has been completed. As much as possible, the seed should be collected from the project site and the range of seed collection shall be limited to within a 15-mile radius of the project area and within the San Luis Rey River watershed to maintain genetic integrity. The

amount of seed purchased and location collected will be provided in writing to the restoration biologist.

5.0 Maintenance Program

The installation contractor will be responsible for the maintenance program. The purpose of the 120-day plant establishment period (PEP) and the five-year maintenance program is to ensure the success of the mitigation planting and to allow native plants to establish and become self-sustaining. Maintenance is needed to create and maintain conditions favorable to the establishment and growth of native plants. The maintenance program ensures that native species are allowed to recruit, container plants are becoming established, and weeds are under control. Maintenance measures will be conducted throughout all mitigation areas and will be coordinated by the restoration biologist. Maintenance will consist of two phases: the PEP and the 5-year maintenance program. The restoration biologist will oversee all aspects of the mitigation program in order to detect problems at the earliest stage.

Maintenance activities expected to be necessary during the maintenance program include weed control, irrigation system management, herbivory protection, trash removal, remedial planting, and access control.

Maintenance of the mitigation site will continue until the objectives of the plan are met. Success of the plantings will be assessed annually after installation. Plantings within the mitigation areas must achieve the specified goals of plant survival and coverage prior to meeting contractual obligations.

5.1 Schedule

A 120-day PEP will commence upon completion of container plants installation and hand-seeding. During this period, relatively intensive maintenance activities will be conducted to aid in the establishment of container plantings under the direction of the restoration biologist. The maintenance crew will control emerging weed seedlings, replace dead plants, and remove any trash from the mitigation site.

If excessive damage from animals (i.e., browsing or trampling) is detected, individual plants may be protected by temporary installation of a chicken-wire fence around each plant. However, since browsing is a natural process, fencing will only be installed if browsing is expected to result in excessive plant mortality that would jeopardize the overall success of the mitigation.

Following completion of the PEP, the five-year maintenance program begins. Often, success criteria are achievable by the end of Year 3. Therefore, the need for additional maintenance beyond Year 3 will be determined at the end of that year. Maintenance inspections will be conducted concurrently with biological monitoring of the site by the restoration biologist. Thus, maintenance inspections will be conducted monthly for the first 18 months after installation, approximately bimonthly for the next 18 months, and quarterly thereafter for the remainder of the five-year maintenance period following the PEP.

Specific maintenance activities will be determined by observations made during the scheduled site visits described above. Plant replacement, repairs to the irrigation system, erosion control, and other remedial actions to correct problems or damage resulting from natural causes, vandalism or other factors that may jeopardize the successful completion of the project will be performed promptly, generally within two weeks of identification of the problem. Table 9 includes the anticipated schedule for maintenance activities during the PEP and 5-year maintenance period.

Table 9
Maintenance Schedule

Type/Task	Plant Establishment Period	Year 1	Year 2	Year 3	Year 4	Year 5
Weed control	Weekly	Monthly for first 8 months	Monthly for first 6 months, bi-monthly for second 6 months	Bi-monthly	Quarterly	Quarterly
Replanting	--	Fall	Fall	--	--	--
Irrigation	As needed	As needed	As needed	--	--	--
NOTE: Schedule is approximate.						

5.2 Weed Control

Weed control will be an integral part of the five-year maintenance program. Weeds will be controlled through one of the means described in Section 4.6.1. A glyphosate-based herbicide approved for use in wetlands will be applied in most cases, but selective herbicides may also be applied to control specific types of weeds, as directed by the restoration biologist. Weeding will be performed by maintenance personnel familiar with and trained to distinguish weeds from native species. Emphasis will be on keeping weed species from producing seeds and controlling weed competition during establishment of the plants. Invasive species anticipated on the mitigation site are described in Section 4.6.2.

Weed control will be timed to prevent seed set by non-native species. During the first year after the PEP, weeding will be performed monthly, depending on site conditions. During Year 2, weeding shall be performed monthly for the first six months and bimonthly for the last six months. Bimonthly weeding will be performed during Year 3 and quarterly for Years 4 and 5. If necessary, the frequency of weeding visits may be modified, as determined by the restoration biologist.

The bird-breeding season (February 15 to September 30) strongly correlates with the weed growing season; therefore, it may be necessary to coordinate restoration activities with bird biologists to avoid any disturbance to sensitive species. The restoration biologist will be in close communication with the bird biologists to ensure that sensitive areas are being avoided during bird-breeding seasons. If a bird nest is observed within an area that should be treated during the bird-breeding season, the bird biologist will be consulted to establish an appropriate buffer to establish such that the breeding birds will not be disturbed while management activities continue.

5.3 Irrigation System Operation

The irrigation system will be operated with automatic timers and at a frequency and duration appropriate for the establishment of the target habitat types (see Table 9). It is anticipated that the irrigation system will be scheduled to water two to three times per week during Years 1 through 3 to supplemental natural rainfall, with a decrease in watering frequency in Year 3. Watering will taper off during summer months to allow plants to enter their natural summer dormancy period. To ensure that plants are self-sustaining, it is anticipated that supplemental irrigation will be discontinued after Year 3.

5.4 Remedial Planting

If the performance standards, as established in Section 6.1, are not achieved because of disease, vandalism, or other natural causes, remedial planting will be necessary. Replanting will be conducted when soil moisture is optimal, between the months of October and March, as determined by the restoration biologist. In areas that do not establish well, or do not reflect the dominant and subdominant species of the reference sites, remedial seeding may also be recommended by the restoration biologist. Planting and seeding methods and specifications will be the same as those described for implementation.

5.5 Vandalism

The mitigation area should be protected from vandalism, breakage of the irrigation system, uprooting of plantings, off-road vehicle activity, and illegal trash dumping by the installation of an appropriate access barrier. Posted signs designating the area as a mitigation site may deter casual vandalism.

6.0 Monitoring Program

The monitoring activities for the on-site mitigation areas are described in detail below. To determine if the mitigation areas are functioning as expected, qualitative and quantitative monitoring will be conducted for five years or until final performance standards are achieved, whichever is shorter. Monitoring surveys will concentrate initially on qualitative observations to identify potential problems and recommend remedial maintenance actions, where necessary. Remedial actions may be necessary to address factors that could jeopardize attainment of the criteria for success. Ultimately, the success of the plan will be evaluated by comparing the final year of monitoring data with project performance standards. The monitoring data will evaluate the functions and values of restored habitat, native and non-native vegetative cover, species diversity, and density. At the completion of any monitoring year, if all final performance standards have been achieved, further monitoring of the site will not be necessary and the mitigation site will be deemed a success.

6.1 Performance Standards

This section defines a set of yearly performance standards for evaluating the progress of the mitigation program. These standards will be used to monitor site development and to decide when to implement remedial measures to correct any deficiencies in progress. Performance standards will be assessed by the restoration biologist based on distinguishable criteria outlined in this plan. Performance standards are characteristic of expected growth within the San Luis Rey River.

In order to determine if the goals of the revegetation program have been achieved, certain success criteria must be met. These criteria typically include quantified measures such as percent survival, percent cover by native species, and non-native cover. These data will be collected during annual monitoring events. Each annual monitoring report will evaluate if these criteria have been met and prescribe corrective measures if necessary.

By satisfying the performance standards, the mitigation areas indicate that they are establishing themselves as self-sustaining habitat. Moreover, mitigation sites are expected to sustain themselves for a minimum of two years (meeting the fifth-year performance standards) in the absence of significant maintenance measures for the final two years during the monitoring period. Performance standards for the freshwater marsh, riparian scrub, and Diegan coastal sage scrub mitigation areas are included in Tables 10 through 12.

Table 10
Performance Standards for Fresh Water Marsh
(Absolute Cover)

Year	Native Cover[1]	Container Plant Survival	Non-native Coverage (not to exceed)
1	No Quantitative Performance Goals	80%	20%
2	30%	100%[2]	10%
3	50%	–	5%
4	65%	–	5%
5	85%	–	5%

[1] This does not include areas of open water caused by slight variations in elevation.
[2] Relative percentage of Year 1.

Table 11
Performance Standards for Riparian Scrub
(Absolute Cover)

Year	Native Cover	Container Plant Survival	Non-native Coverage (not to exceed)
1	50%	80%	20%
2	50%	100%[1]	10%
3	50%	–	5%
4	65%	–	5%
5	85%	–	5%

[1] Relative percentage of Year 1.

Table 12 Performance Standards for Diegan Coastal Sage Scrub (Absolute Cover)			
Year	Native Cover	Container Plant Survival	Non-native Coverage (not to exceed)
1	25%	80%	20%
2	30%	100%[1]	10%
3	40%	–	5%
4	55%	–	5%
5	75%	–	5%
[1] Relative percentage of Year 1.			

6.2 Monitoring Methods

A qualified restoration biologist will conduct the restoration monitoring (the responsibilities and qualifications of the project's restoration biologist are detailed in Section 4.3.1 of this report). This monitoring program is intended to provide continued oversight of the mitigation areas after installation is completed. The mitigation areas will be monitored through a combination of qualitative and quantitative means. Qualitative monitoring provides proactive direction and oversight of the maintenance program, and quantitative monitoring measures overall habitat development. This oversight will accomplish two objectives: (1) provide feedback for the maintenance contractor and (2) provide information to evaluate progress so that adaptive measures can be made to help meet performance standards.

Initial monitoring will begin following restoration implementation. The as-built plantings will be compared to the planting specifications in this report (see Tables 3 through 8), with any deviations from this plan included in an as-built report. Any significant deviations from this plan will be evaluated by the restoration biologist and, if necessary, changes made to conform to the plan.

Both qualitative and quantitative data will be collected during monitoring surveys. Qualitative monitoring will include observations of wildlife use on-site, general site conditions and plant health, identification of potential problems, and remediation alternatives. Quantitative information will include survivorship and native and non-native cover.

6.2.1 Vegetation Measurements

Monitoring data will be analyzed for trends and changes in cover of the most common tree, shrub, and herbaceous species. Year-to-year changes in vegetative cover will be compared to determine whether the mitigation areas are approaching characteristics of mature vegetation. The performance standards described below for achieving success are attributable to percent cover and survivorship of native species.

6.2.1.1 Container Plant Survival

Survival of all container plant material shall be 80 percent in Year 1 and 100 percent in Year 2 relative to the surviving stock from Year 1. Remedial planting shall occur to account for plant mortality to ensure that 90 percent of the plant palette survives in all vegetation communities if plants that die are not being replaced via natural recruitment.

6.2.1.2 Vegetative Cover

Monitoring data should be analyzed separately for native and non-native cover, as appropriate for each habitat type. Native and non-native cover performance standards for each mitigation area are included in Tables 10 through 12.

At the completion of Year 5, there shall be no perennial invasive plant species within the mitigation site (see Section 4.6.2 for a list of the targeted invasive plant species). Other non-native annual species shall not exceed 5 percent in Year 5. These values are absolute.

6.2.1.3 Diversity

Although there is no performance standard for native diversity, all plant species will be noted during monitoring visits. Native species diversity within the herbaceous understory, shrub midstory, and tree overstory will create habitat for a more diverse array of wildlife species.

6.2.2 Qualitative Monitoring Methodology

Evaluation of plant health and identifying and correcting problem areas is necessary for ensuring successful habitat establishment. In Year 1, qualitative monitoring will be conducted monthly, then quarterly for Years 2 through 5. The monitor will review the mitigation areas to assess germination, survival, and growth of seeded and planted material, levels of weed competition, and erosion. The monitor will record and report findings and make recommendations for remedial actions, if needed, to the maintenance contractor after each monitoring event. If site conditions are such that additional remedial actions are required beyond those envisioned in this plan, the monitor will communicate recommendations for remediation to the project proponent.

A component of qualitative monitoring will be to determine the efficacy of invasive plant management/treatment methods, especially within the HEA due to high density of invasive species. Monitoring for invasive species will consist of site visits to determine the presence and location of invasive species as well as the percent cover and life stage. Monitoring will dictate whether remedial measures are required. Results will objectively determine if the treatment areas approach the goals specified at the beginning of treatment activities.

6.2.3 Quantitative Monitoring Methodology

Quantitative monitoring will measure the development of the vegetation within the mitigation areas and will provide documentation on whether the sites are meeting their performance standards.

Quantitative monitoring will be performed within the mitigation areas once a year during the late spring to early summer to measure year-to-year changes on the sites. Late spring to early summer monitoring will allow winter deciduous trees such as willows time to leaf out and be monitored during their active growing season and will coincide with the period of maximum growth of marsh plants. Quantitative monitoring will begin the second spring following implementation of restoration activities in order to allow time for the new vegetation within the mitigation areas to become established.

Some plant species take significantly longer than five years to mature; therefore, full maturation of the mitigation areas may not be achieved by the end of the monitoring period. However, the monitoring data will be analyzed for trends and changes in cover of the most common tree, shrub, and herbaceous species. Year-to-year changes in vegetative cover will be compared to determine whether the mitigation areas are approaching characteristics of mature vegetation. Performance standards will be measured as absolute values. The following describes the various sampling methods proposed for each of the vegetation habitats.

6.2.3.1 Point-intercept Transect Monitoring

Overall native and non-native cover, vegetative structure (trees, shrubs, herbaceous species presence), and species richness will be evaluated within the mitigation site. These parameters will be measured using the point-intercept transect monitoring method to measure development towards the individual performance standards for each habitat type (see Tables 10 through 12). Approximately two transects per acre will be randomly positioned throughout the mitigation site. Transect monitoring methods will follow the protocol published by CNPS in *A Manual of California Vegetation* (Sawyer et al. 2009). Due to the small size of the mitigation areas and the difficulty and resulting destruction that occurs when trying to access vegetation along a 50-meter transect, this method has been revised to employ a 20-meter-long transect centered in a 20-by-5-meter plot. Vegetation will be sampled by the point method at every half meter (0.5-meter intervals) along the transect line to determine species and cover. The percent cover of a species will be determined by dividing the number of intercepts by that species by the total number of sample points. The surveyor will note the species encountered and classify their height (i.e., herb, shrub, or tree) at each interval, as described in the CNPS field sampling protocol (CNPS 1995).

In addition, the number of individual native species present within each transect belt will be counted to determine native species richness. Dead and live container plants will also be counted within the transect belts to determine percent of container plant survival. Quantitative monitoring will be performed once per year in the spring to measure year-to-year changes in vegetative cover and species richness (see Tables 10 through 12). Depending on site conditions, the timing of transect monitoring may be adjusted to better capture general site conditions and the blooming period of plant species on-site.

6.2.4 Photo-documentation

The mitigation effort will be qualitatively documented using photographic monitoring and general observations. Several permanent viewpoints for photo-documentation will be established in each of the different mitigation areas, including in association with the monitoring of the point-intercept and

line-intercept transects. Photographs shall be taken each monitoring period from the same vantage point and in the same direction and shall reflect information discussed in the monitoring report. These photos will be included in each annual report.

6.3 Monitoring Schedule

The monitoring period will be conducted by the restoration biologist and will occur regularly during implementation and for the duration of the maintenance program. Qualitative monitoring will be conducted approximately monthly during the PEP (the 120 days following plant installation) and Year 1, every other month for Years 2 and 3, and quarterly for Years 4 and 5. Monitoring visits will be conducted to identify potential problems, recommend and guide maintenance activities, and ensure that the mitigation areas are making progress towards their annual and final success criteria. The approximate monitoring schedule is presented in Table 13. It is anticipated that the monitoring schedule will be adjusted for seasonality with more frequent events occurring during the growing season of February through June, and fewer events occurring during the summer and fall months.

Table 13
Monitoring Schedule

Type/Task	PEP	Year 1	Year 2	Year 3	Year 4	Year 5
Qualitative						
Monitoring	Monthly	Monthly	Every other month	Every other month	Quarterly	Quarterly
Quantitative						
Transect Monitoring		–	Annually	Annually	Annually	Annually
NOTE: Schedule is approximate.						

7.0 Reporting

7.1 As-built Report

Within 60 days of completion of site preparation and planting, a report shall be submitted describing the as-built status of the mitigation project. The as-built report shall include a description of implementation activities including dates, quantities of container plants and seed installed per habitat type, and figures including site boundaries and habitat types. Changes from the original plans will be discussed.

7.2 120-day Plant Establishment Period Report

After completion of the 120-day PEP, a letter report will be submitted that documents the status of the mitigation areas and the results of qualitative monitoring. Any observations identifying potential problems and recommendations for remedial efforts will be included in the PEP report. Identifying and correcting problems as they arise during the PEP will be crucial to the obtainment of annual success criteria.

7.3 Annual Monitoring Report

Annual monitoring reports will be submitted to the City and all other appropriate resource agencies for a period of five years or until final performance standards are achieved, whichever is shorter, beginning approximately one year after completion of the PEP. These reports will discuss the qualitative and quantitative methods and results and the progress of the mitigation sites and will include corrective measures that may facilitate the attainment of mitigation success as defined by the established performance standards (see Section 6.1). A review of the project by the resource agencies should occur within 45 days of receiving the report and remedial measures recommended, if necessary.

These reports will include the following:

- A list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year;
- Dates and results of maintenance visits;
- An analysis of all qualitative and quantitative monitoring data;
- Annual photographs from photos points; and
- Maps identifying mitigation areas, planting/seeding zones, etc., as appropriate.

8.0 Overall Schedule

In order to coincide with optimal growing conditions, mitigation implementation and planting should occur during the fall to early winter months (approximately November through February). Implementation of mitigation will be timed to occur following the construction of the project. On-site mitigation work will begin with site preparation in approximately October, outside the bird-breeding season for, followed by planting and seeding.

The goals of the mitigation program to establish the desired species should be met within the five-year maintenance and monitoring period required for the mitigation site. However, it may take 15 years or more for some of the vegetation communities and individual species to reach full maturity and habitat value.

9.0 Final Mitigation Success

If all performance standards are met at the end of any monitoring year, the mitigation will be considered a success. When the monitoring period is complete and final performance standards have been met, the permittee will notify the resource agencies when submitting the final annual report that documents this completion.

9.1 Contingency Measures

The functions and values of native and self-sustaining wetland, riparian, and upland ecosystems should be restored to the mitigation areas within a period of five years. There is enough native plant material currently present within the mitigation areas to provide an ample seed source for the natural recruitment of native species. Active restoration practices will be provided in areas where natural recruitment is slow to take effect, and this will speed up the revegetation process. An intensive weed management program will eradicate invasive plants from the mitigation sites and allow native species to flourish.

Beginning in Year 2, if the site has not met its performance standards at the end of the annual maintenance and monitoring period for that year, the restoration biologist will meet with the project client and resource agencies to recommend remedial measures. Each annual report will contain a section that addresses remedial actions that should be taken in order to meet the project goals. If followed, these recommended contingency measures will ensure that the mitigation program is successful.

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Appendix C – U.S. Fish and Wildlife Service, National Marine Fisheries Service, California Natural Diversity Database, and California Native Plant Society Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901
http://www.fws.gov/carlsbad/

In Reply Refer To: November 18, 2021
Consultation Code: 08ECAR00-2022-SLI-0179
Event Code: 08ECAR00-2022-E-00465
Project Name: North Coast Highway Bridge Replacement 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Project Summary

Consultation Code: 08ECAR00-2022-SLI-0179
Event Code: Some(08ECAR00-2022-E-00465)
Project Name: North Coast Highway Bridge Replacement 2021
Project Type: TRANSPORTATION
Project Description: The City of Oceanside proposes to replace the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River (Br. No. 57C0322), which is located approximately 0.3 mile south of Harbor Drive, immediately west of and parallel to Interstate 5, in the city of Oceanside, San Diego County, California. The replacement bridge is intended to be similar in size and scope. Once the replacement bridge is completed, the existing bridge will be removed. The project impact area is approximately 16.5 acres and encompasses both upland, riparian, wetland, and open water habitats.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.2061698,-117.38730264181228,14z



Counties: San Diego County, California

Endangered Species Act Species

There is a total of 16 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Pacific Pocket Mouse *Perognathus longimembris pacificus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8080	Endangered
Stephens' Kangaroo Rat *Dipodomys stephensi (incl. D. cascus)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3495	Endangered

Birds

NAME	STATUS
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher *Polioptila californica californica* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Light-footed Clapper Rail *Rallus longirostris levipes* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6035	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Fishes

NAME	STATUS
Tidewater Goby *Eucyclogobius newberryi* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Riverside Fairy Shrimp *Streptocephalus woottoni* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8148	Endangered
San Diego Fairy Shrimp *Branchinecta sandiegonensis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6945	Endangered

Flowering Plants

NAME	STATUS
Coastal Dunes Milk-vetch *Astragalus tener var. titi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7675	Endangered
San Diego Button-celery *Eryngium aristulatum var. parishii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5937	Endangered
San Diego Thornmint *Acanthomintha ilicifolia* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/351	Threatened
Spreading Navarretia *Navarretia fossalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1334	Threatened

Critical habitats

There are 4 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Coastal California Gnatcatcher *Polioptila californica californica* https://ecos.fws.gov/ecp/species/8178#crithab	Final
Least Bell's Vireo *Vireo bellii pusillus* https://ecos.fws.gov/ecp/species/5945#crithab	Final
Southwestern Willow Flycatcher *Empidonax traillii extimus* https://ecos.fws.gov/ecp/species/6749#crithab	Final
Tidewater Goby *Eucyclogobius newberryi* https://ecos.fws.gov/ecp/species/57#crithab	Final

Quad Name **Oceanside**
Quad Number **33117-B4**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) - **X**
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) - **X**
Range White Abalone (E) - **X**

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) - X
Olive Ridley Sea Turtle (T/E) - X
Leatherback Sea Turtle (E) - X
North Pacific Loggerhead Sea Turtle (E) - X

ESA Whales

Blue Whale (E) - X
Fin Whale (E) - X
Humpback Whale (E) - X
Southern Resident Killer Whale (E) - X
North Pacific Right Whale (E) - X
Sei Whale (E) - X
Sperm Whale (E) - X

ESA Pinnipeds

Guadalupe Fur Seal (T) - X

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH -
Groundfish EFH - X
Coastal Pelagics EFH - X
Highly Migratory Species EFH - X

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans - X
MMPA Pinnipeds - X

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Imported file selection

Coast Highway Bridge Replacement-2 mile radius of BSA

Spea hammondii **Element Code:** AAABF02020

western spadefoot

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2G3
	State:	None		**State:**	S3S4
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	OCCURS PRIMARILY IN GRASSLAND HABITATS, BUT CAN BE FOUND IN VALLEY-FOOTHILL HARDWOOD WOODLANDS.			
	Micro:	VERNAL POOLS ARE ESSENTIAL FOR BREEDING AND EGG-LAYING.			

Occurrence No.	691	**Map Index:** B2109	**EO Index:** 114033	**Element Last Seen:**	2004-04-07
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2004-04-07
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2019-02-21

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.223 / -117.37494	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3676072 E465063	**Elevation (ft):**	177
PLSS:	T11S, R05W, Sec. 14, NW (S)	**Acres:**	70.0

Location: EAST OF ASH RD AT WIRE MOUNTAIN RD INTERSECTION, CAMP PENDLETON SOUTH, NORTH OF OCEANSIDE.

Detailed Location:

Ecological: VERNAL POOL AND COASTAL SAGE SCRUB RESTORATION SITE.

General: SPADEFOOT DETECTED IN POOLS BETWEEN 24 FEB 2003 AND 7 APR 2004.

Owner/Manager: DOD-CAMP PENDLETON MCB

Elanus leucurus **Element Code:** ABNKC06010

white-tailed kite

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3S4
	Other:	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern			
Habitat:	**General:**	ROLLING FOOTHILLS AND VALLEY MARGINS WITH SCATTERED OAKS AND RIVER BOTTOMLANDS OR MARSHES NEXT TO DECIDUOUS WOODLAND.			
	Micro:	OPEN GRASSLANDS, MEADOWS, OR MARSHES FOR FORAGING CLOSE TO ISOLATED, DENSE-TOPPED TREES FOR NESTING AND PERCHING.			

Occurrence No.	37	**Map Index:** 25149	**EO Index:** 5969	**Element Last Seen:**	1983-04-27
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1983-04-27
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1995-11-13

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.23478 / -117.36801	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3677375 E465713	**Elevation (ft):**	225
PLSS:	T11S, R05W, Sec. 11, NE (S)	**Acres:**	0.0

Location: AT THE HEAD OF TULEY CANYON, JUST EAST OF WIRE MOUNTAIN, CAMP PENDLETON MARINE CORPS BASE.

Detailed Location:

Ecological: NEST IS LOCATED IN SAMBUCUS MEXICANA, AT THE HEAD OF A NARROW CANYON SURROUNDED BY COASTAL TERRACES. HABITAT IS COASTAL SAGE SCRUB SURROUNDED BY ANNUAL GRASSLAND; DOMINANTS: RHUS INTEGRIFOLIA, SALVIA MELLIFERA, AND ENCELIA CALIFORNICA.

General: 2 BIRDS OBSERVED NESTING IN 1983.

Owner/Manager: DOD-CAMP PENDLETON MCB

Circus hudsonius **Element Code:** ABNKC11011

northern harrier

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	COASTAL SALT AND FRESHWATER MARSH. NEST AND FORAGE IN GRASSLANDS, FROM SALT GRASS IN DESERT SINK TO MOUNTAIN CIENAGAS.			
	Micro:	NESTS ON GROUND IN SHRUBBY VEGETATION, USUALLY AT MARSH EDGE; NEST BUILT OF A LARGE MOUND OF STICKS IN WET AREAS.			

Occurrence No.	19	**Map Index:** 03344	**EO Index:** 27014	**Element Last Seen:**	1982-03-22
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1982-03-22
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1995-11-13

Quad Summary: San Luis Rey (3311723), Oceanside (3311724), Morro Hill (3311733), Las Pulgas Canyon (3311734)

County Summary: San Diego

Lat/Long:	33.25719 / -117.36946	**Accuracy:**	1 mile
UTM:	Zone-11 N3679860 E465586	**Elevation (ft):**	25
PLSS:	T10S, R05W, Sec. 35 (S)	**Acres:**	0.0

Location: CAMP PENDLETON MCB; YSIDORA FLATS (=BASIN), SANTA MARGARITA RIVER.

Detailed Location:

Ecological:

General: 2-3 PAIRS NEST IN THIS AREA EACH YEAR ACCORDING TO BLOOM.

Owner/Manager: DOD-CAMP PENDLETON MCB

Buteo swainsoni **Element Code:** ABNKC19070

Swainson's hawk

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	Threatened		**State:**	S4
	Other:	BLM_S-Sensitive, IUCN_LC-Least Concern			
Habitat:	**General:**	BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, AND AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.			
	Micro:	REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.			

Occurrence No.	2557	**Map Index:** 27986	**EO Index:** 91510	**Element Last Seen:**	1902-05-25
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	1902-05-25
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2013-09-23

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.23264 / -117.32450	**Accuracy:**	1 mile
UTM:	Zone-11 N3677124 E469766	**Elevation (ft):**	50
PLSS:	T11S, R04W, Sec. 08 (S)	**Acres:**	0.0

Location: SAN LUIS REY.

Detailed Location: MAPPED GENERALLY TO GIVEN LOCALITY, EXACT COLLECTION LOCATION UNKNOWN.

Ecological: STICK NEST LINED WITH LEAVES, STRAW, BARK AND FEATHERS FOUND 43' UP IN COTTONWOOD TREE. SAN DIEGO COUNTY BREEDING POPULATION CONSIDERED EXTIRPATED.

General: ADULT FEMALE OBSERVED ON NEST, 2 EGGS COLLECTED ON 25 MAY 1902.

Owner/Manager: UNKNOWN

Occurrence No.	2566	**Map Index:** 03344	**EO Index:** 91530	**Element Last Seen:**	1919-05-02
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	1919-05-02
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2013-09-23

Quad Summary: San Luis Rey (3311723), Oceanside (3311724), Morro Hill (3311733), Las Pulgas Canyon (3311734)

County Summary: San Diego

Lat/Long:	33.25719 / -117.36946	**Accuracy:**	1 mile
UTM:	Zone-11 N3679860 E465586	**Elevation (ft):**	30
PLSS:	T10S, R05W, Sec. 35 (S)	**Acres:**	0.0

Location: YSIDORA BASIN, ABOUT 5 MILES NORTH OF OCEANSIDE.

Detailed Location: SPECIMEN LOCALITY GIVEN AS "SYCAMORE CANYON, 5 MI N OF OCEANSIDE." SYCAMORE CANYON IS UNKNOWN PLACE NAME. MAPPED VERY GENERALLY TO VALLEY 5 MILES NORTH OF THE TOWN OF OCEANSIDE.

Ecological: NEST FOUND 45' UP SYCAMORE TREE AT FORK OF SEVERAL SMALL LIMBS.

General: 3 EGGS COLLECTED ON 2 MAY 1919.

Owner/Manager: UNKNOWN

Rallus obsoletus levipes **Element Code:** ABNME05014

light-footed Ridgway's rail

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G3T1T2
	State:	Endangered		**State:**	S1
	Other:	CDFW_FP-Fully Protected, NABCI_RWL-Red Watch List			
Habitat:	**General:**	FOUND IN SALT MARSHES TRAVERSED BY TIDAL SLOUGHS, WHERE CORDGRASS AND PICKLEWEED ARE THE DOMINANT VEGETATION.			
	Micro:	REQUIRES DENSE GROWTH OF EITHER PICKLEWEED OR CORDGRASS FOR NESTING OR ESCAPE COVER; FEEDS ON MOLLUSCS AND CRUSTACEANS.			

Occurrence No.	35	**Map Index:** 71257	**EO Index:** 72162	**Element Last Seen:**	1992-XX-XX
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	2007-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2008-05-28

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20418 / -117.38877	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3673990 E463765	**Elevation (ft):**	5
PLSS:	T11S, R05W, Sec. 22 (S)	**Acres:**	0.0

Location: MOUTH OF THE SAN LUIS REY RIVER.

Detailed Location: LOCATION GIVEN AS "SAN LUIS REY RIVER MOUTH".

Ecological:

General: AN UNKNOWN NUMBER OF INDIVIDUALS WAS DETECTED IN 1990 AND 1 PAIR WAS DETECTED IN 1992. SITE HAS BEEN SURVEYED ALMOST EVERY YEAR SINCE 1982 AND NO RAILS HAVE BEEN SEEN AT THIS LOCATION BEFORE 1990 OR SINCE 1992.

Owner/Manager: UNKNOWN

Charadrius nivosus nivosus **Element Code:** ABNNB03031

western snowy plover

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G3T3
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, NABCI_RWL-Red Watch List			
Habitat:	**General:**	SANDY BEACHES, SALT POND LEVEES AND SHORES OF LARGE ALKALI LAKES.			
	Micro:	NEEDS SANDY, GRAVELLY OR FRIABLE SOILS FOR NESTING.			

Occurrence No.	27 **Map Index:** 03229	**EO Index:**	25764	**Element Last Seen:**	2015-09-14
Occ. Rank:	Good	**Presence:**	Presumed Extant	**Site Last Seen:**	2015-09-14
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2016-07-28

Quad Summary: Oceanside (3311724), Las Pulgas Canyon (3311734)

County Summary: San Diego

Lat/Long:	33.23280 / -117.41717	**Accuracy:**	specific area
UTM:	Zone-11 N3677174 E461131	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 09 (S)	**Acres:**	378.0

Location: CAMP PENDLETON MARINE CORPS BASE, FROM THE SANTA MARGARITA RIVER ESTUARY TO 1.3 MI N OF THE MOUTH OF FRENCH CREEK.

Detailed Location: MOST SURVEYS FOCUSED ON SANTA MARGARITA RIVER VICINITY (INCLUDING 2015 SURVEY) AND/OR THE MOUTH OF FRENCH CREEK; HOWEVER, 2010 SURVEYOR FOUND NESTS ALL ALONG THE BEACHES IN BETWEEN. MAPPED TO 2010 SHAPEFILE.

Ecological: 1983-86: DETECTED DURING LEAST TERN SURVEYS. NESTS ON BEACH AND SALT PANNE HABITAT. HIGH EGG LOSS IN 1995 DUE TO FLOODING, SOME CHICK MORTALITY DUE TO ENTANGLEMENT IN TERN HABITAT FENCING.

General: OBSERVED, 1971-73, 1978, & 1979. 13 NESTS FOUND IN 1983, 5 IN '84, 25 IN '85, & 13 IN '86. 43 NESTS (OR CLUTCHES) RECORDED IN 1994 AND 88 IN 1995. 200 NESTS PRODUCED 337 CHICKS IN 2010. 142 ADULTS & 289 YOUNG COUNTED IN 2015.

Owner/Manager: DOD-CAMP PENDLETON MCB

Sternula antillarum browni **Element Code:** ABNNM08103

California least tern

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G4T2T3Q
	State:	Endangered		**State:**	S2
	Other:	CDFW_FP-Fully Protected, NABCI_RWL-Red Watch List			
Habitat:	**General:**	NESTS ALONG THE COAST FROM SAN FRANCISCO BAY SOUTH TO NORTHERN BAJA CALIFORNIA.			
	Micro:	COLONIAL BREEDER ON BARE OR SPARSELY VEGETATED, FLAT SUBSTRATES: SAND BEACHES, ALKALI FLATS, LAND FILLS, OR PAVED AREAS.			

Occurrence No.	21	**Map Index:** 99460	**EO Index:** 12438	**Element Last Seen:**	2015-08-31
Occ. Rank:	Excellent		**Presence:** Presumed Extant	**Site Last Seen:**	2015-08-31
Occ. Type:	Natural/Native occurrence		**Trend:** Increasing	**Record Last Updated:**	2016-03-22

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23314 / -117.41756	**Accuracy:**	non-specific area
UTM:	Zone-11 N3677212 E461095	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 09, SW (S)	**Acres:**	318.0

Location: MOUTH OF THE SANTA MARGARITA RIVER, CAMP PENDLETON MARINE CORPS BASE.

Detailed Location: SURVEYS DIVIDED SITE INTO NESTING AREAS INCLUDING SALT FLATS, SALT FLATS ISLAND, AND NORTH, SOUTH, & BLUE BEACHES. NORTH BEACH HAS MAJORITY OF NESTING & PRODUCTION (2011). MAPPED TO INCLUDE 2010 SHAPEFILE.

Ecological: ONE OF THE FEW REMAINING NEARLY NATURAL NESTING AREAS; LARGEST IN THE STATE AS OF 2000. NESTING RECORDS DATE BACK TO 1918. ABOUT 185 AC OF MATURE SALICORNIA MARSH; ISLAND CREATED 1985 FOR NESTING. TRAFFIC TIGHTLY REGULATED BY MCB.

General: MAX # PAIRS/# FLEDGLINGS/YEAR: 194/237/1986; 192/90/'87; 246/409/'88; 293/335/'90; 328/377/'91; 334/201/'92; 640/250/'96; 993/1102/2000; 956/249/'01; 1328/51/'04; 1604 NESTS/2679 HATCHED/'10; 1377/99/'11; 2606 ADULTS/1653 JUVS/'15.

Owner/Manager: DOD-CAMP PENDLETON MCB

Empidonax traillii extimus **Element Code:** ABPAE33043

southwestern willow flycatcher

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	Endangered		**State:**	S3
	Other:	NABCI_RWL-Red Watch List			
Habitat:	**General:**	RIPARIAN WOODLANDS IN SOUTHERN CALIFORNIA.			
	Micro:				

Occurrence No.	16	**Map Index:**	54280	**EO Index:**	54280	**Element Last Seen:**	2003-07-29
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2008-07-29
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-09-09

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.24191 / -117.38322	**Accuracy:**	specific area
UTM:	Zone-11 N3678171 E464298	**Elevation (ft):**	20
PLSS:	T11S, R05W, Sec. 03, SE (S)	**Acres:**	10.0

Location: ALONG SANTA MARGARITA RIVER, 0.6 MILE NNE OF THE JUNCTION OF STUART MESA ROAD AND VANDEGRIFT BLVD, CAMP PENDLETON MCB.

Detailed Location: PART OF SANTA MARGARITA RIVER SURVEY SITES "STUART MESA - WEST" & "STUART MESA - EAST." MAPPED TO 2002 TERRITORIAL MALE (EAST FEATURE) & 2003 FLOATER (WEST FEATURE).

Ecological: DOMINANTS: ARROYO WILLOW, BLACK WILLOW, CALIFORNIA SYCAMORE & MULEFAT. EXOTICS: ARRUNDO, HEMLOCK, TAMARISK AND MUSTARD. CANOPY HEIGHT = 5-10 M. SURFACE-WATER/SATURATED-SOIL IS PRESENT AT SITE. SITE QUALITY FAIR TO GOOD.

General: 2002: 1 TERRITORIAL MALE DURING RESIDENT PERIOD. 2003: 1 FLOATER (NOT DEFENDING TERRITORY) DURING RESIDENT PERIOD. 2004: MIGRANT ONLY. 2005: NONE DETECTED. 2006: MIGRANTS ONLY. 2007,2008: MIGRANTS IN VICINITY.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	55	**Map Index:**	67329	**EO Index:**	67494	**Element Last Seen:**	2006-07-11
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2008-07-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-09-02

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.22439 / -117.34526	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3676216 E467828	**Elevation (ft):**	30
PLSS:	T11S, R04W, Sec. 18, NW (S)	**Acres:**	0.0

Location: SAN LUIS REY RIVER, JUST NORTH OF FOUSSAT ROAD, SAN LUIS REY.

Detailed Location: PART OF SURVEY SITES "SAN LUIS REY (SLR)" & " LSLR - WHELAN CANAL TO FOUSSAT RD." SURVEY AREAS PROVIDED BY MAP, 2006 PAIR LOCATION PROVIDED BY MAP (KUS06F) & COORDINATES (KUS06R). MAPPED TO 2006 PAIR LOCATION.

Ecological: HABITAT CONSISTS OF RED/ARROYO WILLOW, BLACK WILLOW, AND FREMONT COTTONWOOD. DOMINANT EXOTIC PLANTS INCLUDE POISON HEMLOCK AND GIANT REED. SURROUNDING LAND: SUBURBAN. DISTURBANCE FROM EXTENSIVE HOMELESS ACTIVITY.

General: NONE DETECTED DURING SURVEYS IN 2001 OR 2002. 1 TERRITORIAL BREEDING PAIR DETECTED DURING PROTOCOL SURVEYS IN MAY-JUL 2006. NONE DETECTED DURING SURVEYS IN 2007 OR 2008. MIGRANTS OFTEN DETECTED WITHIN 1 MI OF SITE.

Owner/Manager: DOD-COE

Riparia riparia

Element Code: ABPAU08010

bank swallow

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	Threatened		**State:**	S3
	Other:	BLM_S-Sensitive, IUCN_LC-Least Concern			
Habitat:	**General:**	COLONIAL NESTER; NESTS PRIMARILY IN RIPARIAN AND OTHER LOWLAND HABITATS WEST OF THE DESERT.			
	Micro:	REQUIRES VERTICAL BANKS/CLIFFS WITH FINE-TEXTURED/SANDY SOILS NEAR STREAMS, RIVERS, LAKES, OCEAN TO DIG NESTING HOLE.			

Occurrence No.	103	**Map Index:**	03278	**EO Index:**	25178	**Element Last Seen:**	1925-05-09
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1925-05-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-11-17

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23378 / -117.41125	**Accuracy:**	1 mile
UTM:	Zone-11 N3677279 E461684	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 09 (S)	**Acres:**	0.0

Location: MOUTH OF THE SANTA MARGARITA RIVER, ABOUT 2 MILES NORTH OF OCEANSIDE, CAMP PENDLETON.

Detailed Location: LOCATIONS STATED AS: "HOLES INSIDE OF A SAND BANK NEAR THE OCEAN ABOUT 2 MILES NORTH OF OCEANSIDE, CALIFORNIA," AND "A HOLE IN A MUD BANK ALONG THE OCEAN. SANTA MARGUERITA RANCH, SAN DIEGO CO."

Ecological: IT IS POSSIBLE THAT SOME OF THE REPORTED COLONIES IN SAN DIEGO MAY HAVE BEEN NORTHERN ROUGH-WINGED SWALLOWS; HOWEVER, THE SETS WERE TAKEN BY "OTHERWISE RELIABLE COLLECTORS" (WFV).

General: FOUR FRESH EGGS COLLECTED (#125) FROM HOLE IN MUD BANK BY L. HEATON ON 9 MAY 1925. FIVE FRESH EGGS COLLECTED FROM NEST IN SAND BANK BY F. B. HEATON ON 9 MAY 1925; NEST COMPOSED OF SEAWEED LINED WITH FEATHERS. POSSIBLY ROUGH-WINGED SWALLOWS.

Owner/Manager: DOD-USMC

Occurrence No.	104	**Map Index:**	27999	**EO Index:**	85301	**Element Last Seen:**	1925-05-09
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1925-05-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-08-07

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.19540 / -117.37726	**Accuracy:**	1 mile
UTM:	Zone-11 N3673012 E464835	**Elevation (ft):**	65
PLSS:	T11S, R05W, Sec. 26 (S)	**Acres:**	0.0

Location: OCEANSIDE.

Detailed Location: LOCATION STATED AS "OCEANSIDE." EXACT LOCATION UNKNOWN AND SO MAPPED TO INCLUDE THE COASTLINE AT OCEANSIDE.

Ecological: IT IS POSSIBLE THAT SOME OF THE REPORTED COLONIES IN SAN DIEGO MAY HAVE BEEN NORTHERN ROUGH-WINGED SWALLOWS; HOWEVER, THE SETS WERE TAKEN BY "OTHERWISE RELIABLE COLLECTORS" (WFV).

General: 4 EGGS COLLECTED BY HARRY L. HEATON ON 9 MAY 1925 FROM A NEST IN A COLONY OF ABOUT 100 PAIRS; NESTS CONSTRUCTED OUT OF DARK SEA GRASS. CONSIDERED EXTIRPATED AS A BREEDER IN SOUTHERN CALIFORNIA (SCH92R0001).

Owner/Manager: UNKNOWN

Campylorhynchus brunneicapillus sandiegensis

Element Code: ABPBG02095

coastal cactus wren

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3Q
	State:	None		**State:**	S2

	Other:	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern
Habitat:	**General:**	SOUTHERN CALIFORNIA COASTAL SAGE SCRUB.
	Micro:	WRENS REQUIRE TALL OPUNTIA CACTUS FOR NESTING AND ROOSTING.

Occurrence No.	3	**Map Index:**	17545	**EO Index:**	11745	**Element Last Seen:**	1983-10-18
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1983-10-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1995-11-09

Quad Summary:	San Luis Rey (3311723)
County Summary:	San Diego

Lat/Long:	33.24108 / -117.36270	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3678072 E466210	**Elevation (ft):**	240
PLSS:	T11S, R05W, Sec. 12, NW (S)	**Acres:**	0.0

Location:	ONE MILE WEST OF WHELAN LAKE, IN THE SW CORNER OF PENDLETON MARINE CORPS BASE.
Detailed Location:	
Ecological:	COASTAL SAGE SCRUB HABITAT DOMINATED BY OPUNTIA LITTORALIS, OPUNTIA PROLIFERA, SALVIA APIANA, ARTEMISIA CALIFORNICA, ERIOGONUM FASCICULATUM.
General:	ALTHOUGH NO BIRDS WERE OBSERVED (DURING A 15 MINUTE SITE VISIT), 7 NESTS WERE OBSERVED, INDICATING A RESIDENT POPULATION OF CACTUS WRENS.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	85	**Map Index:**	20417	**EO Index:**	9515	**Element Last Seen:**	1984-07-18
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1984-07-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1992-03-25

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.24011 / -117.37645	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3677969 E464929	**Elevation (ft):**	200
PLSS:	T11S, R05W, Sec. 11 (S)	**Acres:**	0.0

Location:	WIRE MOUNTAIN, NORTH OF SANTA MARGARITA SCHOOL, CAMP PENDLETON MARINE CORPS BASE.
Detailed Location:	
Ecological:	
General:	KNOWN SITE. REMNANTS OF NESTS OBSERVED, BUT NO BIRDS, DURING AN 18 JULY 1984 VISIT BY KENNETH WEAVER.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	111	**Map Index:** 20016	**EO Index:**	9921	**Element Last Seen:**	1989-XX-XX
Occ. Rank:	Good		**Presence:**	Presumed Extant	**Site Last Seen:**	1989-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2004-01-21

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.24059 / -117.38810	**Accuracy:**	non-specific area
UTM:	Zone-11 N3678026 E463843	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 10 (S)	**Acres:**	85.1

Location: NORTH OF SANTA MARGARITA RIVER, 0.3-0.7 MI NORTH OF STUART MESA ROAD JUNCTION WITH VANDERGIFT BLVD, CAMP PENDLETON MCB.

Detailed Location:

Ecological: HABITAT IS COASTAL SAGE SCRUB.

General: 11 CACTUS WRENS, INCLUDING 10 TERRITORIAL MALES, WERE OBSERVED BY KENNETH WEAVER IN 1984 IN VICINITY (INCLUDING OCCURRENCE 101). 4 BIRDS OBSERVED DURING 1989 USFWS SURVEY.

Owner/Manager: DOD-CAMP PENDLETON MCB

Polioptila californica californica

Element Code: ABPBJ08081

coastal California gnatcatcher

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G4G5T3Q
	State:	None		**State:**	S2
	Other:	CDFW_SSC-Species of Special Concern, NABCI_YWL-Yellow Watch List			
Habitat:	**General:**	OBLIGATE, PERMANENT RESIDENT OF COASTAL SAGE SCRUB BELOW 2500 FT IN SOUTHERN CALIFORNIA.			
	Micro:	LOW, COASTAL SAGE SCRUB IN ARID WASHES, ON MESAS AND SLOPES. NOT ALL AREAS CLASSIFIED AS COASTAL SAGE SCRUB ARE OCCUPIED.			

Occurrence No.	64	**Map Index:** 03295	**EO Index:**	30068	**Element Last Seen:**	2001-08-09
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	2001-08-09
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2003-07-10

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.24088 / -117.39430	**Accuracy:**	non-specific area
UTM:	Zone-11 N3678060 E463266	**Elevation (ft):**	40
PLSS:	T11S, R05W, Sec. 10 (S)	**Acres:**	263.7

Location: JUST NORTH OF SANTA MARGARITA RIVER, EAST OF I-5, ON THE SOUTH END OF STUART MESA, CAMP PENDLETON MARINE CORPS BASE.

Detailed Location: BIRDS OBSERVED ALONG BOTH SIDES OF STUART MESA ROAD.

Ecological: DIEGAN COASTAL SAGE SCRUB HABITAT DOMINATED BY ARTEMISIA CALIFORNICA, ERIOGONUM FASCICULATUM, AND SALVIA MELLIFERA. PROPOSED FIBER OPTIC ALIGNMENT LOCATED ALONG STUART MESA ROAD.

General: 6 OBS; 20-35 PAIRS ESTIMATED (ATWOOD'S 1980 CENSUS). 1989 SURVEY:27 BIRDS OBS. 1 AUG 2001: 5 HEARD. 6 AUG 2001:6 HEARD, 1 PR W/YOUNG, 9-13 JUV, 1 MALE, 1 FEMALE. 1 MALE, 1 PAIR OBS MAY-JUNE 2000. 9 AUG 2001:1 FEMALE, 1 JUV, 1 HEARD.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	113	**Map Index:**	03362	**EO Index:**	25056	**Element Last Seen:**	1983-10-18
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1983-10-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1995-11-09

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.24002 / -117.36427	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3677955 E466063	**Elevation (ft):**	300
PLSS:	T11S, R05W, Sec. 12, NW (S)	**Acres:**	0.0

Location: SW CORNER CAMP PENDLETON. APPROX 1 MI W WHELAN LK AND 0.5 MIS YSIDORA BASIN.

Detailed Location:

Ecological: HABITAT IS DENSE COASTAL SAGE SCRUB BORDERED BY NON-NATIVE GRASSLAND TO THE EAST.

General: RESIDENT PAIR OBSERVED. CACTUS WREN ALSO PRESENT.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	207	**Map Index:**	17872	**EO Index:**	12809	**Element Last Seen:**	1989-XX-XX
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1989-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1991-11-12

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.22609 / -117.37036	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3676412 E465490	**Elevation (ft):**	150
PLSS:	T11S, R05W, Sec. 14, NE (S)	**Acres:**	0.0

Location: ON THE WEST SIDE OF WIRE MOUNTAIN, 0.75 MI NE OF SANTA MARGARITA SCHOOL, CAMP PENDLETON MARINE CORPS BASE.

Detailed Location:

Ecological: HABITAT IS COASTAL SAGE SCRUB.

General:

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	208	**Map Index:**	20095	**EO Index:**	9913	**Element Last Seen:**	1989-XX-XX
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1989-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1991-11-12

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23578 / -117.40750	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3677500 E462034	**Elevation (ft):**	25
PLSS:	T11S, R05W, Sec. 09, NE (S)	**Acres:**	0.0

Location: ALONG I-5, ON THE NORTH SIDE OF THE SANTA MARGARITA RIVER, CAMP PENDLETON MARINE CORPS BASE.

Detailed Location:

Ecological: HABITAT IS COASTAL SAGE SCRUB.

General: TWO BIRDS OBSERVED.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	209	**Map Index:**	17864	**EO Index:**	9920	**Element Last Seen:**	1989-XX-XX
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1989-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1991-11-12

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22978 / -117.39652	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3676830 E463054	**Elevation (ft):**	30
PLSS:	T11S, R05W, Sec. 10, SW (S)	**Acres:**	0.0

Location:	ON THE EAST SIDE OF I-5, 0.5 MI NNW OF FALLBROOK JUNCTION, CAMP PENDLETON MARINE CORPS BASE.
Detailed Location:	
Ecological:	HABITAT IS COASTAL SAGE SCRUB.
General:	ONE BIRD OBSERVED.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	210	**Map Index:**	17865	**EO Index:**	30069	**Element Last Seen:**	2001-08-09
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-08-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-07-10

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.23252 / -117.38539	**Accuracy:**	non-specific area
UTM:	Zone-11 N3677131 E464092	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 10 (S)	**Acres:**	254.5

Location:	VICINITY OF THE JUNCTION OF STUART MESA RD AND VANDERGRIFT BLVD, SOUTH OF THE RAILROAD TRACKS, CAMP PENDLETON MCB.
Detailed Location:	
Ecological:	HABITAT IS DIEGAN COASTAL SAGE SCRUB. PLANTS IN AREA INCLUDE ARTEMISIA CALIFORNICA, BACCHARIS PILULARIS AND SALVIA MELLIFERA. SOUTHERN WILLOW SCRUB (SALIX SPECIES, BACCHARIS SALICIFOLIA) ALSO ON SITE.
General:	12 BIRDS OBSERVED DURING 1989 SURVEY. 1 PAIR OBSERVED BETWEEN 12 MAY AND 28 JUN 2000. 1 PAIR WITH 4 FLEDGLINGS OBSERVED 6, 9 AUG 2001. 4 MALE LEAST BELL'S VIREOS SINGING IN VICINITY. PROPOSED FIBER OPTIC ALIGNMENT ALONG STUART MESA RD.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	367	**Map Index:**	22601	**EO Index:**	20493	**Element Last Seen:**	199X-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	199X-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1993-01-05

Quad Summary:	San Luis Rey (3311723)
County Summary:	San Diego

Lat/Long:	33.23458 / -117.35137	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3677348 E467263	**Elevation (ft):**	125
PLSS:	T11S, R05W, Sec. 12, E (S)	**Acres:**	0.0

Location:	SOUTHEAST OF CAMP PENDLETON MARINE CORPS BASE, BETWEEN HUBBERT LAKE & WHELAN LAKE.
Detailed Location:	
Ecological:	
General:	2 OBSERVATIONS BETWEEN 1990 & 1992.
Owner/Manager:	UNKNOWN

Occurrence No.	368	**Map Index:**	22603	**EO Index:**	20492	**Element Last Seen:**	199X-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	199X-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1992-11-13

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.19322 / -117.35191	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3672762 E467197	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 25, NE (S)	**Acres:**	0.0

Location: AREA SOUTH OF OCEANSIDE BLVD, NORTH OF GRANDVIEW ST, AND EAST OF SAN DIEGO FRWY. EAST OF OCEANSIDE.

Detailed Location:

Ecological:

General: 2 OBSERVATIONS BETWEEN 1990 & 1992.

Owner/Manager: UNKNOWN

Occurrence No.	458	**Map Index:**	25988	**EO Index:**	9852	**Element Last Seen:**	1993-XX-XX
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1993-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1995-09-25

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20617 / -117.37765	**Accuracy:**	non-specific area
UTM:	Zone-11 N3674206 E464803	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 23 (S)	**Acres:**	85.0

Location: VICINITY OF LAWRENCE CANYON, ADJACENT TO I-5 AND SE OF THE SAN LUIS REY RIVER, OCEANSIDE.

Detailed Location: SITE IS SURROUNDED BY URBAN AND RESIDENTIAL DEVELOPMENT, EXCEPT TO THE NORTH, WHERE IT IS BORDERED BY BOTH RIVERSIDE DRIVE AND THE SAN LUIS REY RIVER.

Ecological: HABITAT CONSISTS OF COASTAL SAGE SCRUB, SOUTHERN WILLOW SCRUB, AND VERNAL POOLS. OTHER RARE TAXA INCLUDE AIMOPHILA RUFICEPS CANESCENS, CROTALUS RUBER RUBER, DENDROICA PETECHIA, ICTERIA VIRENS, ACCIPITER COOPERI, AND VIREO BELLII PUSILLUS.

General: 3 PAIRS OBSERVED DURING SPRING OF 1993.

Owner/Manager: UNKNOWN

Occurrence No.	667	**Map Index:**	51479	**EO Index:**	51479	**Element Last Seen:**	2001-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-06-04

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.19595 / -117.36424	**Accuracy:**	specific area
UTM:	Zone-11 N3673069 E466049	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 25, NW (S)	**Acres:**	9.1

Location: EAST OF I-5 AND 0.4 MILE NORTH OF THE OCEANSIDE BLVD EXIT, OCEANSIDE.

Detailed Location: JUST SE OF THE OCEANSIDE SENIOR CENTER.

Ecological: HABITAT CONSISTS OF DIEGAN COASTAL SAGE SCRUB DOMINATED BY BACCHARIS SAROTHROIDES. UNDERSTORY IS MAINLY NON-NATIVE GRASSLAND. BROWN-HEADED COWBIRDS IN VICINITY.

General: 2 PAIRS OBSERVED FORAGING BETWEEN 17 MAY AND 30 JUL 2001.

Owner/Manager: UNKNOWN

Vireo bellii pusillus **Element Code:** ABPBW01114

least Bell's vireo

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	Endangered		**State:**	S3
	Other:	NABCI_YWL-Yellow Watch List			
Habitat:	**General:**	SUMMER RESIDENT OF SOUTHERN CALIFORNIA IN LOW RIPARIAN IN VICINITY OF WATER OR IN DRY RIVER BOTTOMS; BELOW 2000 FT.			
	Micro:	NESTS PLACED ALONG MARGINS OF BUSHES OR ON TWIGS PROJECTING INTO PATHWAYS, USUALLY WILLOW, BACCHARIS, MESQUITE.			

Occurrence No.	4	**Map Index:**	03741	**EO Index:**	21326	**Element Last Seen:**	2013-06-25
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2013-06-25
Occ. Type:	Natural/Native occurrence			**Trend:**	Stable	**Record Last Updated:**	2014-03-18

Quad Summary: San Luis Rey (3311723), Oceanside (3311724), Pala (3311731), Bonsall (3311732), Morro Hill (3311733)

County Summary: San Diego

Lat/Long:	33.31204 / -117.19432	**Accuracy:**	non-specific area
UTM:	Zone-11 N3685897 E481911	**Elevation (ft):**	150
PLSS:	T10S, R03W, Sec. 16 (S)	**Acres:**	4272.0

Location: SAN LUIS REY RIVER, ADJACENT TO SR 76, FROM I-5 (OCEANSIDE) UPSTREAM TO LILAC RD EXN (PALA), NW OF ESCONDIDO.

Detailed Location: POPULATION #S PRESENTED AS THE MINIMUM NUMBER OF PAIRS (P), TERRITORIAL MALES (TM), FLEDGLINGS (F), AND/OR JUVENILES (J) DETECTED PER YEAR. MAPPED PRIMARILY TO 2005-2013 SURVEY SITES. BIRDS BANDED FROM RIVER FOUND IN ADJACENT POPULATIONS.

Ecological: HABITAT COMPOSED OF RED/ARROYO WILLOW, FREMONT COTTONWOOD, MULE FAT, BLACK WILLOW, SANDBAR WILLOW, MEXICAN ELDERBERRY, SWEET CLOVER, BOTTLEBRUSH, TAMARISK, PEPPERWEED, EUCALYPTUS, GIANT REED, COCKLEBUR, BLACK MUSTARD, & POISON HEMLOCK.

General: 1919: 4 EGGS. '78: 6-8 TM. '83-84: 1-14 TM. '87-92: 22-43 P, 38 J & 38-102 F. '95-96: 70-75 P. 1999-2003: 1-103 P & 3-77 F. '04-08: 46-172 T/P & 54-178 J. '09: 229 P/38 J. '10: 264 P/106 J. '11: 172 P/99 J. '12: 135 P/69 J. '13: 159 P/86 J.

Owner/Manager: SDG COUNTY, PVT, UNKNOWN

Occurrence No.	54	**Map Index:**	03330	**EO Index:**	16597	**Element Last Seen:**	2013-07-13
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2013-07-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Stable	**Record Last Updated:**	2014-03-18

Quad Summary: San Luis Rey (3311723), Oceanside (3311724), Morro Hill (3311733), Las Pulgas Canyon (3311734), Fallbrook (3311743)

County Summary: San Diego

Lat/Long:	33.32662 / -117.33070	**Accuracy:**	non-specific area
UTM:	Zone-11 N3687546 E469220	**Elevation (ft):**	200
PLSS:	T10S, R04W, Sec. 08 (S)	**Acres:**	4881.0

Location: LOWER PART OF DE LUZ CREEK & SANTA MARGARITA RIVER FROM STUART MESA RD UPSTREAM TO SANDIA CREEK DR JUST N OF FALLBROOK.

Detailed Location: POPULATION #S PRESENTED AS MINIMUM NUMBER OF PAIRS (P), ADULTS (A), TERRITORIAL MALES (TM) AND/OR JUVENILES/FLEDGLINGS (J/F) DETECTED PER YEAR. MOST OBS IN SANTA MARGARITA RIVER (SMR) BASIN S OF CONFLUENCE OF DE LUZ CK & SMR. UNK # IN 2001.

Ecological: HABITAT CONSISTED OF RED/ARROYO WILLOW, BLACK WILLOW, SANDBAR WILLOW, CALIFORNIA SYCAMORE, POISON OAK, MULE FAT, CALIFORNIA WILD GRAPE, FREMONT COTTONWOOD, POISON HEMLOCK, FENNEL, MILK THISTLE, TAMARISK, PEPPERWEED, AND BLACK MUSTARD.

General: 1978-83: 5-61 TM. '84-88: 83-202 TM. '89-95: 156-450 TM. '96-99: 504-583 TM. 2002: 1TM. '03: 2P/1F. '05: 852A/305J. '06: 754A/156J. '07: 385P. '08: 420P/427J. '09: 503P/405J. '10: 551P/283J. '11: 331P/352J. '12: 315P/297J. '13: 422P/296J.

Owner/Manager: DOD-USMC

Aimophila ruficeps canescens **Element Code:** ABPBX91091

southern California rufous-crowned sparrow

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3
	State:	None		**State:**	S3
	Other:	CDFW_WL-Watch List			
Habitat:	**General:**	RESIDENT IN SOUTHERN CALIFORNIA COASTAL SAGE SCRUB AND SPARSE MIXED CHAPARRAL.			
	Micro:	FREQUENTS RELATIVELY STEEP, OFTEN ROCKY HILLSIDES WITH GRASS AND FORB PATCHES.			

Occurrence No.	5	**Map Index:** 25988	**EO Index:**	13426	**Element Last Seen:** 1993-XX-XX
Occ. Rank:	Fair		**Presence:**	Presumed Extant	**Site Last Seen:** 1993-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 1995-09-26

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20617 / -117.37765	**Accuracy:**	non-specific area
UTM:	Zone-11 N3674206 E464803	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 23 (S)	**Acres:**	85.0

Location: VICINITY OF LAWRENCE CANYON, ADJACENT TO I-5 AND SOUTHEAST OF THE SAN LUIS REY RIVER, OCEANSIDE.

Detailed Location: SITE IS SURROUNDED BY URBAN AND RESIDENTIAL DEVELOPMENT, EXCEPT TO THE NORTH, WHERE IT IS BORDERED BY BOTH RIVERSIDE DRIVE AND THE SAN LUIS REY RIVER.

Ecological: HABITAT IS COASTAL SAGE SCRUB, SOUTHERN WILLOW SCRUB, AND VERNAL POOLS. OTHER RARE TAXA INCLUDE POLIOPTILA CALIFORNICA, CROTALUS RUBER RUBER, DENDROICA PETECHIA, ICTERIA VIRENS, ACCIPITER COOPERI, AND VIREO BELLII PUSILLUS.

General: UNKNOWN NUMBER OBSERVED.

Owner/Manager: UNKNOWN

Passerculus sandwichensis beldingi **Element Code:** ABPBX99015

Belding's savannah sparrow

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3
	State:	Endangered		**State:**	S3
	Other:	USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	INHABITS COASTAL SALT MARSHES, FROM SANTA BARBARA SOUTH THROUGH SAN DIEGO COUNTY.			
	Micro:	NESTS IN SALICORNIA ON AND ABOUT MARGINS OF TIDAL FLATS.			

Occurrence No.	16 **Map Index:** 36771	**EO Index:**	24645	**Element Last Seen:**	2001-04-13
Occ. Rank:	Good	**Presence:**	Presumed Extant	**Site Last Seen:**	2001-04-13
Occ. Type:	Natural/Native occurrence	**Trend:**	Fluctuating	**Record Last Updated:**	2002-09-26

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23158 / -117.41117	**Accuracy:**	non-specific area
UTM:	Zone-11 N3677035 E461690	**Elevation (ft):**	0
PLSS:	T11S, R05W, Sec. 09 (S)	**Acres:**	315.1

Location: MARSHES OF THE SANTA MARGARITA RIVER MOUTH.

Detailed Location: 1986 & 1991: MOST BIRDS IN LUSHEST PICKLEWEED ON SOUTH SIDE OF RIVERMOUTH IN WIDE BAND SOUTH TO DREDGED CHANNEL. 72% OF TERRITORIES LOCATED IN THIS AREA IN 1991, BY 2001 PICKLEWEED IN THIS AREA DEAD & MOST BIRDS IN SALTPAN & HIND DUNES.

Ecological: 101 HA SALTMARSH W/FULL TIDAL ACTION. BUT POSSIBLE MUTED TIDES REACHING SOUTH-SIDE SALT MARSHES (SALATA, 1981). DOD PLANS RESTORATION WORK. THE MOUTH MOSTLY CLOSED SINCE 1987 CAUSING WIDE SWINGS IN ENVIRONMENTAL CONDITIONS.

General: ESTIMATE 172 PRS IN 2001, 185 PRS IN 1996, 120 PAIRS IN 1991, 107 PRS IN 1986, 155 PRS IN 1985, 174 PRS IN 1984, 106 PRS IN 1977, & 125 PRS IN 1973.

Owner/Manager: DOD-USMC

Agelaius tricolor **Element Code:** ABPBXB0020

tricolored blackbird

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G2
	State:	Threatened		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY AND VICINITY. LARGELY ENDEMIC TO CALIFORNIA.			
	Micro:	REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, AND FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.			

Occurrence No.	473	**Map Index:** 95705	**EO Index:**	96841	**Element Last Seen:** 1936-05-17
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 2014-04-20
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2015-03-24

Quad Summary: San Luis Rey (3311723), Morro Hill (3311733)

County Summary: San Diego

Lat/Long:	33.23660 / -117.33610	**Accuracy:**	1 mile
UTM:	Zone-11 N3677567 E468686	**Elevation (ft):**	50
PLSS:	T11S, R04W, Sec. 07 (S)	**Acres:**	0.0

Location: SAN LUIS REY RIVER, VICINITY OF WHELAN LAKE, 1.6 MILES W OF HWY 76 & OLD GROVE RD INTERSECTION, NE OF OCEANSIDE.

Detailed Location: MAPPED GENERALLY TO SAN LUIS REY AND SURROUNDING AREAS. PROVIDED LOCATION DESCRIPTIONNS WERE "NEAR SAN LUIS REY," "ONE MILE WEST OF SAN LUIS REY," & "WHELAN LAKE." STATEWIDE SURVEY DATA FROM UC DAVIS TRICOLOR BLACKBIRD PORTAL; 3 LOCATIONS.

Ecological: 1932 HABITAT DESCRIBED AS "LAKE/TULES." 1936 HABITAT DESCRIBED AS "RESERVOIR/CATTAILS." EXACT LOCATION UNKNOWN AND THEREFORE MAPPED TO INCLUDE LIKELY AREAS OF HISTORIC COLONIES AND WHELAN LAKE.

General: ABOUT 1000 NEST OBSERVED ON 19 MAY 1932 BY J. NEFF. ABOUT 500 NESTS OBSERVED ON 17 MAY 1936 BY J. NEFF. NONE OBSERVED IN 23 APR 1994 AND 20 APR 2014 DURING STATEWIDE SURVEYS.

Owner/Manager: CITY OF OCEANSIDE, UNKNOWN

Eucyclogobius newberryi **Element Code:** AFCQN04010

tidewater goby

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	AFS_EN-Endangered, IUCN_NT-Near Threatened			
Habitat:	**General:**	BRACKISH WATER HABITATS ALONG THE CALIFORNIA COAST FROM AGUA HEDIONDA LAGOON, SAN DIEGO COUNTY TO THE MOUTH OF THE SMITH RIVER.			
	Micro:	FOUND IN SHALLOW LAGOONS AND LOWER STREAM REACHES, THEY NEED FAIRLY STILL BUT NOT STAGNANT WATER AND HIGH OXYGEN LEVELS.			

Occurrence No.	84	**Map Index:** 03327	**EO Index:** 28498	**Element Last Seen:**	1974-12-26
Occ. Rank:	None		**Presence:** Extirpated	**Site Last Seen:**	1996-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Decreasing	**Record Last Updated:**	1997-11-10

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23928 / -117.38279	**Accuracy:**	non-specific area
UTM:	Zone-11 N3677879 E464338	**Elevation (ft):**	20
PLSS:	T11S, R05W, Sec. 11 (S)	**Acres:**	178.4

Location: SANTA MARGARITA RIVER, FROM MOUTH TO 2.5 MILES UPSTREAM, 3.3 KM N OCEANSIDE, 5-6 KM INLAND OF OCEAN.

Detailed Location:

Ecological:

General: LACM 36191-3 COLLECTED 26 DEC 1974. ACCORDING TO SWIFT, POP EXTIRPATED 7 JULY 1986. NO GOBIES FOUND IN 1993 OR 1996.

Owner/Manager: DOD-USMC

Occurrence No.	85	**Map Index:** 03307	**EO Index:** 13296	**Element Last Seen:**	1958-04-10
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	1984-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1997-11-10

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.22066 / -117.35243	**Accuracy:**	non-specific area
UTM:	Zone-11 N3675805 E467159	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 13 (S)	**Acres:**	298.6

Location: SAN LUIS REY RIVER, FROM MOUTH TO 3.0 MILES UPSTREAM, N EDGE OCEANSIDE.

Detailed Location:

Ecological:

General: UCLA W58-1. LAST COLLECTED IN 1958.

Owner/Manager: PVT

Leptonycteris yerbabuenae **Element Code:** AMACB03030

lesser long-nosed bat

Listing Status:	**Federal:**	Delisted	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S1
	Other:	CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	ARID REGIONS SUCH AS DESERT GRASSLANDS AND SHRUB LAND. SUITABLE DAY ROOSTS (CAVES, MINES) AND SUITABLE CONCENTRATIONS OF FOOD PLANTS (COLUMNAR CACTI, AGAVES) ARE CRITICAL RESOURCES. NO MATERNITY ROOSTS KNOWN FROM CALIFORNIA; MAY ONLY BE VAGRANT.			
	Micro:	CAVES AND MINES ARE USED AS DAY ROOSTS. CAVES, MINES, ROCK CREVICES, TREES AND SHRUBS, AND ABANDONED BUILDINGS ARE USED AS NIGHT ROOSTS FOR DIGESTING MEALS. NECTAR, POLLEN, AND FRUIT EATING BAT; PRIMARILY FEEDING ON AGAVES, SAGUARO, AND ORGAN PIPE CACTUS.			

Occurrence No.	2 **Map Index:** 27999	**EO Index:**	91933	**Element Last Seen:**	1996-10-18
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	1996-10-18
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2013-11-16

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.19540 / -117.37726	**Accuracy:**	1 mile
UTM:	Zone-11 N3673012 E464835	**Elevation (ft):**	50
PLSS:	T11S, R05W, Sec. 26 (S)	**Acres:**	0.0

Location: OCEANSIDE; EXACT LOCATION UNKNOWN.

Detailed Location: DESCRIBED BY CONSTANTINE AS FOUND IN URBAN OCEANSIDE; THE BAT WAS OBSERVED HANGING UNDER A CANOPY OVER THE FRONT DOOR OF A BUSSINESS.

Ecological: BY TITLE CONSTANTINE SUGGESTS A RANGE EXTENSION, BUT THIS PROBABLY REPRESENTS A VAGRANT MALE OCCURRENCE DURING MIGRATION. THEY'RE ABLE TO MIGRATE FAR (1,000-1,600 KM) AND CAN COMMUTE 40-50 KM BETWEEN ROOST AND FORAGING SITES (FWS94R0002).

General: 1 MALE WAS OBSERVED & COLLECTED ON 18 OCT 1996 AROUND 9AM & DEPOSITED AT LACM. THE BAT WAS IN GOOD CONDITION: "...CONSIDERABLE DEPOSITS OF SUBCUTANEOUS FAT THROUGHOUT BUT ESPECIALLY IN THE NECK, INTERSCAPULAR, AND LEG BASE AREAS."

Owner/Manager: UNKNOWN

Myotis yumanensis **Element Code:** AMACC01020

Yuma myotis

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	BLM_S-Sensitive, IUCN_LC-Least Concern			
Habitat:	**General:**	OPTIMAL HABITATS ARE OPEN FORESTS AND WOODLANDS WITH SOURCES OF WATER OVER WHICH TO FEED.			
	Micro:	DISTRIBUTION IS CLOSELY TIED TO BODIES OF WATER. MATERNITY COLONIES IN CAVES, MINES, BUILDINGS OR CREVICES.			

Occurrence No.	129	**Map Index:** 68768	**EO Index:** 69259	**Element Last Seen:**	1995-10-13
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1995-10-13
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2007-04-11

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23427 / -117.40578	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3677333 E462193	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 09, E (S)	**Acres:**	0.0

Location: CAMP PENDLETON, ABOUT 0.6 MILE NW OF CAMP DEL MAR ON I-5.

Detailed Location: MAPPED ACCORDING TO UTM COORDINATES PROVIDED BY SOURCE, DATUM NOT GIVEN. SOURCE GIVES LOCALITY AS "SANTA MARGARITA RAILROAD BRIDGE."

Ecological:

General: FORAGING SITE. MANY INDIVIDUALS DETECTED AND 1 JUVENILE MALE CAPTURED IN A MIST NET ON 13 OCT 1995.

Owner/Manager: DOD-CAMP PENDLETON MCB

Eumops perotis californicus **Element Code:** AMACD02011

western mastiff bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5T4
	State:	None		**State:**	S3S4
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER AND DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL, ETC.			
	Micro:	ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES AND TUNNELS.			

Occurrence No.	204	**Map Index:** 68768	**EO Index:** 69258	**Element Last Seen:**	1996-07-29
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1996-07-29
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2007-04-11

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23427 / -117.40578	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3677333 E462193	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 09, E (S)	**Acres:**	0.0

Location: CAMP PENDLETON, ABOUT 0.6 MILE NW OF CAMP DEL MAR ON I-5.

Detailed Location: MAPPED ACCORDING TO UTM COORDINATES PROVIDED BY SOURCE, DATUM NOT GIVEN. SOURCE GIVES LOCALITY AS "SANTA MARGARITA RAILROAD BRIDGE."

Ecological:

General: FORAGING SITE. 2 INDIVIDUALS DETECTED ACOUSTICALLY ON 13 OCT 1995. 2 INDIVIDUALS DETECTED ACOUSTICALLY ON 29 JUL 1996.

Owner/Manager: DOD-CAMP PENDLETON MCB

Lepus californicus bennettii **Element Code:** AMAEB03051

San Diego black-tailed jackrabbit

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S3S4
	Other:				
Habitat:	**General:**	INTERMEDIATE CANOPY STAGES OF SHRUB HABITATS AND OPEN SHRUB / HERBACEOUS AND TREE / HERBACEOUS EDGES.			
	Micro:	COASTAL SAGE SCRUB HABITATS IN SOUTHERN CALIFORNIA.			

Occurrence No.	32	**Map Index:**	51480	**EO Index:**	51480	**Element Last Seen:**	2001-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-06-04

Quad Summary:	San Luis Rey (3311723)
County Summary:	San Diego

Lat/Long:	33.19511 / -117.36478	**Accuracy:**	non-specific area
UTM:	Zone-11 N3672976 E465999	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 25, NW (S)	**Acres:**	20.4

Location:	EAST OF I-5 AND 0.2 - 0.5 MILE NORTH OF THE OCEANSIDE BLVD EXIT, OCEANSIDE.
Detailed Location:	SOUTH OF THE OCEANSIDE SENIOR CENTER.
Ecological:	HABITAT CONSISTS OF DIEGAN COASTAL SAGE SCRUB (ARTEMISIA CALIFORNICA, ERIOGONUM FASCICULATUM, BACCHARIS PILULARIS, BACCHARIS SAROTHROIDES), SOUTHERN WILLOW SCRUB (SALIX SPP., POPULUS FREMONTII, SYCAMORE), ALKALI MEADOW AND DISTURBED AREAS.
General:	UNKNOWN NUMBER OBSERVED ON SITE BETWEEN 16 MAY AND 30 JUL 2001.
Owner/Manager:	UNKNOWN

Perognathus longimembris pacificus **Element Code:** AMAFD01042

Pacific pocket mouse

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T1
	State:	None		**State:**	S2
	Other:	CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	INHABITS THE NARROW COASTAL PLAINS FROM THE MEXICAN BORDER NORTH TO EL SEGUNDO, LOS ANGELES COUNTY.			
	Micro:	SEEMS TO PREFER SOILS OF FINE ALLUVIAL SANDS NEAR THE OCEAN, BUT MUCH REMAINS TO BE LEARNED.			

Occurrence No.	6	**Map Index:**	39869	**EO Index:**	34871	**Element Last Seen:**	1936-09-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1936-09-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-09-30

Quad Summary: Oceanside (3311724), Las Pulgas Canyon (3311734)

County Summary: San Diego

Lat/Long:	33.23699 / -117.40144	**Accuracy:**	1 mile
UTM:	Zone-11 N3677632 E462599	**Elevation (ft):**	30
PLSS:	T11S, R05W, Sec. 10 (S)	**Acres:**	0.0

Location: SANTA MARGARITA RIVER MOUTH AND VICINITY.

Detailed Location:

Ecological:

General: HISTORIC SITE. 71 SPECIMENS WERE COLLECTED BETWEEN JUN 1931 AND SEP 1936; DEPOSITED AT USNM, SBMNH, LACM, SDNHM, AND MVZ.

Owner/Manager: DOD-CAMP PENDLETON MCB

Arizona elegans occidentalis **Element Code:** ARADB01017

California glossy snake

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	None		**State:**	S2
	Other:	CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	PATCHILY DISTRIBUTED FROM THE EASTERN PORTION OF SAN FRANCISCO BAY, SOUTHERN SAN JOAQUIN VALLEY, AND THE COAST, TRANSVERSE, AND PENINSULAR RANGES, SOUTH TO BAJA CALIFORNIA.			
	Micro:	GENERALIST REPORTED FROM A RANGE OF SCRUB AND GRASSLAND HABITATS, OFTEN WITH LOOSE OR SANDY SOILS.			

Occurrence No.	130	**Map Index:** A3475	**EO Index:**	105110	**Element Last Seen:** 189X-XX-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 189X-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2017-02-09

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.17981 / -117.36076	**Accuracy:**	1 mile
UTM:	Zone-11 N3671279 E466368	**Elevation (ft):**	58
PLSS:	T11S, R05W, Sec. 36 (S)	**Acres:**	1987.0

Location: SOUTH OCEANSIDE.

Detailed Location: MAPPED TO GENERAL LOCATION BETWEEN CARLSBAD AND OCEAN SIDE, EXACT LOCATION UNKNOWN.

Ecological:

General: SPECIMEN COLLECTED IN THE 1890S.

Owner/Manager: UNKNOWN

Thamnophis sirtalis pop. 1 **Element Code:** ARADB3613F

south coast gartersnake

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T1T2
	State:	None		**State:**	S1S2
	Other:	CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	SOUTHERN CALIFORNIA COASTAL PLAIN FROM VENTURA COUNTY TO SAN DIEGO COUNTY, AND FROM SEA LEVEL TO ABOUT 850 M.			
	Micro:	MARSH AND UPLAND HABITATS NEAR PERMANENT WATER WITH GOOD STRIPS OF RIPARIAN VEGETATION.			

Occurrence No.	1	**Map Index:** 73559	**EO Index:** 74528	**Element Last Seen:**	2009-04-13
Occ. Rank:	Fair		**Presence:** Presumed Extant	**Site Last Seen:**	2009-04-13
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-06-22

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.22671 / -117.34398	**Accuracy:**	specific area
UTM:	Zone-11 N3676473 E467948	**Elevation (ft):**	35
PLSS:	T11S, R04W, Sec. 18, NW (S)	**Acres:**	15.0

Location: ALONG THE SAN LUIS REY RIVER, 0.1-0.4 MI NORTH OF FOUSSAT RD, SAN LUIS REY. SAN LUIS REY OPEN SPACE.

Detailed Location: IN TWO SUMMERS OF INTENSIVE BIRD MONITORING, ONLY TWO INDIVIDUALS OF THIS SPECIES FOUND IN AREA DURING 2006. IN 2009, THIS WAS THE FOURTH INDIVIDUAL SEEN DURING 4 YEARS OF LEAST BELL'S VIREO MONITORING. MAPPED TO PROVIDED COORDINATES.

Ecological: WILLOW RIPARIAN COMMUNITY WITH S. GOODDINGII, S. LASIOLEPIS, P. FREMONTII. OUTSIDE LEVEE, HABITAT IS LOW RUDERAL VEGETATION DOMINATED BY MUSTARDS & MULE FAT. INVADED BY ARUNDO DONAX.

General: 18 MAY 2006: ADULT SNAKE SUNNING IN OPEN FIELD W/MUSTARD. 10 JUL 2006; SMALL SNAKE (18") EMERGING FROM BURROW ON S FACING SLOPE OF LEVEE, PROCEEDED TOWARD WEEDY OPEN AREA. 13 APR 2009:1 ADULT OBS IN LOW WEEDS (CLEARED AREA) ADJ TO RIPARIAN.

Owner/Manager: CITY OF OCEANSIDE

Crotalus ruber **Element Code:** ARADE02090

red-diamond rattlesnake

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive			
Habitat:	**General:**	CHAPARRAL, WOODLAND, GRASSLAND, AND DESERT AREAS FROM COASTAL SAN DIEGO COUNTY TO THE EASTERN SLOPES OF THE MOUNTAINS.			
	Micro:	OCCURS IN ROCKY AREAS AND DENSE VEGETATION. NEEDS RODENT BURROWS, CRACKS IN ROCKS OR SURFACE COVER OBJECTS.			

Occurrence No.	5	**Map Index:** 25988	**EO Index:**	5901	**Element Last Seen:**	1993-XX-XX
Occ. Rank:	Fair		**Presence:**	Presumed Extant	**Site Last Seen:**	1993-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	1995-09-25

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20617 / -117.37765	**Accuracy:**	non-specific area
UTM:	Zone-11 N3674206 E464803	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 23 (S)	**Acres:**	85.0

Location: VICINITY OF LAWRENCE CANYON, ADJACENT TO I-5 AND SOUTHEAST OF THE SAN LUIS REY RIVER, OCEANSIDE.

Detailed Location: SITE IS SURROUNDED BY URBAN AND RESIDENTIAL DEVELOPMENT, EXCEPT TO THE NORTH, WHERE IT IS BORDERED BY BOTH RIVERSIDE DRIVE AND THE SAN LUIS REY RIVER.

Ecological: HABITAT IS COASTAL SAGE SCRUB, SOUTHERN WILLOW SCRUB, AND VERNAL POOLS. OTHER RARE TAXA INCLUDE AIMOPHILA RUFICEPS CANESCENS, POLIOPTILA CALIFORNICA, DENDROICA PETECHIA, ICTERIA VIRENS, ACCIPITER COOPERI, AND VIREO BELLII PUSILLUS.

General: UNKNOWN NUMBER OBSERVED.

Owner/Manager: UNKNOWN

San Diego Mesa Hardpan Vernal Pool

Element Code: CTT44321CA

San Diego Mesa Hardpan Vernal Pool

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2.1
	Other:				
Habitat:	**General:**				
	Micro:				

Occurrence No.	24	**Map Index:** 03337	**EO Index:** 16197	**Element Last Seen:**	1987-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1987-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Decreasing	**Record Last Updated:**	1998-07-16

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23963 / -117.36456	**Accuracy:**	specific area
UTM:	Zone-11 N3677912 E466036	**Elevation (ft):**	280
PLSS:	T11S, R05W, Sec. 12 (S)	**Acres:**	100.1

Location: CAMP PENDLETON; WIRE MOUNTAIN AREA APPROX 2.5 AIR MILES EAST OF SANTA MARGARITA RIVER MOUTH.

Detailed Location: APPROX 30 POOLS SCATTERED ALONG THE LESS DISTURBED EDGES OF THE MESA.

Ecological: OLIVENHAIN SOILS. SURROUNDING EITHER COASTAL SAGE SCRUB OR ANNUAL GRASSLAND. ERYNGIUM ARISTULATUM VAR. PARISHII OBS ONLY IN 1 POOL (11H). COND OF POOL VARIES, SOME POOLS GRADED FOR CONST, SOME POOLS RELATIVELY UNDISTURBED.

General: SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: DOD-CAMP PENDLETON MCB

Southern Coastal Salt Marsh **Element Code:** CTT52120CA

Southern Coastal Salt Marsh

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2.1
	Other:				
Habitat:	**General:**				
	Micro:				

Occurrence No.	5	**Map Index:**	03316	**EO Index:**	16120	**Element Last Seen:**	1986-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1986-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-20

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20708 / -117.38237	**Accuracy:**	specific area
UTM:	Zone-11 N3674309 E464364	**Elevation (ft):**	
PLSS:	T11S, R05W, Sec. 23, NW (S)	**Acres:**	25.3

Location: SAN LUIS REY RIVER MOUTH, NORTH OF OCEANSIDE.

Detailed Location: MARSH FRINGES EDGE OF CHANNEL. HENDRICKSON ESTIMATES 25 ACRES, 1976. BOUNDARY FROM NATIONAL WETLAND INVENTORY MAP.

Ecological: OPEN TO OCEAN PERIODICALLY. TYPED BY NATIONAL WETLAND INVENTORY AS ESTUARINE, INTERTIDAL EMERGENT, REGUARLY FLOODED. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.

General: EXTANT 1986 PER INTERPRETATION OF AERIAL PHOTOS. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: UNKNOWN

Occurrence No.	6	**Map Index:**	03279	**EO Index:**	16119	**Element Last Seen:**	1975-05-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1975-05-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-20

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.22932 / -117.41136	**Accuracy:**	specific area
UTM:	Zone-11 N3676785 E461671	**Elevation (ft):**	
PLSS:	T11S, R05W, Sec. 09, W (S)	**Acres:**	189.0

Location: SANTA MARGARITA ESTUARY, CAMP PENDLETON USMC BASE. AREA INCLUDES SECTIONS 8, 9, & 16.

Detailed Location: ABOUT 85 ACRES, HENRICKSON, 1976.

Ecological: DOMINANT SPECIES ARE SALICORNIA AMBIGUA, ALLENROLFEA OCCIDENTALIS, SCIRPUS ROBUSTUS. RIVER FLOWS UNCHECKED, ESTUARY UNSPOILED, CNACC 1975.

General: CALIFORNIA LEAST TERN SANCTUARY AT MOUTH. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: DOD-CAMP PENDLETON MCB

Southern Riparian Forest

Element Code: CTT61300CA

Southern Riparian Forest

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S4
	Other:				
Habitat:	**General:**				
	Micro:				

Occurrence No.	7	**Map Index:** 03378	**EO Index:** 16043	**Element Last Seen:**	1986-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1986-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1998-07-23

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.22301 / -117.34410	**Accuracy:**	specific area
UTM:	Zone-11 N3676063 E467936	**Elevation (ft):**	10
PLSS:	T11S, R04W, Sec. 18 (S)	**Acres:**	261.2

Location: SAN LUIS REY RIVER, FROM JUST SOUTH OF CAPISTRANO PARK U/S TO ABOUT 1/2 MILE SOUTH OF WHELAN LAKE.

Detailed Location: BOUNDARY REPRESENTS EXTENT AS INTERPRETED FROM 1986 AERIAL PHOTOS.

Ecological: UPPER AND LOWER REACHES MAPPED AS PALUSTRINE, FORESTED, SCRUB/SHRUB, SATURATED/SEMIPERMANENT/SEASONAL WHEREAS MIDDLE REACH (N OF AIRPORT) MAPPED AS PALUSTRINE SHRUB/SCRUB W/SAME MOISTURE REGIME. VEGETATION COMPOSITION UNKNOWN.

General: UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: UNKNOWN

Branchinecta sandiegonensis

Element Code: ICBRA03060

San Diego fairy shrimp

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S1
	Other:	IUCN_EN-Endangered			
Habitat:	**General:**	ENDEMIC TO SAN DIEGO AND ORANGE COUNTY MESAS.			
	Micro:	VERNAL POOLS.			

Occurrence No.	113	**Map Index:**	92375	**EO Index:**	93487	**Element Last Seen:**	2011-01-05
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-01-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2015-04-01

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22381 / -117.37632	**Accuracy:**	specific area
UTM:	Zone-11 N3676162 E464934	**Elevation (ft):**	200
PLSS:	T11S, R05W, Sec. 14 (S)	**Acres:**	59.0

Location:	WIRE MOUNTAIN VP RESTORATION SITE, CAMP PENDLETON MARINE CORPS BASE, SOUTH OF CARNES ROAD ON BOTH SIDES OF WIRE MTN RD.
Detailed Location:	"POOL GROUP 11" SURVEYED 2003-2004; EXACT DETECTION LOCATIONS UNKNOWN. MAPPED USING MCB CAMP PENDLETON SHAPEFILE (2015).
Ecological:	2003-2004: 11 CREATED VERNAL POOLS ON RESTORATION SITE; SPADEFOOT TOAD, TREE FROG, AND PREDACEOUS WATER BEETLES ALSO DETECTED. LINDAHL'S FAIRY SHRIMP ALSO DETECTED IN 1 POOL. ADJACENT TO RESIDENTIAL DEVELOPMENT.
General:	FOUND IN 37 SITES DURING 1997-1998 BASEWIDE INVENTORY. FOUND IN 11 SITES, 2002. FOUND IN 9 OF 11 POOLS ("POOL GROUP 11") ON 24 FEB 2003 TO 7 APR 2004. FOUND AT 12 SITES, 2008-2009 (DATA UNCLEAR). IN 7 SITES, 2010-2011.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	135	**Map Index:**	95421	**EO Index:**	96561	**Element Last Seen:**	2010-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2015-04-01

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.23854 / -117.37911	**Accuracy:**	specific area
UTM:	Zone-11 N3677796 E464680	**Elevation (ft):**	220
PLSS:	T11S, R05W, Sec. 11, NW (S)	**Acres:**	11.0

Location:	CAMP PENDLETON MCB, ON THE SE SIDE OF VANDEGRIFT BLVD ABOUT 0.7 MILE NE OF THE ASH RD INTERSECTION.
Detailed Location:	MAPPED TO SHAPEFILE PROVIDED BY CAMP PENDLETON.
Ecological:	NATURAL POOLS WITH LOW DISTURBANCE FROM TIRE RUTS AND WEEDS.
General:	DETECTED AT 3 SITES DURING 1997-1998 BASEWIDE FAIRY SHRIMP INVENTORY. POSSIBLE RE-SURVEY AND DETECTIONS IN 2008-2009. DETECTED AT TWO ADDITIONAL SITES PRIOR TO 2012, PROBABLY 2010 (DATE UNCLEAR FROM DATA PROVIDED).
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	136	**Map Index:**	95426	**EO Index:**	96566	**Element Last Seen:**	2009-01-05
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2009-01-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2015-03-11

Quad Summary:	San Luis Rey (3311723)
County Summary:	San Diego

Lat/Long:	33.23714 / -117.37073	**Accuracy:**	specific area
UTM:	Zone-11 N3677638 E465460	**Elevation (ft):**	280
PLSS:	T11S, R05W, Sec. 11, NE (S)	**Acres:**	17.0

Location:	CAMP PENDLETON MCB, ABOUT 0.25 MILE N OF COTTONWOOD ST AT COLUMBINE ST AND 1.1 MILES NE OF VANDEGRIFT BLVD AT ASH RD.
Detailed Location:	MAPPED TO SHAPEFILE PROVIDED BY CAMP PENDLETON.
Ecological:	NATURAL POOLS WITH LOW TO MEDIUM DISTURBANCE FROM WEEDS AND TIRE RUTS.
General:	DETECTED AT 3 SITES DURING 1997-1998 SURVEY. OSTENSIBLY FOUND AGAIN AT SOUTHMOST POOL IN 2009.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Cicindela latesignata **Element Code:** IICOL02110

western beach tiger beetle

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2G3
	State:	None		**State:**	S1
	Other:				
Habitat:	**General:**	MUDFLATS AND BEACHES OF COASTAL ESTUARIES FROM SAN DIEGO COUNTY TO LOS ANGELES COUNTY.			
	Micro:	TYPICALLY INHABIT WET OR DRY SANDY BEACHES AND MUD, SAND, OR SALT FLATS.			

Occurrence No.	24	**Map Index:** 03272	**EO Index:** 121069	**Element Last Seen:**	2021-08-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	2021-08-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2021-11-30

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23415 / -117.41049	**Accuracy:**	1 mile
UTM:	Zone-11 N3677321 E461755	**Elevation (ft):**	4
PLSS:	T11S, R05W, Sec. 9 (S)	**Acres:**	1987.0

Location: SANTA MARGARITA RIVER MOUTH, ABOUT 3 MILES NORTH OF OCEANSIDE, CAMP PENDLETON.

Detailed Location: MAPPED NON-SPECIFICALLY TO THE ESTUARY AREA OF SANTA MARGARITA RIVER SOUTH OF STUART MESA BASED ON RUMPP. NAGANO APPEARS TO REFER TO THIS POPULATION AS STUART. INATURALIST RECORDS FROM VICINITY OF CAMP PENDLETON ATTRIBUTED HERE.

Ecological: CONSIDERED BY RUMPP AND NAGANO TO BE PART OF THE "OBLIVIOSA" POPULATION FORM. FORMERLY C. L. OBLIVIOSA EO #5. MAY RECEIVE SOME PROTECTION DUE TO LIMITED ACCESS BY DEPARTMENT OF DEFENSE.

General: UNCLEAR IF SPECIMENS LABELED OCEANSIDE BEFORE ESTABLISHMENT OF CAMP PENDLETON WERE FROM THIS AREA. NOT FOUND BY NAGANO IN THE 1970S. 1 FOUND & PHOTOGRAPHED ON 10 APR 2010. 3 FOUND & PHOTOGRAPHED IN JUN 2020. 2 PHOTOGRAPHED IN AUG 2021.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	27	**Map Index:** B7889	**EO Index:** 121072	**Element Last Seen:**	1932-08-23
Occ. Rank:	None		**Presence:** Extirpated	**Site Last Seen:**	1979-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2021-11-30

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.19966 / -117.38894	**Accuracy:**	1 mile
UTM:	Zone-11 N3673489 E463749	**Elevation (ft):**	13
PLSS:	T11S, R05W, Sec. 22 (S)	**Acres:**	1987.0

Location: OCEANSIDE.

Detailed Location: MAPPED NON-SPECIFICALLY TO THE NORTHERN PORTION OF THE TOWN OF OCEANSIDE AND TO THE HISTORIC ESTUARY AREA AT THE MOUTH OF SAN LUIS REY RIVER; MULTIPLE HARBOR CONSTRUCTIONS HAVE MODIFIED THIS AREA SINCE THE 1930S.

Ecological: CONSIDERED BY NAGANO TO BE PART OF THE "OBLIVIOSA" POPULATION FORM. FORMERLY C. L. OBLIVIOSA EO #2.

General: SEVERAL COLLECTED IN 1932. NOT FOUND BY NAGANO DURING HIS RESEARCH IN THE 1970S AND CONSIDERED EXTIRPATED.

Owner/Manager: UNKNOWN

Bombus crotchii **Element Code:** IIHYM24480

Crotch bumble bee

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	Candidate Endangered		**State:**	S2
	Other:	IUCN_EN-Endangered			
Habitat:	**General:**	COASTAL CALIFORNIA EAST TO THE SIERRA-CASCADE CREST AND SOUTH INTO MEXICO.			
	Micro:	FOOD PLANT GENERA INCLUDE ANTIRRHINUM, PHACELIA, CLARKIA, DENDROMECON, ESCHSCHOLZIA, AND ERIOGONUM.			

Occurrence No.	389	**Map Index:** 27999	**EO Index:**	119606	**Element Last Seen:** 1915-04-11
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 1915-04-11
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2020-11-23

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.19540 / -117.37726	**Accuracy:**	1 mile
UTM:	Zone-11 N3673012 E464835	**Elevation (ft):**	20
PLSS:	T11S, R05W, Sec. 26 (S)	**Acres:**	0.0

Location: OCEANSIDE.

Detailed Location: MAPPED GENERALLY TO PROVIDED SPECIMEN LOCALITY.

Ecological:

General: 1 COLLECTED BY E. JACKSON ON 11 APR 1915.

Owner/Manager: UNKNOWN

Danaus plexippus plexippus pop. 1 **Element Code:** IILEPP2012

monarch - California overwintering population

Listing Status:	**Federal:**	Candidate	**CNDDB Element Ranks:**	**Global:**	G4T1T2Q
	State:	None		**State:**	S2
	Other:	IUCN_EN-Endangered, USFS_S-Sensitive			
Habitat:	**General:**	WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
	Micro:	ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No.	300	**Map Index:** 33189	**EO Index:** 2814	**Element Last Seen:**	2008-12-12
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2022-01-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Fluctuating	**Record Last Updated:**	2022-10-14

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23127 / -117.39750	**Accuracy:**	specific area
UTM:	Zone-11 N3676996 E462964	**Elevation (ft):**	20
PLSS:	T11S, R05W, Sec. 10, SW (S)	**Acres:**	8.7

Location: "CAMP PENDLETON MAIN" SITE, E OF I-5, ABOUT 0.5 MILE WSW OF VANDEGRIFT BLVD AT STUART MESA RD, CAMP PENDLETON.

Detailed Location: ALSO KNOWN AS "CAMP PENDLETON, VANDEGRIFT BLVD" SITE. XERCES SITE #3018.

Ecological: ROOST TREES CONSIST OF A EUCALYPTUS ROW GONE WILD, JUST N OF ABANDONED ORCHARD GRADED & CONVERTED INTO DETENTION BASINS IN EARLY 2000S. A FIRE BURNED THE ORIGINAL ROOST TREES IN 2007, MONARCHS SUBSEQUENTLY USED UNBURNED TREES TO SE.

General: 10-15K IN 1990-91. 8K IN 1991. 10K IN 1992. 300 IN 1995. 8500 IN 1996. 10K IN 1997. 5 IN 1998. 10 IN 1999. 225 IN 2000. 10 IN 2002. 15 IN 2003. 130 IN 2004. 830 IN '05. 300 IN '06. 50 IN '08. 12 IN '09. 2 IN 2010. 5-14 IN WINTER OF 2021-22.

Owner/Manager: DOD-CAMP PENDLETON MCB

Tryonia imitator

Element Code: IMGASJ7040

mimic tryonia (=California brackishwater snail)

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	IUCN_DD-Data Deficient			
Habitat:	**General:**	INHABITS COASTAL LAGOONS, ESTUARIES AND SALT MARSHES, FROM SONOMA COUNTY SOUTH TO SAN DIEGO COUNTY.			
	Micro:	FOUND ONLY IN PERMANENTLY SUBMERGED AREAS IN A VARIETY OF SEDIMENT TYPES; ABLE TO WITHSTAND A WIDE RANGE OF SALINITIES.			

Occurrence No.	40	**Map Index:** 85166	**EO Index:** 86185	**Element Last Seen:**	2009-05-07
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	2009-05-07
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2012-02-23

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23759 / -117.39520	**Accuracy:**	80 meters
UTM:	Zone-11 N3677697 E463180	**Elevation (ft):**	8
PLSS:	T11S, R05W, Sec. 10, NE (S)	**Acres:**	0.0

Location: SANTA MARGARITA RIVER AT STUART MESA BRIDGE.

Detailed Location: SNAILS FOUND 15 METERS WEST (DOWNSTREAM) OF BRIDGE IN 0.4 M OF WATER.

Ecological:

General: 7 COLLECTED 7 MAY 2009 (NMNH 1127627).

Owner/Manager: DOD-USMC

Eryngium aristulatum var. parishii

Element Code: PDAPI0Z042

San Diego button-celery

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T1
	State:	Endangered		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	VERNAL POOLS, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	SAN DIEGO MESA HARDPAN AND CLAYPAN VERNAL POOLS AND SOUTHERN INTERIOR BASALT FLOW VERNAL POOLS; USUALLY SURROUNDED BY SCRUB. 15-880 M.			

Occurrence No.	3	**Map Index:**	27999	**EO Index:**	46957	**Element Last Seen:**	1897-06-16
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1897-06-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2021-03-01

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.19540 / -117.37726	**Accuracy:**	1 mile
UTM:	Zone-11 N3673012 E464835	**Elevation (ft):**	50
PLSS:	T11S, R05W, Sec. 26 (S)	**Acres:**	0.0

Location:	OCEANSIDE.
Detailed Location:	ELEVATION RANGE OF 0-50 FT WAS GIVEN ON COLLECTION LABEL.
Ecological:	
General:	TYPE LOCALITY. ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN 1897 COLLECTION BY PARISH. OCCURRENCE IS PROBABLY EXTIRPATED.
Owner/Manager:	UNKNOWN

Occurrence No.	64	**Map Index:**	03347	**EO Index:**	20007	**Element Last Seen:**	1998-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1998-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2015-02-25

Quad Summary:	San Luis Rey (3311723)
County Summary:	San Diego

Lat/Long:	33.23761 / -117.36877	**Accuracy:**	specific area
UTM:	Zone-11 N3677690 E465643	**Elevation (ft):**	300
PLSS:	T11S, R05W, Sec. 11, NE (S)	**Acres:**	2.0

Location:	WIRE MOUNTAIN, ABOVE HEAD OF TULEY CANYON, 0.25 MILE NORTH OF NORTH END OF DOGWOOD RD, CAMP PENDLETON MARINE CORPS BASE.
Detailed Location:	MAPPED BY CNDDB ACCORDING TO CAMP PENDLETON DIGITAL DATA, IN THE NE 1/4 OF THE NE 1/4 OF SECTION 11.
Ecological:	AT MARGIN OF VERNAL POOLS ON MESA IN COASTAL SAGE SCRUB.
General:	ABOUT 250 PLANTS IN 1983. OBSERVED IN A SINGLE POOL IN 1987. 4 PLANTS OBSERVED IN EAST PORTION OF SITE IN 1998.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	78	**Map Index:**	03333	**EO Index:**	19998	**Element Last Seen:**	1987-03-17
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1987-03-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2015-02-25

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.24000 / -117.37514	**Accuracy:**	80 meters
UTM:	Zone-11 N3677957 E465050	**Elevation (ft):**	250
PLSS:	T11S, R05W, Sec. 11, NW (S)	**Acres:**	0.0

Location:	NORTH END OF WIRE MOUNTAIN, NORTH OF ABNER COURT, EAST OF VANDEGRIFT BLVD, CAMP PENDLETON MARINE CORPS BASE.
Detailed Location:	IN THE NE 1/4 OF THE NW 1/4 OF SECTION 11.
Ecological:	VERNAL POOLS SURROUNDED BY DIEGAN COASTAL SAGE SCRUB. ASSOCIATED WITH PSILOCARPHUS BREVISSIMUS, DESCHAMPSIA DANTHONIOIDES, ALLIUM HAEMATOCHITON, AND CRASSULA AQUATICA.
General:	480 PLANTS OBSERVED IN 1987 BETWEEN THIS OCCURRENCE AND A PORTION OF OCCURRENCE #79.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	79	**Map Index:**	17979	**EO Index:**	19996	**Element Last Seen:**	2012-04-09
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2012-04-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-06-27

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22654 / -117.37352	**Accuracy:**	specific area
UTM:	Zone-11 N3676464 E465196	**Elevation (ft):**	150
PLSS:	T11S, R05W, Sec. 11, S (S)	**Acres:**	23.0

Location:	JUST WEST OF WIRE MOUNTAIN AND TULEY CANYON, CAMP PENDLETON MARINE CORPS BASE.
Detailed Location:	SSE OF THE JUNCTION OF CARNES RD AND WIRE MTN RD. MAPPED BY CNDDB AS 7 POLYGONS ACCORDING TO CAMP PENDLETON DIGITAL DATA.
Ecological:	VERNAL POOLS SURROUNDED BY DIEGAN COASTAL SAGE SCRUB. ASSOCIATED WITH PSILOCARPHUS BREVISSIMUS, DESCHAMPSIA DANTHONIOIDES, ALLIUM HAEMATOCHITON, AND CRASSULA AQUATICA.
General:	POPULATION NUMBERS FOR PORTIONS OF OCCURRENCE: 480 PLANTS OBSERVED IN 1987 BETWEEN A PORTION OF THIS OCCURRENCE AND OCCURRENCE #78, 20+ IN 1995, 114 IN 1998, 11 IN 2002, 13 IN 2009, 9 IN 2011, 13 IN 2012. INCLUDES FORMER OCCURRENCE #93.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	106	**Map Index:**	86548	**EO Index:**	87497	**Element Last Seen:**	1985-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1985-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2012-08-16

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22301 / -117.38865	**Accuracy:**	specific area
UTM:	Zone-11 N3676078 E463784	**Elevation (ft):**	120
PLSS:	T11S, R05W, Sec. 15, NE (S)	**Acres:**	23.0

Location:	CAMP PENDLETON MARINE CORPS BASE, EAST OF I-5, NW OF INTERSECTION OF JACINTO ROAD AND WIRE MOUNTAIN ROAD.
Detailed Location:	BAUDER POOL COMPLEX Y5. MAPPED BY CNDDB AROUND THE Y5 VERNAL POOLS IN THE NE 1/4 OF SECTION 15.
Ecological:	VERNAL POOLS.
General:	COMMON IN OVER 50% OF THESE POOLS IN 1984/1985.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	124	**Map Index:**	B3551	**EO Index:**	115471	**Element Last Seen:**	2018-06-13
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2018-06-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2021-02-25

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.21842 / -117.39295	**Accuracy:**	specific area
UTM:	Zone-11 N3675570 E463383	**Elevation (ft):**	63
PLSS:	T11S, R05W, Sec. 15 (S)	**Acres:**	1.0

Location:	CAMP PENDLETON; ALONG WIRE MOUNTAIN RD JUST WEST OF I-5 AND NE OF THE JUNCTION OF 5TH ST AND SANTA FE AVE.
Detailed Location:	SOUTHWEST PORTION OF BASE; 21 AREA-DEL MAR VERNAL POOL SITE. MAPPED ACCORDING TO 2018 REBMAN COORDINATES, NEAR THE CENTER OF SECTION 15.
Ecological:	VERNAL POOL VEGETATION WITH LYTHRUM HYSSOPIFOLIA, DEINANDRA FASCICULATA, ISOCOMA MENZIESII, AND AMBROSIA PSILOSTACHYA.
General:	AT LEAST 30 PLANTS OBSERVED IN 2018.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Ambrosia pumila **Element Code:** PDAST0C0M0

San Diego ambrosia

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	SANDY LOAM OR CLAY SOIL; SOMETIMES ALKALINE. IN VALLEYS; PERSISTS WHERE DISTURBANCE HAS BEEN SUPERFICIAL. SOMETIMES ON MARGINS OR NEAR VERNAL POOLS. 3-580 M.			

Occurrence No.	71 **Map Index:** A7263	**EO Index:**	109029	**Element Last Seen:**	2019-05-21
Occ. Rank:	Good	**Presence:**	Presumed Extant	**Site Last Seen:**	2019-05-21
Occ. Type:	Transplant Outside of Native Hab./Range	**Trend:**	Unknown	**Record Last Updated:**	2021-01-22

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20423 / -117.38619	**Accuracy:**	specific area
UTM:	Zone-11 N3673994 E464007	**Elevation (ft):**	22
PLSS:	T11S, R05W, Sec. 22, SE (S)	**Acres:**	1.0

Location: SEACLIFF PRESERVE; SOUTH SIDE OF SAN LUIS REY RIVER, BETWEEN THE OCEAN AND WHERE I-5 CROSSES THE RIVER, OCEANSIDE.

Detailed Location: MAPPED ACCORDING TO 2017 DIGITAL DATA FROM RECON ENVIRONMENTAL, INC.

Ecological: ASSOCIATED WITH ARTEMISIA CALIFORNICA, SALVIA MELLIFERA, LEYMUS CONDENSATUS, DUDLEYA VISCIDA, AND IVA HAYESIANA.

General: 675 PLANTS OBSERVED IN 2015. 800 CLUSTERS SEEN IN 2017. 1077 INDIVIDUALS SEEN IN 2018. 1000 INDIVIDUALS SEEN IN 2019. PLANTS FOUND WITHIN A RESTORATION AREA, LIKELY PLANTED.

Owner/Manager: PVT

Chaenactis glabriuscula var. orcuttiana **Element Code:** PDAST20095

Orcutt's pincushion

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T1T2
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	COASTAL BLUFF SCRUB, COASTAL DUNES.			
	Micro:	SANDY SITES. 3-80 M.			

Occurrence No.	15	**Map Index:** 79012	**EO Index:** 47540	**Element Last Seen:**	1933-04-03
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	1933-04-03
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2016-06-14

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.19070 / -117.38110	**Accuracy:**	non-specific area
UTM:	Zone-11 N3672493 E464475	**Elevation (ft):**	20
PLSS:	T11S, R05W, Sec. 26 (S)	**Acres:**	109.0

Location: OCEANSIDE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS ALONG BEACH NEAR OCEANSIDE.

Ecological: ON SEA BLUFFS.

General: SITE BASED ON A 1920 MUNZ COLLECTION, A 1927 HOWELL COLLECTION, AND A 1933 ANDERSON COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Leptosyne maritima **Element Code:** PDAST2L0L0

sea dahlia

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S1S2
	Other:	Rare Plant Rank - 2B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	COASTAL SCRUB, COASTAL BLUFF SCRUB.			
	Micro:	OCCURS ON A VARIETY OF SOIL TYPES, INCLUDING SANDSTONE. 5-185 M.			

Occurrence No.	24 **Map Index:** 96504	**EO Index:**	31631	**Element Last Seen:**	2014-12-07
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	2014-12-07
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2015-06-29

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20663 / -117.38149	**Accuracy:**	80 meters
UTM:	Zone-11 N3674259 E464445	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 23, NW (S)	**Acres:**	0.0

Location: JUST SOUTH OF CA-76 ON THE WEST SIDE OF LAWRENCE CANYON, SOUTH OF SAN LUIS REY RIVER, OCEANSIDE.

Detailed Location: MAPPED BY CNDDB ACCORDING TO 2014 VANDERHOFF COORDINATES, IN THE SW 1/4 OF THE NW 1/4 OF SECTION 23.

Ecological: LOCAL ON NW-FACING SLOPE AT EDGE OF URBAN LANDSCAPE.

General: FEWER THAN 50 PLANTS OBSERVED IN 2014. A 1947 MORAN COLLECTION FROM "OCEANSIDE" IS ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: UNKNOWN

Centromadia pungens ssp. laevis

Element Code: PDAST4R0R4

smooth tarplant

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4T2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	VALLEY AND FOOTHILL GRASSLAND, CHENOPOD SCRUB, MEADOWS AND SEEPS, PLAYAS, RIPARIAN WOODLAND.			
	Micro:	ALKALI MEADOW, ALKALI SCRUB; ALSO IN DISTURBED PLACES. 5-1170 M.			

Occurrence No.	58	**Map Index:**	27999	**EO Index:**	3988	**Element Last Seen:**	1897-06-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1897-06-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2021-09-28

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.19540 / -117.37726	**Accuracy:**	1 mile
UTM:	Zone-11 N3673012 E464835	**Elevation (ft):**	20
PLSS:	T11S, R05W, Sec. 26 (S)	**Acres:**	0.0

Location: OCEANSIDE.

Detailed Location:

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1897 COLLECTION BY PARISH.

Owner/Manager: UNKNOWN

Occurrence No.	132	**Map Index:**	27986	**EO Index:**	101517	**Element Last Seen:**	1896-06-11
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1896-06-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2021-09-13

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.23264 / -117.32450	**Accuracy:**	1 mile
UTM:	Zone-11 N3677124 E469766	**Elevation (ft):**	
PLSS:	T11S, R04W, Sec. 08 (S)	**Acres:**	0.0

Location: SAN LUIS REY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS CENTERED ON SAN LUIS REY.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN 1896 ALDERSON COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Isocoma menziesii var. decumbens

Element Code: PDAST57091

decumbent goldenbush

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G5T2T3
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	COASTAL SCRUB, CHAPARRAL.			
	Micro:	SANDY SOILS; OFTEN IN DISTURBED SITES. 1-915 M.			

Occurrence No.	56	**Map Index:**	87360	**EO Index:**	88349	**Element Last Seen:**	2011-06-02
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-06-02
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2012-11-27

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.21270 / -117.40297	**Accuracy:**	80 meters
UTM:	Zone-11 N3674940 E462445	**Elevation (ft):**	13
PLSS:	T99X, R99X, Sec. UN (X)	**Acres:**	0.0

Location:	SOUTH OF DEL MAR BOAT BASIN; VICINITY OF A TANK TRAINING AREA JUST OFF OF B ST, TRAINING AREA BEACH H OF CAMP PENDELTON.
Detailed Location:	SOUTHWEST OF A BOAT LAUNCH. MAPPED ACCORDING TO 2011 REBMAN COORDINATES.
Ecological:	COASTAL BEACH/SAGE SCRUB WITH MALOSMA LAURINA, HETEROTHECA GRANDIFLORA, CARPOBROTUS EDULIS, CAMISSONIA CHEIRANTHIFOLIA, AND LOTUS NUTTALLIANUS. SANDY SUBSTRATES.
General:	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 2011 COLLECTION BY REBMAN, PLANTS NOTED AS "UNCOMMON."
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	95	**Map Index:**	A1774	**EO Index:**	103365	**Element Last Seen:**	1927-10-22
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1927-10-22
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-09-08

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.20456 / -117.38785	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3674032 E463852	**Elevation (ft):**	5
PLSS:	T11S, R05W, Sec. 22 (S)	**Acres:**	280.0

Location:	SAN LUIS REY RIVER, NEAR THE SEA.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS AROUND THE MOUTH OF THE SAN LUIS REY RIVER.
Ecological:	AT BASE OF CLIFF, NEAR THE SEA.
General:	1 PLANT OBSERVED IN 1927.
Owner/Manager:	UNKNOWN

Occurrence No.	123	**Map Index:**	B3848	**EO Index:**	116765	**Element Last Seen:**	2016-04-05
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-04-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2019-08-30

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.23315 / -117.36123	**Accuracy:**	80 meters
UTM:	Zone-11 N3677193 E466344	**Elevation (ft):**	323
PLSS:	T11S, R05W, Sec. 12, W (S)	**Acres:**	5.0

Location: CAMP PENDLETON: SOUTHERN PORTION OF BASE; EAST OF WIRE MOUNTAIN COMPLEX AND JUST NORTH OF THE BASE BOUNDARY.

Detailed Location: TRAINING AREA NOVEMBER. MAPPED ACCORDING TO 2016 REBMAN COORDINATES.

Ecological: COASTAL SAGE SCRUB VEGETATION. ASSOCIATED WITH RHUS INTEGRIFOLIA, ARTEMISIA CALIFORNICA, ERIOGONUM FASCICULATUM, SALVIA MELLIFERA, SALVIA APIANA, ERODIUM BOTRYS, & STIPA PULCHRA.

General: PLANTS NOTED AS "UNCOMMON" IN 2016.

Owner/Manager: DOD-CAMP PENDLETON MCB

Iva hayesiana

Element Code: PDAST580A0

San Diego marsh-elder

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:** G3
	State:	None		**State:** S2
	Other:	Rare Plant Rank - 2B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		
Habitat:	**General:**	MARSHES AND SWAMPS, PLAYAS.		
	Micro:	RIVERWASHES. 1-430 M.		

Occurrence No.	130	**Map Index:**	A1488	**EO Index:**	103069	**Element Last Seen:**	2015-03-24
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	2015-03-24
Occ. Type:	Transplant Outside of Native Hab./Range			**Trend:**	Unknown	**Record Last Updated:**	2016-08-16

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20411 / -117.38657	**Accuracy:**	specific area
UTM:	Zone-11 N3673982 E463972	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 22, SE (S)	**Acres:**	1.0

Location: SOUTH SIDE OF SAN LUIS REY RIVER, JUST WEST OF I-5, OCEANSIDE.

Detailed Location: MAPPED ACCORDING TO 2015 KENTNER DIGITAL DATA.

Ecological: FLAT TERRACE ADJACENT TO THE SAN LUIS REY RIVER. AREA HAS BEEN (POSSIBLY MISGUIDEDLY) RESTORED AS COASTAL SAGE SCRUB WHICH IS CROWDING OUT NEARBY RARE DUNE-LOVING PLANTS. ASSOCIATED WITH ENCELIA CALIFORNICA, ERIOGONUM FASCICULATUM, ETC.

General: 15 PLANTS OBSERVED IN 2015. IVA PLANTS WERE LIKELY INCLUDED IN RESTORATION PALETTE AND MAY NOT BE NATIVE TO THIS SITE.

Owner/Manager: CITY OF OCEANSIDE

Lasthenia glabrata ssp. coulteri **Element Code:** PDAST5L0A1

Coulter's goldfields

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden			
Habitat:	**General:**	COASTAL SALT MARSHES, PLAYAS, VERNAL POOLS.			
	Micro:	USUALLY FOUND ON ALKALINE SOILS IN PLAYAS, SINKS, AND GRASSLANDS. 1-1375 M.			

Occurrence No.	35	**Map Index:** 39869	**EO Index:** 18614	**Element Last Seen:**	1983-09-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1983-09-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-12-20

Quad Summary: Oceanside (3311724), Las Pulgas Canyon (3311734)

County Summary: San Diego

Lat/Long:	33.23699 / -117.40144	**Accuracy:**	1 mile
UTM:	Zone-11 N3677632 E462599	**Elevation (ft):**	
PLSS:	T11S, R05W, Sec. 10 (S)	**Acres:**	0.0

Location: SANTA MARGARITA RIVER MARSH.

Detailed Location: UPPER MARSH AT THE RIVER MOUTH.

Ecological:

General: REPORTED BY SEVERAL SOURCES WITH ONLY SITE NAME. STATED AS "VERY UNCOMMON" IN 1983 (BUREAU OF RECLAMATION 1984 REPORT). NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Senecio aphanactis

Element Code: PDAST8H060

chaparral ragwort

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	CHAPARRAL, CISMONTANE WOODLAND, COASTAL SCRUB.			
	Micro:	DRYING ALKALINE FLATS. 20-1020 M.			

Occurrence No.	38	**Map Index:** 39869	**EO Index:** 87540	**Element Last Seen:**	1989-03-24
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1989-03-24
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2012-08-15

Quad Summary: Oceanside (3311724), Las Pulgas Canyon (3311734)

County Summary: San Diego

Lat/Long:	33.23699 / -117.40144	**Accuracy:**	1 mile
UTM:	Zone-11 N3677632 E462599	**Elevation (ft):**	69
PLSS:	T11S, R05W, Sec. 10 (S)	**Acres:**	0.0

Location: NEAR THE MOUTH OF THE SANTA MARGARITA RIVER, CAMP JOSEPH PENDLETON MCB.

Detailed Location: BASE SECTION: MARGARITA. EXACT LOCATION UNKNOWN, MAPPED BY CNDDB IN GENERAL VICINITY OF RIVER MOUTH.

Ecological: ERODED SLOPE.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1989 COLLECTION BY REISER, PLANTS NOTED AS "GROWING IN LIMITED NUMBERS." NEEDS FIELDWORK.

Owner/Manager: DOD-CAMP PENDLETON MCB

Erysimum ammophilum

Element Code: PDBRA16010

sand-loving wallflower

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank, SB_SBBG-Santa Barbara Botanic Garden			
Habitat:	**General:**	CHAPARRAL (MARITIME), COASTAL DUNES, COASTAL SCRUB.			
	Micro:	SANDY OPENINGS. 3-320 M.			

Occurrence No.	25	**Map Index:**	A7144	**EO Index:**	108672	**Element Last Seen:**	2014-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2014-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-11-16

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.22543 / -117.37013	**Accuracy:**	specific area
UTM:	Zone-11 N3676339 E465512	**Elevation (ft):**	230
PLSS:	T11S, R05W, Sec. 14, NE (S)	**Acres:**	12.0

Location: VICINITY OF WIRE MOUNTAIN, APPROXIMATELY 1 TO 1.7 AIR MILES EAST OF FALLBROOK JUNCTION, CAMP PENDLETON.

Detailed Location: MAPPED AS 5 POLYGONS BY CNDDB BASED ON DIGITAL DATA PROVIDED BY CAMP PENDLETON, IN THE NORTH 1/2 OF THE NE 1/4 OF SECTION 14 AND THE SOUTH 1/2 OF SECTION 11.

Ecological: COASTAL SAGE SCRUB/RUDERAL. MOSTLY CLAY SUBSTRATES. ASSOCIATED WITH ARTEMISIA CALIFORNICA, ERIOGONUM FASCICULATUM, SALVIA APIANA, LIMONIUM PEREZII, AND MIMULUS AURANTIACUS.

General: 250 PLANTS OBSERVED BETWEEN THIS SITE AND OCCURRENCE #45 IN 1987. "UNCOMMON" IN WEST POLYGON IN 2012. UNKNOWN NUMBER OBSERVED IN 1999 & 2013/2014. ID OF PLANTS FROM SAN DIEGO COUNTY IS UNCLEAR; POSSIBLY A NEW TAXON.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	43	**Map Index:**	A7049	**EO Index:**	108700	**Element Last Seen:**	19XX-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	19XX-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-11-28

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.2322 / -117.3802	**Accuracy:**	specific area
UTM:	Zone-11 N3677094 E464577	**Elevation (ft):**	190
PLSS:	T11S, R05W, Sec. 11, SW (S)	**Acres:**	1.0

Location: JUST WEST OF SANTA MARGARITA SCHOOL, AND ABOUT 0.5 AIR MILE EAST OF VANDEGRIFT BLVD, CAMP PENDLETON.

Detailed Location: MAPPED BY CNDDB BASED ON DIGITAL DATA PROVIDED BY CAMP PENDLETON, IN THE NW 1/4 OF THE SW 1/4 OF SECTION 11.

Ecological: UPLAND.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS DIGITAL DATA FROM CAMP PENDLETON. UNKNOWN NUMBER OF PLANTS OBSERVED DURING PRE-1997 RARE PLANT SURVEYS. ID OF PLANTS FROM SAN DIEGO COUNTY IS UNCLEAR; POSSIBLY A NEW TAXON.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	44	**Map Index:**	A7050	**EO Index:**	108772	**Element Last Seen:**	2014-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2014-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-11-13

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.24176 / -117.38938	**Accuracy:**	specific area
UTM:	Zone-11 N3678157 E463726	**Elevation (ft):**	175
PLSS:	T11S, R05W, Sec. 3, SE (S)	**Acres:**	14.0

Location:	NORTH OF SANTA MARGARITA RIVER, ABOUT 0.6 AIR MILE NORTH OF INTERSECTION OF STUART MESA RD AND VANDEGRIFT BLVD.
Detailed Location:	MAPPED AS 2 POLYGONS BASED ON CAMP PENDLETON DIGITAL DATA, ON SECTION LINE BETWEEN THE SE 1/4 OF SECTION 3 AND THE NE 1/4 OF SECTION 10.
Ecological:	GRASSLANDS.
General:	36 PLANTS SEEN IN SOUTH POLYGON IN 1989. UNKNOWN NUMBER OF PLANTS SEEN THROUGHOUT SITE IN 2013/2014. ID OF PLANTS FROM SAN DIEGO COUNTY IS UNCLEAR; POSSIBLY A NEW TAXON.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	45	**Map Index:**	A7051	**EO Index:**	108774	**Element Last Seen:**	1997-07-08
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-07-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-11-16

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.23823 / -117.37384	**Accuracy:**	specific area
UTM:	Zone-11 N3677760 E465171	**Elevation (ft):**	280
PLSS:	T11S, R05W, Sec. 11, N (S)	**Acres:**	18.0

Location:	ABOUT 0.1-0.6 AIR MILE EAST OF VANDERGRIFT BLVD AND NORTH OF WIRE MOUNTAIN, CAMP PENDLETON.
Detailed Location:	MAPPED BY CNDDB AS 3 POLYGONS FROM CAMP PENDLETON DIGITAL DATA, IN NORTH HALF OF SECTION 11.
Ecological:	SAGE SCRUB.
General:	250 PLANTS SEEN BETWEEN THIS SITE AND OCCURRENCE #25 IN 1987. UNKNOWN NUMBER OF PLANTS SEEN IN 1997. ID OF PLANTS FROM SAN DIEGO COUNTY IS UNCLEAR; POSSIBLY A NEW TAXON.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Lepidium virginicum var. robinsonii **Element Code:** PDBRA1M114

Robinson's pepper-grass

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 4.3			
Habitat:	**General:**	CHAPARRAL, COASTAL SCRUB.			
	Micro:	DRY SOILS, SHRUBLAND. 4-1435 M.			

Occurrence No.	120	**Map Index:** 27986	**EO Index:**	86274	**Element Last Seen:** 1937-01-21
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 1937-01-21
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2012-03-01

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.23264 / -117.32450	**Accuracy:**	1 mile
UTM:	Zone-11 N3677124 E469766	**Elevation (ft):**	
PLSS:	T11S, R04W, Sec. 08 (S)	**Acres:**	0.0

Location: NEAR RANCHO SAN LUIS REY, SAN LUIS REY VALLEY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB IN GENERAL VICINITY OF SAN LUIS REY.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1937 COLLECTION BY GANDER. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Ferocactus viridescens **Element Code:** PDCAC08060

San Diego barrel cactus

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3?
	State:	None		**State:**	S2S3
	Other:	Rare Plant Rank - 2B.1, IUCN_LC-Least Concern, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	CHAPPARAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	OFTEN ON EXPOSED, LEVEL OR SOUTH-SLOPING AREAS; OFTEN IN COASTAL SCRUB NEAR CREST OF SLOPES. 3-490 M.			

Occurrence No.	276	**Map Index:**	90838	**EO Index:**	91875	**Element Last Seen:**	1979-03-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1979-03-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-11-01

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20768 / -117.38381	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3674377 E464229	**Elevation (ft):**	50
PLSS:	T11S, R05W, Sec. 22, NE (S)	**Acres:**	0.0

Location: SAN LUIS REY RIVER JUST EAST OF INTERSTATE 5, OCEANSIDE.

Detailed Location: THIS IS THE "NARROW'S POPULATION." MAPPED BY CNDDB WITHIN THE PORTION OF THE STUDY AREA THAT IS "ALONG THE NORTH SIDE OF THE NARROWS NEAR THE I-5 BRIDGE" BASED ON LOCATION DESCRIPTION IN REPORT.

Ecological: BLUFF TOP.

General: BETWEEN 75 AND 100 INDIVIDUALS WERE OBSERVED IN 1979.

Owner/Manager: CITY OF OCEANSIDE?

Occurrence No.	290	**Map Index:**	98150	**EO Index:**	99561	**Element Last Seen:**	2017-05-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-05-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-07-07

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.21394 / -117.37621	**Accuracy:**	specific area
UTM:	Zone-11 N3675068 E464941	**Elevation (ft):**	80
PLSS:	T11S, R05W, Sec. 14, SW (S)	**Acres:**	2.0

Location: ALONG SAN LUIS REY RIVER NEAR GAGING STATION, JUST EAST OF N LORETTA STREET, OCEANSIDE.

Detailed Location: MAPPED BY CNDDB ACCORDING TO 2015 AND 2017 MORSE COORDINATES, IN THE SE 1/4 OF THE SW 1/4 OF SECTION 14.

Ecological:

General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 2015 AND 2017.

Owner/Manager: CITY OF OCEANSIDE?

Aphanisma blitoides **Element Code:** PDCHE02010

aphanisma

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank, SB_SBBG-Santa Barbara Botanic Garden			
Habitat:	**General:**	COASTAL BLUFF SCRUB, COASTAL DUNES, COASTAL SCRUB.			
	Micro:	ON BLUFFS AND SLOPES NEAR THE OCEAN IN SANDY OR CLAY SOILS. 3-305 M.			

Occurrence No.	79	**Map Index:**	B4509	**EO Index:**	117439	**Element Last Seen:**	1881-04-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1881-04-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2019-12-11

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20972 / -117.37879	**Accuracy:**	1 mile
UTM:	Zone-11 N3674601 E464699	**Elevation (ft):**	
PLSS:	T11S, R05W, Sec. 23 (S)	**Acres:**	1987.0

Location: SEA COAST, SAN LUIS REY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB AROUND COASTAL SLOPES AT THE MOUTH OF THE SAN LUIS REY RIVER, JUST SOUTHWEST OF THE COMMUNITY OF SAN LUIS REY.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN 1881 PARISH COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Atriplex coulteri **Element Code:** PDCHE040E0

Coulter's saltbush

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S1S2
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	COASTAL BLUFF SCRUB, COASTAL DUNES, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	OCEAN BLUFFS, RIDGETOPS, AS WELL AS ALKALINE LOW PLACES. ALKALINE OR CLAY SOILS. 2-460 M.			

Occurrence No.	91	**Map Index:**	98999	**EO Index:**	100530	**Element Last Seen:**	2014-10-14
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2014-10-14
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-01-29

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20389 / -117.3761	**Accuracy:**	80 meters
UTM:	Zone-11 N3673954 E464947	**Elevation (ft):**	90
PLSS:	T11S, R05W, Sec. 23, SW (S)	**Acres:**	5.0

Location: LAWRENCE CANYON; ABOUT 140 METERS WEST OF THE CORNER OF MCNEIL ST AND DUBUQUE ST, OCEANSIDE.

Detailed Location: ALONG TRAIL RUNNING EAST TO WEST DOWN A RIDGE. MAPPED ACCORDING TO 2014 KENTNER COORDINATES, IN THE NE 1/4 OF THE SW 1/4 OF SECTION 23.

Ecological: ON WHITE SANDSTONE SOILS IN DISTURBED GROUND ALONG FOOT PATH. ASSOCIATED WITH ARTEMISIA CALIFORNICA, ERIOGONUM FASCICULATUM, ENCELIA CALIFORNICA, OPUNTIA LITTORALIS, CISTANTHE MARITIMA, AND DUDLEYA EDULUS.

General: ABOUT 10 PLANTS OBSERVED IN 2001. ABOUT 40 PLANTS OBSERVED IN 2014. PREVIOUSLY IDENTIFIED AS ATRIPLEX PACIFICA (EO #36) BUT REISER'S 2001 COLLECTION WAS ANNOTATED TO A. COULTERI BY ROBERTS AND ID CONFIRMED WITH A FIELD VISIT IN 2014.

Owner/Manager: PVT

Occurrence No.	114	**Map Index:**	B1416	**EO Index:**	113321	**Element Last Seen:**	2017-05-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-05-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2018-11-14

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.21426 / -117.37647	**Accuracy:**	specific area
UTM:	Zone-11 N3675103 E464917	**Elevation (ft):**	115
PLSS:	T11S, R05W, Sec. 14, SW (S)	**Acres:**	1.0

Location: SW OF THE END OF SAN JUAN STREET, NORTH OF SAN LUIS REY RIVER.

Detailed Location: MAPPED ACCORDING TO 2017 MORSE COORDINATES, IN THE SE 1/4 OF THE SW 1/4 OF SECTION 14.

Ecological:

General: 1 PLANT OBSERVED IN 2017.

Owner/Manager: UNKNOWN

Atriplex pacifica

Element Code: PDCHE041C0

south coast saltscale

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	COASTAL SCRUB, COASTAL BLUFF SCRUB, PLAYAS, COASTAL DUNES.			
	Micro:	ALKALI SOILS. 1-400 M.			

Occurrence No.	101	**Map Index:**	27986	**EO Index:**	100850	**Element Last Seen:**	1881-04-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1881-04-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-02-26

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.23264 / -117.32450	**Accuracy:**	1 mile
UTM:	Zone-11 N3677124 E469766	**Elevation (ft):**	
PLSS:	T11S, R04W, Sec. 08 (S)	**Acres:**	0.0

Location: SAN LUIS REY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS AROUND SAN LUIS REY.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN 1881 PARISH COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Dudleya blochmaniae ssp. blochmaniae **Element Code:** PDCRA04051

Blochman's dudleya

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3T2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	COASTAL SCRUB, COASTAL BLUFF SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	OPEN, ROCKY SLOPES; OFTEN IN SHALLOW CLAYS OVER SERPENTINE OR IN ROCKY AREAS WITH LITTLE SOIL. 5-290 M.			

Occurrence No.	3	**Map Index:**	17703	**EO Index:**	11670	**Element Last Seen:**	2014-XX-XX
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	2014-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2018-09-18

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.2351 / -117.37686	**Accuracy:**	specific area
UTM:	Zone-11 N3677414 E464889	**Elevation (ft):**	215
PLSS:	T11S, R05W, Sec. 11, NW (S)	**Acres:**	11.0

Location: CAMP PENDLETON MCB. WIRE MOUNTAIN, ABOUT 0.2 KM NORTHEAST OF SANTA MARGARITA SCHOOL.

Detailed Location: IN THE SE 1/4 OF THE NW 1/4 OF SECTION 11. MAJORITY OF OCCURRENCE BASED ON 1983 WIER MAP AND DIGITAL DATA SUBMITTED BY CDFW.

Ecological: IN OPEN, SANDY AREAS ON MESA TOP. COASTAL SAGE SCRUB DOMINATED BY ARTEMISIA CALIFORNICA WITH CARDIONEMA RAMOSISSIMUM, CHLOROGALUM PARVIFLORUM, CRASSULA ERECTA, SPERGULARIA SP, ERIOGONUM FASCICULATUM, LOTUS SCOPARIUS, ETC.

General: 1000+ PLANTS OBSERVED IN 1983; "LOCALLY ABUNDANT IN 3 VERY SMALL POPULATIONS." MAJORITY OF THIS OCCURRENCE IS LIKELY EXTIRPATED BUT A SMALL PORTION OF OCCURRENCE (SE END) WAS OBSERVED, PRESUMABLY IN 2013 OR 2014.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	31	**Map Index:**	61688	**EO Index:**	61724	**Element Last Seen:**	2001-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2005-06-22

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.19520 / -117.36508	**Accuracy:**	80 meters
UTM:	Zone-11 N3672987 E465970	**Elevation (ft):**	120
PLSS:	T11S, R05W, Sec. 25, NW (S)	**Acres:**	0.0

Location: SOUTH OF THE OCEANSIDE-CARLSBAD COUNTRY CLUB, EAST OF I-5 AND 0.2 -0.5 MILE NORTH OF THE OCEANSIDE BLVD EXIT, OCEANSIDE.

Detailed Location: FOUND IN OPEN SPACES IN A PORTION OF THE LARGE CENTRAL PATCH OF COASTAL SAGE SCRUB.

Ecological: DIEGAN COASTAL SAGE SCRUB MOSTLY DOMINATED BY ARTEMISIA CALIFORNICA WITH ERIOGONUM FASCICULATUM AS OCCASIONAL COMPONENT.

General: SEEN DURING FOCUSED SURVEYS FOR THE COASTAL CALIFORNIA GNATCATCHER AND LEAST BELL'S VIREO IN SUMMER 2001.

Owner/Manager: PVT

Dudleya variegata

Element Code: PDCRA040R0

variegated dudleya

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	CHAPARRAL, COASTAL SCRUB, CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.			
	Micro:	IN ROCKY OR CLAY SOILS; SOMETIMES ASSOCIATED WITH VERNAL POOL MARGINS. 3-550 M.			

Occurrence No.	134	**Map Index:** B3965	**EO Index:** 116879	**Element Last Seen:**	2017-05-24
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2017-05-24
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2019-09-17

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20757 / -117.38458	**Accuracy:**	specific area
UTM:	Zone-11 N3674364 E464158	**Elevation (ft):**	20
PLSS:	T11S, R05W, Sec. 22, NE (S)	**Acres:**	1.0

Location: SAN LUIS REY RIVER TRAIL, APPROXIMATELY 0.2 AIR MILE NORTH OF THE JUNCTION OF I-5 AND CA-76, OCEANSIDE.

Detailed Location: MAPPED ACCORDING TO 2017 RECON DIGITAL DATA.

Ecological: IN DISTURBED DIEGAN COASTAL SAGE SCRUB.

General: 2 PLANTS OBSERVED IN 2017.

Owner/Manager: CITY OF OCEANSIDE

Dudleya viscida

Element Code: PDCRA040T0

sticky dudleya

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank, USFS_S-Sensitive			
Habitat:	**General:**	COASTAL SCRUB, COASTAL BLUFF SCRUB, CHAPARRAL, CISMONTANE WOODLAND.			
	Micro:	ON NORTH AND SOUTH-FACING CLIFFS AND BANKS. 20-870 M.			

Occurrence No.	1	**Map Index:**	03323	**EO Index:**	19647	**Element Last Seen:**	2016-12-15
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-12-15
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-01-18

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.21125 / -117.3755	**Accuracy:**	specific area
UTM:	Zone-11 N3674770 E465006	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 23, N (S)	**Acres:**	36.0

Location:	SLOPES ABOVE BOTH SIDES OF THE SAN LUIS REY RIVER, FROM I-5 TO THE EAST ABOUT 1.5 MILES, OCEANSIDE.
Detailed Location:	8 POLYGONS MAPPED ACCORDING TO A 1979 RIEGER MAP, 2006 ROBERTS COORDINATES, 2015 MORSE COORDINATES, AND 2016 VANDERHOFF COORDINATES. INCLUDES GENERAL OBSERVATIONS FROM OCEANSIDE AND "DODDS CANYON AT OCEANSIDE."
Ecological:	COASTAL SAGE SCRUB AND PATCHY TOYON-SUMAC CHAPARRAL WITH HEAVY TOXICODENDRON DIVERSILOBUM. ASSOCIATED WITH VARIOUS MOSSES, LICHENS, POLYPODIUM CALIFORNICA, ETC. GROWING SYMPATRIC WITH DUDLEYA EDULIS.
General:	8425+ PLANTS SEEN ALONG S SIDE OF RIVER IN 1979. UNKNOWN NUMBER SEEN ALONG BOTH SIDES OF RIVER IN 2015. 200+ PLANTS (NOTED AS COMMON, BUT LOCAL) IN 2016. MANY COLLECTIONS & OBSERVATIONS FROM 1897 - 2012 ATTRIB HERE. INCL FORMER EO #S 2 & 3.
Owner/Manager:	PVT

Occurrence No.	4	**Map Index:**	03312	**EO Index:**	19645	**Element Last Seen:**	1997-07-08
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-07-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-01-18

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.23782 / -117.383	**Accuracy:**	specific area
UTM:	Zone-11 N3677717 E464318	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 11, NW (S)	**Acres:**	34.0

Location:	MOUTH OF SANTA MARGARITA RIVER, BOTH SIDES OF VANDEGRIFT BLVD BETWEEN STUART MESA RD AND YSIDORA BASIN, CAMP PENDLETON.
Detailed Location:	3 POLYGONS MAPPED ACCORDING TO A 1987 REISER MAP AND CAMP PENDLETON DIGITAL DATA.
Ecological:	DIEGAN COASTAL SAGE SCRUB GROWS ON THE BLUFFS ABOVE WITH FEW PLANTS (I.E. MALACOTHRIX SAXATILIS) COMPETING WITH DUDLEYA VISCIDA ON THESE VERY STEEP CLIFFS.
General:	800 PLANTS SEEN IN 2 EASTERN POLYGONS IN 1987. WESTERN POLYGON: UNKNOWN NUMBER OF PLANTS SEEN IN 1989, 1990, AND 1997. 1940 GANDER COLLECTION, 1971 BEAUCHAMP COLLECTION, AND 1995 MORAN COLLECTION ALSO ATTRIBUTED TO THIS SITE.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	30	**Map Index:**	A3416	**EO Index:**	105053	**Element Last Seen:**	2015-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2015-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-01-18

Quad Summary:	San Luis Rey (3311723)
County Summary:	San Diego

Lat/Long:	33.21599 / -117.36915	**Accuracy:**	specific area
UTM:	Zone-11 N3675293 E465600	**Elevation (ft):**	75
PLSS:	T11S, R05W, Sec. 14, SE (S)	**Acres:**	1.0

Location:	NORTH SIDE OF SAN LUIS RIVER, ABOUT 0.5 AIR MILE EAST OF NORTH TERRACE ELEMENTARY SCHOOL, OCEANSIDE.
Detailed Location:	MAPPED IN THE EAST 1/2 OF THE SE 1/4 OF SECTION 14 ACCORDING TO 2015 MORSE COORDINATES.
Ecological:	
General:	UNKNOWN NUMBER OF PLANTS SEEN IN 2015.
Owner/Manager:	UNKNOWN

Occurrence No.	31	**Map Index:**	A3417	**EO Index:**	105054	**Element Last Seen:**	1997-06-07
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-06-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-01-18

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22546 / -117.37387	**Accuracy:**	specific area
UTM:	Zone-11 N3676344 E465164	**Elevation (ft):**	100
PLSS:	T11S, R05W, Sec. 14, NE (S)	**Acres:**	22.0

Location:	UPPER PORTION OF AN UNNAMED CANYON TRIBUTARY TO SAN LUIS REY RIVER, ABOUT 1.2 AIR MILES EAST OF FALLBROOK JUNCTION.
Detailed Location:	3 POLYGONS MAPPED ACCORDING TO DIGITAL DATA FROM CAMP PENDLETON.
Ecological:	UPLAND.
General:	UNKNOWN NUMBER OF PLANTS OBSERVED IN 1997.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Euphorbia misera **Element Code:** PDEUP0Q1B0

cliff spurge

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	COASTAL BLUFF SCRUB, COASTAL SCRUB, MOJAVEAN DESERT SCRUB.			
	Micro:	ROCKY SITES. 3-430 M.			

Occurrence No.	36	**Map Index:**	82035	**EO Index:**	83018	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-03-22

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20071 / -117.32335	**Accuracy:**	non-specific area
UTM:	Zone-11 N3673585 E469861	**Elevation (ft):**	
PLSS:	T11S, R04W, Sec. 20 (S)	**Acres:**	534.0

Location: OCEANSIDE, BETWEEN A RESIDENTIAL AREA AND A LIGHT RAIL LINE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB TO ENCOMPASS THE SPRINTER LIGHT RAIL ROUTE WITHIN OCEANSIDE.

Ecological:

General: "SMALL POPULATION" ACCORDING TO ROBERTS (2009), UNKNOWN WHEN SEEN. MORE INFORMATION IS NEEDED REGARDING THIS OCCURRENCE.

Owner/Manager: UNKNOWN

Astragalus tener var. titi

Element Code: PDFAB0F8R2

coastal dunes milk-vetch

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G2T1
	State:	Endangered		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	COASTAL BLUFF SCRUB, COASTAL DUNES, COASTAL PRAIRIE.			
	Micro:	MOIST, SANDY DEPRESSIONS OF BLUFFS OR DUNES ALONG AND NEAR THE PACIFIC OCEAN; ONE SITE ON A CLAY TERRACE. 1-45 M.			

Occurrence No.	2	**Map Index:**	03277	**EO Index:**	19289	**Element Last Seen:**	1969-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1969-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-02-22

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22851 / -117.40692	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3676694 E462085	**Elevation (ft):**	5
PLSS:	T11S, R05W, Sec. 9, S (S)	**Acres:**	280.0

Location:	GRASSLAND OF SOUTHERN SALT-FLAT, SANTA MARGARITA RIVER.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB IN THE VICINITY OF SALT FLATS SOUTH OF THE MOUTH OF SANTA MARGARITA RIVER.
Ecological:	GRASSLAND OF SOUTHERN SALT-FLAT.
General:	LOCALLY COMMON IN 1969. ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1969 SURVEY REPORT BY MUDIE.
Owner/Manager:	DOD-USMC

Acmispon prostratus

Element Code: PDFAB2A0V0

Nuttall's acmispon

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G2
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, IUCN_EN-Endangered, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank, SB_USDA-US Dept of Agriculture			
Habitat:	**General:**	COASTAL DUNES, COASTAL SCRUB.			
	Micro:	ON SAND DUNES. 0-20 M.			

Occurrence No.	13	**Map Index:**	20147	**EO Index:**	9665	**Element Last Seen:**	2016-05-23
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-05-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-09-05

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20481 / -117.38612	**Accuracy:**	specific area
UTM:	Zone-11 N3674059 E464014	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 22 (S)	**Acres:**	7.0

Location: MOUTH OF SAN LUIS REY RIVER, WEST OF INTERSTATE 5, JUST NORTH OF OCEANSIDE.

Detailed Location: MAPPED AS 2 POLYGONS ACCORDING TO A 2001 SUTTLE MAP AND 2015 KENTNER DIGITAL DATA. AREA HAS BEEN (POSSIBLY MISGUIDEDLY) RESTORED AS COASTAL SAGE SCRUB CROWDING OUT DUNE PLANTS. A 1932 PURER COLLECTION FROM "OCEANSIDE" IS ATTRIBUTED HERE.

Ecological: PLANTS FOUND ON SANDY LOAM AND FILL/RIVERBANK SOILS AND FLAT AREA TO SOUTH WITH RUDERAL VEGATION. WITH CAMISSONIA CHEIRANTHIFOLIA, ALONGSIDE TYPHA, SALIX, CENTUAREA, RAPHANUS SATIVUS, AND NEMACAULIS DENUDATA.

General: 200+ PLANTS REPORTED IN 1991 (UNCONFIRMED DATA). WEST POLYGON: PLANTS NOT FOUND IN 2001 DUE TO HABITAT LOSS. EAST POLYGON: 45 PLANTS OBSERVED IN 2001, 81-91 PLANTS OBSERVED IN 2015, 12 PLANTS OBSERVED IN SAMPLE PLOT IN 2016.

Owner/Manager: CITY OF OCEANSIDE, UNKNOWN

Occurrence No.	43	**Map Index:**	93362	**EO Index:**	94465	**Element Last Seen:**	2016-03-28
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-03-28
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-08-30

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.21271 / -117.40162	**Accuracy:**	specific area
UTM:	Zone-11 N3674941 E462571	**Elevation (ft):**	10
PLSS:	T99X, R99X, Sec. UN (X)	**Acres:**	26.0

Location: NW OF OCEANSIDE HARBOR; JUST WEST OF CAPE COD VILLAGE SHOPPING CENTER, BETWEEN SAN LUIS REY RIVER & FALLBROOK JUNCTION.

Detailed Location: IN VICINITY OF A TANK TRAINING AREA JUST OFF OF B STREET. MAPPED BY CNDDB AS 2 POLYGONS ACCORDING TO 2013 CAMP PENDLETON DIGITAL DATA.

Ecological: SANDY SUBSTRATES. COASTAL SAGE SCRUB/DUNE VEGETATION WITH HETEROTHECA GRANDIFLORA, MELILOTUS INDICA, PSEUDOGNAPHALIUM STRAMINEUM, LOTUS HEERMANNII, AND ISOCOMA MENZIESII.

General: APPROXIMATELY 500 PLANTS OBSERVED IN 2007. APPROXIMATELY 9290 PLANTS OBSERVED IN 2011. 1% COVER OF ACMISPON PROSTRATUS OBSERVED DURING 2016 VEGETATION SURVEY.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	44	**Map Index:**	93363	**EO Index:**	94466	**Element Last Seen:**	2007-05-15
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-15
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-08-04

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.21847 / -117.40539	**Accuracy:**	specific area
UTM:	Zone-11 N3675581 E462223	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 16, S (S)	**Acres:**	1.0

Location: JUST NW OF DEL MAR BOAT BASIN, WEST OF FALLBROOK JUNCTION.

Detailed Location: MAPPED BY CNDDB ACCORDING TO 2013 CAMP PENDLETON DIGITAL DATA.

Ecological: DUNE.

General: 3 PLANTS OBSERVED IN 2007.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	45	**Map Index:**	93364	**EO Index:**	94467	**Element Last Seen:**	2016-02-29
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-02-29
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-08-30

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.22705 / -117.41176	**Accuracy:**	specific area
UTM:	Zone-11 N3676533 E461634	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 9, SW (S)	**Acres:**	12.0

Location: BETWEEN SANTA MARGARITA RIVER AND CAMP DEL MAR.

Detailed Location: MAPPED BY CNDDB AS 5 POLYGONS ACCORDING TO 2013 CAMP PENDLETON DIGITAL DATA AND 2016 VEGETATION SURVEY COORDINATES.

Ecological: DUNE.

General: ~500 PLANTS OBSERVED IN 2007. 3% TO 16% COVER OF ACMISPON PROSTRATUS OBSERVED DURING 2016 VEGETATION SURVEYS.

Owner/Manager: DOD-CAMP PENDLETON MCB

Quercus dumosa

Element Code: PDFAG050D0

Nuttall's scrub oak

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:** G3
	State:	None		**State:** S3
	Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, IUCN_EN-Endangered, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank, USFS_S-Sensitive		
Habitat:	**General:**	CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB.		
	Micro:	GENERALLY ON SANDY SOILS NEAR THE COAST; SOMETIMES ON CLAY LOAM. 15-640 M.		

Occurrence No.	141	**Map Index:**	93032	**EO Index:**	94183	**Element Last Seen:**	1997-07-08
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-07-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-07-02

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.23721 / -117.37060	**Accuracy:**	80 meters
UTM:	Zone-11 N3677645 E465472	**Elevation (ft):**	280
PLSS:	T11S, R05W, Sec. 11, NE (S)	**Acres:**	0.0

Location: WIRE MOUNTAIN, JUST EAST OF TULEY BENCHMARK, ABOUT 1.6 AIR MILES NE OF FALLBROOK JUNCTION, CAMP PENDLETON MCB.

Detailed Location: MAPPED NEAR THE CENTER OF THE NE 1/4 OF SECTION 11 ACCORDING TO CAMP PENDLETON DIGITAL DATA.

Ecological:

General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 1997.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	142	**Map Index:**	93033	**EO Index:**	94184	**Element Last Seen:**	2015-02-19
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2015-02-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-11-08

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.22670 / -117.37170	**Accuracy:**	80 meters
UTM:	Zone-11 N3676481 E465365	**Elevation (ft):**	200
PLSS:	T11S, R05W, Sec. 11, SE (S)	**Acres:**	0.0

Location: WIRE MOUNTAIN, APPROXIMATELY 1.3 AIR MILES ENE OF FALLBROOK JUNCTION, CAMP PENDLETON MARINE CORPS BASE.

Detailed Location: MAPPED MOSTLY WITHIN THE SW 1/4 OF THE SE 1/4 OF SECTION 11 ACCORDING TO CAMP PENDLETON DIGITAL DATA.

Ecological: ON MESA WITH SCATTERED VERNAL POOLS, S-FACING EDGE OF CANYON. COASTAL SAGE SCRUB WITH RHUS INTEGRIFOLIA, ARTEMISIA CALIFORNICA, SALVIA MELLIFERA, AND MALOSMA LAURINA.

General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 1997. ONLY 1 VERY LARGE SPREADING SHRUB PRESENT IN 2015.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	144	**Map Index:**	93049	**EO Index:**	94200	**Element Last Seen:**	1997-06-07
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-06-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-07-03

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.23060 / -117.37750	**Accuracy:**	80 meters
UTM:	Zone-11 N3676916 E464826	**Elevation (ft):**	180
PLSS:	T11S, R05W, Sec. 11, SW (S)	**Acres:**	0.0

Location: SOUTHWEST OF WIRE MOUNTAIN, JUST SOUTH OF SANTA MARGARITA SCHOOL, ABOUT 1 AIR MILE ENE OF FALLBROOK JUNCTION.

Detailed Location: MAPPED IN THE NE 1/4 OF THE SW 1/4 OF SECTION 11 ACCORDING TO CAMP PENDLETON DIGITAL DATA.

Ecological:

General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 1997.

Owner/Manager: DOD-CAMP PENDLETON MCB

Nama stenocarpa

Element Code: PDHYD0A0H0

mud nama

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S1S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	MARSHES AND SWAMPS.			
	Micro:	LAKE SHORES, RIVER BANKS, INTERMITTENTLY WET AREAS. 15-815 M.			

Occurrence No.	5	**Map Index:** 27986	**EO Index:** 21775	**Element Last Seen:**	1937-06-17
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1937-06-17
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-10-07

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.23264 / -117.32450	**Accuracy:**	1 mile
UTM:	Zone-11 N3677124 E469766	**Elevation (ft):**	
PLSS:	T11S, R04W, Sec. 08 (S)	**Acres:**	0.0

Location: NEAR SAN LUIS REY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS AROUND THE CITY OF SAN LUIS REY.

Ecological: ROADSIDE.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1937 ROOS COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Sidalcea neomexicana

Element Code: PDMAL110J0

salt spring checkerbloom

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2, USFS_S-Sensitive			
Habitat:	**General:**	PLAYAS, CHAPARRAL, COASTAL SCRUB, LOWER MONTANE CONIFEROUS FOREST, MOJAVEAN DESERT SCRUB.			
	Micro:	ALKALI SPRINGS AND MARSHES. 3-2380 M.			

Occurrence No.	18	**Map Index:** 27999	**EO Index:** 105311	**Element Last Seen:**	1940-04-14
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1940-04-14
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2017-02-09

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.19540 / -117.37726	**Accuracy:**	1 mile
UTM:	Zone-11 N3673012 E464835	**Elevation (ft):**	
PLSS:	T11S, R05W, Sec. 26 (S)	**Acres:**	0.0

Location: NEAR OCEANSIDE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB IN THE GENERAL VICINITY OF OCEANSIDE.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1940 THOMAS COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Nemacaulis denudata var. denudata **Element Code:** PDPGN0G011

coast woolly-heads

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4T2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	COASTAL DUNES.			
	Micro:	0-5 M.			

Occurrence No.	16	**Map Index:**	A6273	**EO Index:**	3987	**Element Last Seen:**	2015-03-24
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	2015-03-24
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-09-08

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.20505 / -117.38587	**Accuracy:**	specific area
UTM:	Zone-11 N3674085 E464037	**Elevation (ft):**	15
PLSS:	T11S, R05W, Sec. 22, E (S)	**Acres:**	1.0

Location: SOUTH SIDE OF THE SAN LUIS REY RIVER, JUST WEST OF INTERSTATE 5, NORTH OCEANSIDE.

Detailed Location: MAPPED ACCORDING TO 2015 KENTNER DIGITAL DATA.

Ecological: FLAT TERRACE ADJACENT TO THE SAN LUIS REY RIVER. AREA HAS BEEN (POSSIBLY MISGUIDEDLY) RESTORED AS COASTAL SAGE SCRUB WHICH IS CROWDING OUT THE RARE DUNE-LOVING PLANTS. ASSOCIATED W/ ENCELIA CALIFORNICA, ERIOGONUM FASCICULATUM, SALVIA, ETC.

General: 1 PLANT IN 2015. A 1933 CRAIG COLLECTION FROM "OCEANSIDE, SAND DUNES" IS ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: CITY OF OCEANSIDE

Occurrence No.	40	**Map Index:**	A6275	**EO Index:**	108035	**Element Last Seen:**	2011-06-02
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-06-02
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-09-08

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.21281 / -117.4026	**Accuracy:**	specific area
UTM:	Zone-11 N3674951 E462481	**Elevation (ft):**	15
PLSS:	T99X, R99X, Sec. UN (X)	**Acres:**	3.0

Location: JUST NW OF OCEANSIDE HARBOR, ABOUT 0.9 AIR MILE SW OF FALLBROOK JUNCTION, CAMP PENDLETON.

Detailed Location: MAPPED ACCORDING TO CAMP PENDLETON DIGITAL DATA.

Ecological: SAND.

General: 196 PLANTS OBSERVED IN 2011.

Owner/Manager: DOD-CAMP PENDLETON MCB

Occurrence No.	41	**Map Index:**	A6276	**EO Index:**	108036	**Element Last Seen:**	2011-05-11
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-05-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-09-08

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.21847 / -117.40539	**Accuracy:**	specific area
UTM:	Zone-11 N3675580 E462224	**Elevation (ft):**	15
PLSS:	T11S, R05W, Sec. 16 (S)	**Acres:**	1.0

Location:	ABOUT 0.7 AIR MILE WSW OF FALLBROOK JUNCTION, CAMP PENDLETON.
Detailed Location:	MAPPED ACCORDING TO CAMP PENDLETON DIGITAL DATA.
Ecological:	DUNE.
General:	15 PLANTS OBSERVED IN 2011.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	42	**Map Index:**	A6277	**EO Index:**	108037	**Element Last Seen:**	2016-02-29
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-02-29
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-09-08

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22722 / -117.41217	**Accuracy:**	specific area
UTM:	Zone-11 N3676553 E461596	**Elevation (ft):**	10
PLSS:	T11S, R05W, Sec. 9, SW (S)	**Acres:**	2.0

Location:	APPROXIMATELY 0.3 TO 0.6 AIR MILE SOUTH OF THE MOUTH OF SANTA MARGARITA RIVER, CAMP PENDLETON.
Detailed Location:	MAPPED AS 3 POLYGONS ACCORDING TO 2016 VEGETATION SURVEY COORDINATES.
Ecological:	ASSOCIATED WITH DISTICHLIS SPICATA, AMBROSIA CHAMISSONIS, A. PSILOSTACHYA, CAMISSONIOPSIS CHEIRANTHIFOLIA SSP. SUFFRUTICOSA, ACMISPON PROSTRATUS, OXALIS PES-CAPRAE, CARPOBROTUS EDULIS, ISOCOMA MENZIESII VAR. VERNONIOIDES, HETEROTHECA, ETC.
General:	LESS THAN 1% TO 1% COVER OF NEMACAULIS DENUDATA OBSERVED DURING 2016 VEGETATION SURVEYS.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Nemacaulis denudata var. gracilis

Element Code: PDPGN0G012

slender cottonheads

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4T3?
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	COASTAL DUNES, DESERT DUNES, SONORAN DESERT SCRUB.			
	Micro:	IN DUNES OR SAND. -45-745 M.			

Occurrence No.	4	**Map Index:** 27999	**EO Index:** 8423	**Element Last Seen:**	1923-06-20
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	1923-06-20
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-04-12

Quad Summary: San Luis Rey (3311723), Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.19540 / -117.37726	**Accuracy:**	1 mile
UTM:	Zone-11 N3673012 E464835	**Elevation (ft):**	15
PLSS:	T11S, R05W, Sec. 26 (S)	**Acres:**	0.0

Location: OCEANSIDE.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS AT OCEANSIDE.

Ecological: MARSHY, SEA BEACHES. SAND DUNES NEAR THE SEA.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1923 WOODCOCK COLLECTION; MENTIONED AS "COMMON IN SAND DUNES NEAR THE SEA" IN 1923. NEEDS FIELDWORK. N. D. VAR. DENUDATA IS ALSO MAPPED HERE; ID OF WOODCOCK SPECIMEN SHOULD BE VERIFIED.

Owner/Manager: UNKNOWN

Navarretia fossalis

Element Code: PDPLM0C080

spreading navarretia

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	VERNAL POOLS, CHENOPOD SCRUB, MARSHES AND SWAMPS, PLAYAS.			
	Micro:	SAN DIEGO HARDPAN AND SAN DIEGO CLAYPAN VERNAL POOLS; IN SWALES AND VERNAL POOLS, OFTEN SURROUDED BY OTHER HABITAT TYPES. 15-850 M.			

Occurrence No.	81	**Map Index:**	93532	**EO Index:**	94668	**Element Last Seen:**	2011-05-18
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-05-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-08-01

Quad Summary:	San Luis Rey (3311723), Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22243 / -117.37421	**Accuracy:**	specific area
UTM:	Zone-11 N3676009 E465131	**Elevation (ft):**	150
PLSS:	T11S, R05W, Sec. 14, N (S)	**Acres:**	6.0

Location:	BOTH SIDES OF CANYON JUST WEST OF TULEY CANYON, FROM 0.85 TO 1.25 AIR MILES WEST OF HUBBERT LAKE, CAMP PENDLETON MCB.
Detailed Location:	SEVERAL SITES MAPPED BY CNDDB AS 4 POLYGONS ACCORDING TO 2013 DIGITAL DATA FROM CAMP PENDLETON MCB AND 2009 SOLOMESHCH COORDINATES.
Ecological:	VERNAL POOLS.
General:	EASTERN POLYGON: 1 PLANT SEEN IN 1998. WESTERN POLYGON: 5 PLANTS SEEN IN 2002. SOUTH-MOST POLYGON: 4 PLANTS SEEN IN 1998, 1 PLANT SEEN IN 2011. CENTER POLYGON BASED ON 2009 SOLOMESHCH COORDINATES.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	82	**Map Index:**	93534	**EO Index:**	94670	**Element Last Seen:**	2011-05-25
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-05-25
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-08-19

Quad Summary:	Oceanside (3311724)
County Summary:	San Diego

Lat/Long:	33.22987 / -117.37685	**Accuracy:**	specific area
UTM:	Zone-11 N3676834 E464886	**Elevation (ft):**	160
PLSS:	T11S, R05W, Sec. 11, SW (S)	**Acres:**	4.0

Location:	JUST SOUTHEAST OF THE INTERSECTION OF CAMES RD AND WIRE MOUNTAIN RD, WEST OF WIRE MOUNTAIN, CAMP PENDLETON MCB.
Detailed Location:	MAPPED NEAR THE CENTER OF THE SW 1/4 OF SECTION 11 ACCORDING TO 2013 DIGITAL DATA FROM CAMP PENDLETON MCB.
Ecological:	
General:	5 PLANTS OBSERVED IN 1998. 4 PLANTS OBSERVED IN 2009. ~210 PLANTS OBSERVED IN 2011.
Owner/Manager:	DOD-CAMP PENDLETON MCB

Occurrence No.	83	**Map Index:**	93535	**EO Index:**	94671	**Element Last Seen:**	2011-05-18
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-05-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-08-19

Quad Summary: Oceanside (3311724)

County Summary: San Diego

Lat/Long:	33.22048 / -117.39331	**Accuracy:**	specific area
UTM:	Zone-11 N3675798 E463349	**Elevation (ft):**	50
PLSS:	T11S, R05W, Sec. 15, NW (S)	**Acres:**	1.0

Location: BETWEEN WIRE MOUNTAIN ROAD AND RR TRACKS, JUST SOUTH OF WHERE RR TRACKS CROSS I-5, FALLBROOK JUNCTION.

Detailed Location: MAPPED IN THE SE 1/4 OF THE NW 1/4 OF SECTION 15 ACCORDING TO 2013 DIGITAL DATA FROM CAMP PENDLETON MCB.

Ecological:

General: 3 PLANTS OBSERVED IN 1998. 11 PLANTS OBSERVED IN 2011.

Owner/Manager: DOD-CAMP PENDLETON MCB

Brodiaea filifolia

Element Code: PMLIL0C050

thread-leaved brodiaea

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:** G2
	State:	Endangered		**State:** S2
	Other:	Rare Plant Rank - 1B.1, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank		
Habitat:	**General:**	CHAPARRAL (OPENINGS), CISMONTANE WOODLAND, COASTAL SCRUB, PLAYAS, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.		
	Micro:	USUALLY ASSOCIATED WITH ANNUAL GRASSLAND AND VERNAL POOLS; OFTEN SURROUNDED BY SHRUBLAND HABITATS. OCCURS IN OPENINGS ON CLAY SOILS. 15-1030 M.		

Occurrence No.	157	**Map Index:**	B6959	**EO Index:**	120022	**Element Last Seen:**	2019-05-23
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2019-05-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2021-02-23

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:	33.21022 / -117.34163	**Accuracy:**	specific area
UTM:	Zone-11 N3674644 E468162	**Elevation (ft):**	275
PLSS:	T11S, R04W, Sec. 19, NW (S)	**Acres:**	4.0

Location: MISSION MOUNTAIN PRESERVE; NORTH SIDE OF MESA DR, 0.5 & 0.7 ROAD MILE WEST OF S EL CAMINO REAL.

Detailed Location: MAPPED BY CNDDB AS 2 POLYGONS BASED ON 2018-2019 DATA PROVIDED BY SDMMP, IN THE NE 1/4 OF THE NW 1/4 OF SECTION 19.

Ecological: MEDITERRANEAN CALIFORNIA NATURALIZED ANNUAL & PERENNIAL GRASSLAND WITH AVENA, BRASSICA SP, ETC.

General: ABOUT 1246 PLANTS ESTIMATED IN 2017, 143 PLANTS IN 2019.

Owner/Manager: CITY OF OCEANSIDE

Sphenopholis interrupta ssp. californica **Element Code:** PMPOA69071

prairie false oat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	CHAPARRAL (COASTAL).			
	Micro:	FRIABLE CLAY LENSES. 87 M.			

*** SENSITIVE ***

Occurrence No.	1	**Map Index:**	B6826	**EO Index:**	119893	**Element Last Seen:**	2020-04-23
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2020-04-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2021-01-06

Quad Summary: San Luis Rey (3311723)

County Summary: San Diego

Lat/Long:		**Accuracy:**	80 meters
UTM:		**Elevation (ft):**	285
PLSS:		**Acres:**	5.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: SMALL CLAY LENSES IN DENSE COASTAL CHAPARRAL. WITH THE ENDANGERED ACANTHOMINTHA ILICIFOLIA, AS WELL AS FESTUCA, DEINANDRA FASCICULATA, SISYRINCHIUM BELLUM, APIASTRUM ANGUSTIFOLIUM, BRACHYPODIUM DISTACHYON, CENTAUREA MELITENSIS, ETC.

General:

Owner/Manager:

ScientificName	Family	CRPR	SRank	CESA	FESA
Abronia maritima	Nyctaginaceae	4.2	S3?	None	None
Acmispon prostratus	Fabaceae	1B.1	S1	None	None
Ambrosia pumila	Asteraceae	1B.1	S1	None	FE
Aphanisma blitoides	Chenopodiaceae	1B.2	S2	None	None
Astragalus tener var. titi	Fabaceae	1B.1	S1	CE	FE
Atriplex coulteri	Chenopodiaceae	1B.2	S1S2	None	None
Camissoniopsis lewisii	Onagraceae	3	S4	None	None
Centromadia pungens ssp. laevis	Asteraceae	1B.1	S2	None	None
Chaenactis glabriuscula var. orcuttiana	Asteraceae	1B.1	S1	None	None
Cistanthe maritima	Montiaceae	4.2	S3	None	None
Dichondra occidentalis	Convolvulaceae	4.2	S3S4	None	None
Dudleya blochmaniae ssp. blochmaniae	Crassulaceae	1B.1	S2	None	None
Dudleya variegata	Crassulaceae	1B.2	S2	None	None
Dudleya viscida	Crassulaceae	1B.2	S2	None	None
Eryngium aristulatum var. parishii	Apiaceae	1B.1	S1	CE	FE
Eryngium pendletonense	Apiaceae	1B.1	S1	None	None
Erysimum ammophilum	Brassicaceae	1B.2	S2	None	None
Euphorbia misera	Euphorbiaceae	2B.2	S2	None	None
Ferocactus viridescens	Cactaceae	2B.1	S2S3	None	None
Hordeum intercedens	Poaceae	3.2	S3S4	None	None
Isocoma menziesii var. decumbens	Asteraceae	1B.2	S2	None	None
Iva hayesiana	Asteraceae	2B.2	S2	None	None
Juncus acutus ssp. leopoldii	Juncaceae	4.2	S4	None	None
Lasthenia glabrata ssp. coulteri	Asteraceae	1B.1	S2	None	None
Leptosyne maritima	Asteraceae	2B.2	S1S2	None	None
Lycium californicum	Solanaceae	4.2	S4	None	None
Myosurus minimus ssp. apus	Ranunculaceae	3.1	S2	None	None
Navarretia fossalis	Polemoniaceae	1B.1	S2	None	FT
Nemacaulis denudata var. denudata	Polygonaceae	1B.2	S2	None	None
Nemacaulis denudata var. gracilis	Polygonaceae	2B.2	S2	None	None
Phacelia stellaris	Hydrophyllaceae	1B.1	S1	None	None
Quercus dumosa	Fagaceae	1B.1	S3	None	None
Selaginella cinerascens	Selaginellaceae	4.1	S3	None	None
Senecio aphanactis	Asteraceae	2B.2	S2	None	None
Sidalcea neomexicana	Malvaceae	2B.2	S2	None	None

Inventory Of Rare and Endangered Plants of California (online edition, v9-01 1.0)
Confirmed occurrences with Oceanside Quadrangle
Website https://www.rareplants.cnps.org [accessed 9 December 2021].

Appendix D – Plant Species Observed within the Biological Study Area

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
ANGIOSPERMS: MAGNOLIIDS-PIPERALES		
SAURURACEAE	LIZARD'S TAIL FAMILY	
Anemopsis californica (Nutt.) Hook. & Arn.	yerba mansa	N
ANGIOSPERMS: MONOCOTS		
ARECACEAE	PALM FAMILY	
Phoenix canariensis Chabaud	Canary Island palm	I
Washingtonia robusta H. Wendl.	Mexican fan palm	I
ASPARAGACEAE	ASPARAGUS FAMILY	
Asparagus asparagoides (L.) Druce	florist's-smilax	I
Asparagus officinalis L. ssp. *officinalis*	garden asparagus	I
CYPERACEAE	SEDGE FAMILY	
Cyperus eragrostis	tall flatsedge	N
Schoenoplectus [=*Scirpus*] *americanus* (Pers.) Volkart ex Schinz & R. Keller	Olney's three-square bulrush	N
Schoenoplectus [=*Scirpus*] *californicus* (C.A. Mey.) Soják	southern bulrush	N
IRIDACEAE	IRIS FAMILY	
Sisyrinchium bellum S. Watson	western blue-eyed grass	N
JUNCACEAE	RUSH FAMILY	
Juncus acutus L. ssp. *leopoldii* (Parl.) Snogerup	southwestern spiny rush	N
POACEAE (GRAMINEAE)	GRASS FAMILY	
Arundo donax L.	giant reed	I
Avena sp.	oats	I
Avena barbata Pott ex Link	slender wild oat	I
Brachypodium distachyon (L.) P. Beauv.	purple falsebrome	I
Bromus catharticus Vahl.	rescue grass	I
Bromus diandrus Roth	ripgut grass	I
Bromus hordeaceus L.	soft chess	I
Bromus madritensis L. ssp. *madritensis*	compact brome	I
Bromus rubens [=*Bromus madritensis* ssp. *rubens*	red brome	I

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
Cortaderia selloana (Schult. & Schult. f.) Asch. & Graebn.	pampas grass	I
Cynodon dactylon	Bermuda grass	I
Digitaria sanguinalis (L.) Scop.	hairy crab grass	I
Distichlis spicata (L.) Greene	salt grass	N
Echinochloa crus-galli	common barnyard grass	I
Ehrharta erecta Lam.	panic veldt grass	I
Elymus [=*Leymus*] *condensatus* J. Presl	giant wild-rye	N
Eragrostis pectinacea var. *pectinacea*	spreading love grass	I
Festuca [=*Vulpia*] *myuros* L.	rattail sixweeks grass	I
Festuca perennis (L.) Columbus & J.P. Sm. [=*Lolium multiflorum* and *Lolium perenne*]	rye grass	I
Hordeum murinum L. ssp. *glaucum* (Steud.) Tzvelev	smooth barley	I
Lamarckia aurea (L.) Moench	golden-top	I
Melica imperfecta Trin.	little California melica	N
Pennisetum setaceum (Forssk.) Chiov.	crimson fountain grass	I
Phalaris minor	little-seeded canary grass	I
Poa annua L.	annual blue grass	I
Polypogon interruptus Kunth	ditch beard grass	I
Polypogon monspeliensis (L.) Desf.	annual beard grass, rabbitfoot grass	I
Polypogon viridis (Gouan) Breistr. [=*Agrostis viridis*]	water beard grass	I
Schismus barbatus (L.) Thell.	Mediterranean schismus	I
Setaria viridis	green bristle grass	I
Stipa [=*Nassella*] *cernua* Stebbins & Love	nodding needle grass	N
Stipa miliacea (L.) Hoover var. *miliaceae* [=*Piptatherum miliaceum* ssp. *miliaceum* and *Oryzopsis miliacea*]	smilo grass	I
TYPHACEAE	CATTAIL FAMILY	
Typha domingensis Pers.	southern cattail	N
ANGIOSPERMS: EUDICOTS		
ADOXACEAE	ADOXA FAMILY	
Sambucus nigra L. ssp. *caerulea* (Raf.) Bolli [=*Sambucus mexicana*]	blue elderberry	N

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
AIZOACEAE	**FIG-MARIGOLD FAMILY**	
Aptenia cordifolia (L. f.) Schwantes	baby sun-rose	I
Carpobrotus edulis (L.) N.E. Br.	freeway iceplant	I
Malephora crocea	crocea iceplant	I
Mesembryanthemum crystallinum L.	crystalline iceplant	I
Mesembryanthemum nodiflorum L.	slender-leaved iceplant	I
Tetragonia tetragonioides (Pall.) Kuntze	New Zealand spinach	I
AMARANTHACEAE	**AMARANTH FAMILY**	
Amaranthus albus L.	tumbleweed	I
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**	
Malosma laurina Nutt. ex Abrams	laurel sumac	N
Rhus integrifolia (Nutt.) Benth. & Hook. f. ex Rothr.	lemonade berry	N
Schinus terebinthifolius Raddi	Brazilian pepper tree	I
Toxicodendron diversilobum (Torr. & A. Gray) Greene	western poison oak	N
APIACEAE (UMBELLIFERAE)	**CARROT FAMILY**	
Apium graveolens L.	celery	I
Conium maculatum L.	common poison hemlock	I
Foeniculum vulgare Mill.	fennel	I
ARALIACEAE	**GINSENG FAMILY**	
Hedera canariensis Willd.	Canary Islands ivy	I
ASTERACEAE	**SUNFLOWER FAMILY**	
Ambrosia psilostachya DC.	western ragweed	N
Ambrosia pumila (Nutt.) A. Gray	San Diego ambrosia	N
Artemisia californica Less.	California sagebrush	N
Artemisia douglasiana Besser	mugwort	N
Baccharis pilularis DC.	chaparral broom, coyote brush	N
Baccharis salicifolia (Ruiz & Pav.) Pers. ssp. *salicifolia*	mule-fat, seep-willow	N
Bidens pilosa L.	common beggar-ticks	I
Carduus pycnocephalus L.	Italian thistle	I
Centaurea melitensis L.	tocalote, Maltese star-thistle	I

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
Cotula australis (Sieber ex Spreng.) Hook. f.	Australian cotula	I
Cotula coronopifolia L.	brass-buttons	I
Deinandra [=*Hemizonia*] *fasciculata* (DC.) Greene	fascicled tarweed	N
Dimorphotheca fruticosa [=*Osteospermum fruticosum*] (L.) DC.	trailing African daisy	I
Encelia californica Nutt.	California encelia	N
Encelia farinosa A. Gray ex Torr.	brittlebush, incienso	(I)
Erigeron sumatrensis Retz. [=*Conyza floribunda*]	tropical horseweed	I
Gazania linearis (Thunb.) Druce	treasure flower	I
Glebionis coronaria (L.) Spach [=*Chrysanthemum coronarium*]	garland, crown daisy	I
Hedypnois cretica (L.) Dum. Cours.	Crete weed	I
Helminthotheca [=*Picris*] *echioides*	bristly ox-tongue	I
Heterotheca grandiflora Nutt.	telegraph weed	N
Hypochaeris glabra L.	smooth cat's-ear	I
Isocoma menziesii (Hook. & Arn.) G.L. Nesom var. *vernonioides* (Nutt.) G.L. Nesom	coastal goldenbush	N
Iva hayesiana A. Gray	San Diego marsh-elder	N
Jaumea carnosa (Less.) A. Gray	fleshy jaumea, salty susan	N
Lactuca serriola	prickly lettuce	I
Matricaria discoidea [=*Chamomilla suaveolens*] DC.	pineapple weed, rayless chamomile	I
Pluchea odorata (L.) Cass.	salt marsh fleabane	N
Pluchea sericea (Nutt.) Coville	arrow-weed	N
Pseudognaphalium biolettii [=*Gnaphalium bicolor*]	bicolor cudweed	N
Pseudognaphalium [=*Gnaphalium*] *californicum* (DC.) Anderb.	California everlasting, green everlasting	N
Pseudognaphalium [=*Gnaphalium*] *luteoalbum* (L.) Hilliard & B.L. Burtt	everlasting cudweed	I
Pseudognaphalium [=*Gnaphalium*] *stramineum* (Kunth) Anderb.	cotton-batting plant	N
Sonchus asper (L.) Hill ssp. *asper*	prickly sow thistle	I
Sonchus oleraceus L.	common sow thistle	I
Xanthium strumarium L.	cocklebur	N
BORAGINACEAE	BORAGE FAMILY	
Heliotropium curassavicum L. var. *oculatum* (A. Heller) I. M. Johnst. ex Tidestr.	seaside heliotrope, alkali heliotrope	N
Pholistoma auritum var. *auritum*	fiesta flower	N

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
BRASSICACEAE (CRUCIFERAE)	**MUSTARD FAMILY**	
Brassica nigra (L.) W.D.J. Koch	black mustard	I
Capsella bursa-pastoris (L.) Medik.	shephard's purse	I
Hirschfeldia incana (L.) Lagr.-Fossat	short-pod mustard	I
Lepidium didymium L.	lesser wart-cress	I
Lobularia maritima (L.) Desv.	sweet alyssum	I
Raphanus sativus L.	radish	I
Sisymbrium irio L.	London rocket	I
Sisymbrium orientale L.	hare's-ear cabbage	I
CACTACEAE	**CACTUS FAMILY**	
Cylindropuntia [=*Opuntia*] *prolifera*	coast cholla	N
Mammillaria dioica	fish-hook cactus	N
Opuntia ficus-indica (L.) Mill.	mission prickly-pear, Indian fig	I
Opuntia littoralis (Engelm.) Cockerell.	coast prickly-pear, shore cactus	N
CARYOPHYLLACEAE	**PINK FAMILY**	
Spergula arvensis L.	stickwort, starwort	I
Stellaria pallida	lesser chickweed	I
CHENOPODIACEAE	**GOOSEFOOT FAMILY**	
Atriplex semibaccata R. Br.	Australian saltbush	I
Chenopodium murale L.	nettle-leaf goosefoot	I
Dysphania [=*Chenopodium*] *ambrosioides* (L.) Mosyakin & Clemants	Mexican tea	I
Dysphania pumilo	Tasmanian goosefoot	I
Salsola australis R. Br.	Australian tumbleweed	I
Salsola tragus L.	Russian thistle, tumbleweed	I
CONVOLVULACEAE	**MORNING-GLORY FAMILY**	
Calystegia macrostegia (Greene) Brummitt ssp. *intermedia* (Abrams) Brummitt	south coast morning-glory	N
Cressa truxillensis Kunth	alkali weed	N
CRASSULACEAE	**STONECROP FAMILY**	
Crassula connata (Ruiz & Pav.) A. Berger	pygmy-weed	N
Crassula ovata (Mill.) Druce	jade plant	I

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
Dudleya variegata	variegated dudleya	N
Dudleya viscida (S. Watson) Moran	sticky-leaved liveforever, sticky dudleya	N
CUCURBITACEAE	**GOURD FAMILY**	
Marah macrocarpa (Greene) Greene	wild cucumber	N
EUPHORBIACEAE	**SPURGE FAMILY**	
Croton [=*Eremocarpus*] *setiger* Hook.	turkey-mullein, dove weed	N
Euphorbia [=*Chamaesyce*] *maculata* L.	spotted spurge	I
Euphorbia peplus L.	petty spurge	I
Ricinus communis L.	castor bean	I
FABACEAE (LEGUMINOSAE)	**LEGUME FAMILY**	
Acmispon americanus (Nutt.) Rydb. var. *americanus* [=*Lotus purshianus* var. *purshianus*]	Spanish-clover	N
Acmispon glaber (Vogel) Brouillet var. *glaber* [=*Lotus scoparius* var. *scoparius*]	coastal deerweed	N
Acmispon prostratus [=*Lotus nuttallianus*]	Nuttall's acmispon, Nuttall's lotus	N
Acmispon strigosus (Nutt.) Brouillet [=*Lotus strigosus*]	bishop's lotus, strigose lotus	N
Medicago polymorpha L.	California burclover	I
Melilotus albus Medik.	white sweetclover	I
Melilotus indicus (L.) All.	sourclover	I
GERANIACEAE	**GERANIUM FAMILY**	
Erodium botrys (Cav.) Bertol.	long-beak filaree	I
Erodium brachycarpum (Godr.) Thell.	short-beak filaree	I
Erodium cicutarium (L.) L'Hér. ex Aiton	redstem filaree	I
Erodium moschatum (L.) L'Hér. ex Aiton	greenstem filaree	I
Geranium carolinianum	Carolina geranium	N
Pelargonium ×hortorum	fish geranium	I
LAMIACEAE	**MINT FAMILY**	
Rosmarinus officinalis L.	rosemary	I
Salvia apiana Jeps.	white sage	N
Salvia mellifera Greene	black sage	N

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
LYTHRACEAE	**LOOSESTRIFE FAMILY**	
Lythrum hyssopifolia L.	grass poly, hyssop loosestrife	I
MALVACEAE	**MALLOW FAMILY**	
Malva parviflora L.	cheeseweed, little mallow	I
Malva pseudolavatera Webb. & Berthel.	Cretan mallow, tree mallow, malva rosa	I
MYRTACEAE	**MYRTLE FAMILY**	
Eucalyptus sp.	gum tree	I
Eucalyptus camaldulensis Dehnh.	red gum, river red gum	I
MYRSINACEAE	**MYRSINE FAMILY**	
Lysimachia [=*Anagallis*] *arvensis* (L.) U. Manns & Anderb.	scarlet pimpernel	I
ONAGRACEAE	**EVENING-PRIMROSE FAMILY**	
Camissoniopsis sp. [=*Camissonia* sp.]	sun cup	N
Camissoniopsis [=*Camissonia*] *cheiranthifolia* (Spreng.) W.L. Wagner & Hoch ssp. *suffruticosa* (S. Watson) W.L. Wagner & Hoch	beach evening-primrose	N
Camissoniopsis [=*Camissonia*] *lewisii* (P.H. Raven) W.L. Wagner & Hoch	Lewis' evening-primrose, Lewis' sun cup	N
Epilobium ciliatum Raf. ssp. *ciliatum*	willow herb	N
Oenothera elata Kunth ssp. *hirsutissima* (S. Watson) W. Dietr.	great marsh evening-primrose	N
OXALIDACEAE	**OXALIS FAMILY**	
Oxalis pes-caprae L.	Bermuda buttercup	I
PAPAVERACEAE	**POPPY FAMILY**	
Eschscholzia californica Cham.	California poppy	N
PHRYMACEAE [=SCROPHULARIACEAE]	**HOPSEED FAMILY**	
Diplacus [=Mimulus] aurantiacus Curtis	orange bush monkeyflower	N
PLANTAGINACEAE	**PLANTAIN FAMILY**	
Antirrhinum nuttallianum Benth. ex A. DC.	Nuttall's snapdragon	N
Plantago coronopus	cut-leaf plantain	I
Plantago lanceolata L.	English plantain	I

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
PLUMBAGINACEAE	**LEADWORT FAMILY**	
Limonium sinuatum (L.) Mill.	notch-leaf marsh-rosemary	I
POLYGONACEAE	**BUCKWHEAT FAMILY**	
Emex spinosa (L.) Campd.	devil's thorn	I
Eriogonum fasciculatum Benth. var. *foliolosum* (Nutt.) S. Stokes ex Abrams	leafy California buckwheat	N
Polygonum aviculare L. ssp. *depressum* [=*Polygonum arenastrum*] (Meisn.) Arcang.	common knotweed, doorweed	I
Pterostegia drymarioides	California thread-stem, granny's hairnet	N
Rumex crispus L.	curly dock	I
RANUNCULACEAE	**BUTTERCUP FAMILY**	
Clematis ligusticifolia	western virgin's bower	**N**
ROSACEAE	**ROSE FAMILY**	
Heteromeles arbutifolia (Lindl.) M. Roem.	toyon, Christmas berry	N
Rosa californica Cham. & Schltdl.	California rose	N
Rubus ursinus Cham. & Schltdl.	California blackberry	N
RUBIACEAE	**MADDER FAMILY**	
Galium sp.	bedstraw, cleavers	N
SALICACEAE	**WILLOW FAMILY**	
Salix exigua	narrow-leaf willow	N
Salix lasiolepis Benth.	arroyo willow	N
SCROPHULARIACEAE	**FIGWORT FAMILY**	
Myoporum laetum G. Forst.	ngaio tree	I
Verbascum thapsus L.	woolly mullein	I
SIMAROUBACEAE	**QUASSIA OR SIMAROUBA FAMILY**	
Ailanthus altissima (Mill.) Swingle	tree of heaven	I
SOLANACEAE	**NIGHTSHADE FAMILY**	
Datura wrightii Regel	western Jimson weed	N
Nicotiana glauca Graham	tree tobacco	I
Solanum americanum Mill.	white nightshade	N

Appendix D Plant Species Observed within the Biological Study Area		
Scientific Name	Common Name	Origin
TAMARICACEAE	**TAMARISK FAMILY**	
Tamarix ramosissima Ledeb.	saltcedar	I
TROPAEOLACEAE	**NASTURTIUM FAMILY**	
Tropaeolum majus L.	garden nasturtium	I
URTICACEAE	**NETTLE FAMILY**	
Urtica dioica L. ssp. *holosericea* (Nutt.) Thorne	hoary nettle	N
Urtica urens L.	dwarf nettle	I
ZYGOPHYLLACEAE	**CALTROP FAMILY**	
Tribulus terrestris L.	puncture vine	I

ORIGIN

N = Native to locality

I = Introduced species from outside locality

(I) = Introduced species to the ecoregion in which the survey occurred; however, native to other ecoregions within San Diego County.

Appendix E – Wildlife Species Observed within the Biological Study Area

Appendix E Wildlife Species Observed within the Biological Study Area	
Scientific Name	Common Name
INVERTEBRATES	
BULLIDAE	BUBBLE SNAILS
Bulla gouldiana	bulla snail
POTAMIDIDAE	HORN SNAILS
Cerithidea spp.	hornsnail
AGLAJIDAE	SEA SLUGS
Navanax inermis	navanax
APLYSIIDAE	SEA HARES
Aplysia californica	California sea hare
CAMBARIDAE	CRAYFISHES
Procambarus clarkii	red swamp crayfish (I)
PALAEMONIDAE	PALAEMONID SHRIMPS
Palaemon macrodactylus	Oriental shrimp (I)
HESPERIIDAE	SKIPPERS
Erynnis funeralis	funereal duskywing
PIERIDAE	WHITES & SULPHURS
Anthocharis sara sara	Pacific Sara orangetip
FISHES	
RHINOBATIAE	GUITARFISHES
Rhinobatos productus	shovelnose guitarfish
UROTRYGONIDAE	AMERICAN ROUND STINGRAYS
Urobatis helleri	round stingray
GYMNURIDAE	BUTTERFLY RAYS
Gymnura marmorata	California butterfly ray
MYLIOBATIDAE	EAGLE RAYS AND MANTAS
Myliobatis californica	bat ray
MUGILIDAE	MULLETS
Mugil cephalus	striped mullet
ATHERINIDAE	SILVERSIDES
Atherinops affinis	topsmelt
FUNDULIDAE	TOPMINNOWS
Fundulus parvipinnis	California killifish
POECILIIDAE	LIVEBEARERS
Gambusia affinis	western mosquitofish (I)
SYGNATHIDAE	PIPEFISHES AND SEAHORSES
Sygnathus auliscus	barred pipefish
SERRANIDAE	SEA BASSES
Paralabrax nebulifer	barred sand bass
KYPHOSIDAE	SEA CHUBS
Girella nigricans	opaleye
EMBIOTOCIDAE	SURFPERCHES
Amphistichus argenteus	barred surfperch

Appendix E Wildlife Species Observed within the Biological Study Area	
Scientific Name	Common Name
BLENNIIDAE	COMBTOOTH BLENNIES
Hypsoblennius gentilis	bay blenny
GOBIIDAE	GOBIES
Clevelandia ios	arrow goby
Ilypnus gilberti	cheekspot goby
Acanthogobius flavimanus	yellowfin goby
PARALICHTHYIDAE	SAND FLOUNDERS
Paralichthys californicus	California halibut
PLEURONECTIDAE	RIGHTEYE FLOUNDERS
Hypsopsetta guttulata	diamond turbot
BIRDS	
ANATIDAE	DUCKS, GEESE, & SWANS
Anas platyrhynchos platyrhynchos	mallard
Oxyura jamaicensis rubida	ruddy duck
PODICIPEDIDAE	GREBES
Podilymbus 2odiceps podiceps	pied-billed grebe
Aechmophorus occidentalis	western grebe
Podilymbus nigricollis californicus	eared grebe
PSITTACIDAE	PARROTS
parrot	unidentified parrot
PELICANIDAE	PELICANS
Oelecanus occidentalis californicus	brown pelican
THRESKIORNITHIDAE	IBISES AND SPOONBILLS
Plegadis chihi	white-faced ibis
PHALACROCORACIDAE	CORMORANTS
Phalacrocorax auratus albociliatus	double-crested cormorant
ARDEIDAE	HERONS & BITTERNS
Ardea alba	great egret
Ardea herodias	great blue heron
Butorides virescens	green heron
Egretta rufescens	reddish egret
Egretta thula candidissma	snowy egret
Ixobrychus exilis exilis	western least bittern
Nycticorax nycticorax	black-crowned night heron
VULTURIDAE OR CATHARTIDAE	NEW WORLD VULTURES
Cathartes aura	turkey vulture
PANDIONIDAE	OSPREYS
Pandion haliaetus	osprey
ACCIPITRIDAE	HAWKS, KITES, & EAGLES
Accipiter cooperii	Cooper's hawk
Buteo lineatus	red-shouldered hawk
Buteo jamaicensis	red-tailed hawk

Appendix E Wildlife Species Observed within the Biological Study Area	
Scientific Name	Common Name
FALCONIDAE	**FALCONS & CARACARAS**
Falco sparverius sparverius	American kestrel
RALLIDAE	**RAILS, GALLINULES, & COOTS**
Fulica americana americana	American coot
Gallinula chloropus cachinnans	common gallinule
Rallus limicola	Virginia rail
Rallus obsoletus [=longirostris] levipes	light-footed Ridgway's [=clapper] rail
CHARADRIIDAE	**PLOVERS**
Charadrius vociferus vociferus	killdeer
SCOLOPACIDAE	**SANDPIPERS AND SNIPES**
Actitis macularius	spotted sandpiper
Tringa semipalmata	willet
LARIDAE	**GULLS, TERNS, & SKIMMERS**
Hydroprogne caspia	Caspian tern
Larus occidentalis wymani	western gull
RECURVIOSTRIDAE	**STILTS AND AVOCETS**
Recurvirostra americana	American avocet
COLUMBIDAE	**PIGEONS & DOVES**
Columba livia	rock dove (I)
Streptopelia decaocto	Eurasian collared-dove
Zenaida macroura marginella	mourning dove
APODIDAE	**SWIFTS**
Aeronautes saxatalis	white-throated swift
TROCHILIDAE	**HUMMINGBIRDS**
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
Selasphorus rufus	rufous hummingbird
Selasphorus sasin	Allen's hummingbird
ALCEDINIDAE	**KINGFISHERS**
Megaceryle alcyon	belted kingfisher
PICADAE	**SAPSUCKERS AND WOODPECKERS**
Picoides nuttallii	Nuttall's woodpecker
TYRANNIDAE	**TYRANT FLYCATCHERS**
Contopus cooperi	olive-sided flycatcher
Empidonax difficilis difficilis	pacific-slope flycatcher
Contopus sordidulus	western wood-pewee
Sayornis nigricans semiatra	black phoebe
Tyrannus vociferans vociferans	Cassin's kingbird
VIREONIDAE	**VIREOS**
Vireo bellii pusillus	least Bell's vireo
Vireo gilvus	warbling vireo
Vireo huttoni	Hutton's Vireo

Appendix E Wildlife Species Observed within the Biological Study Area	
Scientific Name	Common Name
CORVIDAE	CROWS, JAYS, & MAGPIES
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos hesperis	American crow
Corvus corax clarionensis	common raven
HIRUNDINIDAE	SWALLOWS
Petrochelidon pyrrhonota tachina	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Hirundo rustica erythrogaster	barn swallow
AEGITHALIDAE	BUSHTIT
Psaltriparus minimus melanurus	bushtit
TROGLODYTIDAE	WRENS
Cistothorus palustris clarkae	Clark's marsh wren
Thryomanes bewickii	Bewick's wren
Troglodytes aedon parkmanii	house wren
REGULIDAE	KINGLETS
Regulus calendula calendula	ruby-crowned kinglet
TIMALIIDAE	BABBLERS
Chamaea fasciata henshawi	wrentit
MIMIDAE	MOCKINGBIRDS & THRASHERS
Mimus polyglottos polyglottos	northern mockingbird
Toxostoma redivivum redivivum	California thrasher
STURNIDAE	STARLINGS & MYNAS
Sturnus vulgaris	European starling (I)
PARULIDAE	WOOD WARBLERS
Setophaga coronata	yellow-rumped warbler
Setophaga [=*Dendroica*] *petechia*	yellow warbler
Geothlypis trichas	common yellowthroat
Oreothilpis [=*Vermivora*] *celata*	orange-crowned warbler
Cardellina [=*Wilsonia*] *pusilla*	Wilson's warbler
Icteria virens auricollis	yellow-breasted chat
EMBERIZIDAE	EMBERIZIDS
Melospiza melodia	song sparrow
Zonotrichia leucophrys	white-crowned sparrow
Melozone [=*Pipilo*] *crissalis*	California towhee
Pipilo maculatus	spotted towhee
CARDINALIDAE	CARDINALS & GROSBEAKS
Pheucticus melanocephalus maculatus	black-headed grosbeak
ICTERIDAE	BLACKBIRDS & NEW WORLD ORIOLES
Agelaius phoeniceus	red-winged blackbird
Icterus cucullatus nelsoni	hooded oriole
Icterus bullockii	Bullock's oriole
Molothrus ater	brown-headed cowbird
Quiscalus mexicanus	great-tailed grackle

Appendix E Wildlife Species Observed within the Biological Study Area	
Scientific Name	Common Name
FRINGILLIDAE	FINCHES
Spinus [=*Carduelis*] *psaltria hesperophilus*	lesser goldfinch
Spinus [=*Carduelis*] *tristis salicamans*	American goldfinch
Haemorhous [=*Carpodacus*] *mexicanus frontalis*	house finch
PASSERIDAE	OLD WORLD SPARROWS
Passer domesticus	house sparrow (I)
MAMMALS	
LEPORIDAE	RABBITS & HARES
Sylvilagus audubonii	desert cottontail
SCIURIDAE	SQUIRRELS & CHIPMUNKS
Spermophilus beecheyi	California ground squirrel
CANIDAE	CANIDS
Canis familiaris	domestic dog (I)
PROCYONIDAE	PROCYONIDS
Procyon lotor	northern raccoon
(I) = Introduced species	

Appendix F – Aquatic Resource Delineation Report for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement, Oceanside, California

Aquatic Resource Delineation Report for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Oceanside, California

Prepared for
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September 30, 2022



JR Sundberg, Biologist/Botanist

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Acronyms and Abbreviations

CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
FAC	Facultative
GPS	Global Positioning System
NI	No Indicator
NRCS	Natural Resource Conservation Service
OHWM	ordinary high water mark
Project	Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

1.0 Site Description and Landscape Setting

The Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (project) includes the replacement of the existing structurally deficient Coast Highway (Hill Street) Bridge (Bridge Number 57C0322) over the San Luis Rey River. The aquatic resources delineation is used to identify and map the extent of the federal jurisdictional waters of the U.S. and state wetlands/waters.

The project is located within the city of Oceanside, county of San Diego, California (Figure 1; all figures referenced in this report are located in Attachment 1). The project site is located in Sections 22 and 23 at Township 11 South, Range 5 West, on the U.S. Geological Survey (USGS) 7.5-minute topographical maps, Oceanside, California quadrangle (Figure 2). The bridge lies just west of Interstate 5 along Coast Highway between Monterey Drive and Costa Pacifica Way (Figure 3). The project impact area includes all work areas, staging areas, and access areas. In addition, an identified habitat enhancement area located downstream of the bridge is included as part of the project. The project area is bound by Harbor Drive to the north and the Santa Fe Railroad to the west, extends northeast to Capistrano Drive, and continues south just past State Route 76 (see Figure 3).

The applicant will accompany the U.S. Army Corps of Engineers (USACE) on all site visits. The USACE must contact the applicant prior to visiting the site. The contact information for the applicant is:

Property Owner:	City of Oceanside
Applicant:	City of Oceanside
Primary Contact:	David Toschak
Telephone:	1-760-435-5106
E-mail:	DToschak@oceansideca.org

2.0 Site Alterations, Current and Past Land Use

The Review Area is located at the juncture of the San Luis Rey River with the Interstate 5 freeway and Hill Street Bridge, and encompasses the project impact area, habitat enhancement area and a 100-foot buffer surrounding both (see Figure 3). Both the north and south bank of San Luis Rey River have been altered historically to support the bridges, prevent erosion of the footings, and keep vegetation cleared underneath The current land use is the major transportation corridor and the natural tidally influenced river channel. There are encampments under the bridges and in the adjacent riparian habitats.

2.1 Soils

Information on the soil types sampled in the Review Area (Figure 4) is summarized from the Soil Survey for San Diego County (U.S. Department of Agriculture [USDA] 1973), the San Diego Association of Governments (SANDAG) 1995 geographic information system data (SANDAG 1995), and the Hydric Soils of California list obtained from the USDA Natural Resource Conservation Service (NRCS; 2021).

One soil type, tidal flat, was encountered at sample points in the Review Area (see Figure 4). Tidal flat is described below according to the classifications from the USDA characterizations of soil types in San Diego County (USDA 1973):

> Tidal flat soils are located close enough to sea level to be subject to periodic tidal inundation. The lower areas are often barren, and the upper area supports salt-tolerant vegetation. The texture is influenced by the surrounding soils and can range from clay to fine sand. Tidal flats are typically saline and are on the hydric soil list (NRCS 1995).

Hydric soil indicators observed at sample points within wetland areas included depleted matrix (i.e., presence of mottles, low chroma colors), sandy gleyed matrix, and saturation.

2.2 Hydrology

The Review Area is bisected by the San Luis Rey River, which flows in a westerly direction for approximately one-half mile until meeting the Pacific Ocean. The area where the San Luis Rey River and Pacific Ocean meet is typically blocked by a sand bar during the dry season. At times of high flow, the river flows directly into the Pacific Ocean. On either side of the San Luis Rey River are floodplain terraces. Although the terraces may flood during peak river flow or high tides, the hydrology is primarily within the banks of the river and groundwater driven. The lack of predominately salt-tolerant vegetation also supports a fresh groundwater hydrology. Hydrology indicators commonly observed in the wetland areas included one or more of the following: surface water, high water table, saturation, or riverine sediment deposits.

2.3 Vegetation

A large portion of the vegetation within the Review Area has been subject to recent and historic disturbance, active management, and non-native plant invasion. Vegetation and land cover types observed include disturbed southern riparian scrub, freshwater marsh, non-native riparian, open water, Diegan coastal sage scrub (including disturbed), eucalyptus woodland, disturbed habitat, and urban/developed land (see Figure 4; Table 1; all tables referenced in this report are located in Attachment 2).

3.0 Precipitation Data and Analysis

Climate data, including precipitation totals, for the nearest recording station to the project site was gathered from the NRCS National Water and Climate Center databases. The climate data obtained are discussed below.

3.1 Climate and Growing Season

The Review Area is located within the coastal plain of southern California, in an area generally characterized by moderate temperature fluctuations throughout the year, with hot and dry summers

and cooler and wetter winters. The majority of precipitation typically falls between December and March as somewhat frequent low- to moderate-intensity rainfall. The growing season typically lasts into late summer when little to no precipitation occurs and as temperatures increase. Rainfall amounts can vary substantially from year to year, with the potential for periods of extended drought.

3.2 Antecedent Precipitation Tool Summary

The Antecedent Precipitation Tool was used to analyze the 30-day rolling total and the 30-year normal range of precipitation data for the nearest recording weather stations to the project (Attachment 3).

Surveys conducted in 2016 and 2021 were both conducted at times designated extreme drought. There was little or no rain during the preceding 30-days. However, the Review Area hydrology is driven primarily by groundwater and tidal influence limiting the impact of the drought on the analysis.

3.3 Wetland Hydrology and Analysis

The presence of wetland hydrology indicators confirm that inundation or saturation has occurred on a site but may not provide information about the timing, duration, or frequency of the event. Hydrology features are generally the most ephemeral of the three wetland parameters (USACE 2008).

In the 2008 Arid Supplement, wetland hydrology indicators are divided into four groups. Those that are determined based on direct observation are in Group A. These include the presence of surface water, a high water table, and saturation. Water marks, drift deposits, surface soil cracks, and other indicators of flooding or ponding fall within Group B. Group C consists of indicators that provide indirect evidence that a site was saturated recently, such as the presence of sulfidic odors or oxidized rhizospheres along living roots. Finally, Group D consists of vegetation and soil features that indicate recent wet conditions such as the Facultative (FAC) neutral test or a shallow aquitard (USACE 2008). These indicators are further classified as primary or secondary indicators.

Hydrologic information for the site was obtained by reviewing USGS topographic maps and by directly observing hydrology indicators in the field. The wetland hydrology criterion was considered fulfilled at a location if, based upon the conclusions inferred from the field observations, an area had a high probability of being periodically inundated or had soils saturated to the surface at some time during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (USACE 1987). If at least one primary indicator or at least two secondary indicators were found at a sample point, the wetland hydrology criterion was considered fulfilled.

4.0 Investigation Methods

A routine aquatic resources delineation, following the guidelines set forth by USACE (1987 and 2008), was performed by RECON Environmental biologists Gerry Scheid and J.R. Sundberg on June 29 and October 24, 2016, to gather field data at locations where aquatic resources occur in the Review Area. The Review Area was visited again on August 30, 2021 by RECON Environmental biologists

J.R. Sundberg and Jade Woll to reassess the sample points and gather updated field data on the aquatic resources within the Review Area. Once on-site, the potential federal and state jurisdictional areas were examined to determine the presence and extent of any aquatic resources.

4.1 Wetland Parameters

4.1.1 Hydrophytic Vegetation

Vegetation communities comprising partially or entirely of hydrophytic plant species were examined, and data for each vegetation stratum (i.e., tree, shrub, herb, and vine) were recorded on the datasheet provided in the 2008 Arid West Regional Supplement (USACE 2008). The percent absolute cover of each species present was visually estimated and recorded.

The wetland indicator status of each species recorded within a vegetation community was determined by using the arid west portion of the National Wetland Plant List (USACE 2018). Dominant species with an indicator status of NI (No Indicator) or not listed in the 2018 National Wetland Plant List were evaluated as either wetland or upland indicator species based on local professional knowledge of where the species are most often observed in habitats that are characteristic in southern California.

The dominance test was then used to determine which vegetation community qualified as hydrophytic vegetation at each site. In situations where a site failed the dominance test, the prevalence index was used to verify if the hydrophytic vegetation standard was met. The presence or absence of morphological adaptations was noted; however, none of the sampled wetland areas required an analysis of morphological adaptations to determine if the vegetation was hydrophytic.

4.1.2 Hydric Soils

Sample points were selected within potential wetland areas and where the apparent boundary between wetland and upland was inferred based on changes in the composition of the vegetation and topography (see Figure 4). Soil pits were dug to a depth of at least 18 inches to determine soil color, evidence of soil saturation, depth to groundwater, and indicators of a reducing soil environment (i.e., mottling, gleying, and hydrogen sulfide odor). A Munsell Soil Color Book (Munsell Color 2009) was used to determine soil colors, and the 2008 Arid West Regional Supplement (USACE 2008) and the Field Indicators of Hydric Soils in the United States guide (USDA 2017) was used to determine the presence of hydric soil indicators.

4.1.3 Wetland Hydrology

Hydrologic information for the site was obtained by reviewing USGS topographic maps, analyzing climate conditions prior to the field survey, and by directly observing hydrology indicators in the field. All portions of any potentially occurring wetlands or non-wetland waters within the Review Area were inspected for signs of hydrology as defined in the 2008 Arid West Regional Supplement (USACE 2008). A Streamflow Duration Assessment was conducted according to the User Manual for the Beta Streamflow Duration Assessment Method for the Arid West (USACE 2021).

4.2 Pre-Field Review

Prior to conducting the delineation, an aerial photograph, USGS topographic maps of the site, including the 7.5-minute Oceanside quadrangle (USGS 2018; see Figure 2), USDA soil maps of the site (see Figure 4), mapped vegetation communities (Figure 5), and the U.S. Fish and Wildlife Service National Wetland Inventory (U.S. Fish and Wildlife Service 2021; Figure 6) were examined to aid in the determination of potential waters of the U.S. on-site.

4.3 On-site Wetland Investigation

Once on-site, the Review Area was examined to determine the presence of any indicators of wetlands, including wetland vegetation, hydric soils, and hydrology. Field data, including hand drawn maps and recorded global positioning system (GPS) points and lines, were later digitized/downloaded into ArcGIS. Mapped aquatic resources created using these data were analyzed in ArcGIS to provide acreages or target aquatic resource and vegetation boundaries. USACE wetland determination data forms are included as Attachment 4 and photographs of the Review Area are provided in Attachment 5. Descriptions of the potential wetland vegetation communities sampled are provided below. Vegetation communities mapped within the Review Area are provided on Figure 5.

4.3.1 Areas with Hydrophytic Vegetation

The following vegetation communities contain plant species that are considered hydrophytic vegetation: freshwater marsh, disturbed southern riparian scrub, non-native riparian, and some areas of disturbed habitat. These vegetation communities are dominated by plant species that have a wetland indicator status of Obligate, Facultative-wet, or Facultative species.

4.3.2 Areas Lacking Hydrophytic Vegetation

Vegetation communities or land cover types present on-site that lack hydrophytic vegetation include open water, some disturbed habitat areas, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, eucalyptus woodland, and urban/developed land. Except for open water, these vegetation communities are dominated by upland plant species.

4.4 On-site Ordinary High Water Mark Investigation

The lateral extent of the ordinary high water mark (OHWM) was delineated on both banks of the San Luis Rey River in the Review Area using the observed hydrology indicators in accordance with *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008). The OHWM data forms are included as Attachment 6. Indicators observed and used to determine the extent of the OHWM include change in vegetation species, change in vegetation cover, break in bank slope.

5.0 Description of Aquatic Resources

Aquatic resources include riparian wetlands and tidally influenced non-wetland waters. The map of the delineated aquatic resources within the Review Area is shown in Figure 7. Figures 8 and 9 show the locations of the jurisdictional waters identified on-site for each agency jurisdiction. Tables 2 and 3 provides a breakdown of acreages by jurisdiction.

5.1 USACE Waters

Portions of the southern riparian scrub, disturbed habitat, and freshwater marsh areas along the San Luis Rey River on-site satisfy the three parameter criteria for USACE wetlands. Wetland waters of the U.S. on-site include all wetlands within the ordinary high water mark and all wetlands that are adjacent to it within the active floodplain. A total of 8.32 acres of wetland waters of the U.S. were delineated within the Review Area (see Figures 7 and 8).

A total of 4.55 acres of non-wetland waters of the U.S. considered to fall within USACE jurisdiction were delineated on-site (see Figures 7 and 8). Jurisdictional non-wetland waters on-site include the open water of the San Luis Rey River. These non-wetland waters lack hydrophytic vegetation. The lateral extent of the non-wetland waters was determined by the observable ordinary high water mark. These non-wetland waters are within the reach of tidal influence.

The presence of standing water, an OHWM, and a connection to the Pacific Ocean were used to determine the preliminary jurisdictional status of the river.

5.3 Regional Water Quality Control Board Waters of the State

The Review Area also contains wetlands and stream channel that may be within Regional Water Quality Control Board (RWQCB) jurisdiction (see Figure 8). The 4.55 acres of non-wetland waters within the stream channel is likely Waters of the State. It measures 1,725 feet linear feet. The potential wetland Waters of the State consist of 8.32 acres of estuarine and palustrine wetlands associated with the stream channel.

5.4 California Department of Fish and Wildlife Waters of the State

The Review Area also contains wetlands and stream channel that may be within California Department of Fish and Wildlife (CDFW) jurisdiction (see Figure 8). The 4.55 acres of non-wetland waters within the stream channel would likely be consider CDFW Streambed. The 9.78 acres of estuarine and palustrine vegetation associated with the stream channel would likely be considered CDFW Riparian.

5.5 California Coastal Commission Wetlands

The Review Area also contains wetlands and stream channel that may be within California Coastal Commission (CCC) jurisdiction (see Figure 9). The stream channel and associated estuarine and palustrine vegetation would likely be considered CCC Wetlands. This portion of the Review Area measures 14.32 acres.

6.0 Deviation from National Wetland Inventory

The results of this analysis vary slightly from those classified in the National Wetland Inventory (NWI; see Figure 6). The areas of variation are the extent of the Freshwater Forested/Shrub Wetland (Cowardin Codes: PSSR, PFOS) under the bridges (see Figure 7) which are disturbed and unvegetated (Cowardin Code: E2US2P). The exact boundary between the Freshwater Forested/Shrub Wetland and Estuarine and Marine Wetland (Cowardin Codes: E2EM1P, ESEM1/SSP) in the west part of the Review Area was slightly different from the NWI. See Table 2 for details of wetland types occurring in the Review Area.

7.0 Mapping Method

The maps of the delineated aquatic resources within the Review Areas are based on the above analysis (see Figures 7-9). The boundary of the majority of aquatic resource was obtained from a combination of GPS data collected in the field, aerial photography, and recent topographic survey data. Geographic information system mapping software (ArcMap) was used to produce the graphical maps contained in this report.

8.0 Location of Aquatic Resources

Jurisdictional waters were delineated on-site according to USACE, California Department of Fish and Wildlife, Regional Water Quality Control Board, and California Coastal Commission regulations. Acreages of jurisdictional waters for each of the different jurisdictions are provided in Tables 2 and 3. Figures 8 and 9 show the locations of the jurisdictional waters identified on-site for each agency jurisdiction.

9.0 Results and Conclusions

Wetlands, riparian, and non-wetland waters were delineated within the Review Area. Of the total 47.29-acre Review Area, 12.87 acres are wetlands, 1.46 acres are riparian, and 4.55 acres are non-wetland waters. The wetland waters linear feet measures 1,725 feet due to the Review Area following the stream channel.

10.0 Disclaimer Statement

This report describes the results of an aquatic resource delineation conducted within the Review Area. It was prepared in accordance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2017). The aquatic resource delineation is used to identify and map the potential extent of the jurisdictional waters. The purpose of this study was to identify and map the limits of any aquatic resources on the property to provide necessary background information for analysis by the resource agencies in making a jurisdictional determination. The USACE, Regional Water Quality Control Board, and California Department of Fish and Wildlife will review the content of this report and ultimately make a determination of jurisdiction for any waters that may be present in the Review Area. References used in the preparation of this report are included below in Attachment 7.

ATTACHMENTS

ATTACHMENT 1

Maps



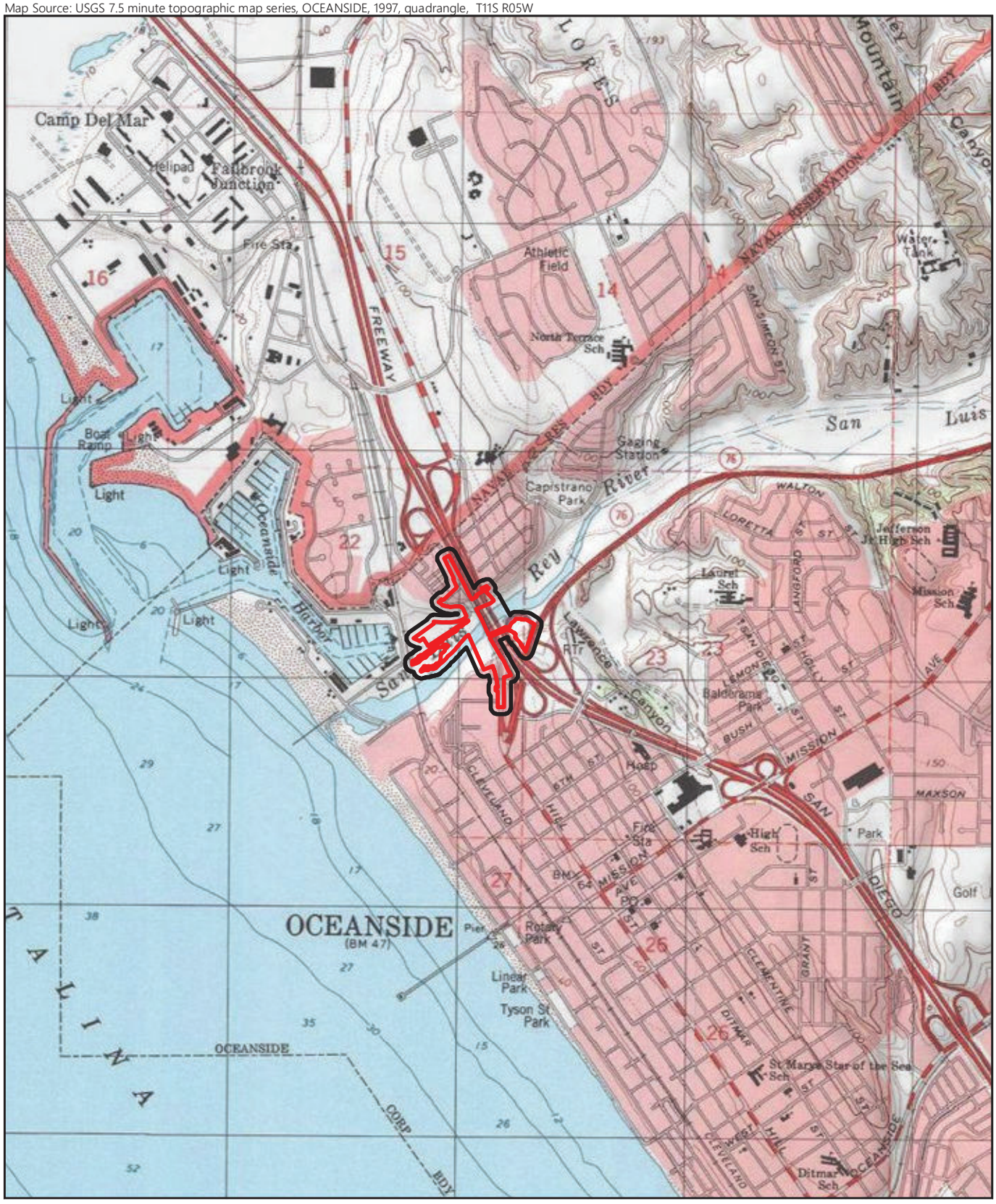
Project Location

RECON

M:\JOBS4\7380\common_gis\Wettec_2022\fig1.mxd 08/31/2022 bma

FIGURE 1
Regional Location

Map Source: USGS 7.5 minute topographic map series, OCEANSIDE, 1997, quadrangle, T11S R05W



0 Feet 2,000

Project Area

Review Area

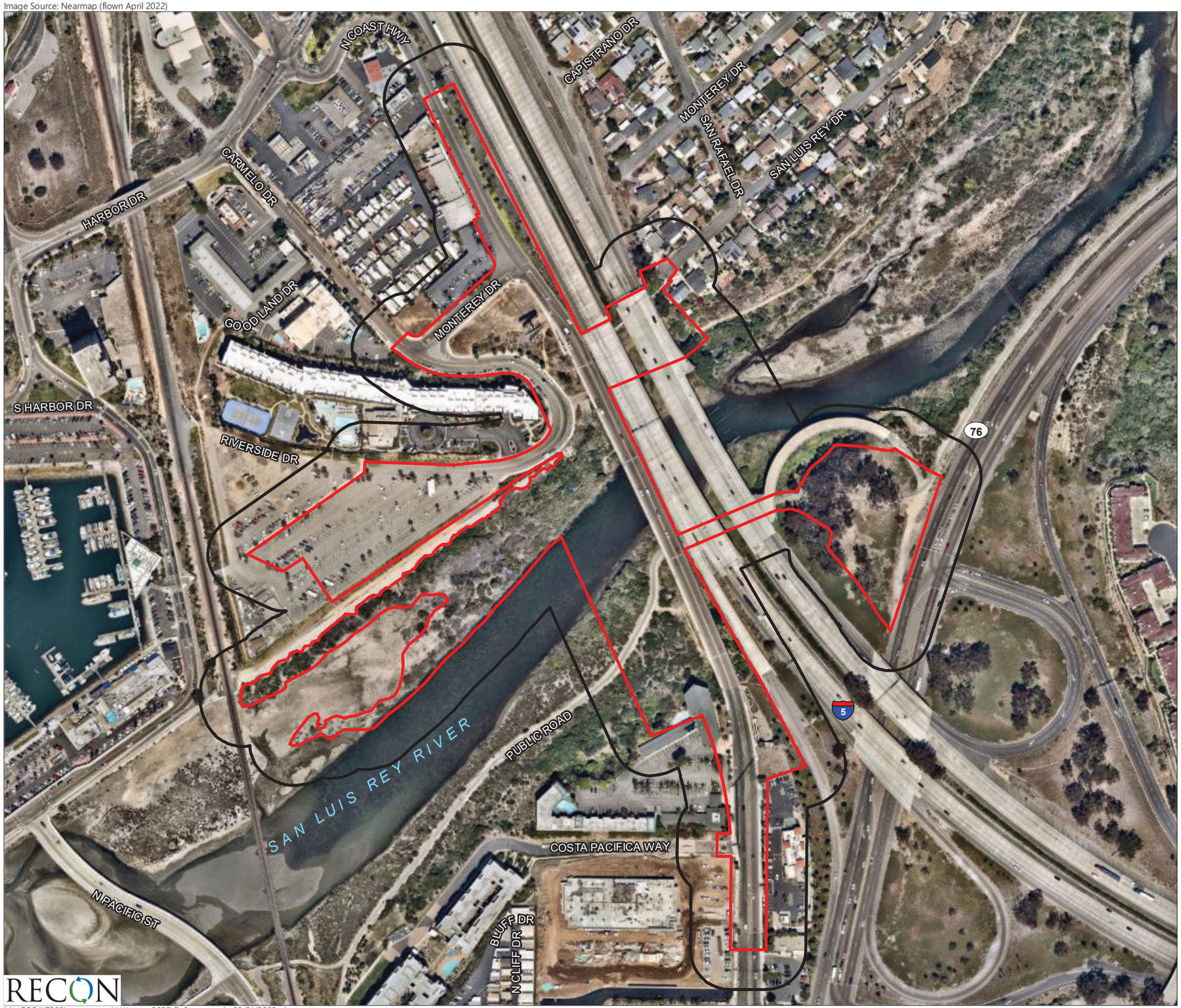
RECON

M:\JOBS4\7380\common_gis\Wettec_2022\fig2_wet.mxd 08/31/2022 bma

FIGURE 2

Project Location on USGS Map

Image Source: Nearmap (flown April 2022)



Project Area

Review Area

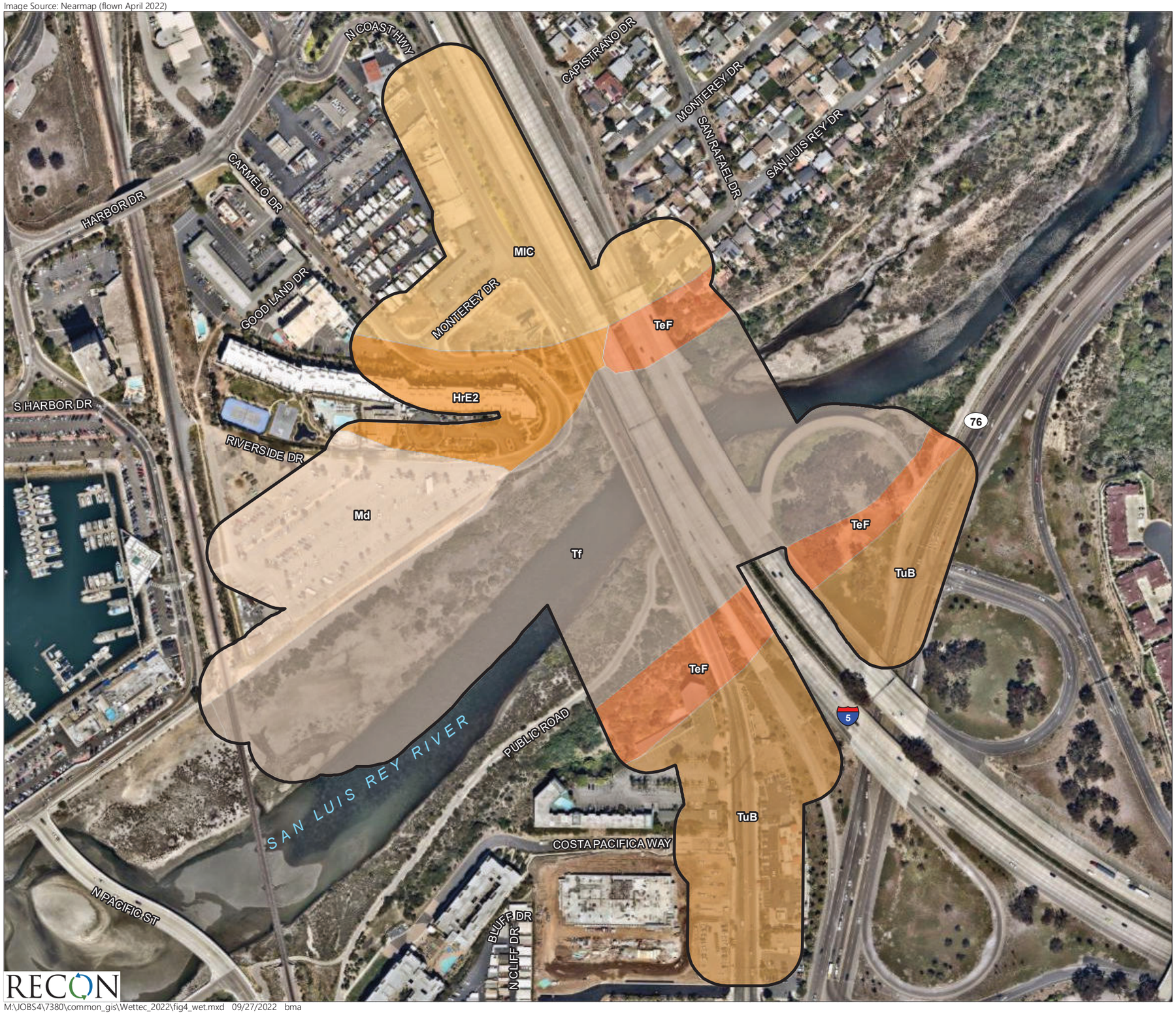
0 Feet 250

FIGURE 3
Project Location
on Aerial Photograph

RECON

M:\JOBS4\7380\common_gis\Wettec_2022\fig3_wet.mxd 08/31/2022 bma

Image Source: Nearmap (flown April 2022)



Review Area

Soil Classification

- HrE2 - Huerhuero loam, 15-30% slopes, eroded
- Md - Made land
- MIC - Marina loamy coarse sand, 2-9% slopes
- TeF - Terrace escarpments
- Tf - Tidal flats
- TuB - Tujunga sand, 0-5% slopes

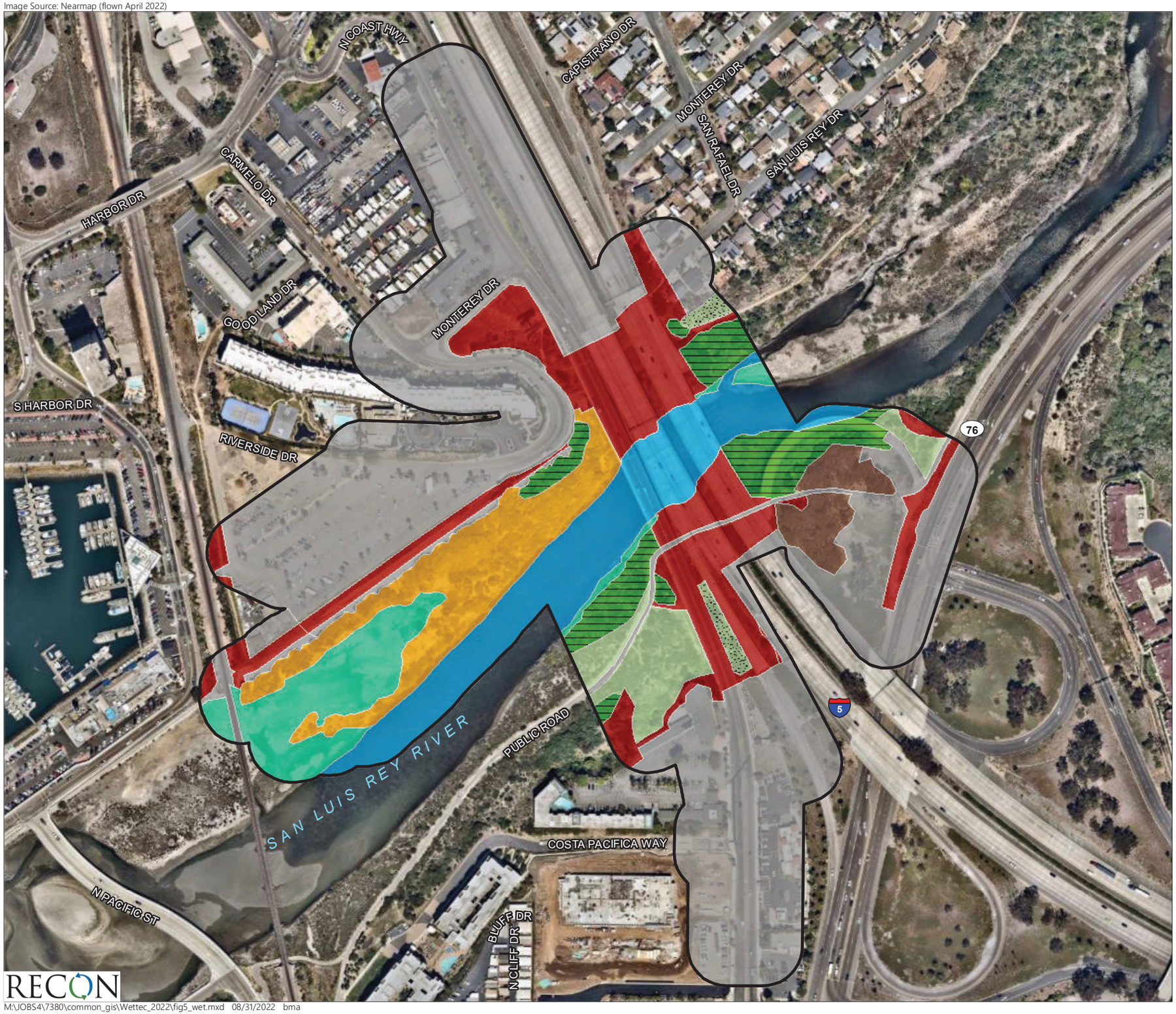
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RECON

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FIGURE 4
Project Location on Soils Map

Image Source: Nearmap (flown April 2022)



Review Area

Vegetation Communities and Land Cover Types

- Diegan Coastal Sage Scrub
- Disturbed Diegan Coastal Sage Scrub
- Disturbed Southern Riparian Scrub
- Freshwater Marsh
- Open Water
- Non-native Riparian
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

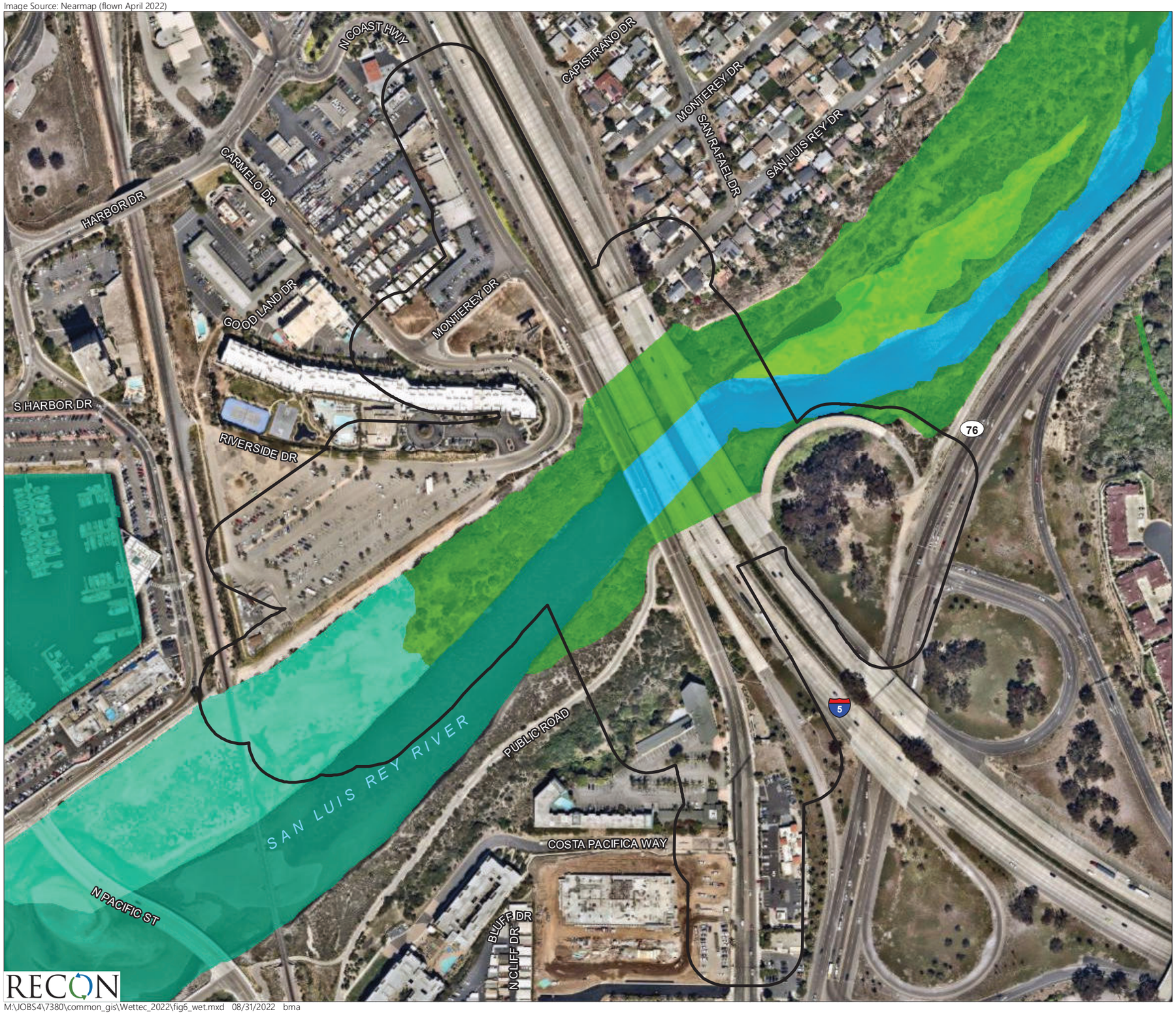
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FIGURE 5
Vegetation Communities
within the Review Area

Image Source: Nearmap (flown April 2022)



Review Area

National Wetlands Inventory

- Estuarine and Marine Deepwater (E1UBL)
- Estuarine and Marine Wetland (E2EM1P, ESEM1/SSP)
- Freshwater Emergent Wetland (PEM1R
- Freshwater Forested/Shrub Wetland (PSSR, PFOS)
- Riverine (R1UBV)

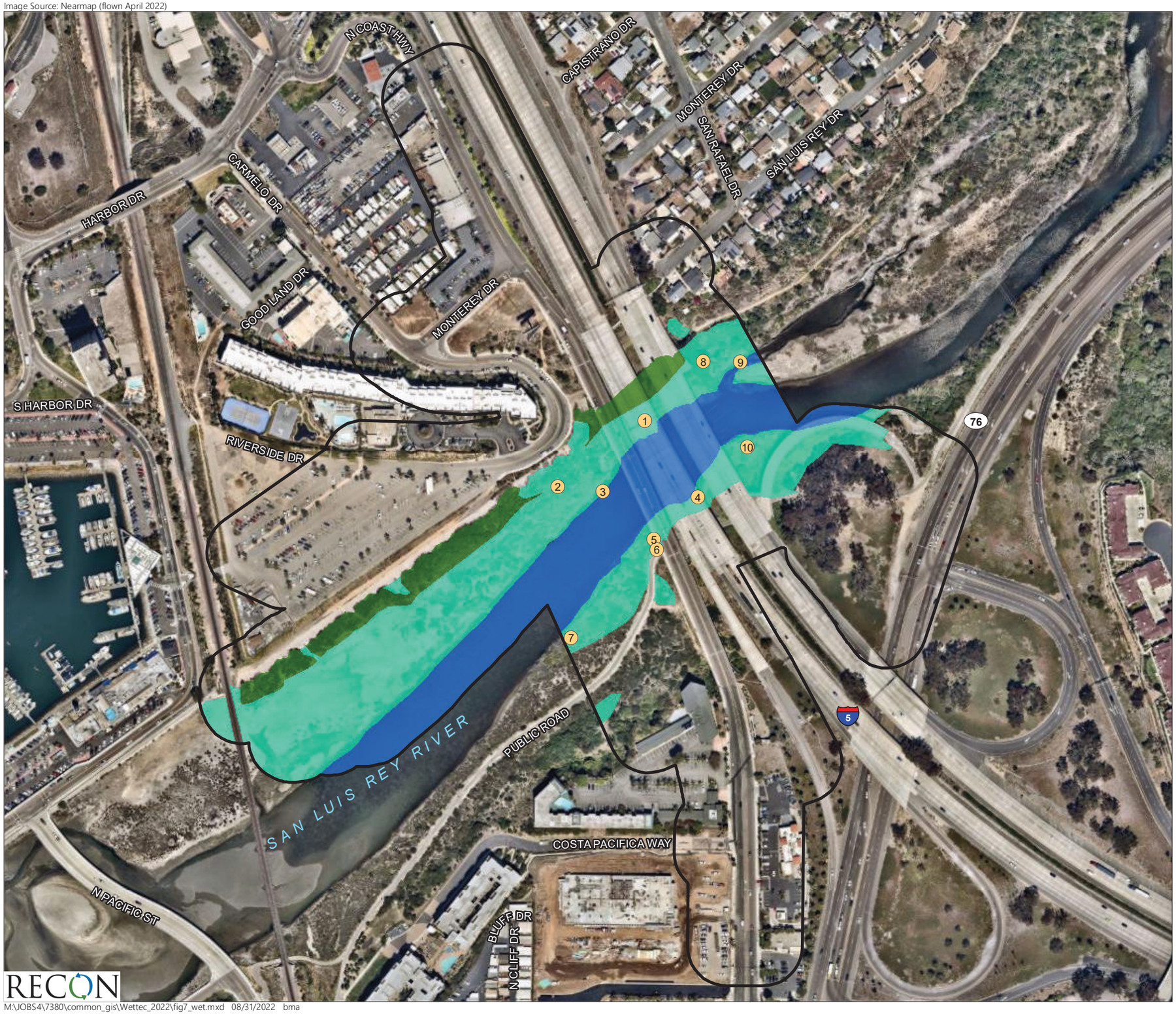
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FIGURE 6
National Wetlands Inventory

Image Source: Nearmap (flown April 2022)



Review Area

Sample Point

Aquatic Resources

Non-wetland Water

Wetland

Riparian

0 Feet 250

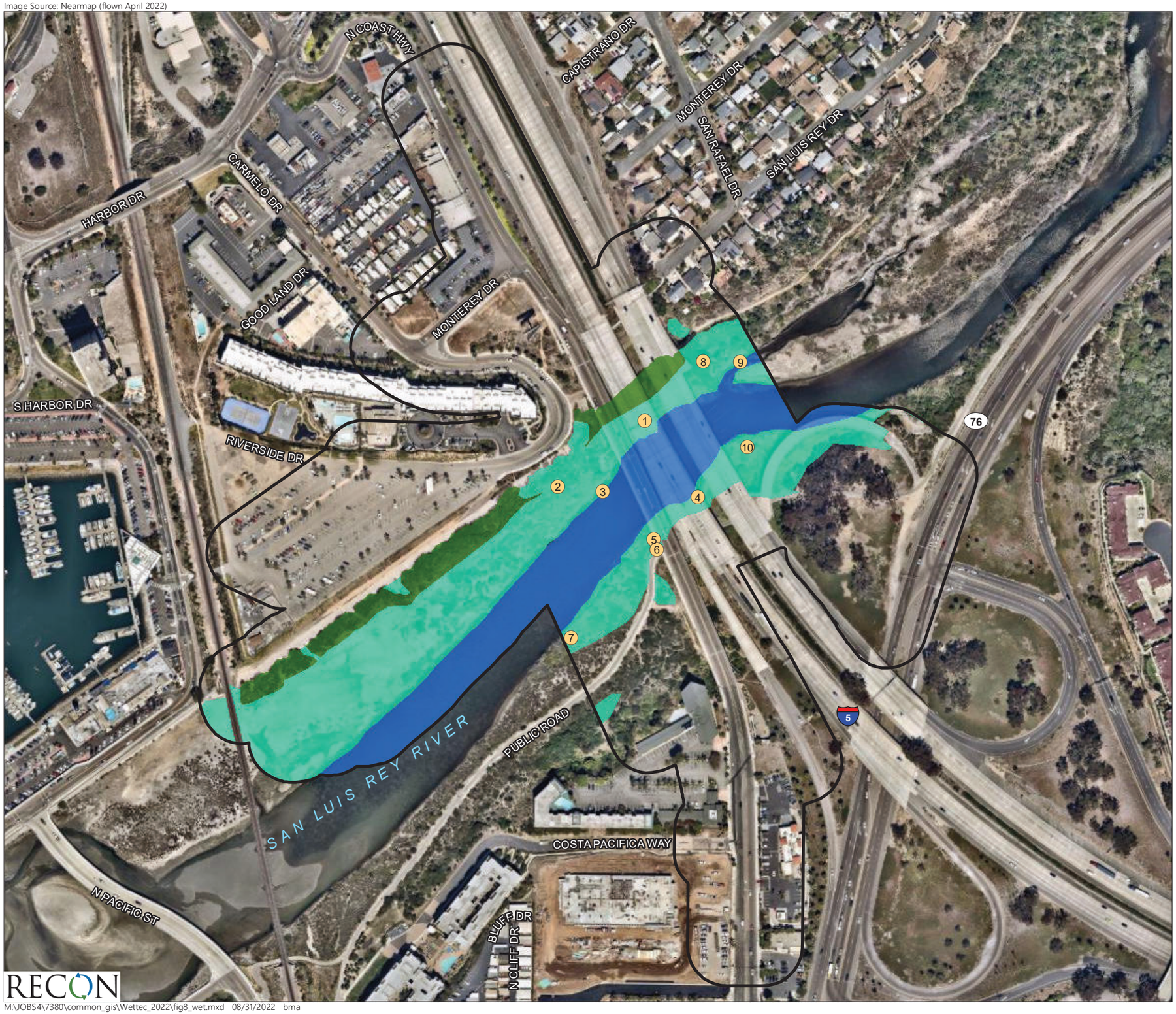
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FIGURE 7

Aquatic Resources Delineated within the Review Area

Image Source: Nearmap (flown April 2022)



Review Area

Sample Point

Jurisdictional Resources

USACE Non-wetland Waters of the US, RWQCB Non-wetland Waters of the State, CDFW Streambed

USACE Wetland Waters of the U.S., RWQCB Wetland Waters of the State, CDFW Riparian

CDFW Riparian

0 Feet 250

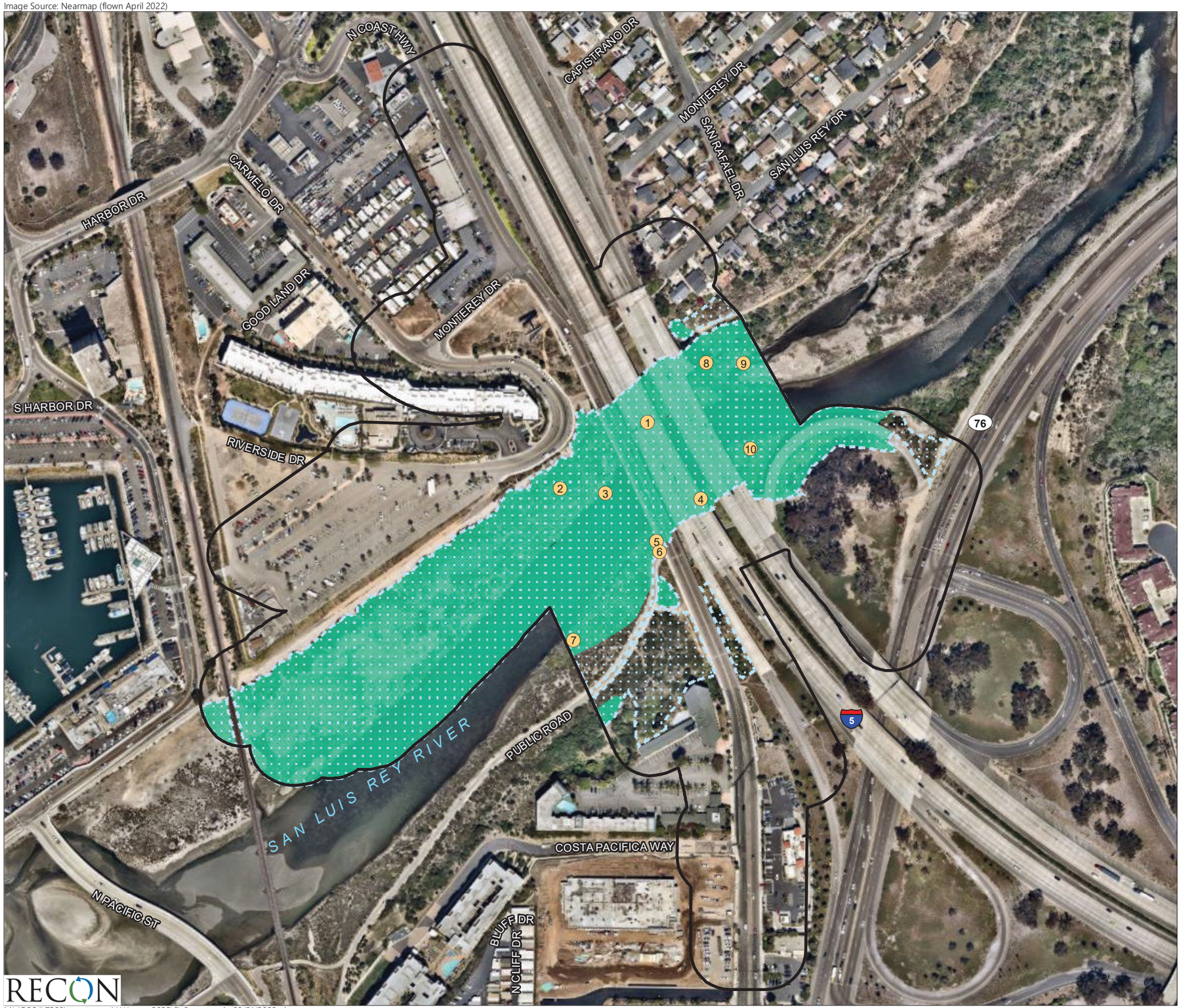
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FIGURE 8

Potential USACE Waters of the U.S., RWQCB Waters of the State, and CDFW Riparian/Streambed within the Review Area

Image Source: Nearmap (flown April 2022)



Review Area
Sample Point
Environmentally Sensitive Habitat Areas
State Coastal Wetlands

0 Feet 250

RECON

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FIGURE 9
California Coastal Commission Wetlands
within the Review Area

ATTACHMENT 2

Tables

Table 1 Vegetation Communities/Land Cover Types (acres)	
Community or Type (Holland [1986] Code as modified by Oberbauer [2008])	Area within Review Area (acres)
Diegan Coastal Sage Scrub	1.68
Disturbed Diegan Coastal Sage Scrub	0.32
Disturbed Habitat	6.91
Disturbed Southern Riparian Scrub	2.48
Eucalyptus Woodland	1.06
Freshwater Marsh	2.67
Non-native Riparian	3.48
Open Water	4.55
Urban/Developed	24.13
TOTAL	**47.29***
*Total may differ due to rounding.	

Table 2 List of Aquatic Resources									
Waters ID	Cowardin Code	HGM Code	Area (acres)*	Linear Feet	Waters Type	Latitude (dd WGS84)	Longitude (dd WGS84)	Local Waterway	Dominant Vegetation
Federal and State Waters									
1	E2EM1P	Estuarine Fringe	2.67	--	RPWWD	33.20530795104	-117.3873372036	Estuarine	*Arundo donax*
2	E2FO3P	Estuarine Fringe	2.35	--	RPWWD	33.20597224376	-117.3862643200	Estuarine	*Schinus terebinthifolius*
3	E2SS1P	Estuarine Fringe	0.75	--	RPWWD	33.20563957353	-117.3854223607	Estuarine	*Salix laevigata*
4	E2US2P	Estuarine Fringe	0.81	--	RPWWD	33.20697831198	-117.3850755222	Estuarine	N/A
5	R1UBV	Riverine	4.55	1,725	RPW	32.839464	-116.905578	Riverine	N/A
6	PSS1S	Palustrine	1.73	--	RPWWD	32.839360	-116.905522	Riverine	*Schoenoplectus californicus*
State Waters Only									
7	E2FO3P	Estuarine Fringe	1.15	--	CDFW Riparian	33.20606958195	-117.38660211821	Estuarine	*Schinus terebinthifolius*
8	E2FO3S	Estuarine Fringe	0.31	--	CDFW Riparian	33.20733205749	-117.3853185623	Estuarine	*Salix lasiolepis*

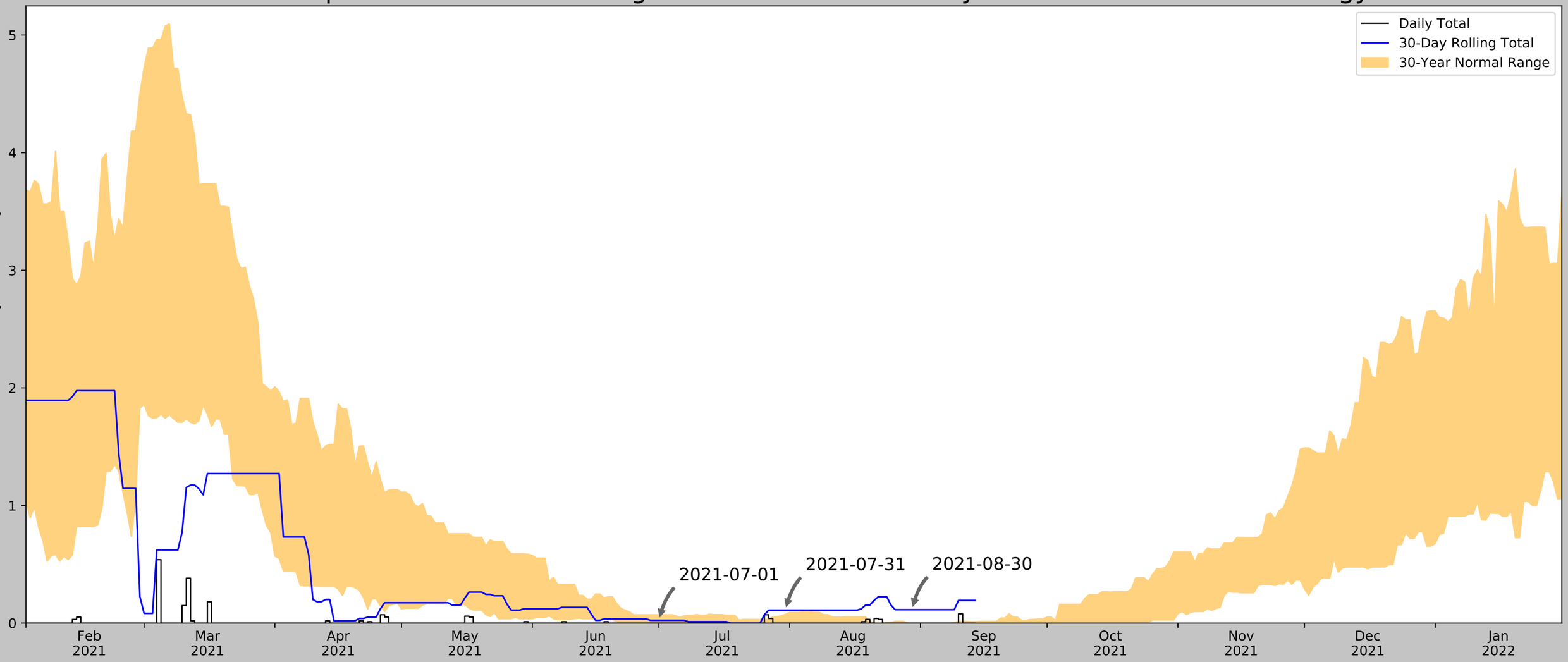
E2EM1P = Persistent, Emergent, Intertidal, Estuarine, Irregularly Flooded
E2FO3P = Broad-Leaved Evergreen, Forested, Intertidal, Estuarine, Irregularly Flooded
E2SS1P = Broad-Leaved Deciduous, Scrub-Shrub, Intertidal, Estuarine, Irregularly Flooded
E2FO3S = Broad-Leaved Evergreen, Forested, Intertidal, Estuarine, Temporarily Flooded-Tidal
E2US2P = Sand, Unconsolidated Shore, Intertidal, Estuarine, Irregularly Flooded
R1UBV = Unconsolidated Bottom, Tidal, Riverine, Permanently Flooded-Tidal
PSS1S = Broad-Leaved Deciduous, Scrub-Shrub, Palustrine, Temporarily Flooded-Tidal
HGM = hydrogeomorphic
RPW = Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs
RPWWD = Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
*Acreages are subject to rounding

Table 3 Aquatic Resources in the Review and Project Areas by Jurisdiction (acres)		
Jurisdictional Waters	Review Area (acres)	Project Area (acres)
USACE Jurisdiction		
Non-wetland Waters of the U.S.	4.55	1.01
Wetland	8.32	3.48
USACE Total	**12.87**	**4.49**
RWQCB Jurisdiction†		
Non-wetland Waters of the U.S.	4.55	1.01
Wetland	8.32	3.48
RWQCB Total	**12.87**	**4.49**
CDFW Jurisdiction†		
Streambed	4.55	1.01
CDFW Riparian	9.78	4.71
CDFW Total	**14.32**	**5.72**
CCC Jurisdiction‡		
Wetlands	14.32	5.72
CCC Total	**14.32**	**5.72**
†CDFW and RWQCB area of jurisdiction overlaps all USACE jurisdictional waters. CDFW jurisdiction includes additional riparian habitat. ‡CCC Wetlands overlap CDFW area of jurisdiction.		

ATTACHMENT 3

Antecedent Precipitation Tool Results

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.20658083805244, -117.38551552883423
Observation Date	2021-08-30
Elevation (ft)	10.79
Drought Index (PDSI)	Extreme drought

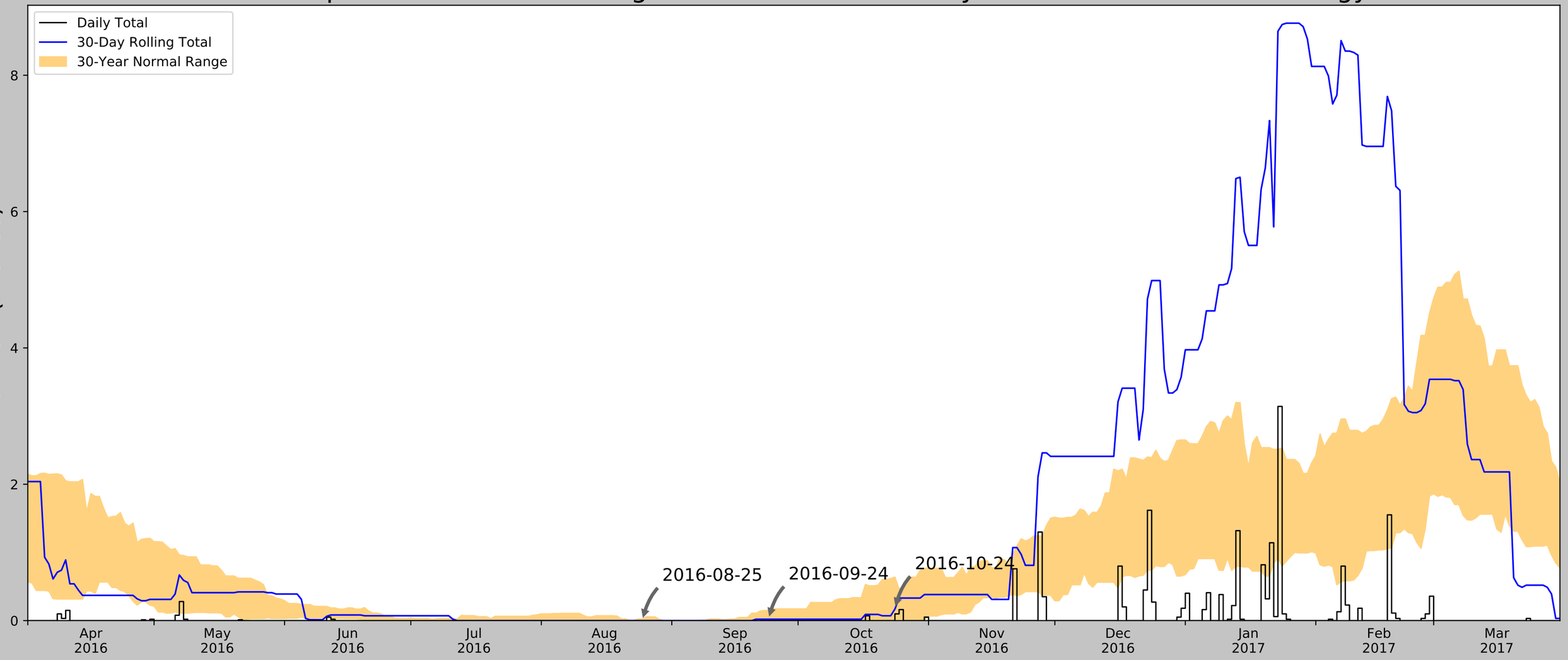
Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2021-08-30	0.0	0.0	0.114173	Wet	3	3	9

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
LAGUNA NIGUEL 1.8 SW	33.5093, -117.728	855.971	28.777	845.181	37.271	210	0
SAN CLEMENTE 2.2 W	33.4466, -117.6488	131.89	22.495	121.1	12.847	172	0
LAGUNA NIGUEL 0.9 W	33.5285, -117.7203	477.034	29.46	466.244	26.993	1665	0
LAGUNA BEACH 3.2 SSE	33.4977, -117.7387	193.898	28.637	183.108	18.13	107	7
MISSION VIEJO 3.1 SSE	33.5692, -117.6362	538.058	28.929	527.268	28.271	160	0
LAKE ELSINORE 4.7 SSW	33.6092, -117.3589	3095.144	27.86	3084.354	98.467	104	0
DANA POINT 2.1 N	33.4865, -117.691	376.969	26.171	366.179	21.36	12	0
SAN JUAN CAPISTRANO 0.9 W	33.5007, -117.6685	108.924	26.071	98.134	14.29	174	70
MISSION VIEJO 3.5 SSE(K6WTA)	33.5633, -117.6394	612.861	28.67	602.071	30.163	1102	13
LAKE ELSINORE 2.8 SSW	33.6308, -117.3397	1356.955	29.429	1346.165	52.859	1	0
MURRIETA 4.3 ENE	33.5838, -117.1404	1312.008	29.651	1301.218	51.925	62	0
OCEANSIDE 2.3 WNW	33.233, -117.3498	259.843	2.755	249.053	1.926	382	0
SAN DIEGO 6.6 N	32.9107, -117.1485	434.055	24.624	423.265	21.503	11	0
SAN MARCOS 2.5 ENE	33.1472, -117.1316	666.011	15.247	655.221	16.851	210	0
ENCINITAS 2.7N	33.0757, -117.292	187.992	10.538	177.202	6.609	1	0
CARLSBAD 2.2SE	33.1427, -117.3206	21.982	5.795	11.192	2.673	1	0
ESCONDIDO #2	33.1211, -117.09	600.066	18.084	589.276	18.794	6370	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.2065883805244, -117.38551552883423
Observation Date	2016-10-24
Elevation (ft)	10.79
Drought Index (PDSI)	Extreme drought

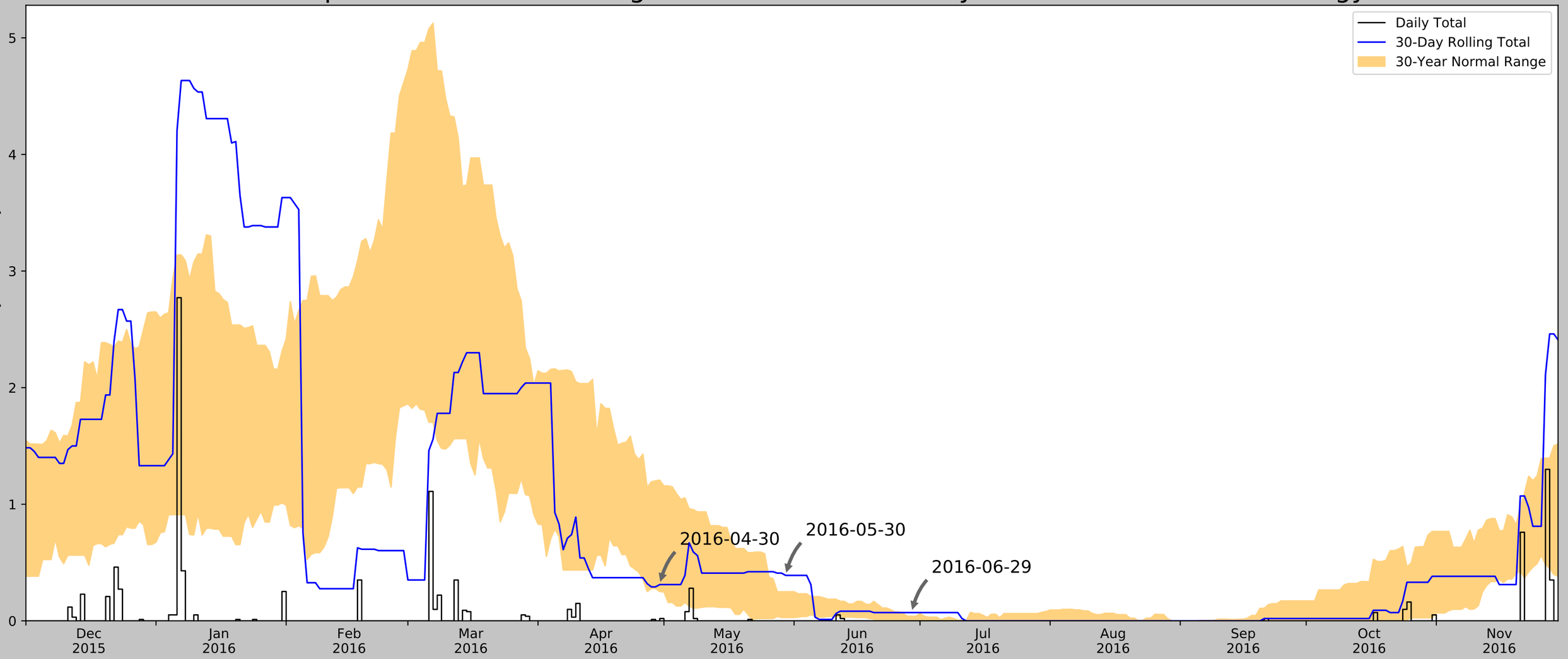
Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2016-10-24	0.0	0.638189	0.169291	Normal	2	3	6
2016-09-24	0.0	0.147638	0.019685	Normal	2	2	4

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
LAGUNA NIGUEL 1.8 SW	33.5093, -117.728	855.971	28.777	845.181	37.271	210	0
SAN CLEMENTE 2.2 W	33.4466, -117.6488	131.89	22.495	121.1	12.847	172	0
LAGUNA NIGUEL 0.9 W	33.5285, -117.7203	477.034	29.46	466.244	26.993	814	24
LAGUNA BEACH 3.2 SSE	33.4977, -117.7387	193.898	28.637	183.108	18.13	52	0
MISSION VIEJO 3.1 SSE	33.5692, -117.6362	538.058	28.929	527.268	28.271	43	0
LAKE ELSINORE 4.7 SSW	33.6092, -117.3589	3095.144	27.86	3084.354	98.467	104	0
MISSION VIEJO 3.5 SSE(K6WTA)	33.5633, -117.6394	612.861	28.67	602.071	30.163	856	55
MURRIETA 4.3 ENE	33.5838, -117.1404	1312.008	29.651	1301.218	51.925	57	11
OCEANSIDE 2.3 WNW	33.233, -117.3498	259.843	2.755	249.053	1.926	382	0
SAN DIEGO 6.6 N	32.9107, -117.1485	434.055	24.624	423.265	21.503	11	0
SAN MARCOS 2.5 ENE	33.1472, -117.1316	666.011	15.247	655.221	16.851	210	0
ENCINITAS 2.7N	33.0757, -117.292	187.992	10.538	177.202	6.609	1	0
CARLSBAD 2.2SE	33.1427, -117.3206	21.982	5.795	11.192	2.673	1	0
ESCONDIDO #2	33.1211, -117.09	600.066	18.084	589.276	18.794	7819	0
OCEANSIDE MARINA	33.2097, -117.395	9.843	0.589	0.947	0.266	580	0
SAN JUAN CANYON	33.5319, -117.5525	375.0	24.455	364.21	19.912	3	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	33.2065883083805244, -117.38551552883423
Observation Date	2016-06-29
Elevation (ft)	10.79
Drought Index (PDSI)	Extreme drought

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2016-06-29	0.0	0.039764	0.070866	Wet	3	3	9
2016-05-30	0.027953	0.25	0.389764	Wet	3	2	6

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
LAGUNA NIGUEL 1.8 SW	33.5093, -117.728	855.971	28.777	845.181	37.271	199	0
SAN CLEMENTE 2.2 W	33.4466, -117.6488	131.89	22.495	121.1	12.847	156	0
LAGUNA NIGUEL 0.9 W	33.5285, -117.7203	477.034	29.46	466.244	26.993	775	0
LAGUNA BEACH 3.2 SSE	33.4977, -117.7387	193.898	28.637	183.108	18.13	48	0
MISSION VIEJO 3.1 SSE	33.5692, -117.6362	538.058	28.929	527.268	28.271	0	14
LAKE ELSINORE 4.7 SSW	33.6092, -117.3589	3095.144	27.86	3084.354	98.467	104	0
MISSION VIEJO 3.5 SSE(K6WTA)	33.5633, -117.6394	612.861	28.67	602.071	30.163	633	69
MURRIETA 4.3 ENE	33.5838, -117.1404	1312.008	29.651	1301.218	51.925	27	7
OCEANSIDE 2.3 WNW	33.233, -117.3498	259.843	2.755	249.053	1.926	382	0
SAN DIEGO 6.6 N	32.9107, -117.1485	434.055	24.624	423.265	21.503	11	0
SAN MARCOS 2.5 ENE	33.1472, -117.1316	666.011	15.247	655.221	16.851	210	0
ENCINITAS 2.7N	33.0757, -117.292	187.992	10.538	177.202	6.609	1	0
CARLSBAD 2.2SE	33.1427, -117.3206	21.982	5.795	11.192	2.673	1	0
ESCONDIDO #2	33.1211, -117.09	600.066	18.084	589.276	18.794	8153	0
OCEANSIDE MARINA	33.2097, -117.395	9.843	0.589	0.947	0.266	611	0
SAN JUAN CANYON	33.5319, -117.5525	375.0	24.455	364.21	19.912	3	0

ATTACHMENT 4

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 1

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2%

Subregion (LRR): LRR-C Lat: 33deg. 12min. 24.57sec. Long: 117deg. 23min. 6.85sec. Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes** X **No**

Remarks: Vegetation under the Hill Street bridge and Intersate 5 bridges is periodically cleared and/or sprayed with herbicide to control plant growth under these features. The natural soils under the bridges have been altered in the past due to the road/bridge construction; therefore, soil profiles may not be natural.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *Ricinus communis*	5	Yes	FACU
2. *Arundo donax*	5	Yes	FACW
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size:)			
1. *Stipa miliaceae*	5	Yes	UPL
2. *Poa annua*	5	Yes	FAC
3. *Tetragonia tetragonioides*	5	No	UPL
4. *Nasturtium gambelii*	5	No	OBL
5.			
6.			
7.			
8.			
	20 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	5	x 2 =	10
FAC species	5	x 3 =	15
FACU species	5	x 4 =	20
UPL species	10	x 5 =	50
Column Totals:	30 (A)		100 (B)

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No x

Remarks: More discturbed by clearing and encampments.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	98	5YR 6/8	2	RM	M	fine sandy silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: Low chroma matrix with mottles indicates hydric soil conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- x Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- x Sediment Deposits (B2) (**Riverine**)
- x Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): _____

Water Table Present? Yes ___ No x Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No x Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample area is located on a floodplain terrace of the San Luis Rey River under Interstate 5 and Hill Street bridges. Wetland hydrology at this location is primarily groundwater driven; however, seaonal overbank flooding may also occur on this terrace.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2020

Applicant/Owner: City of Oceanside State: CA Sampling Point: 2

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2%

Subregion (LRR): LRR-C Lat: 33deg. 12min. 22.9sec. Long: 117deg. 23min. 9.18sec. Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil , or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?**	**Yes** X **No**
Hydric Soil Present?	Yes X No		
Wetland Hydrology Present?	Yes X No		

Remarks: Native riparian vegetation is heavily infested with non-native trees and shrubs.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	15	Yes	FACW
2.	5	Yes	FACU
3.			
4.			
	20	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Arundo donax*	40	Yes	FACW
2.			
3.			
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size:)			
1. *Toxicodendron diversilobum*	5	Yes	UPL
2. *Poa annua*	2	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	7	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Asparagus asparagoides*	3	Yes	UPL
2.			
	3	= Total Cover	

% Bare Ground in Herb Stratum 6 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	65	x 2 =	130
FAC species	2	x 3 =	6
FACU species	5	x 4 =	20
UPL species	8	x 5 =	400
Column Totals:	80	(A)	556 (B)

Prevalence Index = B/A = 6.95

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks: Native riparian habitat dominated by invasive trees and shrubs.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	95	5YR 6/8	5	RM	M	fine sandy silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- _x_ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes _X_ No ___

Remarks: Low chroma matrix with mottles indicates hydric soil conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- _x_ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- _x_ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No _x_ Depth (inches): ____

Water Table Present? Yes ___ No _x_ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ___ No _x_ Depth (inches): ____

Wetland Hydrology Present? Yes _X_ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The sample area is located on a floodplain terrace of the San Luis Rey River downstream of Interstate 5 and Hill Street bridges. Wetland hydrology at this location is primarily groundwater driven; however, seasonal overbank flooding may also occur on this terrace.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 3

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2%

Subregion (LRR): LRR-C Lat: 33deg. 12min. 22.9sec. Long: 117deg. 23min. 8.10sec. Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil , or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	**Yes** **No** X
Hydric Soil Present?	Yes X	No		
Wetland Hydrology Present?	Yes X	No		

Remarks: Open water, no vegetation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *N/A*			
2.			
3.			
4.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Woody Vine Stratum (Plot size:)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: (A)

Total Number of Dominant Species Across All Strata: (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks: Open water within channel.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	GLEY 1.25/N	100			RM	M	fine sand	submerged 6" below water surface

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: Sandy gleyed matrix indicates hydric soil conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- x Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 36

Water Table Present? Yes X No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The sample area is located in the channel of the San Luis Rey River downstream of Interstate 5 and Hill Street bridges, one foot out from the bank.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 20, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 4

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2%

Subregion (LRR): LRR-C Lat: 33deg. 12min. 22.67sec. Long: 117deg. 23min. 4.97sec. Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes		No	X
Hydric Soil Present?	Yes		No	X
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes** **No** X

Remarks: Vegetation under the Hill Street bridge and Interstate 5 bridges is periodically cleared and/or sprayed with herbicide to control plant growth under these features.The natural soils under the bridges have been altered in the past due to the road/bridge construction; therefore, soil profiles may not be natural.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1. *N/A*			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *N/A*			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. *Carpabrotus edulis*	30	Yes	UPL
2. *Jaumea carnosa*	10	Yes	OBL
3. *Ambrosia psilostachya*	10	Yes	FACU
4. *Stipa miliacea*	1	No	FAC
5.			
6.			
7.			
8.			
	51 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 53 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	0	x 2 =	0
FAC species	1	x 3 =	3
FACU species	10	x 4 =	40
UPL species	30	x 5 =	150
Column Totals:	51 (A)		203 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks: Vegetation cover of dominant species under the bridges has been affected by recent clearing and control methods. A narrow strip of wetland where Jaumea camosa grows.

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5YR 5/2	100					fine sandy silt	
12-18	7.5YR 4/4	100					fine sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: No hydric soil indicators observed. Young soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
x Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No x Depth (inches): _____

Water Table Present? Yes _____ No x Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No x Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The sample area is located on a floodplain terrace of the San Luis Rey River under Interstate 5 and Hill Street bridges. Wetland hydrology at this location may be groundwater driven, with occasional seaonal overbank flooding; however, area does not meet USACE wetland criteria but would be considered a disturbed riparian area by the State and Coastal staff.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 5

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2%

Subregion (LRR): LRR-C Lat: 33deg. 12min. 21.89sec. Long: 117deg. 23min. 5.87sec. Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? No Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?**	**Yes** X **No**
Hydric Soil Present?	Yes X No		
Wetland Hydrology Present?	Yes X No		

Remarks: Wetland area supported by three parameters.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	10	Yes	FACW
2.			
3.			
4.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Arundo donax*	5	Yes	FACW
2. *Rubus ursinus*	10	Yes	FACU
3. *Toxicodendron diversilobum*	5	Yes	UPL
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size:)			
1. *Schoenoplectus californicus*	20	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 6 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	15	x 2 =	30
FAC species		x 3 =	
FACU species	10	x 4 =	40
UPL species	5	x 5 =	25
Column Totals:	50 (A)		115 (B)

Prevalence Index = B/A = 2.3

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks: The sample location is at a lower bank terrace of the San Luis Rey River.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/2	100					fine loamy sand	
6-18	GLEY 2.5/N	100					fine sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
_x_ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _X_ No ___

Remarks: Gleyed sandy matrix indicates hydric soil conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
_x_ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
_x_ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
_x_ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No _x_ Depth (inches): _____

Water Table Present? Yes ___ No _x_ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _x_ No ___ Depth (inches): 12

Wetland Hydrology Present? Yes _X_ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The sample area is located on a lower floodplain terrace of the San Luis Rey River west of Hill Street bridge. Wetland hydrology at this location is primarily groundwater driven; however, seaonal overbank flooding may also occur on this terrace.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 6

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2%

Subregion (LRR): LRR-C Lat: 33deg. 12min. 24.57sec. Long: 117deg. 23min. 6.85sec. Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil , or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No x	**Is the Sampled Area within a Wetland?**	**Yes** **No** x
Hydric Soil Present?	Yes	No x		
Wetland Hydrology Present?	Yes	No x		

Remarks: Sample point used to determine upper limit of wetland. Vegetation is disturbed due to existing trail use.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1. *none*			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *none*			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. *Brachypodium distachyon*	5	Yes	UPL
2. *Euphorbia maculata*	5	Yes	UPL
3. *Raphanus sativus*	5	No	UPL
4. *Bromus diandrus*	10	Yes	UPL
5. *Hirschfeldia incana*			None
6.			
7.			
8.			
	92 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species	92	x 5 =	460
Column Totals:	92 (A)		460 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No x

Remarks: Vegetation cover has been disturbed by an adjacent trail.

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	100					fine loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No x

Remarks: No indicators of hydric soil conditions present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No x Depth (inches): _____

Water Table Present? Yes _____ No x Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No x Depth (inches): _____

Wetland Hydrology Present? Yes _____ No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 7

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-2%

Subregion (LRR): LRR-C Lat: 33deg. 12min. 19.15sec. Long: 117deg. 23min. 8.68sec. Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil , or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x No	**Is the Sampled Area within a Wetland?**	**Yes** x **No**
Hydric Soil Present?	Yes x No		
Wetland Hydrology Present?	Yes x No		

Remarks: Vegetation has a moderate infestation of non-native invasive species.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Schinus terebinthifolius*	30	Yes	FAC
2. *Salix laevigata*	25	Yes	FACW
3.			
4.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Arundo donax*	10		FACW
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size:)			
1. *Juncus acutus*	10	Yes	FACW
2. *Anemopsis californicus*	30	Yes	OBL
3. *Ambrosia psilostachya*	10	Yes	FACW
4.			
5.			
6.			
7.			
8.			
	50	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	40	x 2 =	80
FAC species	30	x 3 =	90
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

x Dominance Test is >50%

x Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes x No

Remarks: Sample area is located on a lower floodplain terrace of the San Luis Rey River.

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	GLEY 3/10Y	98	5YR 6/8	2	RM	M	fine sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- x Sandy Gleyed Matrix (S4)
- x Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes x No ___

Remarks: Gleyed sandy matrix and presence of mottles indicate hydric soil conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): _____

Water Table Present? Yes ___ No x Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes x No ___ Depth (inches): 2

Wetland Hydrology Present? Yes x No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample area is located on a floodplain terrace of the San Luis Rey River west of Hill Street bridge. Seasonal overbank flooding and a high water table govern the wetland hydrology at this location.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 8

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1%

Subregion (LRR): LRR-C Lat: Long: Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No x	**Is the Sampled Area within a Wetland?**	**Yes** **No** x
Hydric Soil Present?	Yes	No x		
Wetland Hydrology Present?	Yes	No x		

Remarks: Vegetation is affected by non-native invasion, cutting for clearance of bridge supports, and encampments.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus uhdei*	20	Yes	None
2. *Salix laevigata*	10	No	FACW
3.			
4.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Salix lasiolepis*	10	Yes	FACW
2. *Rosa californica*	5		FAC
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size:)			
1. *Poa annua*	10	Yes	FACU
2. *Rubus ursinus*	5	Yes	FACU
3. *Stipa milacea*	2	Yes	None
4. *Asparagus asparagoides*	2	Yes	None
5. *Nasturtium gambelii*			OBL
6.			
7.			
8.			
	14	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Vitis girdiana*	5	Yes	FAC
2. *Toxicodendron diversilobum*	5	Yes	FACU
	10	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	15	x 2 =	30
FAC species	5	x 3 =	15
FACU species	15	x 4 =	60
UPL species	59	x 5 =	295
Column Totals:	94	(A)	400 (B)

Prevalence Index = B/A = 4.26

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No x

Remarks: Sample area is located on a lower floodplain terrace of the San Luis Rey River. Vegtation management area, reduction in weedy and non-native species.

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	100					loam	
13-18	10YR 4/2	100					loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No x

Remarks: No hydric soil indicators present. No physical change

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- x Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No x Depth (inches): _____

Water Table Present? Yes _____ No x Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? Yes _____ No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample area is located on a floodplain terrace of the San Luis Rey River east of Hill Street bridge. Habitat is disturbed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 9

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1%

Subregion (LRR): LRR-C Lat: Long: Datum: NAD83

Soil Map Unit Name: Tidal Flat NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x No	**Is the Sampled Area within a Wetland?**	**Yes** x **No**
Hydric Soil Present?	Yes x No		
Wetland Hydrology Present?	Yes x No		

Remarks: Vegetation is affected by non-native invasion, cutting for clearance of bridge supports, and encampments.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. *Schoenoplectus californicus*	20	Yes	OBL
2. *Arundo donax*	5	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	20 (A)		20 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

x Dominance Test is >50%

x Prevalence Index is ≤3.0[1]

Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes x No

Remarks: Sample area is located on a lower floodplain terrace of the San Luis Rey River. Arundo counted as herb since it was less than 1 m and resprouting after cut.

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2.5/10Y	100					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- x Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes x No ___

Remarks: Gleyed sandy matrix and depleted matrix presence indicate hydric soil conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- x Saturation (A3)
- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- x Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): ___

Water Table Present? Yes x No ___ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes x No ___ Depth (inches): 8

Wetland Hydrology Present? Yes x No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The sample area is located on an edge of a floodplain terrace of the San Luis Rey River east of Hill Street bridge. A high water table governs the wetland hydrology at this location.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Coast Highway (Hill Street) Bridge City/County: Oceanside / San Diego County Sampling Date: August 30, 2021

Applicant/Owner: City of Oceanside State: CA Sampling Point: 10

Investigator(s): JR Sundberg; Jade Woll Section, Township, Range: Oceanside: Unsectioned - T11S R5W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1%

Subregion (LRR): LRR-C Lat: Long: Datum: NAD83

Soil Map Unit Name: NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Yes Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x No	**Is the Sampled Area within a Wetland?**	**Yes** x **No**
Hydric Soil Present?	Yes x No		
Wetland Hydrology Present?	Yes x No		

Remarks: Vegetation is affected by non-native invasion, cutting for clearance of bridge supports, and encampments.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix laevigata*	30	Yes	FACW
2. *Myopourm laetum*	2	No	FACU
3.			
4.			
	32	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Baccharis salicifolia*	15	Yes	FAC
2. *Arundo donax*	2	No	FACW
3.			
4.			
5.			
	17	= Total Cover	
Herb Stratum (Plot size:)			
1. *Ambrosia psilostachya*	20	Yes	FACU
2. *Carpobrotus edulis*	10	Yes	None
3. *Stipa miliacea*	5	No	None
4.			
5.			
6.			
7.			
8.			
	35	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	30	x 2 =	60
FAC species	20	x 3 =	60
FACU species	20	x 4 =	80
UPL species	5	x 5 =	25
Column Totals:	95	(A)	225 (B)

Prevalence Index = B/A = 2.37

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- x Prevalence Index is ≤3.0[1]
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes x No

Remarks: Sample area is located on a lower floodplain terrace of the San Luis Rey River.

SOIL Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	100					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No x

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No x Depth (inches): _____

Water Table Present? Yes _____ No x Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No x Depth (inches): _____

Wetland Hydrology Present? Yes _____ No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sample area is located on a floodplain terrace of the San Luis Rey River west of Hill Street bridge. Seasonal overbank flooding may occur but the water table is too deep to have wetland hydrology.

ATTACHMENT 5

Ground Level Color Photographs



PHOTOGRAPH 1
Unvegetated Area Under Bridge, Facing North



PHOTOGRAPH 2
Edge of San Luis River with Encampment, Facing Southwest



PHOTOGRAPH 3
Non-Native Riparian Vegetation, Facing South



PHOTOGRAPH 4
Non-Native Riparian Vegetation Managed Under Bridge, Facing Northeast



PHOTOGRAPH 5
Disturbed Upland Vegetation at the Edge of the Wetlands, Facing North



PHOTOGRAPH 6
View of Bridges from Abandoned Freeway Ramp, Facing Northwest

ATTACHMENT 6

Ordinary High Water Mark Data Sheets and Stream Flow Duration Assessment

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Coast Highway (Hill Street) Bridge
Project Number: 7380
Stream: San Luis Rey
Investigator(s): SRS SCW
Date: 2021 Aug 30
Time: 14 30
Town:
State:
Photo begin file#:
Photo end file#:

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☒ / N ☐ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

Potential anthropogenic influences on the channel system:
Under major freeway bridge. Contrained floodplain due to road embankments, development, and topography

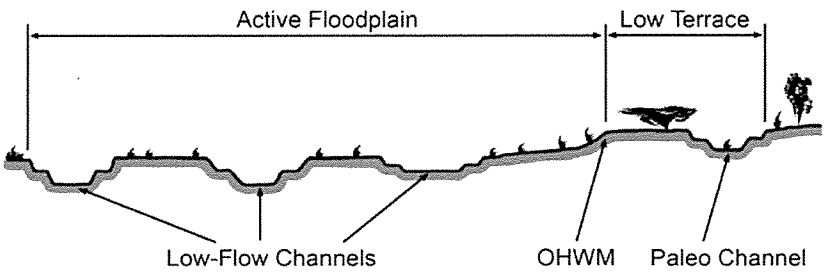
Brief site description:

Checklist of resources (if available):

- ☒ Aerial photography
  Dates:
- ☒ Topographic maps
- ☐ Geologic maps
- ☒ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

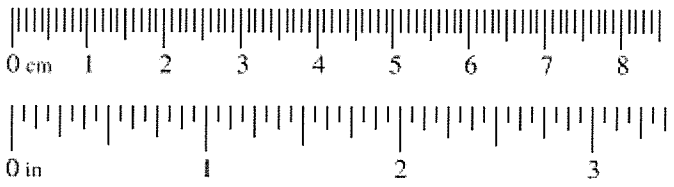


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☐ GPS
   - ☐ Other:

Wentworth Size Classes

Inches (in)		Millimeters (mm)	Wentworth size class	
	10.08	256	Boulder	
	2.56	64	Cobble	Gravel
	0.157	4	Pebble	
	0.079	2.00	Granule	
	0.039	1.00	Very coarse sand	
	0.020	0.50	Coarse sand	
1/2	0.0098	0.25	Medium sand	Sand
1/4	0.005	0.125	Fine sand	
1/8	0.0025	0.0625	Very fine sand	
1/16	0.0012	0.031	Coarse silt	
1/32	0.00061	0.0156	Medium silt	Silt
1/64	0.00031	0.0078	Fine silt	
1/128	0.00015	0.0039	Very fine silt	
			Clay	Mud



Project ID: 7380 **Cross section ID:** **Date:** **Time:**

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 17 % Tree: 2 % Shrub: 5 % Herb: 10 %

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☒ Benches
- ☒ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments: Area maintained under bridge, veg. kept cut low or cleared. Sediment deposits above OHWM forming natural levy. Swale on low terrace is more vegetated.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

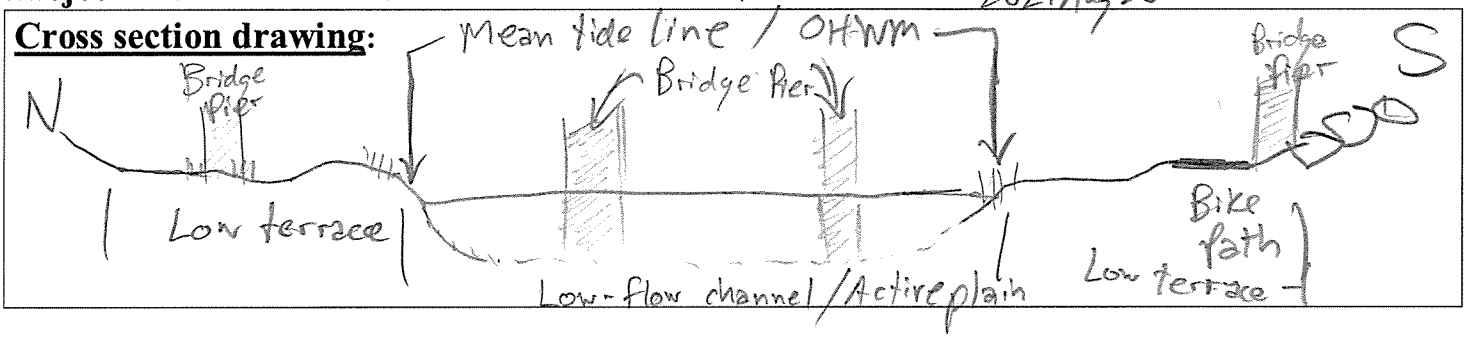
Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Project ID: 7380 **Cross section ID:** 1 **Date:** 2021 Aug 30 **Time:** 1430

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☒ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments: Clear break in slope, every where is sand tidal influenced channel

Floodplain unit: ☒ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: Sand

Total veg cover: 0 % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☒ Drift and/or debris
- ☒ Presence of bed and bank
- ☒ Benches
- ☐ Soil development
- ☐ Surface relief
- ☒ Other: Surface water
- ☐ Other: _____
- ☐ Other: _____

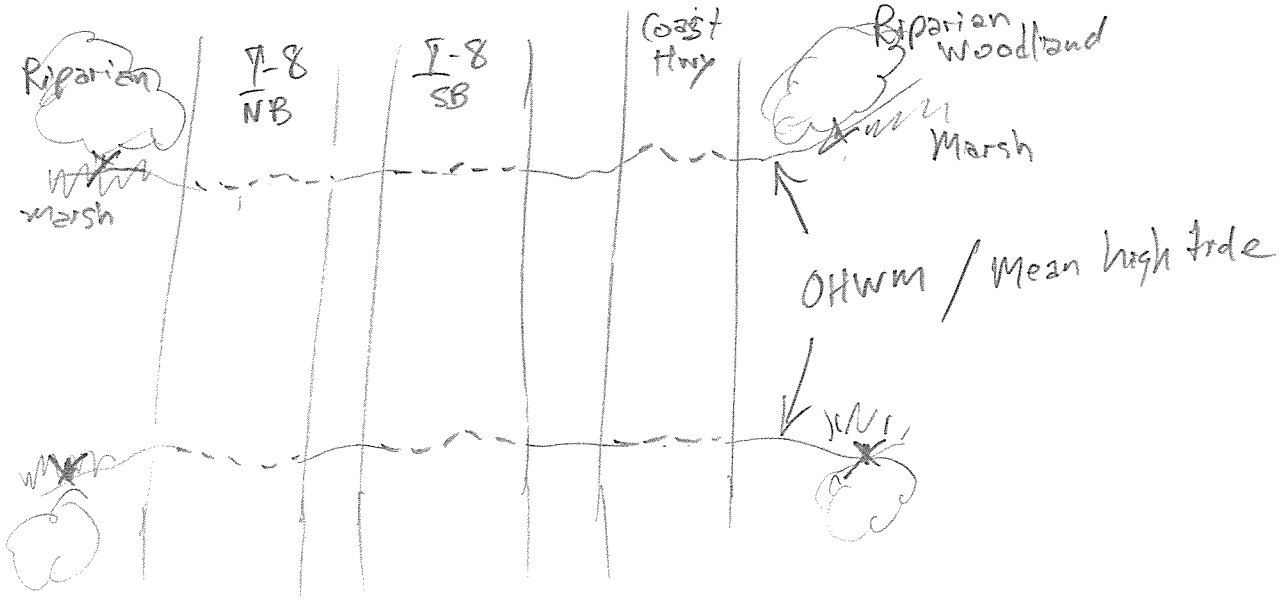
Comments: Perennial tidally influenced channel

Beta Arid West Streamflow Duration Assessment Method

General site information

Project name or number: Coast Highway (Hill Street) Bridge 7380		
Site code or identifier:	Assessor(s): SRS SCW	
Waterway name: San Luis Rey		Visit date:
Current weather conditions (check one) ☐ Storm/heavy rain ☐ Steady rain ☐ Intermittent rain ☐ Snowing ☒ Cloudy (50 % cover) ☐ Clear/Sunny	Notes on current or recent weather conditions (e.g., precipitation in previous week): Dry season conditions are normal - no rain for weeks	Coordinates at downstream end (decimal degrees): Lat (N): Long (W): Datum:
Surrounding land-use within 100 m (check one or two): ☒ Urban/industrial/residential ☐ Agricultural (farmland, crops, vineyards, pasture) ☐ Developed open-space (e.g., golf course) ☐ Forested ☐ Other natural ☐ Other: _____	Describe reach boundaries: Major Freeway bridge, urban and residential out side of floodplain. Some open space along and in Flood plain.	
Mean channel width (m): 40 m	Reach length (m): 40x width; min 40 m; max 200 m. 100 m	Enter photo ID, or check if completed Top down: _____ Mid down: _____ Mid up: _____ Bottom up: _____
Disturbed or difficult conditions (check all that apply): ☐ Recent flood or debris flow ☐ Stream modifications (e.g., channelization) ☐ Diversions ☐ Discharges ☐ Drought ☒ Vegetation removal/limitations ☐ Other (explain in notes) ☐ None	Notes on disturbances or difficult site conditions: Veg. management under bridges Encampments	
Observed hydrology: 100 % of reach with surface flow 100 % of reach with sub-surface or surface flow 0 # of isolated pools	Comments on observed hydrology: Tidal influenced channel	

Site sketch:



1. Hydrophytic plant species

Record up to 5 hydrophytic plant species (FACW or OBL in the **Arid West** regional wetland plant list) within the assessment area: **within the channel or up to one half-channel width**. Explain in notes if species has an odd distribution (e.g., covers less than 2% of assessment area, long-lived species solely represented by seedlings, or long-lived species solely represented by specimens in decline), or if there is uncertainty about the identification. Enter photo ID, or check if photo is taken.

Check if applicable: ☐ No vegetation in assessment area ☐ No hydrophytes in assessment area

Species	Odd distribution?	Notes	Photo ID
Schoenoplectus		In marsh	
Baccharis		On north bank	
Salix		Riparian areas	

Notes on hydrophytic vegetation:
At OHWM some sections of reach have marsh. On unmaintained terraces, there is riparian vegetation

2 and 3. Aquatic invertebrates

2. How many aquatic invertebrates are quantified in a 15-minute search?

Number of individuals quantified:
☐ None
☐ 1 to 19
☒ 20 +

(Do not count mosquitos)

Photo ID:_____

3. Is there evidence of aquatic stages of EPT (Ephemeroptera, Plecoptera and Trichoptera)?

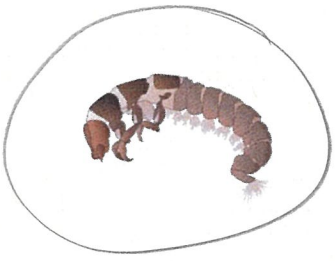
Yes / No



Ephemeroptera larva
Image credit: Dieter Tracey



Plecoptera larva
Tracey Saxby



Trichoptera larva
Tracey Saxby

Notes on aquatic invertebrates:

4. Algal Cover

Are algae found on the streambed? ☐ Check if *all* observed algae appear to be deposited from an upstream source.	☐ Not detected ☒ Yes, < 10% cover ☐ Yes, ≥ 10% (check Yes in single indicator below)	Notes on algae cover: filamentous on sandy	Photo ID:

5. Are single indicators observed?

Indicator	Present	Notes	Photo ID
Fish	☒ Yes ☐ No, no fish ☐ No, only non-native mosquitofish	Unknown spp. jumping Minnows	
Algae cover ≥ 10%	☐ Yes ☒ No		

Supplemental information E.g., aquatic or semi-aquatic amphibians, snakes, or turtles; iron-oxidizing bacteria and fungi; etc.

Photo log

Indicate if any other photos taken during the assessment

Photo ID	Description

Additional notes about the assessment:

Classification: _____

1. Hydrophytic plant species	2. Aquatic invertebrates	3. EPT taxa	4. Algae	5. Single indicators • fish present • algae cover ≥ 10%	Classification
None	None	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present	Absent	**Need more information**
				Present	**At least intermittent**
	Few (1-19)	Absent	Absent	Absent	**Need more information**
				Present	**At least intermittent**
			Present	Absent	**Need more information**
				Present	**At least intermittent**
		Present			**At least intermittent**
	Many (20+)	Absent	Absent	Absent	**Need more information**
				Present	**At least intermittent**
			Present	Absent	**Need more information**
				Present	**At least intermittent**
		Present			**At least intermittent**
Few (1-2)	None	Absent	Absent	Absent	**Need more information**
				Present	**At least intermittent**
			Present		**At least intermittent**
	Few (1-19)	Absent	Absent		**Intermittent**
			Present		**At least intermittent**
		Present			**At least intermittent**
	Many (20+)	Absent	Absent		**Intermittent**
			Present		**At least intermittent**
		Present	Absent		**At least intermittent**
			Present		**Intermittent**
Many (3+)	None	Absent	Absent	Absent	**Need more information**
				Present	**At least intermittent**
			Present		**At least intermittent**
	Few (1-19)	Absent			**At least intermittent**
		Present			**Perennial**
	Many (20+)	Absent			**At least intermittent**
		Present			**Perennial**

Shading provided to enhance readability by increasing the contrast between neighboring cells; empty cells indicate the classification will not change with additional information however it is recommended that all five indicators be measured and recorded during every assessment.

ATTACHMENT 7

References Cited

References Cited

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Appendix G – Rare Plant Survey Reports

BUSBY
Biological Services

October 2, 2017

Ms. Brenna Ogg
Senior Biologist
RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, California 92101

RE: 2017 RARE PLANT SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY BRIDGE REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Ogg:

This letter report summarizes the results of the focused rare plant surveys that were conducted in 2017 by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway Bridge Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2).

PROJECT INFORMATION

The Proposed Project includes replacement of the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. RECON provided BBS with a survey area based on the preliminary, estimated Proposed Project impact area, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (see Attachment 1: Figure 4).

The main portion of the Proposed Project (i.e., Coast Highway bridge) is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (see Attachment 1: Figures 1 through 3). Other project components (e.g., roadway approaches, construction staging and access areas) extend north and south along Coast Highway and east along the north side of the San Luis Rey River. The Proposed Project is located within Township 11 South, Range 5 West, and in Sections 22 and 23 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; see Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (see Attachment 1: Figure 3). Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

METHODS

Prior to the start of the focused surveys, a list of the rare plant species that have potential to occur within or adjacent to the Proposed Project area was developed from a query of the U.S. Fish and Wildlife Service (USFWS) database (USFWS 2017), California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB; CDFW 2017), and the SanGIS database (County of San Diego 2017); research using the San Diego Natural History Museum's (SDNHM) plant distribution mapping and voucher specimen lists (SDNHM 2017); research using the California Native Plant Society (CNPS) database (CNPS 2017); and local knowledge of rare plant species likely to occur in the vicinity of the Proposed Project area. The database query included a review of rare plant species reported within 1 mile of the Proposed Project area. Prior to conducting the surveys, results from this background research were carefully considered to determine the rare plant species with the potential for occurrence within the Proposed Project area, and a list of target species was developed.

A plant species was classified as 'special-status' if it had one or more of the designations summarized in Table 1, below.

Table 1: Status Abbreviations and Explanations

STATUS ABBREVIATION		STATUS EXPLANATION
FEDERAL	FE	federally listed endangered species
	FT	federally listed threatened species
	FC	federal candidate species, proposed for listing
STATE	SE	California state-listed endangered species
	ST	California state-listed threatened species
	SR	California state-listed rare species (plants only)
California Rare Plant Rank (CRPR)	1A	presumed extirpated in California and rare or extinct elsewhere
	1B	rare, threatened, or endangered in California and elsewhere
	2A	presumed extirpated in California but more common elsewhere
	2B	rare, threatened, or endangered in California but more common elsewhere
	3	more information needed
	4	limited distribution
CRPR THREAT RANKS	0.1	Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
	0.2	Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
	0.3	Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Species that were on one or more of the database results lists, but were recently 'considered but rejected' (CBR) as a special-status species by CNPS, were not included. CBR species are more common than previously thought, or their taxonomic rank has changed. Therefore, they no longer meet the criteria to be classified as rare species.

Plant names used herein follow the *Checklist of the Vascular Plants of San Diego County, 5th edition* (*Checklist*; Rebman and Simpson 2014). Additional plant references used included *The Jepson manual: vascular plants of California, Second Edition* (*Jepson Manual*; Baldwin et al. 2012); the Consortium of California Herbarium (2017) voucher data; and the San Diego Plant Atlas (SDNHM 2017). When the *Jepson Manual* and the *Checklist* differed in plant taxonomic treatments, such as recognition or lumping of a variety, then the taxonomy of the *Checklist* took precedence.

Qualified biologists conducted focused field surveys for the target rare plant species by walking meandering transects throughout the Proposed Project footprint and 100-foot buffer. Surveys were conducted during appropriate times to coincide with the expected blooming period of all target rare plant species and maximize the possibility of detection of those species. Surveys were conducted in early spring and late spring.

When a special-status plant species was observed, a waypoint was taken with a handheld Global Positioning System (GPS) that recorded the plant's location and the elevation.

RESULTS

The background research conducted for the special-status plants in the vicinity of the Proposed Project resulted in a list of 43 rare plant species with a potential to occur within or adjacent to the Proposed Project area. A table summarizing the rare plant species with a potential to occur within 1 mile of the Proposed Project area is included in Attachment 2.

Two rounds of rare plant surveys were conducted within approximately 14.04 acres, which included all suitable rare plant habitat within the Proposed Project area and 100-foot buffer (Attachment 1: Figure 4): round 1 on April 10, 2017, and round 2 on May 24, 2017. Biologists who conducted the focused surveys included Margie Mulligan (MM) and Andrew Kort (AK). A list of surveyors and survey dates are provided in Table 2, below.

Table 2. Survey Dates and Surveyors

Survey Round	Survey Date	Surveyors
Round 1 (Early Spring)	4/10/17	MM, AK
Round 2 (Late Spring)	5/24/17	MM, AK

Six rare plant species were observed during the focused rare plant surveys – San Diego marsh-elder (*Iva hayesiana*; CRPR 2B.2), variegated dudleya (*Dudleya variegata*; CRPR 1B.2), sticky dudleya (*Dudleya viscida*; CRPR 1B.2), Nuttall's acmispon (*Acmispon prostratus*; CRPR 1B.1), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*; CRPR 4.2), and Lewis' evening-primrose (*Camissoniopsis lewisii*; CRPR 3). These six species are discussed below. A complete list of all plant species observed during the focused rare plant species surveys is included as Attachment 3.

San Diego Marsh-elder

San Diego marsh-elder is a CRPR 2B.2 species (moderately threatened in California but more common elsewhere). It is a perennial herb in the Asteraceae family that typically blooms from April to October. This species is found along ephemeral drainages, alkali marshes, and playas. San Diego marsh-elder is known from San Diego County and from Baja California, Mexico, at elevations between 30 and 1,640 feet amsl. This species is threatened by waterway channelization, coastal development, non-native plant species, and vehicle activity (CNPS 2017, Calflora 2017, NatureServe 2017).

During the 2017 focused surveys, 14 San Diego marsh-elder individuals were observed (Attachment 1: Figure 4) in the Diegan coastal sage scrub along the bike path that runs along the southern bank of the San Luis Rey River and west of I-5.

All of these individuals are outside of the Proposed Project footprint but inside the 100-foot rare plant survey buffer. All individuals observed appear to be part of an ongoing revegetation effort along the southern bank of the San Luis Rey River.

Variegated Dudleya

Variegated dudleya is a CRPR 1B.2 species (moderately threatened in California and elsewhere).). It is a perennial herb in the Crassulaceae family that typically blooms from May to June. This species is found in temporary freshwater pools, sometimes vernal pools, in chaparral, grasslands, and coastal sage scrub. Variegated dudleya is known from the western half of San Diego County as well as from Baja California, Mexico. It occurs at elevations between 195 and 3,970 feet amsl. This species is threatened by development and grazing (CNPS 2017, Calflora 2017, NatureServe 2017).

During the 2017 focused surveys, two variegated dudleya individuals were observed (Attachment 1: Figure 4) in the disturbed Diegan coastal sage scrub along the trail that runs along the northern bank of the San Luis Rey River and just east of I-5. Both of these individuals are outside of the Proposed Project footprint but inside the 100-foot rare plant survey buffer, and they appear to be naturally occurring individuals.

Sticky Dudleya

Sticky dudleya is a CRPR 1B.2 species (moderately threatened in California and elsewhere). It is a perennial herb in the Crassulaceae family that typically blooms from May to June. This species is found in rocky areas in coastal bluff scrub, chaparral, coastal sage scrub, and cismontane woodland. Sticky dudleya is known from Orange and San Diego counties as well as from Baja California, Mexico. It occurs at elevations between 30 and 1,805 feet amsl. This species is threatened by development and road construction (CNPS 2017, Calflora 2017, NatureServe 2017).

During the 2017 focused surveys, 24 sticky dudleya individuals were observed (Attachment 1: Figure 4) in disturbed Diegan coastal sage scrub along the trail that runs along the northern bank of the San Luis Rey River and just east of I-5. All of these individuals are outside of the Proposed Project footprint but inside the 100-foot rare plant survey buffer, and they appear to be naturally occurring individuals.

Nuttall's Acmispon

Nuttall's acmispon is a CRPR 1B.1 species (rare, threatened, or endangered in California and elsewhere). It is an annual herb in the Fabaceae family that blooms from March to June. This species is typically found in coastal dunes and sandy soils in coastal sage scrub. Nuttall's acmispon is known from coastal San Diego County and into Baja California, Mexico, at elevations from sea level to 65 feet

amsl. This species is threatened by development, non-native plants, trampling by humans and dogs, and land management activities (NatureServe 2017).

During the 2017 focused surveys, two Nuttall's acmispon individuals were observed (Attachment 1: figure 4) in the disturbed southern riparian scrub along the southern bank of the San Luis Rey River and west of I-5. Both individuals were just outside but immediately adjacent to the rare plant survey area and appear to be part of the ongoing revegetation effort along the southern bank of the San Luis Rey River.

Southwestern Spiny Rush

Southwestern spiny rush is a CRPR 4.2 species (limited distribution and moderately threatened in California). It is a rhizomatous herb in the Juncaceae family that blooms from May to June. This species typically is found along ephemeral drainages, alkaline marshes and seeps, mesic areas of coastal dunes, and coastal salt marsh. Southwestern spiny rush is known from southern California in Imperial, Los Angeles, Orange, Santa Barbara, San Diego, San Luis Obispo, and Ventura counties; from Nevada, Arizona, and Georgia; and from Baja California, Mexico; as well as into South America. It is found at elevations between 10 and 2,955 feet amsl. This species is threatened by development and flood control activities (CNPS 2017, Calflora 2017, NatureServe 2017).

During the 2017 focused surveys, 63 southwestern spiny rush individuals were observed (Attachment 1: Figure 4). The majority of these observations are scattered within the non-native riparian habitat along the northern bank of the San Luis Rey River, west of I-5, and within the Habitat Enhancement Area that is proposed as mitigation for Proposed Project impacts. Additional observations occurred outside the Proposed Project footprint but within the 100-foot rare plant survey buffer (a) within disturbed habitat located along the southern bank of the San Luis Rey River and below the northbound I-5 bridge and (b) within disturbed southern riparian scrub located along the southern bank of the San Luis Rey River and just east of I-5. Two observations occurred just outside the rare plant survey area in the disturbed southern riparian scrub along the southern bank of the San Luis Rey River, one east and one west of I-5. All individuals appear to be naturally occurring.

Lewis' Evening-primrose

Lewis' evening-primrose is a CRPR 3 species (more information is needed before accurately ranking this species). It is an annual herb in the Onagraceae family that blooms from March to May. This species typically is found in sandy or clay soils associated with coastal dunes as well as in coastal sage scrub, grassland, and foothill woodland habitats with suitable soils. Lewis' evening-primrose is known from southern California in Los Angeles, Orange, Riverside, San Diego, San Luis Obispo, and Ventura counties and into Baja California, Mexico. It is found at

elevations between 0 and 985 feet amsl (CNPS 2017, Calflora 2017, NatureServe 2017).

During the 2017 focused surveys, 187 Lewis' evening-primrose individuals were observed (Attachment 1: Figure 4) in the Diegan coastal sage scrub along the bike path that runs along the southern bank of the San Luis Rey River and west of I-5. Of these, 52 individuals occur within the Proposed Project footprint, and 135 occur outside the Proposed Project footprint but within the 100-foot rare plant survey buffer. All individuals observed appear to be part of an ongoing revegetation effort along the southern bank of the San Luis Rey River.

SUMMARY

No federally or state-listed plant species were observed during the focused rare plant surveys conducted for the Proposed Project in spring 2017.

Six rare plant species – San Diego marsh-elder (CRPR 2B.2), variegated dudleya (CRPR 1B.2), sticky dudleya (CRPR 1B.2), Nuttall's acmispon (CRPR 1B.1), southwestern spiny rush (CRPR 4.2), and Lewis' evening-primrose (CRPR 3) – were observed within or immediately adjacent to the rare plant survey area during the focused rare plant surveys conducted for the Proposed Project in spring 2017. Of these, only Lewis' evening-primrose occurs within the Proposed Project footprint. All of the remaining observations during the 2017 focused surveys occurred outside the Proposed Project footprint but inside the 100-foot rare plant survey buffer, within the proposed Habitat Enhancement Area, or immediately adjacent to the rare plant survey area boundary.

Please do not hesitate to contact me at melissa@busbybiological.com or 858.334.9507 if you have any questions.

Sincerely,



Melissa Busby
Owner/Principal Biologist

cc: Brenna Ogg, RECON

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Special-Status Plant Species with Potential for Occurrence
Attachment 3: Plant Species Observed during Rare Plant Surveys

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ATTACHMENT 1 – Figures



Project Location

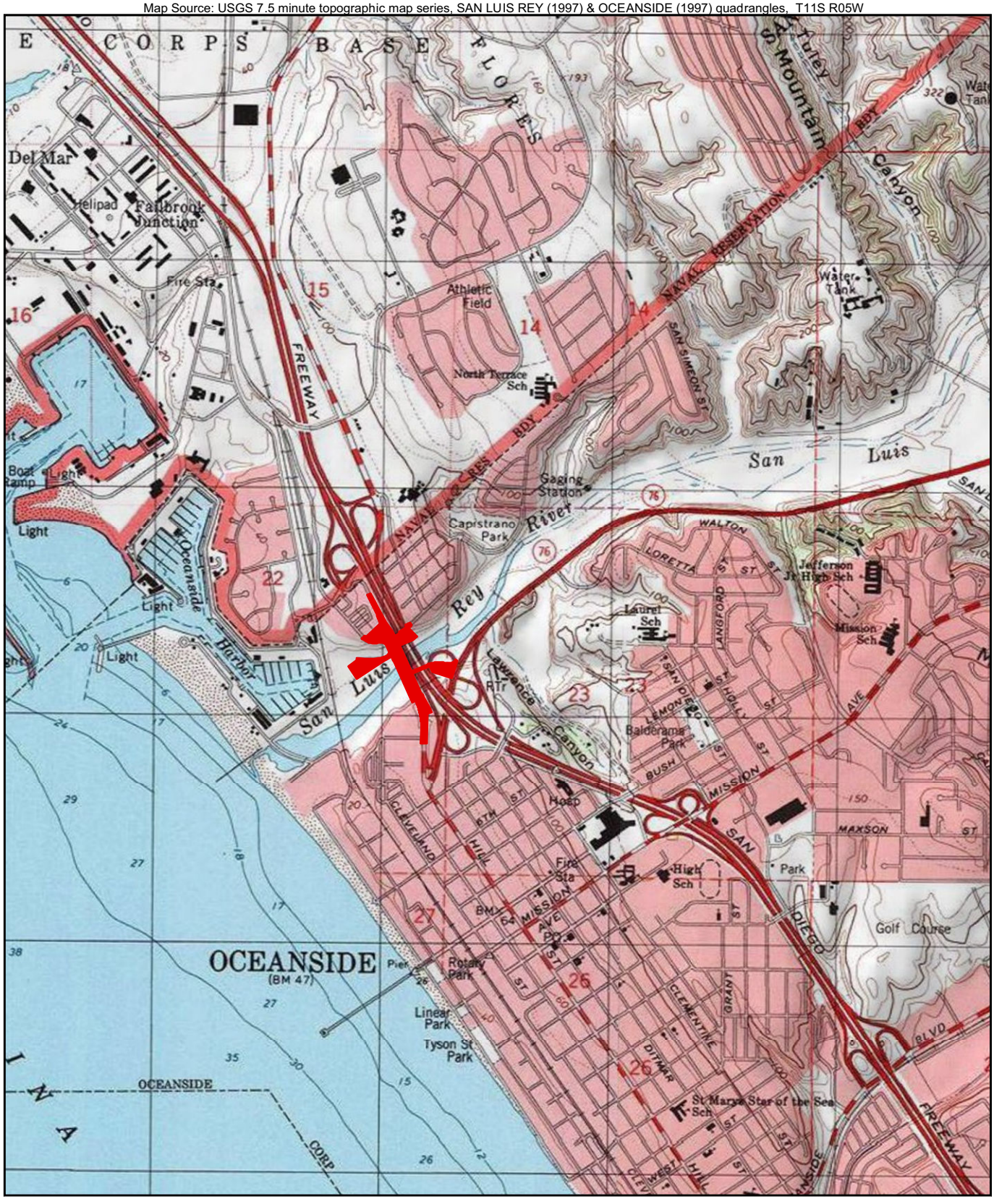
RECON

M:\JOBS4\7380\common_gis\fig1.mxd 4/14/2015 sab

FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



Project Impact Area

FIGURE 2

Project Location on USGS Map

RECON

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Image Source: NearMaps (flown June 2017)



Project Impact Area

Habitat Enhancement Area (Project Mitigation)

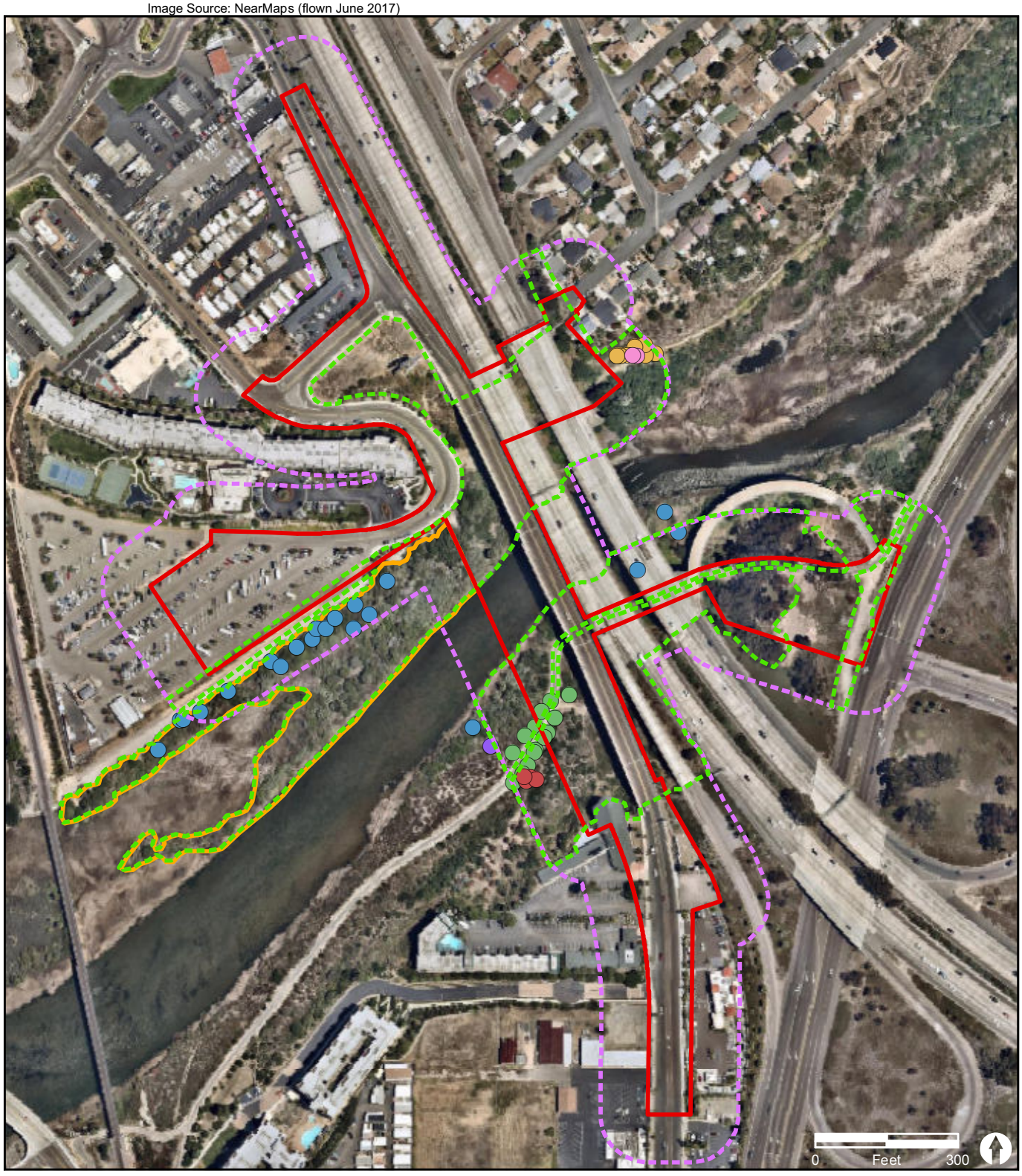
FIGURE 3

Project Vicinity - Aerial

RECON

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Image Source: NearMaps (flown June 2017)



Project Impact Area
Habitat Enhancement Area (Project Mitigation)
100-foot Buffer
Rare Plants Survey Area

Rare Plant Observations

- Lewis' Evening-primrose
- Nuttall's Acmispon
- San Diego Marsh-elder
- Southwestern Spiny Rush
- Sticky Dudleya
- Variegated Dudleya

FIGURE 4

Rare Plant Survey Area
and Sensitive Species Observations

RECON

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ATTACHMENT 2 – Special-Status Plant Species with Potential for Occurrence

ATTACHMENT 2
Special-Status Plant Species with Potential for Occurrence

ATTACHMENT 2
Special-Status Plant Species with Potential for Occurrence

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
San Diego thornmint (*Acanthomintha ilicifolia*)	FT SE CRPR 1B.1 MHCP NE-C	Narrow endemic. Annual herb. Blooms Apr-Jun. Clay soils associated with vernal pools in chaparral, coastal sage scrub, grassland. Elev. 30-3,150ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, no suitable habitat present on site, and species not observed during 2015 or 2017 focused surveys.
Nuttall's acmispon (*Acmispon* [*Lotus nuttallianus*] *prostrata*)	CRPR 1B.1 MHCP NE-C	Narrow endemic. Annual herb. Blooms Mar-Jun. Coastal dunes, coastal sage scrub. Elev. 0-35ft.	High. Species observed in disturbed southern riparian scrub just outside rare plant survey area during 2017 focused surveys.
spineshrub (*Adolphia californica*)	CRPR 2B.1 MHCP-E	Deciduous shrub. Blooms Dec-May. Clay soils in chaparral, coastal sage scrub, grassland. Elev. 145-2,430ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, no suitable habitat present on site, and Proposed Project is outside species' elevation range. This conspicuous perennial species would have likely been apparent if present during 2015 or 2017 focused surveys.
San Diego ambrosia (*Ambrosia pumila*)	FE CRPR 1B.1 MHCP NE-C	Narrow endemic. Rhizomatous herb. Blooms Apr-Oct. Often in disturbed areas with sandy loam or clay soils, sometimes alkaline areas, in chaparral, coastal sage scrub, grassland, vernal pools. Elev. 65-1,365ft.	Not expected. During the 2015 surveys, six individuals observed in scattered patch along southern bank of San Luis Rey River; however, this area is now outside the Proposed Project and associated rare plant survey area and appears to be part of an ongoing revegetation effort based on on-site evidence and lack of naturally occurring historical location records within 1 mile. Not observed during the 2017 surveys.
aphanisma (*Aphanisma blitoides*)	CRPR 1B.2 MHCP–CC	Annual herb. Blooms Mar-Jun. Coastal bluff scrub, coastal dunes,	Not expected. No historical occurrence records exist within 1 mile of Proposed

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
		coastal sage scrub. Elev. 3-1,000ft.	Project and only marginal suitable habitat present on site. However, species was not observed during 2015 or 2017 focused surveys conducted during species' blooming period.
Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*)	FE CRPR 1B.1 MHCP NE-CC	Narrow endemic. Evergreen shrub. Blooms Dec-Jun. Sandy soils in maritime chaparral. Elev. 0-1,200ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat is present on site. This conspicuous perennial species would have likely been apparent if present during 2015 or 2017 focused surveys.
South Coast saltscale (*Atriplex pacifica*)	CRPR 1B.2	Annual herb. Blooms Mar-Oct. Playas, coastal dunes, coastal bluff scrub, coastal sage scrub. Elev. 0-460ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project and marginally-suitable habitat present on site. However, species was not observed during 2015 or 2017 focused surveys conducted during species' blooming period.
Encinitas baccharis (*Baccharis vanessae*)	FT SE CRPR 1B.1 MHCP NE-CC	Narrow endemic. Deciduous shrub. Blooms Aug-Nov. Maritime chaparral, cismontane woodland. Elev. 195-2,365ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, no suitable habitat present on site, and Proposed Project is outside species' elevation range. This conspicuous perennial species would have likely been apparent if present during 2015 or 2017 focused surveys.
San Diego goldenstar (*Bloomeria clevelandii*)	CRPR 1B.1 MSCP NE-CC	Narrow endemic. Bulbiferous herb. Blooms Apr-May. Typically clay soils in vernal pools associated with chaparral, coastal sage scrub, grassland. Elev. 160-1,525ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, no suitable habitat present on site, and Proposed Project is outside the species' elevation range. Species was not observed during 2015 or 2017 focused surveys conducted during this species'

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
			blooming period.
thread-leaved brodiaea (*Brodiaea filifolia*)	FT SE CRPR 1B.1 MHCP NE-C	Narrow endemic. Bulbiferous herb. Blooms Mar-Jun. Typically clay soils in vernal pools associated with playas, chaparral, coastal sage scrub, cismontane woodland, grassland. Elev. 80-3,675ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat is present on site. Species was not observed during 2015 or 2017 focused surveys conducted during species' blooming period.
Orcutt's brodiaea (*Brodiaea orcuttii*)	CRPR 1B.1 MHCP-CC	Bulbiferous herb. Blooms Apr-Jul. Typically mesic, clay soils (sometimes serpentine) in vernal pools associated with chaparral, cismontane woodland, closed-cone coniferous forest, meadows & seeps, grassland. Elev. 30-1,692ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat is present on site. Species was not observed during 2015 or 2017 focused surveys conducted during species' blooming period.
Lewis' evening-primrose (*Camissoniopsis lewisii*)	CRPR 3.1	Annual herb. Blooms Mar-Jun. Sandy or clay soils associated with coastal dunes, coastal sage scrub, grassland, foothill woodland. Elev. 0-985ft.	Present. During 2017 focused surveys, 187 individuals observed in the Diegan coastal sage scrub along the bike path that runs along the southern bank of the San Luis Rey River and west of I-5. Of these, 52 individuals occur within the Proposed Project footprint, and 135 occur outside the Proposed Project footprint but within the 100-foot rare plant survey buffer.
wart-stemmed ceanothus (*Ceanothus verrucosus*)	CRPR 2B.2 MHCP-CC	Evergreen shrub. Blooms Dec-May. Chaparral. Elev. 3-1,250ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat is present on site. This conspicuous perennial species would have likely been apparent if present during 2015 or 2017 focused surveys.
smooth tarplant (*Centromadia pungens* ssp. *laevis*)	CRPR 1B.1	Annual herb. Blooms Apr-Sep. Alkaline soils within chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill	Not expected. Historical records exist within 1 mile of Proposed Project and no suitable habitat is present on site. Species was not observed during 2015 or 2017

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
		grassland. Elev. 0-2,100ft.	focused surveys conducted during species' blooming period.
Orcutt's pincushion (*Chaenactis glabriuscula* var. *orcuttiana*)	CRPR 1B.1	Annual herb. Blooms Jan-Aug. Sandy soils in coastal dunes, coastal bluff scrub. Elev. 0-330ft.	Not expected. Historical records exist within 1 mile and marginally suitable habitat is present on site. However, species was not observed during 2015 or 2017 focused surveys conducted during species' blooming period.
Orcutt's spineflower (*Chorizanthe orcuttiana*)	FE SE CRPR 1B.1 MHCP NE-CC	Narrow endemic. Annual herb. Blooms Mar-May. Sandy openings in chaparral, coastal sage scrub, closed-cone coniferous forest. Elev. 10-410ft.	Not expected. Limited suitable habitat is present on site; however, species was not observed during 2015 or 2017 focused surveys conducted during species' blooming period.
summer-holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	CRPR 1B.2 MHCP-CC	Evergreen shrub. Blooms Apr-Jun. Chaparral, cismontane woodland. Elev. 95-2,595ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, no suitable habitat is present on site, and Proposed Project is outside species' elevation range. This conspicuous species would have likely been apparent if present during 2015 or 2017 focused surveys.
Del Mar Mesa sand aster (*Corethrogyne filaginifolia* var. *linifolia*)	CRPR 1B.1 MHCP NE-CC	Narrow endemic. Perennial herb. Blooms May-Sep. Coastal bluff scrub, maritime chaparral, coastal sage scrub on sandstone substrates. Elev. 45-495ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and only marginally-suitable habitat exists on site. However, species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
western dichondra (*Dichondra occidentalis)*	CRPR 4.2 MHCP-E	Stoloniferous perennial herb. Blooms Jan-Jul. Among rocks and shrubs in coastal sage scrub, chaparral, and oak woodland. Often prevalent following fire. Elev. below 1,700ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and only marginally-suitable habitat exists on site. However, species was not observed during 2015 or 2017 focused surveys conducted during this species'

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
			blooming period.
Blochman's dudleya (*Dudleya blochmaniae*)	CRPR 1B.1 MHCP-C	Perennial herb. Blooms Apr-Jun. Rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland. Elev. below 1,475ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat present on site. Species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
short-leaved dudleya (*Dudleya brevifolia*)	SE CRPR 1B.1 MHCP NE-E	Narrow endemic. Perennial herb. Blooms Apr-May. Sandstone, openings in maritime chaparral, coastal sage scrub. Elev. 95-820ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat present on site. Species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
variegated dudleya (*Dudleya variegata*)	CRPR 1B.2 MHCP NE-CC	Narrow endemic. Perennial herb. Blooms Apr-May. Clay soils associated with vernal pools in chaparral, cismontane woodland, coastal sage scrub, grassland. Elev. 10-1,905ft.	Present. Two individuals were observed during 2017 focused surveys in the disturbed Diegan coastal sage scrub along the trail that runs along the northern bank of the San Luis Rey River and just east of I-5. Both individuals are outside of the Proposed Project footprint but inside the 100-foot rare plant survey buffer.
sticky dudleya (*Dudleya viscida*)	CRPR 1B.2 MHCP-C	Perennial herb. Blooms May-Jun. Rocky areas in coastal bluff scrub, chaparral, coastal scrub, cismontane woodland. Elev. 30-1,805ft.	Present. During 2017 focused surveys, 24 individuals were observed during 2017 focused surveys in the disturbed Diegan coastal sage scrub along the trail that runs along the northern bank of the San Luis Rey River and just east of I-5. All individuals are outside of the Proposed Project footprint but inside the 100-foot rare plant survey buffer.
Palmer's goldenbush (*Ericameria palmeri* ssp. *palmeri*)	CRPR 1B.1 MHCP-CC	Evergreen shrub. Blooms Sep-Nov. Mesic areas in chaparral, coastal sage scrub. Elev. 95-1,970ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and only marginally-suitable habitat exists on site. This conspicuous perennial

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
			species would have likely been apparent if present during 2015 or 2017 focused surveys conducted during this species' blooming period.
San Diego button-celery (*Eryngium aristulatum* var*. parishii*)	FE SE CRPR 1B.1 MHCP NE & WO-CC	Narrow endemic. Wetland obligate. Annual/perennial herb. Blooms Apr-Jun. Vernal pools in coastal sage scrub, grassland. Elev. 65-2,035ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat is present on site. Species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
cliff spurge (*Euphorbia misera*)	CRPR 2B.2 MHCP-CC	Shrub. Blooms Dec-Aug. Rocky areas in coastal bluff scrub, coastal sage scrub, Mojavean desert scrub. Elev. 30-1,640ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project, but no suitable habitat present on site. Species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
coast (San Diego) barrel cactus (*Ferocactus viridescens*)	CRPR 2B.1 MHCP-C	Stem succulent. Blooms May-Jun. Chaparral, coastal sage scrub, grassland, vernal pools. Elev. 10-1,480ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project and suitable habitat exists on site. This conspicuous species would have likely been apparent if present during 2015 or 2017 focused surveys.
Palmer's grapplinghook (*Harpagonella palmeri*)	CRPR 4.2 MHCP-E	Annual herb. Blooms Mar-May. Clay soils in chaparral, coastal sage scrub, grassland, disturbed areas. Elev. 65-3,135ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat present on site. Species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
Orcutt's hazardia (*Hazardia orcuttii*)	CRPR 1B.1 MHCP NE-C	Narrow endemic. Perennial evergreen shrub. Blooms Aug-Oct. Often clay soils in maritime chaparral, coastal scrub. Elev. 260-280ft.	Not expected. No historical occurrence records within 1 mile of Proposed Project, no suitable habitat present on site, and Proposed Project is outside species' elevation range. Species was not observed during 2015 or 2017 focused surveys

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
			conducted during this species' blooming period.
decumbent goldenbush (*Isocoma menziesii* var. *decumbens*)	CRPR 1B.2	Shrub. Blooms Apr-Nov. Sandy, often disturbed, areas in grassland and openings in chaparral, coastal sage scrub. Elev. 30-445ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat present on site. This conspicuous species would have likely been apparent if present during 2015 or 2017 focused surveys conducted during this species' blooming period.
San Diego marsh-elder (*Iva hayesiana*)	CRPR 2B.2 MHCP-C	Perennial herb. Blooms Apr-Oct. Drainages, marshes Playas. Elev. 30-1,640ft.	Present. During 2017 focused surveys, 14 individuals observed in the Diegan coastal sage scrub along the bike path that runs along the southern bank of the San Luis Rey River and west of I-5. All of these individuals are outside of the Proposed Project footprint but inside the 100-foot rare plant survey buffer.
southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	CRPR 4.2 MHCP-E	Perennial, rhizomatous herb. Blooms Mar-Jun. along drainages, alkali marsh, seeps. Elev. 10-2,955ft.	Present. During 2017 focused surveys, 63 southwestern spiny rush individuals were observed. Most observations are scattered within the non-native riparian habitat along the northern bank of the San Luis Rey River, west of I-5, and within the Habitat Enhancement Area that is proposed as mitigation for Proposed Project impacts. Additional observations occurred outside the Proposed Project footprint but within the 100-foot rare plant survey buffer (a) within disturbed habitat located along the southern bank of the San Luis Rey River and below the northbound I-5 bridge and (b) within disturbed southern riparian scrub located along the southern bank of the San Luis Rey River and just

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
			east of I-5. Two observations occurred just outside the rare plant survey area in the disturbed southern riparian scrub along the southern bank of the San Luis Rey River, one east and one west of I-5.
heart-leaved pitcher sage (*Lepechinia cardiophylla*)	CRPR 1B.2 MHCP-CC	Shrub. Blooms Apr-Jun. Chaparral, cismontane woodland, closed-cone coniferous forest. Elev. 1,705-4,495ft.	Not expected. No historical occurrence records within 1 mile of Proposed Project, no suitable habitat present on site, and Proposed Project is outside species' elevation range. Species was not observed during 2015 or 2017 focused surveys conducted during species' blooming period.
sea dahlia (*Leptosyne maritima*)	CRPR 2B.2	Perennial herb. Blooms Mar-May. Coastal bluff scrub, coastal sage scrub. Elev. 15-495ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project and marginally-suitable habitat present on site. However, species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*)	CRPR 1B.2 MHCP-CC	Rhizomatous herb. Blooms Jun-Aug. chaparral, cismontane woodland. Elev. 980-5,170ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, no suitable habitat present on site, and Proposed Project is outside species' elevation range. Species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
little mousetail (*Myosurus minimus* ssp. *apus*)	CRPR 3.1 MHCP NE & WO-CC	Narrow endemic. Wetland obligate. Annual herb. Blooms Mar-Jun. Alkaline soils in vernal pools, grassland. Elev. 65-2,100ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat is present on site. Species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
spreading navarretia (*Navarretia fossalis*)	FT CRPR 1B.1 MHCP NE & WO-CC	Narrow endemic. Wetland obligate. Annual herb. Blooms Apr-Jun. Shallow freshwater associated with marshes, playas, vernal pools, chenopod scrub. Elev. 95-2,150ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project and marginally-suitable habitat is present on site. However, species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
coast woolly-heads (*Nemacaulis denudata* var. *denudata*)	CRPR 1B.2	Annual herb. Blooms Apr-Sep. Coastal dunes. Elev. 0-330ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project and marginally-suitable habitat is present on site. However, species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
slender cottonheads (*Nemacaulis denudata* var. *gracilis*)	CRPR 2B.2	Annual herb. Blooms Mar-May. Coastal dunes, desert dunes, Sonoran desert scrub. Elev. 160-1,315ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project and marginally-suitable habitat is present on site. However, species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
California Orcutt grass (*Orcuttia californica*)	FE SE CRPR 1B.1 MHCP NE & WO-CC	Narrow endemic. Wetland obligate. Annual herb. Blooms Apr-Aug. Vernal pools. Elev. 45-2,165ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and no suitable habitat is present on site. Species was not observed during 2015 or 2017 focused surveys.
Gander's ragwort (*Packera ganderi*)	SR CRPR 1B.2 MHCP-CC	Perennial herb. Blooms Apr-Jun. Gabbroic outcrops & burned areas in chaparral. Elev. 1,310-3,940ft.	Not expected. No historical occurrence records within 1 mile of Proposed Project, no suitable habitat present on site, and Proposed Project is outside species' elevation range. Species was not observed during 2015 or 2017 focused surveys conducted during this species' blooming period.
Nuttall's scrub oak (*Quercus dumosa*)	CRPR 1B.1 MHCP-C	Evergreen shrub. Blooms Feb-Apr. Sandy or clay loam soils associated with chaparral, coastal sage scrub, closed-cone coniferous forest. Elev. 45-1,315ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project and only marginally-suitable habitat exists on site. This conspicuous species would have likely been apparent if present during the 2015 or 2017 focused surveys.
ashy spike-moss	CRPR 4.1	Perennial rhizomatous herb (fern).	Not expected. No historical occurrence

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
(*Selaginella cinerascens*)	MHCP-E	Observable all year. Chaparral, coastal sage scrub. Elev. 65-2,100ft.	records within 1 mile of Proposed Project and only marginally-suitable habitat exists on site. However, species was not observed during 2015 or 2017 focused surveys.

FE = federally listed endangered species
FT = federally listed threatened species
SE = state-listed endangered species
SR = state rare species
CRPR 1B.1 = species is seriously threatened in California and elsewhere
CRPR 1B.2 = species is moderately threatened in California and elsewhere
CRPR 2B.1 = species is seriously threatened in California but more common elsewhere
CRPR 2B.2 = species is moderately threatened in California but more common elsewhere
CRPR 3.1 = more information is needed before accurately ranking this species
CRPR 4.2 = species has limited distribution and is moderately threatened in California
MHCP-C = species covered by MHCP (Multiple Habitat Conservation Plan)
MHCP NE-C = species considered a narrow endemic and covered by MHCP
MHCP-CC = species considered for coverage but not covered by MHCP
MHCP NE-CC = species considered a narrow endemic and considered for coverage but not covered by MHCP
MHCP NE & WO-CC = species considered a narrow endemic and wetland obligate, and considered for coverage but not covered by MHCP
MHCP-E = species evaluated for MHCP but not considered for coverage
MHCP NE-E = species considered a narrow endemic and evaluated for MHCP but not considered for coverage

ATTACHMENT 3 – Plant Species Observed during Rare Plant Surveys

ATTACHMENT 3
Plant Species Observed during Rare Plant Surveys

Family	Scientific Name	Common Name	Status
Adoxaceae	*Sambucus nigra* ssp. *caerulea*	blue elderberry	
Aizoaceae	*Carpobrotus edulis*	iceplant*	
	Malephora crocea	Crocea iceplant*	
	Mesembryanthemum crystallinum	crystalline iceplant*	
	Mesembryanthemum nodiflorum	slender-leaf iceplant*	
	Tetragonia tetragonioides	New Zealand spinach*	
Amaranthaceae	*Amaranthus albus*	white tumbleweed*	
Anacardiaceae	*Rhus integrifolia*	lemonadeberry	
	Schinus terebinthifolius	Brazilian pepper tree*	
	Toxicodendron diversilobum	western poison-oak	
Apiaceae	*Apium graveolens*	common celery*	
	Conium maculatum	common poison hemlock*	
	Foeniculum vulgare	sweet fennel*	
Araliaceae	*Hedera canariensis*	Algerian ivy*	
Arecaceae	*Phoenix canariensis*	Canary Island date palm*	
	Washingtonia robusta	Mexican fan palm*	
Asparagaceae	*Asparagus asparagoides*	florist's-smilax*	
	Asparagus officinalis ssp. *officinalis*	green asparagus*	
Asteraceae	*Ambrosia psilostachya*	western ragweed	
	Artemisia californica	coastal sagebrush	
	Artemisia douglasiana	Douglas mugwort	
	Baccharis pilularis	coyote brush	
	Baccharis salicifolia	mule fat	
	Bidens pilosa var. *pilosa*	common beggar's tick*	
	Carduus pycnocephalus	Italian thistle*	
	Centaurea melitensis	tocalote*	
	Cotula australis	Australian brass-buttons*	
	Cotula coronopifolia	African brass-buttons*	
	Dimorphotheca fruticosa	trailing African daisy*	
	Encelia californica	California encelia	
	Erigeron sumatrensis	tropical horseweed*	
	Gazania linearis	treasure flower*	
	Glebionis coronaria	garland/crown daisy*	
	Hedypnois cretica	Crete hedypnois*	
	Helminthotheca echioides	bristly ox-tongue*	
	Heterotheca grandiflora	telegraph weed	
	Hypochaeris glabra	smooth cat's ear*	

	Isocoma menziesii var. *vernonioides*	coastal goldenbush	
	Iva hayesiana	San Diego marsh-elder	2B.2
	Jaumea carnosa	salty susan	
	Latuca serriola	prickly lettuce*	
	Matricaria discoidea	common pineapple-weed*	
	Pluchea odorata	salt marsh fleabane	
	Pluchea sericea	arrowweed	
	Pseudognaphalium californicum	California everlasting	
	Pseudognaphalium biolettii	bicolor cudweed	
	Pseudognaphalium luteoalbum	fragrant everlasting cudweed*	
	Pseudognaphalium stramineum	cotton-batting plant	
	Sonchus asper ssp. *asper*	prickly sow-thistle*	
	Sonchus oleraceus	common sow-thistle*	
	Xanthium strumarium	cocklebur*	
Boraginaceae	*Heliotropium curassavicum* var. *oculatum*	salt heliotrope	
	Pholistoma auritum var. *auritum*	fiesta flower	
Brassicaceae	*Brassica nigra*	black mustard*	
	Capsella bursa-pastoris	shepherd's purse*	
	Hirschfeldia incana	short-pod mustard*	
	Lepidium didymum	lesser wart-cress*	
	Lobularia maritima	sweet alyssum*	
	Raphanus sativus	wild radish*	
	Sisymbrium irio	London rocket*	
	Sisymbrium orientale	hare's-ear cabbage*	
Cactaceae	*Cylindropuntia prolifera*	coast cholla	
	Mammillaria dioica	fish-hook cactus	
	Opuntia littoralis	coast prickly-pear	
Caryophyllaceae	*Stellaria pallda*	pale starwort*	
Chenopodiaceae	*Atriplex semibaccata*	Australian saltbush*	
	Chenopodium murale	nettle-leaf goosefoot*	
	Dysphania ambrosioides	Mexican tea*	
	Dysphania pumilio	Tasmanian goosefoot*	
	Salsola australis	Australian tumbleweed*	
Convolvulaceae	*Calystegia macrostegia* ssp. *intermedia*	south coast morning-glory	
	Cressa truxillensis	alkali weed	
Crassulaceae	*Crassula connata*	pygmyweed	
	Crassula ovata	jade plant*	
	Dudleya variegata	variegated dudleya	1B.2
	Dudleya viscida	sticky dudleya	1B.2
Cucurbitaceae	*Marah macrocarpa*	manroot	
Cyperaceae	*Cyperus eragrostis*	tall flatsedge	

	Schoenoplectus americanus	Olney's bulrush	
	Schoenoplectus californicus	California bulrush	
Euphorbiaceae	*Euphorbia maculata*	spotted spurge*	
	Euphorbia peplus	petty spurge*	
	Ricinus communis	castor bean*	
Fabaceae	*Acmispon glaber* var. *glaber*	deerweed	
	Acmispon prostratus	Nuttall's acmispon	1B.1
	Ceratonia siliqua	carob tree*	
	Melilotus indicus	Indian sweetclover*	
Geraniaceae	*Erodium botrys*	long-beak filaree*	
	Erodium cicutarium	red-stem filaree*	
	Erodium moschatum	white-stem filaree/storksbill*	
	Geranium carolinianum	Carolina geranium	
	Pelargonium ×hortorum	zonal geranium*	
Iridaceae	*Sisyrinchium bellum*	blue-eyed grass	
Juncaceae	*Juncus acutus* ssp. *leopoldii*	southwestern spiny rush	4.2
Lamiaceae	*Rosmarinus officinalis*	rosemary*	
	Salvia mellifera	black sage	
Lythraceae	*Lythrum hyssopifolia*	grass poly*	
Malvaceae	*Malva parviflora*	cheeseweed*	
Myrsinaceae	*Anagallis arvensis*	scarlet pimpernel*	
Myrtaceae	*Eucalyptus camaldulensis*	river red gum*	
Onagraceae	*Camissoniopsis lewisii*	Lewis' evening-primrose	3
	Epilobium ciliatum ssp. *ciliatum*	willow herb	
	Oenothera elata	evening-primrose	
Oxalidaceae	*Oxalis pes-caprae*	Bermuda-buttercup*	
Phyrmaceae	*Mimulus aurantiacus*	monkey flower bush	
Plantaginaceae	*Antirrhinum nuttallianum*	Nuttall's snapdragon	
	Plantago coronopus	cut-leaf plantain*	
Poaceae	*Arundo donax*	giant reed*	
	Avena barbata	slender wild oat*	
	Brachypodium distachyon	purple falsebrome*	
	Bromus catharticus var. catharticus	rescue grass*	
	Bromus diandrus	ripgut grass*	
	Bromus hordeaceus	soft chess*	
	Bromus madritensis ssp. *rubens*	foxtail chess*	
	Cynodon dactylon	Bermuda grass*	
	Distichlis spicata	salt grass	
	Echinochloa colona	jungle-rice*	
	Ehrharta erecta	panic veldt grass*	
	Elymus condensatus	giant wild-rye	

	Eragrostis pectinacea var. *pectinacea*	spreading love grass*	
	Festuca myuros	rat-tail fescue*	
	Festuca perennis	perennial rye grass*	
	Hordeum murinum ssp. *glaucum*	glaucous barley*	
	Lamarckia aurea	golden-top*	
	Melica imperfecta	Coast Range melic	
	Pennisetum setaceum	crimson fountain grass*	
	Phalaris minor	little-seed canary grass*	
	Poa annua	annual blue grass*	
	Polypogon interruptus	ditch beard grass*	
	Polypogon monspeliensis	annual beard grass*	
	Polypogopn viridis	water beardgrass*	
	Schismus barbatus	Mediterranean schismus*	
	Setaria viridis	green bristle grass*	
	Stipa miliacea var. *milacea*	smilo grass*	
Polygonaceae	*Emex spinosa*	devil's thorn*	
	Eriogonum fasciculatum var. *foliolosum*	inland California buckwheat	
	Polygonum aviculare	common knotweed*	
	Pterostegia drymarioides	granny's hairnet	
	Rumex crispus	curly dock*	
Ranunculaceae	*Clematis ligusticifolia*	yerva de chiva	
Rosaceae	*Heteromeles arbutifolia*	toyon	
	Rosa californica	California rose	
	Rubus ursinus	California blackberry	
Salicaceae	*Salix exigua* var. *hindsiana*	Hinds' willow	
	Salix lasiolepis	arroyo willow	
Saururaceae	*Anemopsis californica*	yerba mansa	
Scrophulariaceae	*Myoporum laetum*	lollypop tree*	
Solanaceae	*Datura wrightii*	western jimson weed	
	Nicotiana glauca	tree tobacco*	
	Solanum americanum	white nightshade	
Tamaricaceae	*Tamarix ramosissima*	saltcedar*	
Tropaeolaceae	*Tropaeolum majus*	garden nasturtium*	
Urticaceae	*Urtica dioica* ssp. *holosericea*	hoary nettle	
	Urtica urens	dwarf nettle*	
Vitaceae	*Vitis girdiana*	southern California wild grape	
Zygophyllaceae	*Tribulus terrestris*	puncture vine*	

* = non-native species
FE = federally listed endangered species
1B.1 = seriously threatened in California and elsewhere
1B.2 = moderately threatened in California and elsewhere
2B.2 = moderately threatened in California but more common elsewhere

3 = more information needed about the species before it can be accurately ranked
4.2 = limited distribution and moderately threatened in California

BUSBY
Biological Services

March 22, 2017

Ms. Brenna Ogg
Senior Biologist
RECON Environmental
1927 Fifth Avenue
San Diego, California 92101

RE: 2015 RARE PLANT SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY BRIDGE REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Ogg:

This letter report summarizes the results of the focused rare plant surveys that were conducted in 2015 by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway Bridge Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2).

PROJECT INFORMATION

The Proposed Project includes replacement of the existing Coast Highway bridge. As the details of the Proposed Project design were not known at the time of these surveys, RECON, in coordination with Moffatt & Nichol, provided BBS with a preliminary, estimated Proposed Project footprint, which includes the existing bridge as well as potential associated access routes and staging yards (Attachment 1: Figure 3). The Proposed Project is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2). The Proposed Project is located within Township 11 South, Range 5 West, and in Section 22 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968) (Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level (amsl).

The Proposed Project area is bordered on all sides by developed land, which includes Interstate 5, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses. Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges, and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and estuarine. Other vegetation communities present in smaller proportions include

disturbed Diegan coastal sage scrub, Diegan coastal sage scrub/southern riparian scrub transition, coastal brackish marsh, and eucalyptus woodland.

METHODS

Prior to the start of the focused surveys, a list of the rare plant species that have potential to occur within or adjacent to the Proposed Project area was developed from a query of the U.S. Fish and Wildlife Service (USFWS) database (USFWS 2014), California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB; CDFW 2014), and the SanGIS database (County of San Diego 2015); data provided by SDG&E from other projects; research using the San Diego Natural History Museum's (SDNHM) plant distribution mapping and voucher specimen lists (SDNHM 2015); research using the California Native Plant Society (CNPS) database (CNPS 2015); and local knowledge of rare plant species likely to occur in the vicinity of the Proposed Project area. The database query included a review of rare plant species reported within 1 mile of the Proposed Project area. Prior to conducting the surveys, results from this background research were carefully considered to determine the rare plant species with the potential for occurrence within the Proposed Project area, and a list of target species was developed.

A plant species was classified as 'special-status' if it had one or more of the designations summarized in Table 1, below.

Table 1: Status Abbreviations and Explanations

STATUS ABBREVIATION		STATUS EXPLANATION
FEDERAL	FE	federally listed endangered species
	FT	federally listed threatened species
	FC	federal candidate species, proposed for listing
STATE	SE	California state-listed endangered species
	ST	California state-listed threatened species
	SR	California state-listed rare species (plants only)
California Rare Plant Rank (CRPR)	1A	presumed extirpated in California and rare or extinct elsewhere
	1B	rare, threatened, or endangered in California and elsewhere
	2A	presumed extirpated in California but more common elsewhere
	2B	rare, threatened, or endangered in California but more common elsewhere
	3	more information needed
	4	limited distribution
CRPR THREAT RANKS	0.1	Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
	0.2	Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
	0.3	Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Species that were on one or more of the database results lists, but were recently 'considered but rejected' (CBR) as a special-status species by CNPS, were not included. CBR species are more common than previously thought, or their taxonomic rank has changed. Therefore, they no longer meet the criteria to be classified as rare species.

Plant names used herein follow the *Checklist of the Vascular Plants of San Diego County, 4th edition* (*Checklist*; Rebman and Simpson 2006). Additional plant references used included *The Jepson manual: vascular plants of California, Second Edition* (*Jepson Manual*; Baldwin et al. 2012); the Consortium of California Herbarium (2015) voucher data; and the San Diego Plant Atlas (SDNHM 2015). When the *Jepson Manual* and the *Checklist* differed in plant taxonomic treatments, such as recognition or lumping of a variety, then the taxonomy of the *Checklist* took precedence.

Qualified botanists conducted focused field surveys for the target rare plant species by walking meandering transects throughout the Proposed Project footprint and 100-foot buffer. Surveys were conducted during appropriate times to coincide with the expected blooming period of all target rare plant species and maximize the possibility of detection of those species. Surveys were conducted in early spring, late spring, and summer.

When a special-status plant species was observed, a waypoint was taken with a handheld Global Positioning System (GPS) that recorded the plant's location and the elevation.

RESULTS

The background research conducted for the special-status plants in the vicinity of the Proposed Project resulted in a list of 43 rare plant species with a potential to occur within or adjacent to the Proposed Project area. A table summarizing the rare plant species with a potential to occur within 1 mile of the Proposed Project area is included in Attachment 2.

Three rounds of rare plant surveys were conducted within approximately 10.5 acres, which included all suitable rare plant habitat within the Proposed Project area and 100-foot buffer (Attachment 1: Figure 4): round 1 on April 14, 2015; round 2 on May 7, 2015; and round 3 on July 21, 2015. Botanists who conducted the focused surveys included Ryan Meszaros (RM), Brian Lohstroh (BL), and Travis Cooper (TC). A list of surveyors and survey dates are provided in Table 2, below.

Table 2. Survey Dates and Surveyors

Survey Round	Survey Date	Surveyors
Round 1 (Early Spring)	4/14/15	RM, BL
Round 2 (Late Spring)	5/7/15	RM, BL
Round 3 (Summer)	7/21/15	BL, TC

Five rare plant species were observed during the focused rare plant surveys. One species – San Diego ambrosia (*Ambrosia pumila*) – is a federally listed endangered and a CRPR 1B.1 species. The other four are San Diego marsh-elder (*Iva hayesiana*; CRPR 2B.2), sticky dudleya (*Dudleya viscida*; CRPR 1B.2), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*; CRPR 4.2), and Lewis' evening-primrose (*Camissoniopsis lewisii*; CRPR 3). These five species are discussed below. A complete list of all plant species observed during the focused special-status plant species surveys is included as Attachment 3.

San Diego Ambrosia

San Diego ambrosia is a federally listed endangered and a CRPR 1B.1 species (seriously threatened in California and elsewhere). It is a rhizomatous herb in the Asteraceae family that typically blooms from April to October. This species typically is found in disturbed areas along historic floodplains with sandy loam or clay soils, and sometimes in alkaline areas. This species is also reported from chaparral, coastal sage scrub, grassland, and around vernal pools. San Diego ambrosia is known from Riverside and San Diego counties as well as Baja California, Mexico, at elevations between 65 and 1,365 feet amsl. This species is threatened by nonnative plant species, road maintenance, foot traffic, vehicle impacts, and development (CNPS 2015, Calflora 2015, NatureServe 2015).

During the 2015 surveys, 675 individual San Diego ambrosia were observed in a scattered patch in the Diegan coastal sage scrub along the southern bank of the San Luis Rey River within and immediately adjacent to the southwestern portion of the rare plant survey area (Attachment 1: Figure 4). Of these, 125 individuals occur within the rare plant survey area, 550 individuals occur outside the rare plant survey area, and all individuals occur outside the Proposed Project boundary. The individuals observed in this area appear to be part of an ongoing revegetation effort along the southern bank of the San Luis Rey River.

San Diego Marsh-elder

San Diego marsh-elder is a CRPR 2B.2 species (moderately threatened in California but more common elsewhere). It is a perennial herb in the Asteraceae family that typically blooms from April to October. This species is found along ephemeral drainages, alkali marshes, and playas. San Diego marsh-elder is known from San Diego County and from Baja California, Mexico, at elevations between 30 and 1,640 feet amsl. This species is threatened by waterway channelization, coastal development, nonnative plant species, and vehicle activity (CNPS 2015, Calflora 2015, NatureServe 2015).

During the 2015 surveys, 32 individual San Diego marsh-elder were observed in three locations within and immediately adjacent to the rare plant survey area (Attachment 1: Figure 4). One individual occurs in the northern portion of the rare plant survey area and within the Proposed Project boundary within disturbed habitat along Carmelo Drive. Of the remaining 31 individuals, 30 occur outside of the Proposed Project boundary in the southwestern portion of the rare plant survey area within the Diegan coastal sage scrub along the southern bank of the San Luis Rey River, and one individual occurs outside the rare plant survey area along the southern bank of the San Luis Rey River. All individuals observed along the southern bank of the San Luis Rey River appear to be part of an ongoing revegetation effort in this area.

Sticky Dudleya

Sticky dudleya is a CRPR 1B.2 species (moderately threatened in California and elsewhere). It is a perennial herb in the Crassulaceae family that typically blooms from May to June. This species is found in rocky areas in coastal bluff scrub, chaparral, coastal sage scrub, and cismontane woodland. Sticky dudleya is known from Orange and San Diego counties as well as from Baja California, Mexico. It occurs at elevations between 30 and 1,805 feet amsl. This species is threatened by development and road construction (CNPS 2015, Calflora 2015, NatureServe 2015).

During the 2015 surveys, eight individual sticky dudleya were observed in a scattered patch in the Diegan coastal sage scrub along the southern bank of the San Luis Rey River within and immediately adjacent to the southwestern portion of the rare plant survey area (Attachment 1: Figure 4). Of these, three individuals occur within the rare plant survey area, five individuals occur outside the rare plant survey area, and all individuals occur outside the Proposed Project boundary. The individuals observed in this area appear to be part of an ongoing revegetation effort along the southern bank of the San Luis Rey River.

Southwestern Spiny Rush

Southwestern spiny rush is a CRPR 4.2 species (limited distribution and moderately threatened in California). It is a rhizomatous herb in the Juncaceae family that blooms from May to June. This species typically is found along ephemeral drainages, alkaline marshes and seeps, mesic areas of coastal dunes, and coastal salt marsh. Southwestern spiny rush is known from southern California in Imperial, Los Angeles, Orange, Santa Barbara, San Diego, San Luis Obispo, and Ventura counties; from Nevada, Arizona, and Georgia; and from Baja California, Mexico; as well as into South America. It is found at elevations between 10 and 2,955 feet amsl. This species is threatened by development and flood control activities (CNPS 2015, Calflora 2015, NatureServe 2015).

During the 2015 surveys, 123 individual southwestern spiny rush were observed scattered within the non-native riparian community along the northern bank of the San Luis Rey River that is within the rare plant survey area (Attachment 1: Figure 4). Of these, 120 individuals occur within the rare plant survey area, three individuals occur outside the rare plant survey area, and all individuals occur outside the Proposed Project boundary. All individuals appear to be naturally occurring.

Lewis' Evening-primrose

Lewis' evening-primrose is a CRPR 3 species (more information is needed before accurately ranking this species). It is an annual herb in the Onagraceae family that blooms from March to May. This species typically is found in sandy or clay soils associated with coastal dunes as well as in coastal sage scrub, grassland, and foothill woodland habitats with suitable soils. Lewis' evening-primrose is known from southern California in Los Angeles, Orange, Riverside, San Diego, San Luis Obispo, and Ventura counties and into Baja California, Mexico. It is found at elevations between 0 and 985 feet amsl (CNPS 2015, Calflora 2015, NatureServe 2015).

During the 2015 surveys, 164 individual Lewis' evening-primrose were observed in scattered patches in the Diegan coastal sage scrub immediately adjacent to the paved bike path that runs along the southern bank of the San Luis Rey River, within and immediately adjacent to the southwestern portion of the rare plant survey area (Attachment 1: Figure 4). Of these, 160 individuals occur within the rare plant survey area, including 62 individuals inside the Proposed Project boundary and 98 individuals outside the Proposed Project boundary. The remaining four individuals occur outside the Proposed Project boundary and rare plant survey area. All individuals appear to be naturally occurring.

SUMMARY

One federally listed species – San Diego ambrosia – was observed during the focused rare plant surveys conducted for the Proposed Project in spring and summer 2015. Of the 675 San Diego ambrosia individuals detected, 125 individuals occur within the rare plant survey area, and all individuals occur outside the Proposed Project boundary.

Four additional rare plant species – San Diego marsh-elder (CRPR 2B.2), sticky dudleya (CRPR 1B.2), southwestern spiny rush (CRPR 4.2), and Lewis' evening-primrose (CRPR 3) – were observed within the rare plant survey area during the focused rare plant surveys conducted for the Proposed Project in spring and summer 2015. Of the 32 San Diego marsh-elder detected, 31 individuals occur within the rare plant survey area, including one individual in the Proposed Project boundary. Of the eight sticky dudleya detected, three individuals occur within the rare plant survey area, and all individuals occur outside the Proposed Project boundary. Of the 123 southwestern spiny rush detected, 120 individuals occur within the rare plant survey area, and all individuals occur outside the Proposed Project boundary. Of the 164 Lewis' evening-primrose detected, 160 individuals occur within the rare plant survey area, including 62 inside the Proposed Project boundary.

Please do not hesitate to contact me at melissa@busbybiological.com or 858.334.9507 if you have any questions.

Sincerely,



Melissa Busby
Owner/Principal Biologist

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Special-Status Plant Species with Potential for Occurrence
Attachment 3: Plant Species Observed during Rare Plant Surveys

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ATTACHMENT 1 – Figures



Project Location

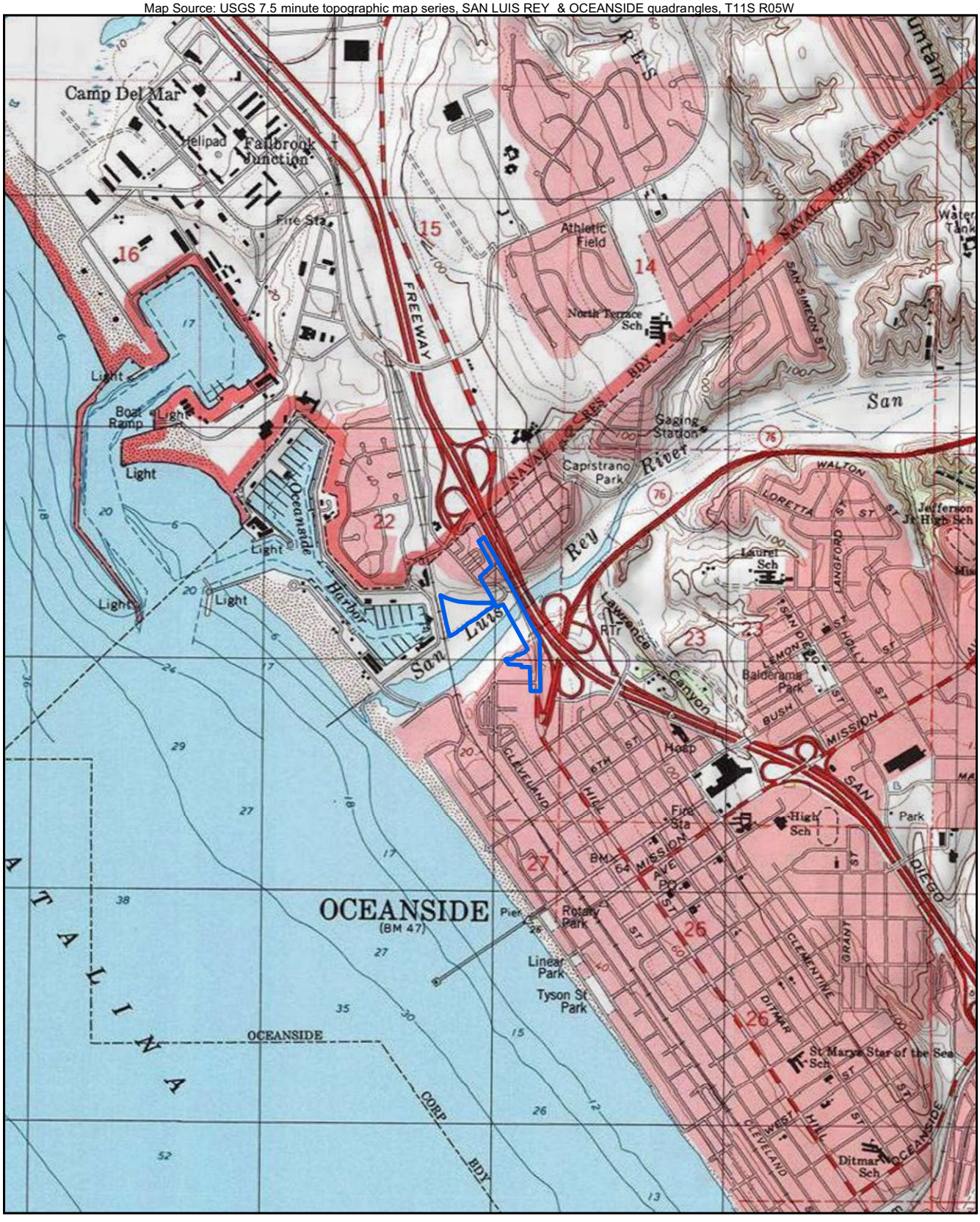
RECON

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FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY & OCEANSIDE quadrangles, T11S R05W



0 Feet 2,000

Project Boundary

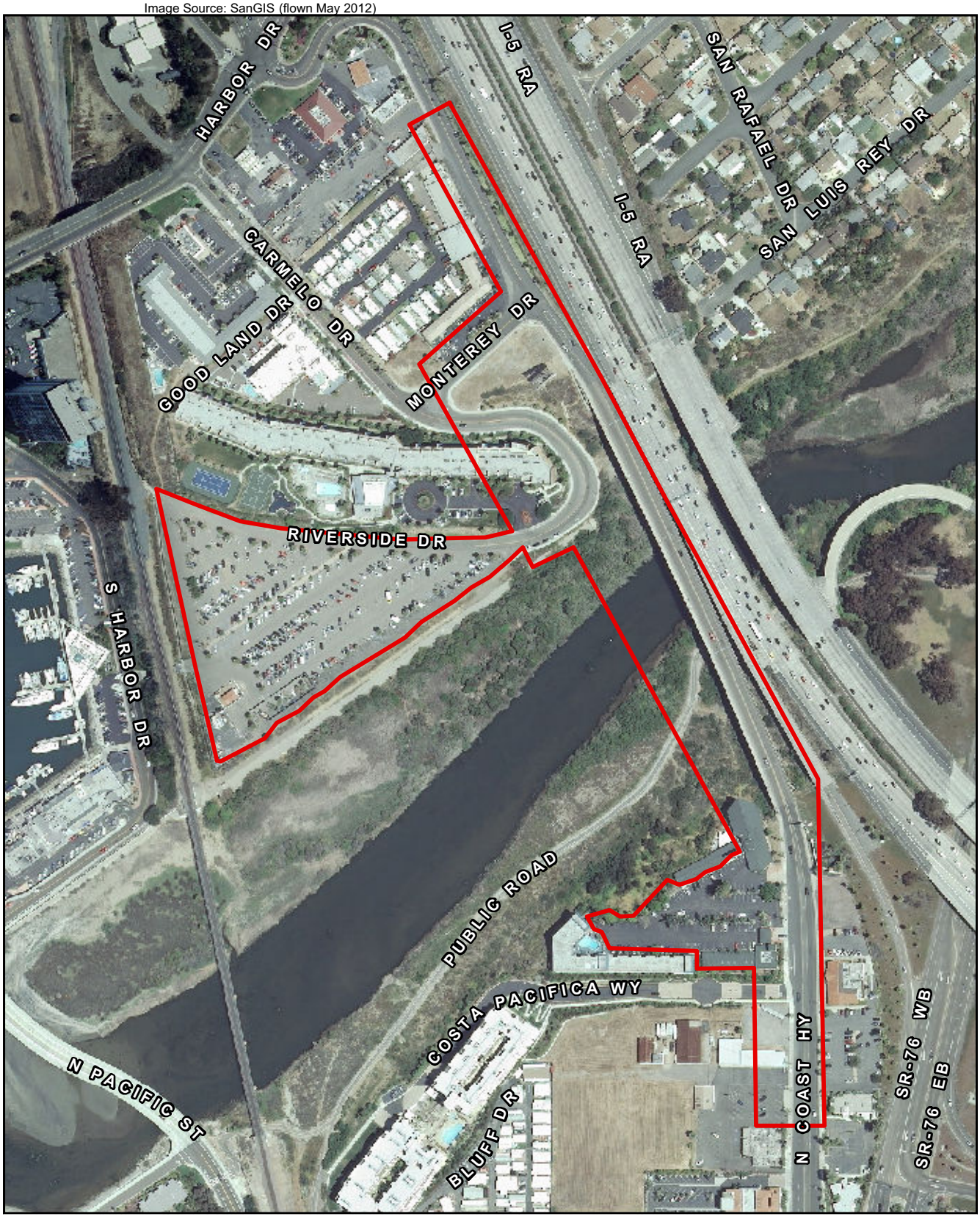
FIGURE 2

Project Vicinity - USGS Topographic Map

RECON

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Image Source: SanGIS (flown May 2012)



Project Boundary

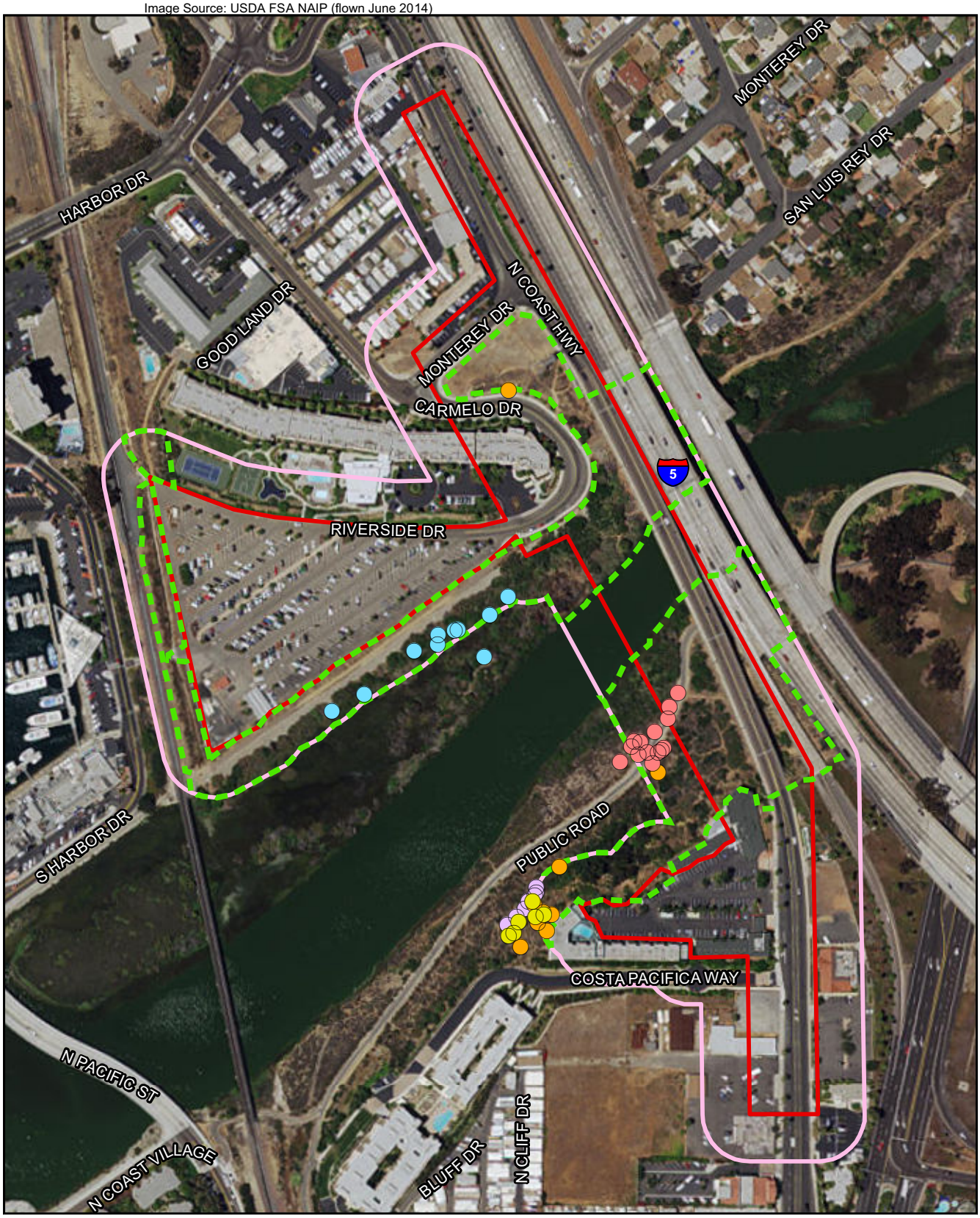
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FIGURE 3

Project Vicinity - Aerial

Image Source: USDA FSA NAIP (flown June 2014)



Project Boundary
100ft Buffer
Rare Plants Survey Area

Rare Plant Observations

- Lewis' Evening-primrose
- San Diego Ambrosia
- San Diego Marsh-elder
- Southwestern Spiny Rush
- Sticky Dudleya

0 Feet 300

FIGURE 4

Rare Plant Survey Area
and Sensitive Species Observations

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ATTACHMENT 2 – Special-Status Plant Species with Potential for Occurrence

ATTACHMENT 2
Special-Status Plant Species with Potential for Occurrence

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
San Diego thornmint (*Acanthomintha ilicifolia*)	FT SE CRPR 1B.1 MHCP NE-C	Narrow endemic. Annual herb. Blooms Apr-Jun. Clay soils associated with vernal pools in chaparral, coastal sage scrub, grassland. Elev. 30-3,150ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and species was not observed during 2015 focused surveys.
Nuttall's acmispon (*Acmispon* [*Lotus nuttallianus*] *prostrata*)	CRPR 1B.1 MHCP NE-C	Narrow endemic. Annual herb. Blooms Mar-Jun. Coastal dunes, coastal sage scrub. Elev. 0-35ft.	Not expected. Historical records exist within 1 mile of Proposed Project; marginally-suitable habitat is present on site. However, species was not observed during 2015 focused surveys conducted during this species' blooming period.
spineshrub (*Adolphia californica*)	CRPR 2B.1 MHCP-E	Deciduous shrub. Blooms Dec-May. Clay soils in chaparral, coastal sage scrub, grassland. Elev. 145-2,430ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and Proposed Project is outside species' elevation range. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015 focused surveys.
San Diego ambrosia (*Ambrosia pumila*)	FE CRPR 1B.1 MHCP NE-C	Narrow endemic. Rhizomatous herb. Blooms Apr-Oct. Often in disturbed areas with sandy loam or clay soils, sometimes alkaline areas, in chaparral, coastal sage scrub, grassland, vernal pools. Elev. 65-1,365ft.	Six individuals observed in scattered patch within and immediately adjacent to rare plant survey area along southern bank of San Luis Rey River. Appears to be part of an ongoing revegetation effort based on on-site evidence and lack of naturally occurring historical location records within 1 mile.
aphanisma (*Aphanisma blitoides*)	CRPR 1B.2 MHCP–CC	Annual herb. Blooms Mar-Jun. Coastal bluff scrub, coastal dunes, coastal sage scrub. Elev. 3-1,000ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and only marginally-suitable

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
			habitat is present on site. However, species was not observed during 2015 focused surveys conducted during species' blooming period.
Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*)	FE CRPR 1B.1 MHCP NE-CC	Narrow endemic. Evergreen shrub. Blooms Dec-Jun. Sandy soils in maritime chaparral. Elev. 0-1,200ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015 focused surveys.
South Coast saltscale (*Atriplex pacifica*)	CRPR 1B.2	Annual herb. Blooms Mar-Oct. Playas, coastal dunes, coastal bluff scrub, coastal sage scrub. Elev. 0-460ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project, and marginally-suitable habitat is present on site. However, species was not observed during 2015 focused surveys conducted during species' blooming period.
Encinitas baccharis (*Baccharis vanessae*)	FT SE CRPR 1B.1 MHCP NE-CC	Narrow endemic. Deciduous shrub. Blooms Aug-Nov. Maritime chaparral, cismontane woodland. Elev. 195-2,365ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and Proposed Project is outside species' elevation range. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015 focused surveys.
San Diego goldenstar (*Bloomeria clevelandii*)	CRPR 1B.1 MSCP NE-CC	Narrow endemic. Bulbiferous herb. Blooms Apr-May. Typically clay soils in vernal pools associated with chaparral, coastal sage scrub, grassland. Elev. 160-1,525ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and Proposed Project is outside the species' elevation range. Species was not observed during 2015 focused surveys conducted during this species' blooming period.

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
thread-leaved brodiaea (*Brodiaea filifolia*)	FT SE CRPR 1B.1 MHCP NE-C	Narrow endemic. Bulbiferous herb. Blooms Mar-Jun. Typically clay soils in vernal pools associated with playas, chaparral, coastal sage scrub, cismontane woodland, grassland. Elev. 80-3,675ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. Species was not observed during 2015 focused surveys conducted during species' blooming period.
Orcutt's brodiaea (*Brodiaea orcuttii*)	CRPR 1B.1 MHCP-CC	Bulbiferous herb. Blooms Apr-Jul. Typically mesic, clay soils (sometimes serpentine) in vernal pools associated with chaparral, cismontane woodland, closed-cone coniferous forest, meadows & seeps, grassland. Elev. 30-1,692ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. Species was not observed during 2015 focused surveys conducted during species' blooming period.
Lewis' evening-primrose (*Camissoniopsis lewisii*)	CRPR 3.1	Annual herb. Blooms Mar-Jun. Sandy or clay soils associated with coastal dunes, coastal sage scrub, grassland, foothill woodland. Elev. 0-985ft.	Fourteen individuals were observed in scattered patches within and immediately adjacent to the southwestern portion of the rare plant survey area immediately adjacent to the paved bike path that runs along the southern bank of the San Luis Rey River. Individuals appear to be naturally occurring.
wart-stemmed ceanothus (*Ceanothus verrucosus*)	CRPR 2B.2 MHCP-CC	Evergreen shrub. Blooms Dec-May. Chaparral. Elev. 3-1,250ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015 focused surveys.
smooth tarplant (*Centromadia pungens* ssp*. laevis*)	CRPR 1B.1	Annual herb. Blooms Apr-Sep. Alkaline soils within chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland. Elev. 0-2,100ft.	Not expected. Historical records exist within 1 mile of Proposed Project. However, no suitable habitat is present on site, and species was not observed during 2015 focused surveys conducted during species' blooming period.

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
Orcutt's pincushion (*Chaenactis glabriuscula* var*. orcuttiana*)	CRPR 1B.1	Annual herb. Blooms Jan-Aug. Sandy soils in coastal dunes, coastal bluff scrub. Elev. 0-330ft.	Not expected. Historical records exist within 1 mile, and marginally-suitable habitat is present on site. However, species was not observed during 2015 focused surveys conducted during species' blooming period.
Orcutt's spineflower (*Chorizanthe orcuttiana*)	FE SE CRPR 1B.1 MHCP NE-CC	Narrow endemic. Annual herb. Blooms Mar-May. Sandy openings in chaparral, coastal sage scrub, closed-cone coniferous forest. Elev. 10-410ft.	Not expected. Limited suitable habitat is present on site; however, species was not observed during 2015 focused surveys conducted during species' blooming period.
summer-holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	CRPR 1B.2 MHCP-CC	Evergreen shrub. Blooms Apr-Jun. Chaparral, cismontane woodland. Elev. 95-2,595ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and Proposed Project is outside species' elevation range. This conspicuous species was not observed and would have likely been apparent if present during 2015 focused surveys.
Del Mar Mesa sand aster (*Corethrogyne filaginifolia* var. *linifolia*)	CRPR 1B.1 MHCP NE-CC	Narrow endemic. Perennial herb. Blooms May-Sep. Coastal bluff scrub, maritime chaparral, coastal sage scrub on sandstone substrates. Elev. 45-495ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and only marginally-suitable habitat exists on site. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
western dichondra (*Dichondra occidentalis)*	CRPR 4.2 MHCP-E	Stoloniferous perennial herb. Blooms Jan-Jul. Among rocks and shrubs in coastal sage scrub, chaparral, and oak woodland. Often prevalent following fire. Elev. below 1,700ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and only marginally-suitable habitat exists on site. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
Blochman's dudleya	CRPR 1B.1	Perennial herb. Blooms Apr-Jun.	Not expected. No historical occurrence

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
(*Dudleya blochmaniae*)	MHCP-C	Rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland. Elev. below 1,475ft.	records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
short-leaved dudleya (*Dudleya brevifolia*)	SE CRPR 1B.1 MHCP NE-E	Narrow endemic. Perennial herb. Blooms Apr-May. Sandstone, openings in maritime chaparral, coastal sage scrub. Elev. 95-820ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
variegated dudleya (*Dudleya variegata*)	CRPR 1B.2 MHCP NE-CC	Narrow endemic. Perennial herb. Blooms Apr-May. Clay soils associated with vernal pools in chaparral, cismontane woodland, coastal sage scrub, grassland. Elev. 10-1,905ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat exists on site. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
sticky dudleya (*Dudleya viscida*)	CRPR 1B.2 MHCP-C	Perennial herb. Blooms May-Jun. Rocky areas in coastal bluff scrub, chaparral, coastal scrub, cismontane woodland. Elev. 30-1,805ft.	Seven individuals were observed in a scattered patch within and immediately adjacent to the rare plant survey area along the southern bank of the San Luis Rey River. Appears to be part of an ongoing revegetation effort based on on-site evidence.
Palmer's goldenbush (*Ericameria palmeri* ssp. *palmeri*)	CRPR 1B.1 MHCP-CC	Evergreen shrub. Blooms Sep-Nov. Mesic areas in chaparral, coastal sage scrub. Elev. 95-1,970ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and only marginally-suitable habitat exists on site. This conspicuous perennial species was not observed and would have likely been apparent if present during 2015 focused surveys conducted during this species' blooming period.
San Diego button-celery (*Eryngium aristulatum*	FE SE	Narrow endemic. Wetland obligate. Annual/perennial herb. Blooms Apr-	Not expected. Historical occurrence records exist within 1 mile of Proposed

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
var. *parishii*)	CRPR 1B.1 MHCP NE & WO-CC	Jun. Vernal pools in coastal sage scrub, grassland. Elev. 65-2,035ft.	Project. However, no suitable habitat is present on site, and species was not observed during 2015 focused surveys conducted during this species' blooming period.
cliff spurge (*Euphorbia misera*)	CRPR 2B.2 MHCP-CC	Shrub. Blooms Dec-Aug. Rocky areas in coastal bluff scrub, coastal sage scrub, Mojavean desert scrub. Elev. 30-1,640ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project, but no suitable habitat present on site. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
coast (San Diego) barrel cactus (*Ferocactus viridescens*)	CRPR 2B.1 MHCP-C	Stem succulent. Blooms May-Jun. Chaparral, coastal sage scrub, grassland, vernal pools. Elev. 10-1,480ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project, and suitable habitat exists on site. However, this conspicuous species was not observed and would have likely been apparent if present during 2015 focused surveys.
Palmer's grapplinghook (*Harpagonella palmeri*)	CRPR 4.2 MHCP-E	Annual herb. Blooms Mar-May. Clay soils in chaparral, coastal sage scrub, grassland, disturbed areas. Elev. 65-3,135ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
Orcutt's hazardia (*Hazardia orcuttii*)	CRPR 1B.1 MHCP NE-C	Narrow endemic. Perennial evergreen shrub. Blooms Aug-Oct. Often clay soils in maritime chaparral, coastal scrub. Elev. 260-280ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and Proposed Project is outside species' elevation range. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
decumbent goldenbush (*Isocoma menziesii* var.	CRPR 1B.2	Shrub. Blooms Apr-Nov. Sandy, often disturbed, areas in grassland	Not expected. Historical occurrence records exist within 1 mile of Proposed

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
decumbens)		and openings in chaparral, coastal sage scrub. Elev. 30-445ft.	Project, but no suitable habitat is present on site. This conspicuous species was not observed and would have likely been apparent if present during 2015 focused surveys conducted during this species' blooming period.
San Diego marsh-elder (*Iva hayesiana*)	CRPR 2B.2 MHCP-C	Perennial herb. Blooms Apr-Oct. Drainages, marshes Playas. Elev. 30-1,640ft.	Nine individuals were observed in three locations within and immediately adjacent to the rare plant survey area – one in the northern portion along Carmelo Drive and two in the southwestern portion along the southern bank of the San Luis Rey River. The individuals observed along the southern bank of the San Luis Rey River appear to be part of an ongoing revegetation effort in this area based on on-site evidence.
spiny rush (*Juncus acutus* ssp. *leopoldii*)	CRPR 4.2 MHCP-E	Perennial, rhizomatous herb. Blooms Mar-Jun. along drainages, alkali marsh, seeps. Elev. 10-2,955ft.	Ten individuals were observed scattered along the northern bank of the San Luis Rey River within the rare plant survey area. Individuals appear to be naturally occurring.
heart-leaved pitcher sage (*Lepechinia cardiophylla*)	CRPR 1B.2 MHCP-CC	Shrub. Blooms Apr-Jun. Chaparral, cismontane woodland, closed-cone coniferous forest. Elev. 1,705-4,495ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and Proposed Project is outside species' elevation range. Species was not observed during 2015 focused surveys conducted during species' blooming period.
sea dahlia (*Leptosyne maritima*)	CRPR 2B.2	Perennial herb. Blooms Mar-May. Coastal bluff scrub, coastal sage scrub. Elev. 15-495ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project, and marginally-suitable habitat present on site. However, species was not

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
			observed during 2015 focused surveys conducted during this species' blooming period.
felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*)	CRPR 1B.2 MHCP-CC	Rhizomatous herb. Blooms Jun-Aug. chaparral, cismontane woodland. Elev. 980-5,170ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and Proposed Project is outside species' elevation range. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
little mousetail (*Myosurus minimus* ssp. *apus*)	CRPR 3.1 MHCP NE & WO-CC	Narrow endemic. Wetland obligate. Annual herb. Blooms Mar-Jun. Alkaline soils in vernal pools, grassland. Elev. 65-2,100ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
spreading navarretia (*Navarretia fossalis*)	FT CRPR 1B.1 MHCP NE & WO-CC	Narrow endemic. Wetland obligate. Annual herb. Blooms Apr-Jun. Shallow freshwater associated with marshes, playas, vernal pools, chenopod scrub. Elev. 95-2,150ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project, and marginally-suitable habitat is present on site. However, species was not observed during 2015 focused surveys conducted during this species' blooming period.

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
coast woolly-heads (*Nemacaulis denudata* var*. denudata*)	CRPR 1B.2	Annual herb. Blooms Apr-Sep. Coastal dunes. Elev. 0-330ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project, and marginally-suitable habitat is present on site. However, species was not observed during 2015 focused surveys conducted during this species' blooming period.
slender cottonheads (*Nemacaulis denudata* var. *gracilis*)	CRPR 2B.2	Annual herb. Blooms Mar-May. Coastal dunes, desert dunes, Sonoran desert scrub. Elev. 160-1,315ft.	Not expected. Historical occurrence records exist within 1 mile of Proposed Project, and marginally-suitable habitat is present on site. However, species was not observed during 2015 focused surveys conducted during this species' blooming period.
California Orcutt grass (*Orcuttia californica*)	FE SE CRPR 1B.1 MHCP NE & WO-CC	Narrow endemic. Wetland obligate. Annual herb. Blooms Apr-Aug. Vernal pools. Elev. 45-2,165ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and no suitable habitat is present on site. Species was not observed during 2015 focused surveys.
Gander's ragwort (*Packera ganderi*)	SR CRPR 1B.2 MHCP-CC	Perennial herb. Blooms Apr-Jun. Gabbroic outcrops & burned areas in chaparral. Elev. 1,310-3,940ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project. No suitable habitat is present on site, and Proposed Project is outside species' elevation range. Species was not observed during 2015 focused surveys conducted during this species' blooming period.
Nuttall's scrub oak (*Quercus dumosa*)	CRPR 1B.1 MHCP-C	Evergreen shrub. Blooms Feb-Apr. Sandy or clay loam soils associated with chaparral, coastal sage scrub, closed-cone coniferous forest. Elev. 45-1,315ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and only marginally-suitable habitat exists on site. This conspicuous species was not observed and would have likely been apparent if present during the 2015 focused surveys.

SPECIES NAME	STATUS	HABITAT DESCRIPTION*	POTENTIAL FOR OCCURRENCE
ashy spike-moss (*Selaginella cinerascens*)	CRPR 4.1 MHCP-E	Perennial rhizomatous herb (fern). Observable all year. Chaparral, coastal sage scrub. Elev. 65-2,100ft.	Not expected. No historical occurrence records exist within 1 mile of Proposed Project, and only marginally-suitable habitat exists on site. Species was not observed during 2015 focused surveys.

FE = federally listed endangered species
FT = federally listed threatened species
SE = state-listed endangered species
SR = state rare species
CRPR 1B.1 = species is seriously threatened in California and elsewhere
CRPR 1B.2 = species is moderately threatened in California and elsewhere
CRPR 2B.1 = species is seriously threatened in California but more common elsewhere
CRPR 2B.2 = species is moderately threatened in California but more common elsewhere
CRPR 3.1 = more information is needed before accurately ranking this species
CRPR 4.1 = species has limited distribution and is seriously threatened in California
CRPR 4.2 = species has limited distribution and is moderately threatened in California
MHCP-C = species covered by MHCP (Multiple Habitat Conservation Plan)
MHCP NE-C = species considered a narrow endemic and covered by MHCP
MHCP-CC = species considered for coverage but not covered by MHCP
MHCP NE-CC = species considered a narrow endemic and considered for coverage but not covered by MHCP
MHCP NE & WO-CC = species considered a narrow endemic and wetland obligate, and considered for coverage but not covered by MHCP
MHCP-E = species evaluated for MHCP but not considered for coverage
MHCP NE-E = species considered a narrow endemic and evaluated for MHCP but not considered for coverage

ATTACHMENT 3 – Plant Species Observed during Rare Plant Surveys

ATTACHMENT 3
Plant Species Observed during Rare Plant Surveys

Family	Scientific Name	Common Name	Status
Adoxaceae	*Sambucus nigra* ssp. *caerulea*	blue elderberry	
Aizoaceae	*Carpobrotus edulis*	iceplant*	
	Mesembryanthemum crystallinum	crystalline iceplant*	
	Mesembryanthemum nodiflorum	slender-leaf iceplant*	
	Tetragonia tetragonioides	New Zealand spinach*	
Amaranthaceae	*Amaranthus albus*	white tumbleweed*	
Anacardiaceae	*Rhus integrifolia*	lemonadeberry	
	Schinus terebinthifolius	Brazilian pepper tree*	
	Toxicodendron diversilobum	western poison-oak	
Apiaceae	*Apium graveolens*	common celery*	
	Conium maculatum	common poison hemlock*	
	Foeniculum vulgare	sweet fennel*	
Araliaceae	*Hedera canariensis*	Algerian ivy*	
Arecaceae	*Phoenix canariensis*	Canary Island date palm*	
	Washingtonia robusta	Mexican fan palm*	
Asparagaceae	*Asparagus asparagoides*	florist's-smilax*	
	Asparagus officinalis ssp. *officinalis*	green asparagus*	
Asteraceae	*Ambrosia psilostachya*	western ragweed	
	Ambrosia pumila	San Diego ambrosia	FE, 1B.1
	Artemisia californica	coastal sagebrush	
	Artemisia douglasiana	Douglas mugwort	
	Baccharis pilularis	coyote brush	
	Baccharis salicifolia	Mule fat	
	Bidens pilosa var. *pilosa*	common beggar's tick*	
	Carduus pycnocephalus	Italian thistle*	
	Centaurea melitensis	tocalote*	
	Cotula australis	Australian brass-buttons*	
	Cotula coronopifolia	African brass-buttons*	
	Deinandra fasciculata	fascicled tarweed	
	Dimorphotheca fruticosa	trailing African daisy*	
	Encelia californica	California encelia	
	Encelia farinosa var. farinosa	brittlebush	
	Erigeron sumatrensis	tropical horseweed*	
	Gazania linearis	treasure flower*	
	Glebionis coronaria	garland/crown daisy*	
	Hedypnois cretica	Crete hedypnois*	
	Heterotheca grandiflora	telegraph weed	

	Hypochaeris glabra	smooth cat's ear*	
	Isocoma menziesii var. *vernonioides*	coastal goldenbush	
	Iva hayesiana	San Diego marsh-elder	2B.2
	Jaumea carnosa	salty susan	
	Matricaria discoidea	common pineapple-weed*	
	Pluchea odorata	salt marsh fleabane	
	Pseudognaphalium californicum	California everlasting	
	Pseudognaphalium luteoalbum	fragrant everlasting cudweed*	
	Pseudognaphalium stramineum	cotton-batting plant	
	Sonchus oleraceus	common sow-thistle*	
	Xanthium strumarium	cocklebur*	
Boraginaceae	*Heliotropium curassavicum* var. *oculatum*	salt heliotrope	
Brassicaceae	*Brassica nigra*	black mustard*	
	Capsella bursa-pastoris	shepherd's purse*	
	Hirschfeldia incana	short-pod mustard*	
	Lepidium didymum	lesser wart-cress*	
	Lobularia maritima	sweet alyssum*	
	Raphanus sativus	wild radish*	
	Sisymbrium irio	London rocket*	
	Sisymbrium orientale	hare's-ear cabbage*	
Cactaceae	*Opuntia littoralis*	coast prickly-pear	
Caryophyllaceae	*Spergula arvensis*	stickwort, starwort*	
Chenopodiaceae	*Atriplex semibaccata*	Australian saltbush*	
	Chenopodium murale	nettle-leaf goosefoot*	
	Dysphania ambrosioides	Mexican tea*	
	Salsola australis	Australian tumbleweed*	
Convolvulaceae	*Calystegia macrostegia* ssp. *intermedia*	south coast morning-glory	
	Cressa truxillensis	alkali weed	
Crassulaceae	*Crassula connata*	pygmyweed	
	Crassula ovata	jade plant*	
	Dudleya viscida	sticky dudleya	1B.2
Cucurbitaceae	*Marah macrocarpa*	manroot	
Cyperaceae	*Schoenoplectus americanus*	Olney's bulrush	
	Schoenoplectus californicus	California bulrush	
Euphorbiaceae	*Croton setigerus*	doveweed	
	Euphorbia maculata	spotted spurge*	
	Euphorbia peplus	petty spurge*	
	Ricinus communis	castor bean*	
Fabaceae	*Acmispon americanus* var. *americanus*	Spanish clover	
	Acmispon glaber var. *glaber*	deerweed	
	Acmispon strigosus	strigose lotus	

	Melilotus albus	white sweetclover*	
	Melilotus indicus	Indian sweetclover*	
Geraniaceae	*Erodium botrys*	long-beak filaree*	
	Erodium brachycarpum	short-beak filaree	
	Erodium cicutarium	red-stem filaree*	
	Erodium moschatum	white-stem filaree*	
Iridaceae	*Sisyrinchium bellum*	blue-eyed grass	
Juncaceae	*Juncus acutus* ssp. *leopoldii*	southwestern spiny rush	4.2
Lamiaceae	*Rosmarinus officinalis*	rosemary*	
	Salvia apiana	white sage	
	Salvia mellifera	black sage	
Lythraceae	*Lythrum hyssopifolia*	grass poly*	
Malvaceae	*Malva parviflora*	cheeseweed*	
	Malva pseudolavatera	Cretan mallow*	
Myrsinaceae	*Anagallis arvensis*	scarlet pimpernel*	
Myrtaceae	*Eucalyptus camaldulensis*	river red gum*	
Onagraceae	*Camissoniopsis cheiranthifolia* ssp. *suffruticosa*	beach shrubby primrose	
	Camissoniopsis lewisii	Lewis' evening-primrose	3
	Epilobium ciliatum ssp. *ciliatum*	willow herb	
	Oenothera elata	Evening-primrose	
Oxalidaceae	*Oxalis pes-caprae*	Bermuda-buttercup*	
Papaveraceae	*Eschscholzia californica*	California poppy	
Phyrmaceae	*Mimulus aurantiacus*	monkey flower bush	
Plantaginaceae	*Antirrhinum nuttallianum*	Nuttall's snapdragon	
	Plantago lanceolata	English plantain*	
Plumbaginaceae	*Limonium sinuata*	notch-leaf marsh-rosemary*	
Poaceae	*Arundo donax*	giant reed*	
	Avena barbata	slender wild oat*	
	Brachypodium distachyon	purple falsebrome*	
	Bromus catharticus var. catharticus	rescue grass*	
	Bromus diandrus	ripgut grass*	
	Bromus hordeaceus	soft chess*	
	Bromus madritensis ssp. *madritensis*	compact brome*	
	Bromus madritensis ssp. *rubens*	foxtail chess*	
	Digitaria sanguinalis	large crab grass*	
	Distichlis spicata	salt grass	
	Ehrharta erecta	panic veldt grass*	
	Elymus condensatus	giant wild-rye	
	Festuca myuros	rat-tail fescue*	
	Festuca perennis	perennial rye grass*	
	Hordeum murinum ssp. *glaucum*	glaucous barley*	

	Lamarckia aurea	golden-top*	
	Melica imperfecta	Coast Range melic	
	Pennisetum setaceum	crimson fountain grass*	
	Poa annua	annual blue grass*	
	Polypogon interruptus	ditch beard grass*	
	Polypogon monspeliensis	annual beard grass*	
	Polypogopn viridis	water beardgrass*	
	Schismus barbatus	Mediterranean schismus*	
	Stipa cernua	nodding needlegrass	
	Stipa miliacea var. *milacea*	smilo grass*	
Polygonaceae	*Emex spinosa*	devil's thorn*	
	Eriogonum fasciculatum var. *foliolosum*	inland California buckwheat	
	Polygonum aviculare	common knotweed*	
	Rumex crispus	curly dock*	
Rosaceae	*Heteromeles arbutifolia*	toyon	
	Rosa californica	California rose	
	Rubus ursinus	California blackberry	
Salicaceae	*Salix exigua* var. *hindsiana*	Hinds' willow	
	Salix lasiolepis	arroyo willow	
Saururaceae	*Anemopsis californica*	yerba mansa	
Scrophulariaceae	*Myoporum laetum*	lollypop tree*	
	Verbascum thapsus	woolly mullein*	
Simaroubaceae	*Ailanthus altissima*	tree-of-heaven*	
Solanaceae	*Datura wrightii*	western jimson weed	
	Nicotiana glauca	tree tobacco*	
	Solanum americanum	white nightshade	
Tamaricaceae	*Tamarix ramosissima*	saltcedar*	
Tropaeolaceae	*Tropaeolum majus*	garden nasturtium*	
Typhaceae	*Typha domingensis*	southern cattail	
Urticaceae	*Urtica urens*	dwarf nettle*	
Zygophyllaceae	*Tribulus terrestris*	puncture vine*	

* = non-native species
FE = federally listed endangered species
1B.1 = seriously threatened in California and elsewhere
1B.2 = moderately threatened in California and elsewhere
2B.2 = moderately threatened in California but more common elsewhere
3 = more information needed about the species before it can be accurately ranked
4.2 = limited distribution and moderately threatened in California

Appendix H – Fish Survey Reports

MARINE TAXONOMIC SERVICES, LTD.

Essential Fish Habitat Assessment for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project

November 29, 2021

Prepared for:

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Marine Taxonomic Services Ltd. 2021. Essential Fish Habitat Assessment for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project. Prepared for Busby Biological Services. November 2021.



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Essential Fish Habitat Assessment for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project

November 29, 2021

1 Introduction

This report summarizes the assessment of Essential Fish Habitat (EFH) for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project) located in the City of Oceanside, San Diego County, California (Figure 1). The report is provided in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (Federal Register 1997). The amendments require the delineation of EFH for all managed species. Federal action agencies which fund, permit, or carry out activities that may adversely affect EFH are required to consult with the National Marine Fisheries Service (NMFS) regarding the potential effects of their actions on EFH and respond in writing to the NMFS' recommendations. The Proposed Project falls within three EFH Fishery Management Plans (FMPs), including Pacific Coast Groundfish, Coastal Pelagic Species, and Pacific Coast Salmon.

2 Proposed Action

The Proposed Project includes replacement of the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse effects on the San Luis Rey River and the surrounding riparian area.

Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open.

The Proposed Project area is based on the preliminary, estimated Proposed Project footprint, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (Figure 1). Currently, the Proposed Project impact area is approximately 16.48 acres and includes the bridge replacement as well as staging areas. Construction is not yet scheduled, but is anticipated to start in 2024.

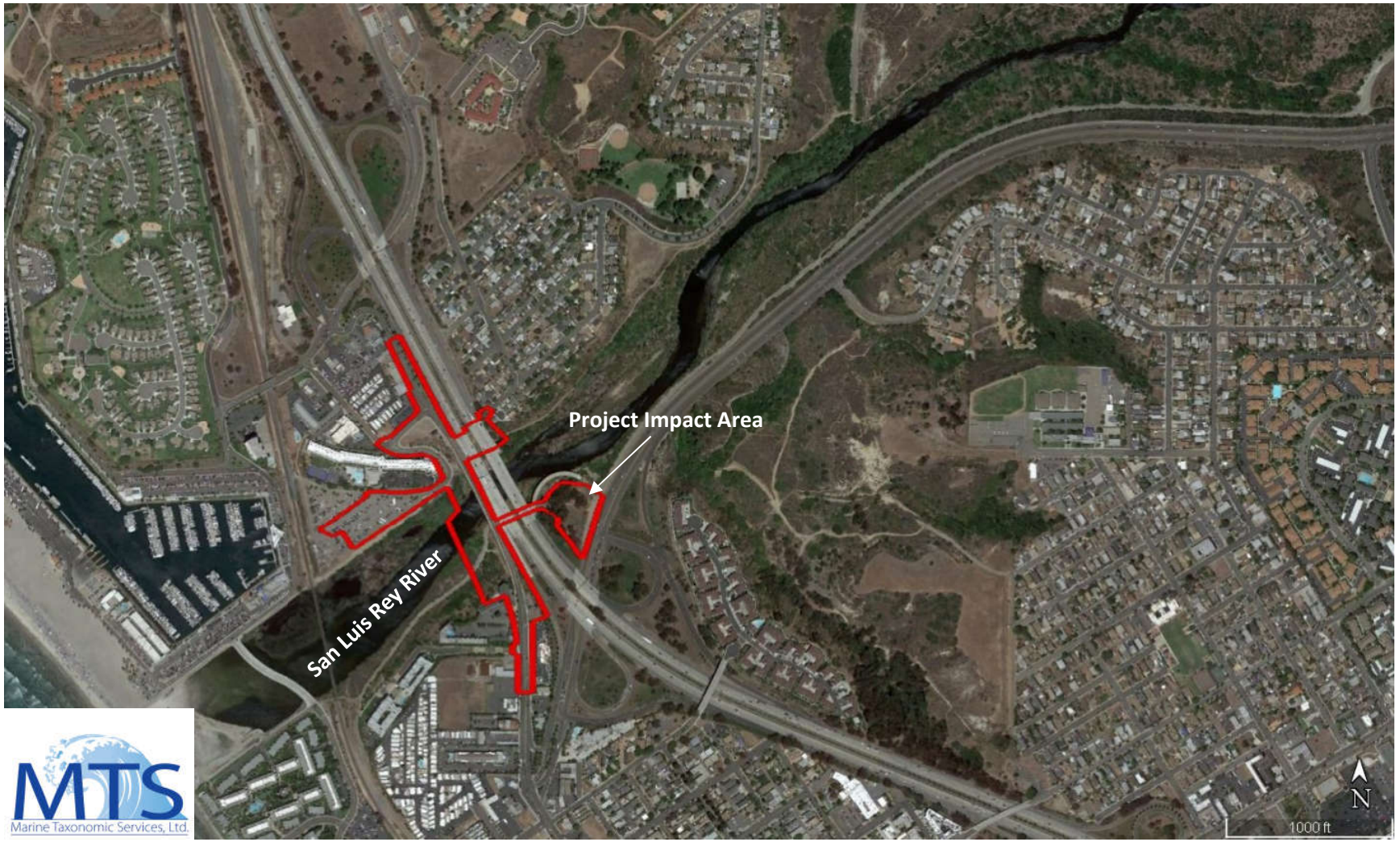


Figure 1. Location of the Proposed Project Impact area and surrounding landscape.

3 Methods

Focused fish surveys were performed by Marine Taxonomic Services Ltd. (MTS) on behalf of Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) in September and October 2021. These surveys included focused, protocol-level, absence/presence surveys for the federally listed endangered tidewater goby (*Eucyclogobius newberryi*) and focused, absence/presence surveys for southern California steelhead (hereafter steelhead; *Oncorhynchus mykiss*). The methods and results of the focused fish surveys are reported in *Fish Surveys within the San Luis Rey River for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project, City of Oceanside, California* (MTS 2021).

In addition to the focused fish surveys (MTS 2021), general observations were made to evaluate aquatic species and habitats present during the fish surveys. This information was used to support the evaluation of fish habitat and potential effects presented in this EFH assessment. To ensure that this assessment was not solely dependent upon observations from the Proposed Project-specific fish surveys, an evaluation of the 2015 focused fish survey report (ECORP 2016) and other relevant literature was performed to better understand historical distribution of fish in the San Luis Rey River as well as in similar water bodies in the region.

4 Existing Habitat Conditions

The San Luis Rey River watershed is a mixture of developed and undeveloped land covering over 565 square miles and includes one of San Diego County's largest coastal wetlands, consisting of several areas of high ecological significance. The headwaters of the San Luis Rey River originate in the Cleveland National Forest and eventually connect to the Pacific Ocean. Lake Henshaw is a man-made lake that intersects the river in the upper portion of the watershed. The lowest portion of the watershed supports a bar-built estuary that is periodically open to the ocean. Substrates in the lower portion of the river include mud, sand, and rock rip rap. The inlet is unvegetated; however, ditch grass (*Ruppia maritima*) is found throughout the lagoon and the stem of the San Luis Rey River system.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (Figure 1). Within the Proposed Project vicinity, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges, and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

Site disturbances include man-made channels, homeless encampments, foot paths, and bridge crossings. The lagoon and river mouth are frequented by beach goers who potentially disturb wildlife and increase habitat loss. Where vegetation (riparian and freshwater marsh habitats) occurs, it maintains channel banks and shoreline, and acts to help filter chemical contaminants.

5 Essential Fish Habitat Assessment

This section includes an assessment of EFH located within the designated Project area. The legal background and purpose of the following EFH assessment is to manage species and fisheries with the potential to occur within the designated Project area, and habitat areas of particular concern (HAPCs) known to occur within the designated Project area are discussed below.

5-1 Essential Fish Habitat Background

The following EFH assessment for the Project is provided in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (MSA) (Code of Federal Regulations (CFR) Title 50, Chapter VI, Part 600). The amendments require the delineation of "essential fish habitat" for all managed species. Federal action agencies which fund, permit, or carry out activities that may adversely impact the EFH are required to consult with the National Marine Fisheries Service (NMFS) regarding the potential effects of their actions on the EFH and respond in writing to the NMFS's recommendations.

The MSA defines an EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". For the purpose of interpreting the definition of EFH: "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle. A healthy ecosystem is defined under the MSA as, "an ecosystem where ecological productive capacity is maintained, diversity of the flora and fauna is preserved, and the ecosystem retains the ability to regulate itself".

The purpose of this EFH assessment is to comprehensively identify and analyze EFH occurring within the designated Project area. The goal of identifying the EFH was so federal agencies can best determine whether the Project would adversely affect the designated EFH, and identify possible conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH if necessary. The MSA requires consultation for all federal agency actions that may adversely affect EFH. An EFH consultation with NMFS is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. Under Section 305(b)(4) of the MSA, NMFS is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. As such, the following EFH assessment, which includes an analysis of species managed by the Pacific Fishery Management Council that are known to utilize EFH within the Project area, and an analysis of potential HAPCs within the Project area, will provide all the information necessary for NMFS to conduct any future EFH consultations for the Project.

5-2 Managed Fisheries with EFH occurring within the Project Area

Since the 1950s, there have been minimal efforts made to inventory the fish species within the San Luis Rey River (USFWS 2017). No managed fish species were captured during the 2017 focused fish surveys conducted for the Proposed Project (MTS 2017). Similarly, during the 2021 focused fish surveys conducted for the Proposed project no managed fish species were captured (MTS 2021). In 2015, a similar focused fish monitoring effort failed to find any managed fish species within or near the Proposed Project (ECORP 2016). The only fish species captured during the focused 2015 fish surveys was mosquitofish (*Gambusia affinis*).

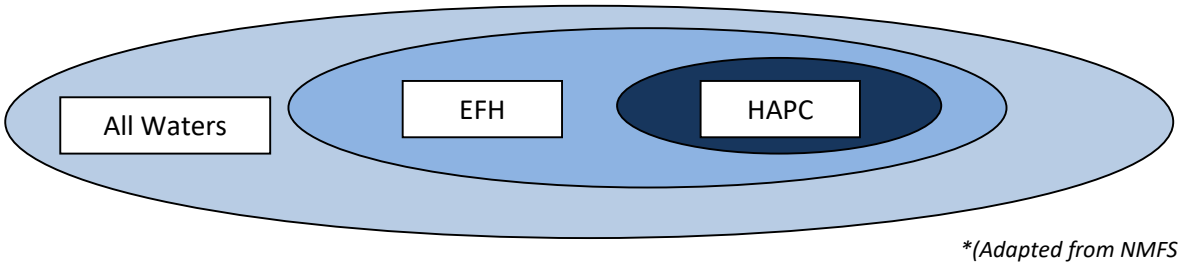
Based on fish collections in similar nearby watersheds, including San Mateo Creek and Santa Margarita River (Warburton *et al.* 2000), and potential to occur in shallow nearshore and/or estuarine habitat in southern California, 22 species have potential to occur within the San Luis Rey River. Of the 22 species three managed fish may have greater potential to occur in the San Luis Rey River based on sightings in nearby river systems with similar habitat conditions, including northern anchovy (*Engraulis mordax*), California scorpionfish (*Scorpaena gutatta*), and steelhead (Warburton *et al*. 2000, Table 1). The potential for these fish and their habitats to be found at least periodically within the San Luis Rey River or to be supported in the future is based on the similarity in habitats between the San Luis Rey River and these other nearby watersheds. In the case of steelhead, the historical presence of the species means it is possible that recovery efforts could lead to future utilization of the San Luis Rey River as habitat. For all other species their presence is unlikely, however with potential to occur either near shore, in estuary environments, or shallow sandy substrate there may be potential for these species to be present in the San Luis Rey River when the mouth is open and actively flowing to the ocean.

Table 1. List of federally managed coastal pelagic fish species and pacific groundfish with potential to occur in the San Luis Rey River.

Common Name	Species Name
Coastal Pelagic Species FMP	
Jack Mackerel	*Trachurus symmetricus*
Northern Anchovy	*Engraulis mordax*
Pacific Mackerel	Scomber japonicas
Pacific Sardine	*Sardinops sagax*
Pacific Coast Groundfish FMP	
Big Skate	*Raja binoculata*
Black Rockfish	*Sebastes melanops*
Black and Yellow Rockfish	*Sebastes chrysomelas*
Brown Rockfish	*Sebastes auriculatus*
Cabezon	*Scorpaenichthys marmoratus*
Calico Rockfish	*Sebastes dallii*
California Skate	*Raja inornata*
California Scorpionfish	*Scorpaena guttata*
Copper Rockfish	*Sebastes caurinus*
Kelp Greenling	*Hexagrammos decagrammus*
Lingcod	*Ophiodon elongatus*
Longnose Skate	*Raja rhina*
Pacific Cod	*Gadus macrocephalus*
Pacific Sanddab	*Citharichthys sordidus*
Pacific whiting (hake)	*Merluccius productus*
Sablefish	*Anoplopoma fimbria*
Silversides	*Atherinopsidae*
Pacific Coast Salmon FMP	
Southern California Steelhead	*Oncorhynchus mykiss*

5-3 Habitat Areas of Particular Concern (HAPCs) Observed within the Project Area

While the Project area falls within designated EFH for the three FMPs identified above, the potential presence of habitat areas of particular concern (HAPC) was also addressed in this assessment. HAPCs are a discreet subset of EFH (
Figure 2) that are distinguished by characteristics including their high ecological value and vulnerability to anthropogenic stressors.



**(Adapted from NMFS 2019b)*

Figure 2. Figure depicting organization chart of essential fish habitat and habitats of particular concern.

Areas within designated EFH can also be designated as a HAPC based on one or more of the following characteristics (NMFS 2019b):

1) The importance of the ecological function provided by the habitat.

2) Its sensitivity to human-induced environmental degradation

3) The extent of threats posed by development of the habitat

4) The rarity of the habitat type

HAPCs are considered high priority areas for conservation, management, and research because they are rare, sensitive, stressed by development, or important to ecosystem function (NMFS 2019b). The HAPC designation does not necessarily equate to additional protections or restrictions upon an area, but helps to prioritize and focus conservation efforts (NMFS 2019b). Although these habitats are particularly important for healthy fish populations, other EFH areas that provide suitable habitat functions are also necessary to support and maintain sustainable fisheries and a healthy ecosystem (NMFS 2019b). Current HAPC types are estuaries, canopy kelp, seagrass, and rocky reefs.

The following assessment found estuary HAPCs occurring within the proposed Project area. While HAPC's were identified within the areas surveyed, they do not fall under any additional protections or legal restrictions to which the Project would be required to comply.

5-4 General EFH Considerations

Potential adverse effects to habitat for managed fish species, if present, are expected to be minimal and temporary. Proposed Project actions that may affect the identified potential FMP-covered species' habitats include removal and replacement of piles, and placement of reinforcement forms. These actions and other construction activities are considered with general regards to potential effects to fish species and habitats relative to the below considerations. In general, best management practices (BMPs) are described below, however, BMPs required by the Project's permits to protect wetlands and other sensitive biological resources would be adequate to protect any sensitive fish and EFH; therefore, no additional avoidance, minimization, or mitigation measures would be required specifically for fish and/or EFH.

5-4.1 Sedimentation and Turbidity

Any in-water work that involves bottom contact would result in temporary, localized increases in turbidity within and adjacent to the Proposed Project. The extent to which turbidity may be mitigated is addressed in other Proposed Project environmental review documents. Increases in turbidity could decrease the foraging efficiency of fishes; however, these potential adverse effects are likely be offset by the provision of additional food resources as invertebrates are released from the bottom or broken loose from pilings during construction. The extent to which one effect is offset by another is dependent upon species present and feeding strategies and cannot be predicted.

As suspended sediment settles, the increased sedimentation can have effects on epibenthic and infaunal invertebrates. These organisms can be smothered or else suffer from decreases in feeding efficiency.

5-4.2 Hazardous Materials and Chemical Spills

Hazardous materials and chemical spills could result from accidents on the work site. The Proposed Project could release hazardous substances into the environment as a result of an accidental discharge. However, the Proposed Project's adherence to BMPs will minimize the potential for accidents and provide for appropriate response and cleanup in the event an accident does occur.

5-4.3 Re-Suspension of Contaminants

Sediment disturbance in areas where bridge pilings are removed and replaced has the potential to redistribute contaminated sediments if contaminated sediments are present. There is no reason to expect that sediments within the construction footprint are more contaminated than surrounding sediments. Therefore, it is unlikely that contaminants would be released by construction activities.

5-4.4 Habitat Modification and Shading

The new structures associated with the Proposed Project are like the existing structures and will have no adverse effects on water quality. Tidal flow, currents, or wave patterns are not expected to be altered. If both structures are temporarily retained, there will be a net increase in over-water shading. This will result in minor losses of primary productivity, as photosynthesis will be depressed in shaded waters. However, eelgrass habitat is not present within or adjacent to the Proposed Project; therefore, there will be no adverse effects to this HAPC. Given there are no significant in-water habitats dominated by habitat forming primary producers, the Proposed Project may affect but is not likely to adversely affect EFH and managed fish species through reduction of primary productivity (e.g. plankton and periphyton).

5-4.5 Entrainment and Stranding

There are no Proposed Project elements that will lead to entrainment of fish or prey items for fish species. Additionally, there are no Proposed Project elements that are anticipated to significantly alter tidal flow and currents. Therefore, there is no increased risk for stranding. Thus, the Proposed Project is anticipated to have no effect on EFH or managed fish species through entrainment or stranding.

5-4.6 Predation Risk

Piles and bridge structures may attract some fish species and predatory avian species. The extent to which this increased predation risk would affect EFH and managed fish species is not certain. However, the Proposed Project would only increase the presence of bridge structures during the period when both structures are present. This will only occur if the existing bridge is not removed prior to construction of the new bridge. Thus, any increases in predation risk would be temporary. Given the minimal potential that EFH for managed species is present, this effect is minimal. Thus, the Proposed Project may affect but is not likely to adversely affect EFH and managed fish species through an increase in predation risk.

5-4.7 Food Resources

The Proposed Project will not change the distribution or availability of forage for managed species that may occur in the San Luis Rey River. There will be a temporary loss of encrusting communities on pile structures that are removed. This removal is minor and does not represent suitable forage for EFH-managed species in the San Luis Rey River system. Therefore, the Proposed Project is anticipated to have no effect on EFH or managed fish species through loss of food resources.

5-4.8 Spawning

The Proposed Project work areas are not suitable spawning habitat for any of the managed fish species. Additionally, there will be minimal alteration of the bottom, and there is no suitable nursery habitat for managed species in the Proposed Project area. Thus, the Proposed Project is anticipated to have no effect on EFH and managed fish species relative to spawning.

6 Conclusions

The biological communities present within the Proposed Project area are typical of lagoon and estuary habitats in the region, and are not notably diverse, unique, or sensitive. The San Luis Rey is not listed by NOAA as a HAPC, however given the estuarine nature of this area it is considered to perform important ecosystem functions and should be listed as an HAPC.

Many economically important fish utilize estuary habitats for juvenile development, foraging, and protection against larger predators. However, California steelhead are the only listed species known to inhabit the San Luis Rey (Kajtaniak et al. 2007, Downie and Kajtaniak 2010). In recent year's survey efforts have not found any of these fish species in the San Luis Rey system (ECORP 2016, MTS 2017, MTS 2021).

While there is potential for managed fish species to occupy the San Luis Rey River when the river mouth is open to the ocean, any potential adverse effects to fish species resulting from Proposed Project actions are considered to be short-term and would cease at, or shortly after, Proposed Project completion. It is anticipated that the newly constructed facilities will function similarly to existing facilities with regards to hydrology. Any associated species living on, around, and adjacent to the existing facility will similarly occur in association with the new facilities.

While it is possible for the Proposed Project to have unforeseen effects relating to accidents and minor redistribution of sediments, the probability of adverse effects is low. Moreover, the potential for managed fish species to occur is minimal and, therefore, adverse effects to EFH/HAPC even in the event of an accident are negligible.

Therefore, it is determined that the Proposed Project may affect but it is not likely to adversely affect EFH and managed fish species.

7 References

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Downie, S.T. and D. Kajtaniak. 2010. San Luis Rey River Watershed Assessment. Coastal Watershed Planning and Assessment Program. Department of Fish and Game, Sacramento, CA.

[ECORP] ECORP Consulting Inc. 2016. 2015 fish surveys in the San Luis Rey River for the coast highway bridge replacement project. January 2016.

[MTS] Marine Taxonomic Services. 2017. Fish Surveys within the San Luis Rey River for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project, City of Oceanside, California. October 2017.

[MTS] Marine Taxonomic Services. 2021. Fish Surveys within the San Luis Rey River for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project, City of Oceanside, California. November 2021.

Warburton M. L. C. C. Swift, R. N. Fisher. 2000. Status and Distribution of fishes in the Santa Margarita River Drainage. Report prepared for the Nature Conservancy.

Ms. Melissa Busby
Busby Biological Services, Inc.
4629 Cass St. #192
San Diego, CA 92109

November 24, 2021

Re: Fish Surveys within the San Luis Rey River for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project, City of Oceanside, California

Dear Ms. Busby:

This letter report summarizes the results of focused fish surveys conducted for the federally listed endangered tidewater goby (*Eucyclogobius newberryi*) and for southern California steelhead (steelhead; *Oncorhynchus mykiss*). Surveys were performed in 2021 by Marine Taxonomic Services Ltd. (MTS) on behalf of Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project). The Proposed Project is in the City of Oceanside, San Diego County, California (Figure 1). Surveys were performed by Antonette Gutierrez under section 10(a)(1)(A) permit TE-50992B-0 and California Department of Fish and Wildlife (CDFW) scientific collecting permit 003181, as amended. This document also serves as the 45-day report requirement to the United States Fish and Wildlife Service (USFWS) for the 10(a)(1)(A) permit holder for focused protocol-level, presence/absence surveys conducted for tidewater goby on September 28, 2021, and October 29, 2021.

Project Information

The Proposed Project includes replacement of the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse effects on the San Luis Rey River and the surrounding riparian area.

The Proposed Project is located within Township 11 South, Range 5 West, and in Sections 22 and 23 of the United States Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level.

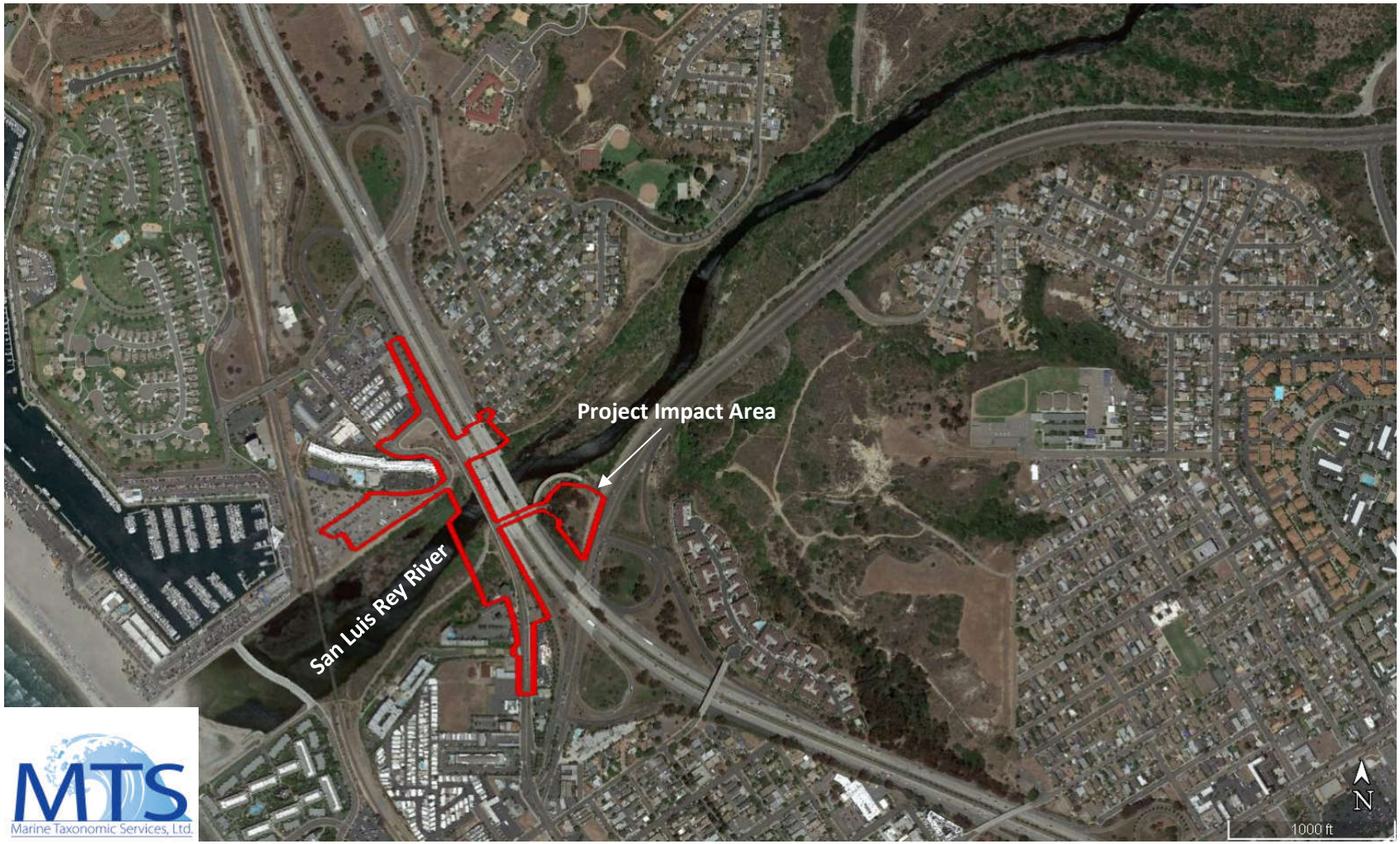


Figure 1. The above figure shows the location of the Proposed Project Impact Area and San Luis Rey River surveyed in September and October 2021.



Figure 2. United States Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle of survey locations for September and October 2021.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (Figure 1). Within the Proposed Project vicinity, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

The headwaters of the San Luis Rey River originate in the Cleveland National Forest and eventually connect to the Pacific Ocean. Lake Henshaw is a man-made lake that intersects the river in the upper portion of the watershed. When open to the ocean, the lower portion of the watershed supports an intertidal habitat with a substrate of mud, sand, and rock rip rap as well as submerged brackish water vegetation and algae.

Special Status Species

Tidewater Goby

The tidewater goby is a small benthic fish that forms isolated populations in California's coastal lagoons, creeks, and marshes. The tidewater goby rarely exceeds 50 millimeters standard length (SL) and is brownish in color and mottled. This species has been found in waters ranging from 9 to 25 degrees Celsius (48 to 77 degrees Fahrenheit) and can tolerate a wide range of salinities, from 0 to 55 parts per thousand (USFWS 2007). The tidewater goby is generally a bottom dwelling species found in sand, mud, and gravel, and it inhabits watercourses with slow or no currents. This species' presence, distribution, and density may vary seasonally and spatially.

Historically, the tidewater goby has been documented at 135 localities within California, ranging from Tillas Slough (mouth of Smith River) in Del Norte County near the Oregon border, to Agua Hedionda Lagoon at Carlsbad, San Diego County (USFWS 2005). The San Luis Rey River is one of the historical locations that has intermittently supported tidewater goby. However, several of these documented populations have been considered extirpated or in decline (USFWS 2005). Given the nature and number of remaining populations, the rapidity of decline in some areas, the degree of threat, and the difficulty in natural recolonization, USFWS declared the tidewater goby as an endangered species in 1994 (Holland 1992).

Southern California Steelhead

Steelhead is a migratory species that spends most of its life in the ocean and then returns to rivers and streams for spawning. Steelhead can reach up to 55 pounds in weight and 45 inches in length, though its average size in southern California is much smaller (NOAA 2016). This species is silvery-white on the underside and has a specked body with a pink to red stripe running along its sides. Steelhead can survive in a wide range of water conditions, but it does best where dissolved oxygen concentration is at least 7 parts per million (NOAA 2016).

Steelhead is naturally found in the western Pacific and has been introduced all over the world. Historically, steelhead has populated coastal watersheds throughout southern California. An adult steelhead was documented in the San Luis Rey River in 2007 in a pool at the College Avenue crossing in the City of Oceanside (CDFW 2007). While a few individual *O. mykiss* (either as steelhead or rainbow trout) have been documented in the estuarine systems to the north of the San Luis Rey River – specifically, in the upper reaches of the San Mateo Creek and the Santa Margarita River (Damien Cie pers. comm. [Marine Corps Installation West-Marine Corps Base Camp Pendleton] October 2, 2017 and Warburton et al 2000; respectively) – these populations are not self-sustaining. Most documented populations have been in decline since the mid-1900s, leading to the listing of the southern California population of steelhead as a federally endangered species in 1997 from the Santa Maria River south to Malibu Creek (Federal Register 1997), which is currently the southernmost known, self-sustaining steelhead population. A Southern Range Extension to include streams as far south as San Diego County was promulgated on May 1, 2002 (Federal Register 1999), and reaffirmed January 5, 2006 (Federal Register 2006).

In 2009, the San Luis Rey River was designated as a high priority watershed by the National Marine Fisheries Service (NMFS), part of the National Oceanic and Atmospheric Administration (NOAA), under the draft Southern California Steelhead Recovery Plan. Two of the principal steelhead recovery objectives are to increase abundance of steelhead and to preserve the expression of its diverse life history strategies (NMFS 2012). The Southern California Steelhead Recovery Plan uses a Threat Assessment Process to identify, prioritize, and compare threats among the watersheds in which the steelhead is native and to examine the possibilities for mitigation. Threats to steelhead viability identified in the Southern California Steelhead Recovery Plan include dewatering and inadequate stream flows in the main channels and tributaries, barriers to fish passage in the river, loss of estuarine habitat, and lack of suitable spawning gravels in the main channel and important tributaries (NMFS 2012). However, the natural climatic, hydrological, geological, and ecological advantages cited in the assessment indicate that these limiting factors can be successfully mitigated, making the San Luis Rey River a prime candidate for steelhead restoration.

Methods

On September 28 and October 29, 2021, focused fish surveys were conducted within the San Luis Rey River according to the most recent USFWS Tidewater Goby Survey Protocol (USWFS 2006) (Table 1). The San Luis Rey River is characterized as a large body of water per the USFWS Tidewater Goby Survey Protocol (USWFS 2006); therefore, as recommended in the protocol for large bodies of water, the sampling covered more than five distinct survey locations upstream and downstream of the Proposed Project. All suitable habitat within the San Luis Rey River was surveyed and included areas extending from the mouth to upstream of the Proposed Project. Additional areas within the San Luis Rey River system were assessed by the biologist, however, only accessible areas with suitable characteristics for tidewater goby and steelhead were surveyed.

Table 1. The below table provides a summary of survey dates, times, conditions, and biologists

Date	Time	Conditions[1]	Permitted Biologist(s)	Other Fish Biologists
September 28, 2021	06:30-13:00	Weather: 100%cc - 90% cc Wind: 1-5 MPH Air Temperature: 63° F-72° F	Antonette Gutierrez	Samuel Schipper Grace Teller Russell Barabe Cora McClelland
October 29, 2021	08:30-15:30	Weather: 0%cc Wind: 1 MPH Air Temperature: 63° F-72°F	Antonette Gutierrez	Samuel Schipper Raelynn Heinitz

[1] cc=cloud cover; -MPH= miles per hour; ° F = degrees Fahrenheit

Sampling for tidewater goby occurred in appropriate habitat consisting of slow-moving water, generally less than 3 meters (10 feet) in depth, with suitable substrate and appropriate water quality parameters. A total of 50 seines were pulled during the two sampling periods, using a 3.0 by 1.0-meter-deep seine (with approximate 3-millimeter mesh). The distance traveled during each seine event was determined by the habitat conditions. In addition, during each survey, six un-baited minnow traps (with approximate 3-millimeter mesh) were deployed in depths ranging from 0.5 meter to 1.5 meters in areas of suitable habitat for tidewater goby. Supplemental sampling was performed in areas with open substrate between rock rip rap, snags, and dense vegetation using hand-held dip nets (with 0.5- to 1-millimeter mesh). A Geode Differential Global Positioning System (dGPS) connected to a tablet with mapping capabilities was used to record all sampling locations per gear type. Fish species captured were identified, counted, and released. Potential tidewater goby predators and other non-fish species were noted. The general habitat parameters were described and recorded on field data sheets and included recordings of water quality parameters using a multi-parameter water quality sonde at three locations: (1) the Proposed Project site, (2) upstream of the Proposed Project, and (3) downstream of the Proposed Project.

Results

The sections below list general observations recorded during each of the survey events, summarize water quality data collected at the time of sampling, indicate the fish species captured, identify potential tidewater goby predators, and provide other information relevant to the site and potential presence of target fish species (i.e., tidewater goby, steelhead). Figure 3 shows the locations of the sampling sites and the gear type used across both survey events.

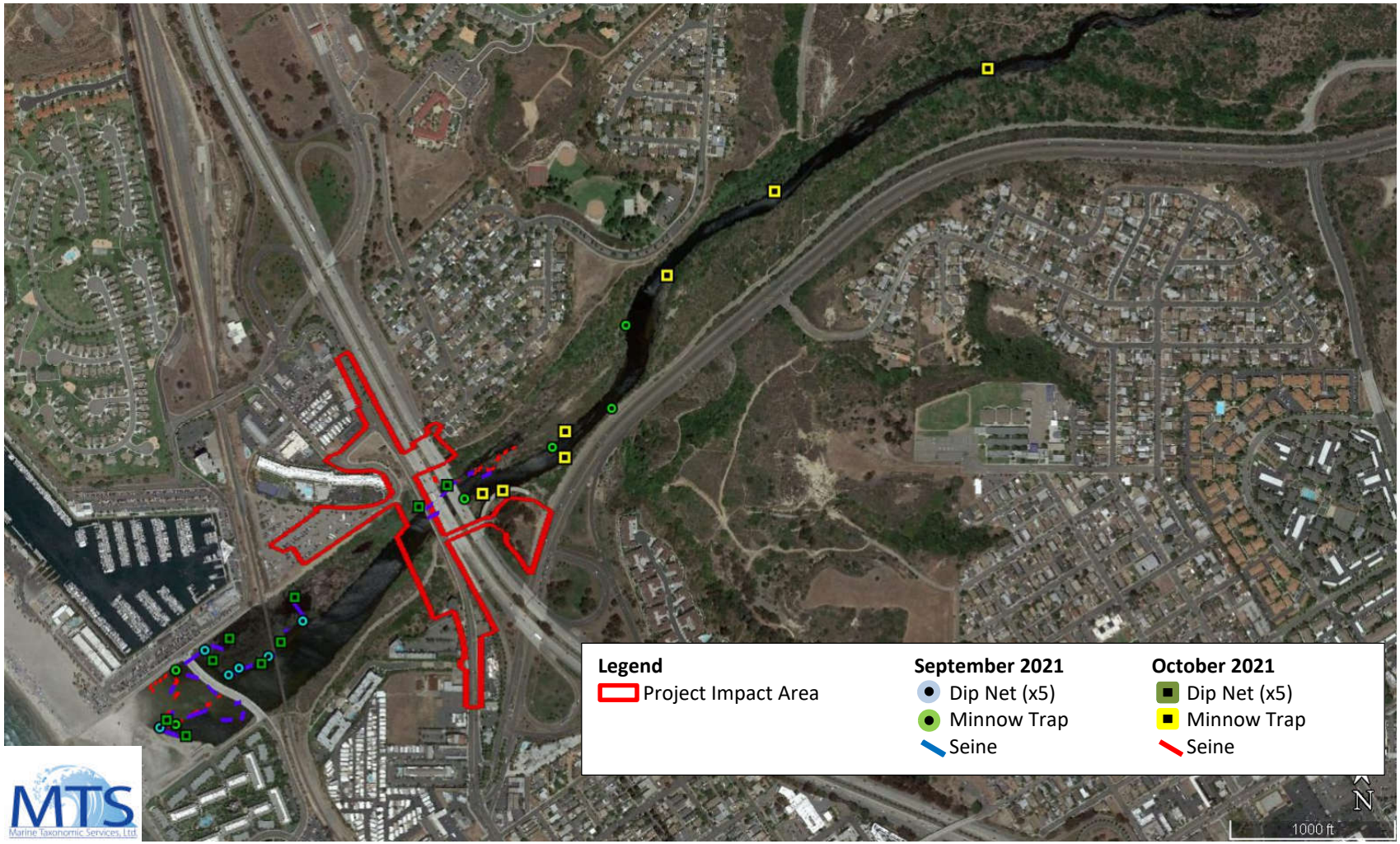


Figure 3. The above figure illustrates the sampling locations for September and October 2021 sampling events per gear type.

September 2021 Sampling

During the September 2021 focused fish surveys, no tidewater goby or steelhead were detected. The following section describes general observations recorded during the September 28, 2021, survey event. It indicates the fish species captured, identifies potential tidewater goby predators, summarizes water quality data collected at the time of sampling, and provides other information relevant to the site, tidewater goby, and steelhead.



Photo 1. Looking west: lagoon mouth closed downstream of Proposed Project.

During the September 2021 survey, the San Luis Rey River was closed to the ocean and did not exhibit any active signs of tidal influence. The substrate within the areas surveyed consisted mostly of hard packed sand throughout the entire system. Isolated areas of mud occurred northeast of the railway bridge and under the Interstate 5 bridge on the north side. Ditch grass (*Ruppia maritima*) was found submerged east of the railway bridge and along the periphery of the lagoon. Surface algal mats and submerged algae dominated the mouth of the lagoon. Bright red algae were noted in the muddy area northeast of the railway bridge. Expansive areas of dead cattails (*Typha latifolia*) and debris occurred upstream of the Interstate 5 bridge.



Photo 2. Looking east: Isolated muddy habitat downstream of Proposed Project.

In September 2021, native fish species detected included topsmelt (*Atherinops affinis*), California killifish (*Fundulus parvipinnis*), and barred pipefish (*Syngnathus auliscus*). Non-native fish species captured included mosquitofish (*Gambusia affinis*). Fish species observed but not captured included California halibut (*Paralichthys californicus*), barred sand bass (*Paralabrax nebulifer*), striped mullet (*Mugii cephalus*), opaleye (*Girella nigricans*), bat ray (*Myliobatis californica*), butterfly ray (*Gymnura marmorata*), and round ray (*Urobatis halleri*).

Potential tidewater goby predators observed around the lagoon in September 2021 included reddish egret (*Egretta rufescens*), great blue heron (*Ardea herodias*), black-crowned night heron (*Nycticorax nycticorax*), snowy egret (*Egretta thula*), great egret (*Ardea alba*) and double crested cormorant (*Phalacrocorax auritus*). One potential steelhead predator; the osprey (*Pandion haliaetus*) was perched on a light post on the north Pacific Street bridge that spans the San Luis Rey River.

Water quality observations generally showed that at the time of the survey, the lower San Luis Rey River was freshwater influenced, with upstream, Proposed Project, and downstream stations having similar surface and bottom water parameters. The water temperature was consistent throughout the system, and dissolved oxygen levels were low (Table 2).

Table 1. Water quality data for September 28, 2021, sampling efforts. Surface and bottom measurements taken within 15 centimeters of surface and bottom, respectively.

Location	Time	Station Depth (m)	Vertical Profile	Temp (°C)	Sp Cond (mS/cm)	Salinity (psu)	pH	Turbidity (NTU)	DO (mg/L)
Proposed Project I-5 Bridge	10:21	2.00	Surface	23.21	20973.1	12.73	7.96	3.70	4.49
	10:23		Bottom	22.47	21925.8	13.35	8.07	4.80	4.98
Downstream of Proposed Project	08:32	1.20	Surface	22.10	20974.7	12.72	8.00	2.33	5.30
	08:34		Bottom	22.00	21776.1	13.25	8.07	2.22	5.21
Upstream of Proposed Project	11:10	1.00	Surface	23.58	20042.1	12.12	7.92	4.65	4.66
	11:12		Bottom	23.41	21868.8	13.33	8.00	5.06	4.41

October 2021 Sampling

During the October 2021 focused fish surveys, no tidewater goby or steelhead were detected. The following section describes general observations recorded during the October 29, 2021, survey event. It indicates the fish species captured, identifies potential tidewater goby predators, summarizes water quality data collected at the time of sampling, and provides other information relevant to the site, tidewater goby, and steelhead.

During the October 2021 survey, the San Luis Rey River was not open to the ocean, nor were signs of overland tidal flow observed. The lagoon substrate consisted mostly of hard packed sand throughout the system. Isolated areas of mud occurred northeast of the railway bridge and under the Interstate 5 bridge

on the north side. Isolated areas of ditch grass were found east and west of the trestle bridge. Additionally, ditch grass was found where the dead cattail patch and debris were previously documented east of the Interstate 5 Bridge. Algal mats were limited to the edge of the lagoon at the mouth and submerged algae was found on the northeast side of the trestle bridge. Recent rain events likely washed cattail debris downstream and dissipated algae that was prevalent during the September 2021 surveys. This created open areas near the mouth and just east of the Interstate 5 Bridge, allowing for seining to occur in areas not covered during the September 2021 surveys.

During the October 2021 fish surveys, few fish species were detected. Fish captured included topsmelt, barred pipefish, and non-native mosquitofish. Other fish species observed but not captured included California halibut, California killifish, striped mullet, opaleye and bat ray.

Potential tidewater goby predators observed in and around the lagoon in October 2021 included avian lagoon species, such as great blue heron, snowy egret, and great egret. In addition, black-crowned night heron, green heron (*Butorides virescens*), double crested cormorant, pied-billed grebe (*Podilymbus podiceps*), and belted kingfisher (*Megaceryle alcyon*) are potential tidewater goby predators that were documented along the river channel within the areas surveyed.

The water-quality monitoring results for the October 2021 sampling show that freshwater flow had increased throughout the system. In general, the water parameters were similar at all three stations: upstream, proposed Project, and downstream. Since the September 2021 survey, the water was generally deeper, cooler, clearer, fresher, and contained higher amounts of dissolved oxygen. (Table 3). Due to the higher water level from recent rain, seining efforts were limited. Areas surveyed during the September 2021 exceeded depths of 2.5 meters (8 feet).

Table 3. Water quality data for October 29, 2021, sampling efforts. Surface and bottom measurements taken within 15 centimeters of surface and bottom, respectively.

Location	Time	Station Depth (m)	Vertical Profile	Temp (°C)	Sp Cond (mS/cm)	Salinity (psu)	pH	Turbidity (NTU)	DO (mg/L)
Proposed Project I-5 Bridge	10:26	1.50	Surface	19.35	16153.0	9.58	8.14	1.02	7.69
	10:28		Bottom	19.54	16280.0	9.55	8.21	2.30	8.71
Downstream of Proposed Project	12:04	2.20	Surface	18.54	14483.0	6.91	8.10	1.15	7.85
	12:08		Bottom	18.31	15749.0	9.32	8.11	1.80	7.24
Upstream of Proposed Project	09:58	1.20	Surface	19.93	13976.0	8.66	7.73	0.80	4.43
	10:00		Bottom	19.25	16058.0	9.46	8.05	1.10	6.17

Discussion and Recommendations

Steelhead and tidewater goby historically occurred in the San Luis Rey River, with both species fluctuating spatially and seasonally (Downie and Kajtaniak 2010; NMFS 2012; USFWS 2013; and Swenson 1999). The mouth of the San Luis Rey River was not open to the ocean during the 2021 surveys. However, during the 2017 surveys the mouth was open and over the four years between the 2017 and 2021 survey events, the mouth was closed in the fall of 2018 and breached in the fall of 2019 and winter of 2020 (google Earth historic maps accessed November 2021). With the intermittent breaching of the mouth, both tidewater goby and steelhead had potential to enter the San Luis Rey River System between the 2017 and 2021 survey efforts. However, while there remains potential for either of these species to occupy the system, neither species was detected during the current 2021 sampling efforts.

The San Luis Rey River system was surveyed from the lagoon mouth to approximately 1 mile upstream from the Proposed Project. During the September 2021 and October 2021 surveys, the upstream reaches up to 1 mile of the Proposed Project exceeded the height of the seine, where water levels were greater than 2.5 meters (8 feet); therefore, these areas were not surveyed using the seine. Instead, minnow traps were deployed in these areas. Even though there is a deep channel that persists upstream and downstream of the proposed Project site, suitable conditions for steelhead are poor due to low levels of dissolved oxygen. Additionally, there were very limited areas of preferred tidewater goby habitat found during the 2021 surveys. Hard compact sand, rooted vegetation and desiccated rooted vegetation was dominate throughout the system. Areas void of vegetation consisted of hard packed sand. There were very limited areas of soft mud or soft sand for gobies to create burrows upstream or downstream of the proposed project site.

Overall, the September 2021 and October 2021 survey efforts characterized the San Luis Rey River system as freshwater influenced. Water quality parameters showed suitable temperatures and pH regimes for both tidewater goby and steelhead. Dissolved oxygen was depressed in September 2021 relative to October 2021. Dissolved oxygen levels were not low enough to prevent fish utilization but were well below optimal for steelhead in September 2021.

In addition to low habitat suitability for tidewater goby, potential tidewater goby bottom dwelling fish predators and avian predators were observed throughout the system. Avian predators were observed foraging throughout the areas surveyed focusing in reachable, shallow, calm areas that would typically be ideal tidewater goby habitat. Unlike the 2017 surveys, where calm areas were localized due to active tidal flow through the river system, calm water was present throughout the river system during the 2021 surveys, which allowed for increased accessibility to locations where tidewater goby may have been present and able to be preyed upon by avian species. Additional anthropomorphic challenges for this species exist in this system and in general. This species is threatened by habitat loss and degradation attributable to human destruction and manipulation of coastal wetlands for urban development and agriculture, stream channelization, flood control projects, cattle grazing, and artificial breaching of creek mouths. Additionally, the presence of introduced species contributed to the elimination of several tidewater goby populations (Lafferty et al. 1999). Many exotic species are washed into tidewater goby

watercourses from upstream sources. Although tidewater goby was not detected during the 2021 or 2017 surveys, this species was detected in the San Luis Rey River in 2010 (USFWS 2013) at an upstream location. Because this species' presence fluctuates spatially and seasonally, there is still potential for tidewater goby to re-colonize the San Luis Rey River, including the Proposed Project area.

During 2021, habitat and water quality conditions for steelhead in the San Luis Rey River were not optimal and therefore not suitable to support this species. The system overall is faced with anthropomorphic challenges including channelization and urbanization from agricultural development, urban development, culverts, homeless encampments, and urban runoff. Additionally, reduction of high-quality habitat resulting from streambank and upland soil erosion, loss of riparian vegetation, water diversion, and point and non–point source pollution from municipal development and agriculture has significantly reduced the distribution and abundance of steelhead (NRCS 2000). Because of the anthropomorphic challenges and reduction in high quality habitat, the San Luis Rey River does not support sufficient refugia for steelhead, including spawning and rearing habitats for the species. At best, the San Luis Rey River in its current condition might only intermittently support a migratory route for adult steelhead to search for suitable spawning habitat. To persist, anadromous salmonid minimally require adult migration pathways, spawning and incubation habitat, stream rearing habitat, forage and migration pathways, and estuarine habitat (NMFS 2000). In its current state, the San Luis Rey River does not meet the minimal requirements to support and sustain the life-cycle of anadromous salmonids. Lastly, there are no abundant source populations, nor any nearby refugia populations that could potentially re-colonize the area to help sustain an existing salmonid population in the marginal habitat found in the San Luis Rey River.

According to citations within the tidewater goby protocol from several tidewater goby research scientists and based on the annual life cycle of the tidewater goby, documented population fluctuations, and their recolonizing ability, focused survey results are valid for a maximum of 1 year from the survey end date (USFWS 2005 and 2006). Five consecutive years of negative survey results are needed to establish a history of absence. Therefore, it is recommended that surveys continue for the San Luis Rey River to support the recovery of tidewater goby. Additionally, in accordance with the 2006 Tidewater Goby Protocol: "For surveys conducted as part of a project clearance, additional sampling may be needed prior to initiation of those project activities that may affect the tidewater goby. If gobies are not found within the two survey periods, and the project will not be completed within 60 days of the last survey, a pre-project survey may be required for any part of the proposed project area that may affect the tidewater goby. The need for this survey will be evaluated on a case-by-case basis between the applicant and our field office (USFWS) that has jurisdiction over the area of interest."

By signing below the Section 10 biologist performing the survey, Antonette Gutierrez, has reviewed and approved this document for submittal to regulatory agencies.



11/23/21

Antonette Gutierrez, Wildlife Biologist, TE-50992B-0 Date

If you have any questions or concerns regarding the results of these surveys, do not hesitate to contact me at 760.331.7897 or robert@consultmts.com.

Sincerely,



Robert Mooney, Principal Scientist

References

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Marine Taxonomic Services, Ltd.

Ms. Melissa Busby
Busby Biological Services, Inc.
4629 Cass St. #192
San Diego, CA 92109

December 18, 2017

Re: Fish Surveys within the San Luis Rey River for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project, City of Oceanside, California

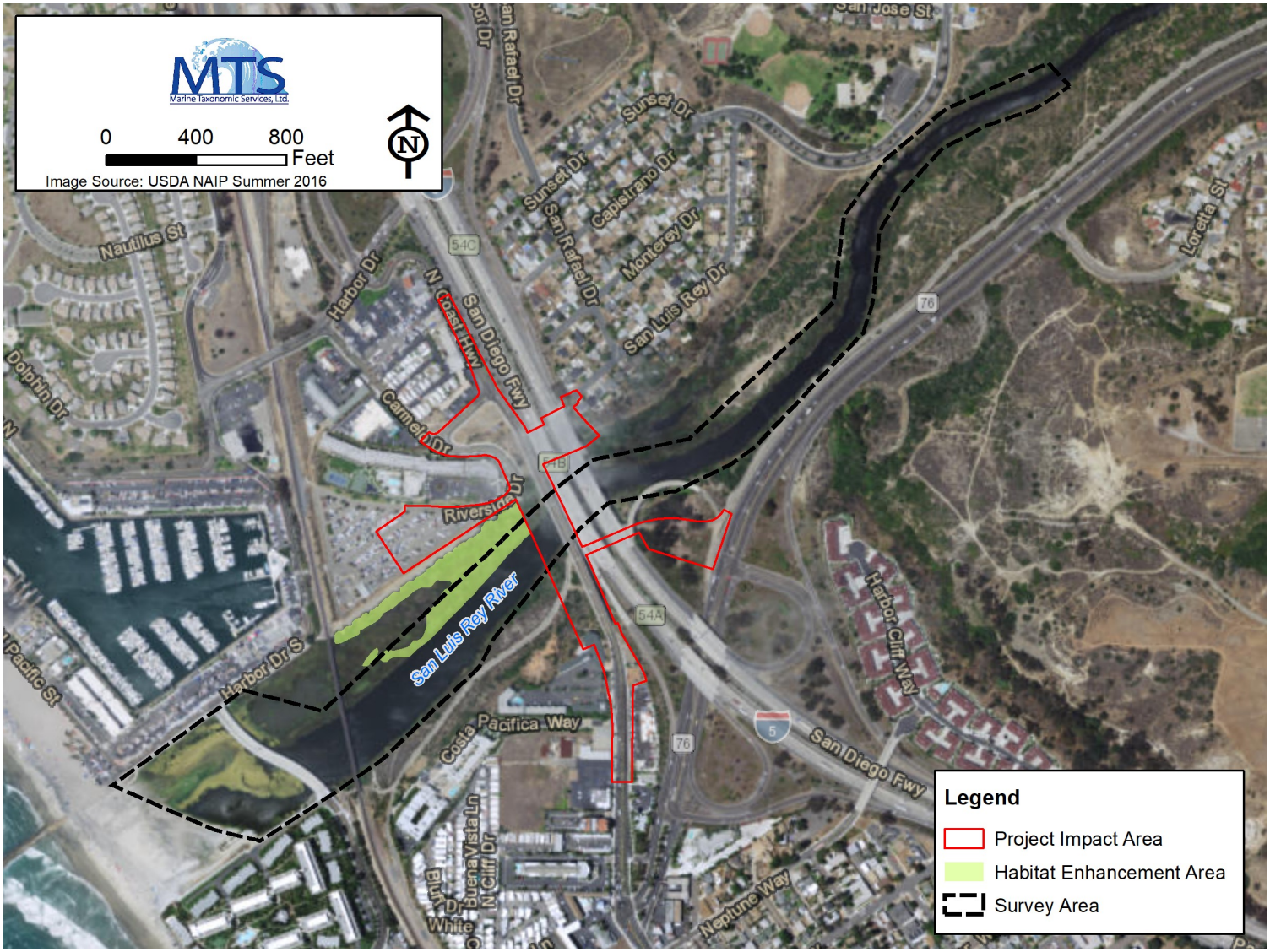
Dear Ms. Busby:

This letter report summarizes the results of focused fish surveys conducted for the federally listed endangered tidewater goby (*Eucyclogobius newberryi*) and for southern California steelhead (steelhead; *Oncorhynchus mykiss*). Surveys were performed in 2017 by Marine Taxonomic Services Ltd. (MTS) on behalf of Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Figure 1). Surveys were performed by Antonette Gutierrez under section 10(a)(1)(A) permit TE-50992B-0 and California Department of Fish and Wildlife (CDFW) scientific collecting permit 003181, as amended. This document also serves as the 45-day report requirement to the United States Fish and Wildlife Service (USFWS) for the 10(a)(1)(A) permit holder for focused protocol-level, presence/absence surveys conducted for tidewater goby on July 31, 2017, and September 8, 2017.

Project Information

The Proposed Project includes replacement of the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse effects on the San Luis Rey River and the surrounding riparian area.

The Proposed Project is located within Township 11 South, Range 5 West, and in Sections 22 and 23 of the United States Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level (amsl).


MTS
Marine Taxonomic Services, Ltd.
0
400
800
Feet
Image Source: USDA NAIP Summer 2016
N
San Rafael Dr
Sunset Dr
Capistrano Dr
Monterey Dr
San Luis Rey Dr
Loretta St
Nautilus St
Harbor Dr
N Coast Hwy
San Diego Fwy
Dolphin Dr
Carmelo Dr
Riverside Dr
San Luis Rey River
Harbor Dr S
Pacific St
Costa Pacifica Way
Harbor Cliff Way
San Diego Fwy
Buena Vista Ln
N Cliff Dr
Neptune Way
54C
54B
54A
76
5
Legend
Project Impact Area
Habitat Enhancement Area
Survey Area

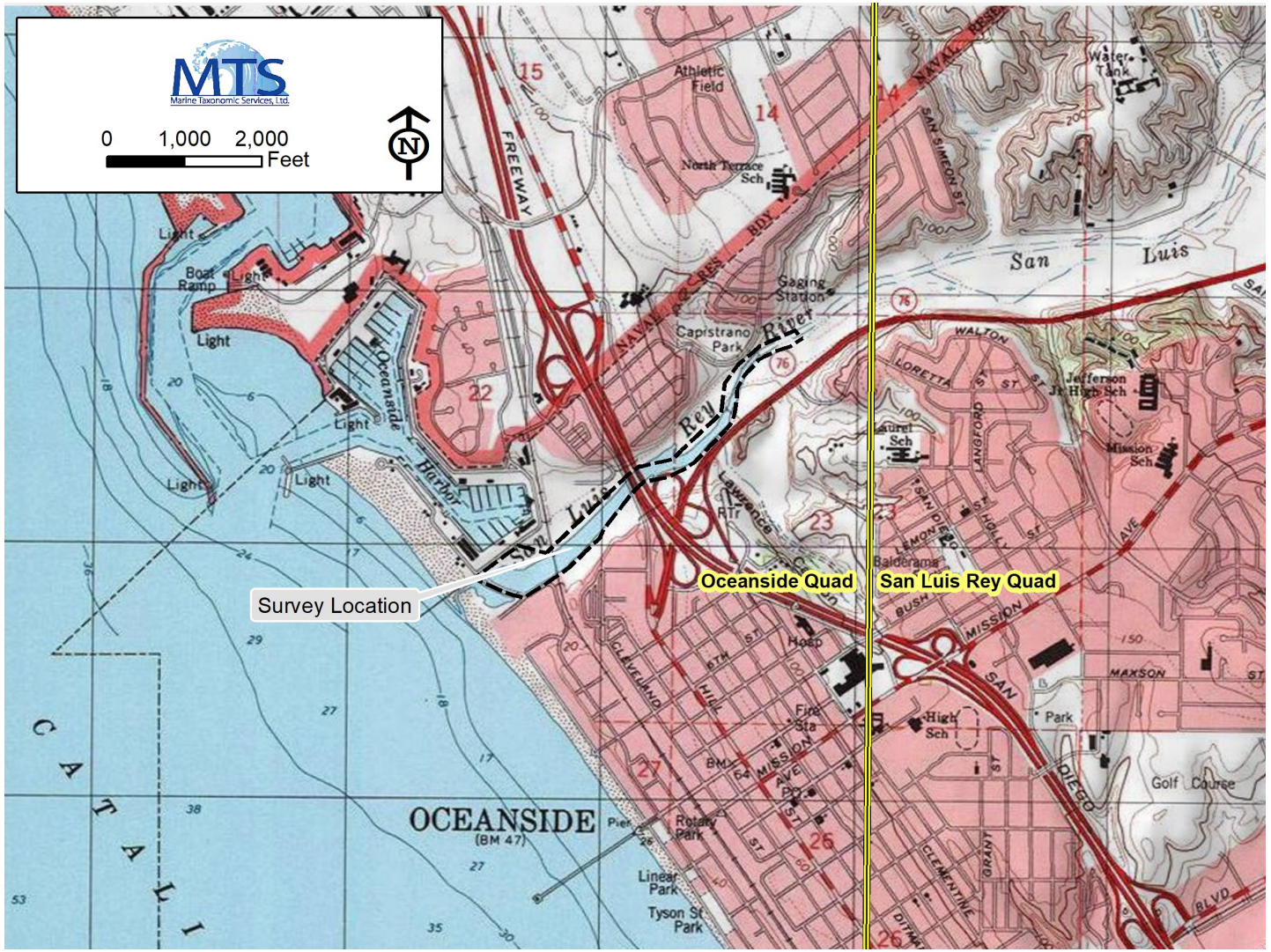


Figure 2. United States Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle of survey locations for July and September 2017.

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Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (Figure 1). Within the Proposed Project vicinity, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

The headwaters of the San Luis Rey River originate in the Cleveland National Forest and eventually connect to the Pacific Ocean. Lake Henshaw is a man-made lake that intersects the river in the upper portion of the watershed, approximately 50 miles upstream from the mouth of the river. When open to the ocean, the lower portion of the watershed supports an intertidal habitat with a substrate of mud, sand, and rock rip rap as well as submerged brackish water vegetation and algae.

Special Status Species

Tidewater Goby

The tidewater goby is a small benthic fish that forms isolated populations in California's coastal lagoons, creeks, and marshes. The tidewater goby rarely exceeds 50 millimeters standard length (SL) and is brownish in color and mottled. This species has been found in a waters ranging from 9 to 25 degrees Celsius (48 to 77 degrees Fahrenheit) and can tolerate a wide range of salinities, from 0 to 55 parts per thousand (USFWS 2007). The tidewater goby is generally a bottom dwelling species found in sand, mud, and gravel, and it inhabits watercourses with slow or no currents. This species' presence, distribution, and density may vary seasonally and spatially.

Historically, the tidewater goby has been documented at 135 localities within California, ranging from Tillas Slough (mouth of Smith River) in Del Norte County near the Oregon border, to Agua Hediona Lagoon at Carlsbad, San Diego County (USFWS 2005). The San Luis Rey River is one of the historical locations that has intermittently supported tidewater goby. However, several of these documented populations have been considered extirpated or in decline (USFWS 2005). Given the nature and number of remaining populations, the rapidity of decline in some areas, the degree of threat, and the difficulty in natural recolonization, USFWS declared the tidewater goby as an endangered species in 1994 (Holland 1992).

Southern California Steelhead

Steelhead is a migratory species that spends most of its life in the ocean and then returns to rivers and streams for spawning. Steelhead can reach up to 55 pounds in weight and 45 inches in length, though its average size in southern California is much smaller than northern populations (NOAA 2016), with 27 pounds being the maximum weight of a southern California steelhead based on historical data form the

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species (University of California 2017). This species is silvery-white on the underside and has a specked body with a pink to red stripe running along its sides. Steelhead can survive in a wide range of water conditions, but it does best where dissolved oxygen concentration is at least 7 parts per million (NOAA 2016).

Steelhead is naturally found in the western Pacific and has been introduced all over the world. Historically, steelhead has populated coastal watersheds throughout southern California. An adult steelhead was documented in the San Luis Rey River in 2007 in a pool at the College Avenue crossing in the City of Oceanside (CDFW 2007). While a few individual *O. mykiss* (either as steelhead or rainbow trout) have been documented in the estuarine systems to the north of the San Luis Rey River – specifically, in the upper reaches of the San Mateo Creek and the Santa Margarita River (Damien Cie pers. comm. [Marine Corps Installation West-Marine Corps Base Camp Pendleton] October 2, 2017 and Warburton, Swift, and Fisher 2000; respectively) – these populations are not self-sustaining. Most documented populations have been in decline since the mid-1900s, leading to the listing of the southern California population of steelhead as a federally endangered species in 1997 from the Santa Maria River south to Malibu Creek (Federal Register 1997), which is currently the southernmost known, self-sustaining steelhead population. A Southern Range Extension to include streams as far south as San Diego County was promulgated on May 1, 2002 (Federal Register 1999), and reaffirmed January 5, 2006 (Federal Register 2006).

In 2009, the San Luis Rey River was designated as a high priority watershed by the National Marine Fisheries Service (NMFS), part of the National Oceanic and Atmospheric Administration (NOAA), under the draft Southern California Steelhead Recovery Plan. Two of the principal steelhead recovery objectives are to increase abundance of steelhead and to preserve the expression of its diverse life history strategies (NMFS 2012). The Southern California Steelhead Recovery Plan uses a Threat Assessment Process to identify, prioritize, and compare threats among the watersheds in which the steelhead is native and to examine the possibilities for mitigation. Threats to steelhead viability identified in the Southern California Steelhead Recovery Plan include dewatering and inadequate stream flows in the main channels and tributaries, barriers to fish passage in the river, loss of estuarine habitat, and lack of suitable spawning gravels in the main channel and important tributaries (NMFS 2012). However, the natural climatic, hydrological, geological, and ecological advantages cited in the assessment indicate that these limiting factors can be successfully mitigated, making the San Luis Rey River a prime candidate for steelhead restoration.

Methods

On July 31 and September 8, 2017, focused fish surveys were conducted within the San Luis Rey River according to the most recent USFWS Tidewater Goby Survey Protocol (USWFS 2006) (Table 1). The San Luis Rey River is characterized as a large body of water per the USFWS Tidewater Goby Survey Protocol (USWFS 2006); therefore, as recommended in the protocol for large bodies of water, the sampling covered more than five distinct survey areas upstream and downstream of the Proposed Project,

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including approximately 32.2 acres of the San Luis Rey River system, from the mouth of the river to approximately 1 mile upstream of the Proposed Project.

Table 1. The below table provides a summary of survey dates, times, conditions, and biologists

Date	Time	Conditions[1]	Permitted Biologist(s)	Other Fish Biologist
July 31, 2017	06:30- 13:00	Weather: 100%cc - 90% cc Wind: 0-2 BS Air Temperature: 72° F-78° F	Antonette Gutierrez	Samuel Schipper Grace Teller Andrew Kort
September 8, 2017	06:30-13:00	Weather: 100% - 25%cc Wind: 0-2 BS Air Temperature: 70° F-74°F	Antonette Gutierrez	Samuel Schipper Angelica Zavala-Lopez Andrew Kort

[1] cc=cloud cover; BS=Beaufort Scale; ° F = degrees Fahrenheit

Sampling for tidewater goby occurred in appropriate habitat consisting of slow moving water, generally less than 3 meters (10 feet) in depth, with suitable substrate and appropriate water quality parameters. A total of 63 seines were pulled during the two sampling periods, using a 3.0- or 5.0-meter-long by 1.0-meter-deep seine (with approximate 3-millimeter mesh). The length of net used was determined by the habitat conditions. In addition, nine un-baited minnow traps (with approximate 3-millimeter mesh) were deployed in depths ranging from 0.5 meter to 1.5 meters in areas of suitable habitat for tidewater goby. Supplemental sampling was performed in areas with open substrate between rock rip rap, snags, and dense vegetation using hand-held dip nets (with 0.5- to 1-millimeter mesh). A Garmin 64S Global Positioning System (GPS) unit was used to record all sampling locations per gear type. Fish species captured were identified, counted, and released. Potential tidewater goby predators and other non-fish species were noted. The general habitat parameters were described and recorded on field data sheets and included recordings of water quality parameters using a multi-parameter, water quality sonde at three locations: (1) the Proposed Project site, (2) upstream of the Propose Project, and (3) downstream of the Proposed Project.

Results

The sections below list general observations recorded during each of the survey events, summarize water quality data collected at the time of sampling, indicate the fish species captured, identify potential tidewater goby predators, and provide other information relevant to the site and potential presence of target fish species (i.e., tidewater goby, steelhead). Figure 3 shows the locations of the sampling sites and the gear type used across both survey events.

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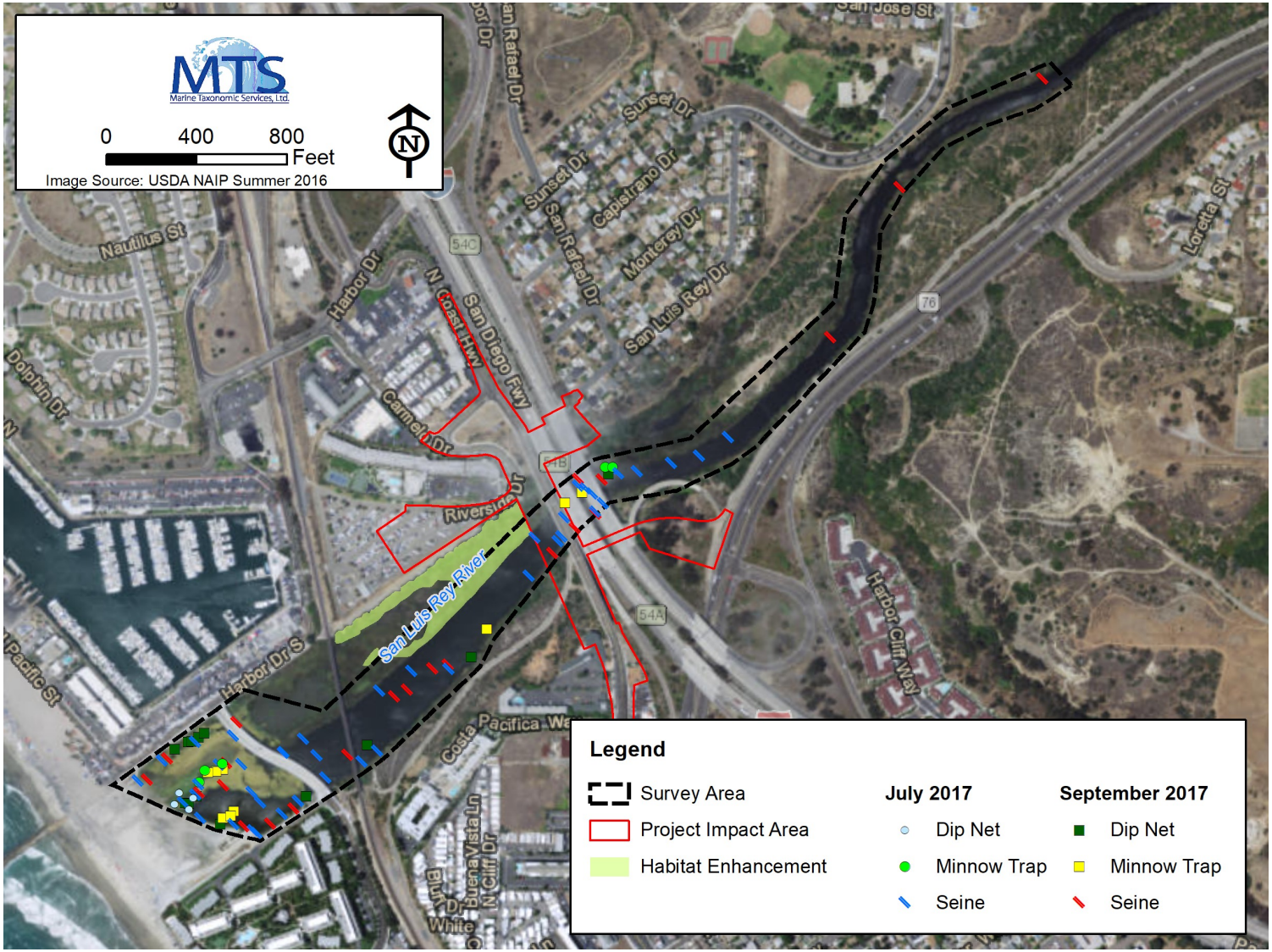


Figure 3. The above figure illustrates the sampling locations for July and September 2017 sampling events per gear type.

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July 2017 Sampling

During the July 2017 focused fish surveys, no tidewater goby or steelhead were detected. The following section describes general observations recorded during the July 31, 2017, survey event. It indicates the fish species captured, identifies potential tidewater goby predators, summarizes water quality data collected at the time of sampling, and provides other information relevant to the site, tidewater goby, and steelhead.



Photo 1. July 31, 2017: Looking west downstream of Proposed Project.

During the July 2017 survey, the San Luis Rey River was open to the ocean and exhibited active tidal influence. The survey area substrate consisted of sand at the mouth of the river and mud, sand, and gravel within the lagoon and adjacent to the Proposed Project. Ditch grass (*Ruppia maritima*) was found submerged throughout the sampling area, with a few bare areas at the mouth of the river, along the periphery of the lagoon, and in several areas below the bridges.

In July 2017, native fish species detected included topsmelt (*Atherinops affinis*), California killifish (*Fundulus parvipinnis*), diamond turbot (*Hypsopsetta guttulata*), barred pipefish (*Syngnathus auliscus*), opaleye (*Girella nigricans*), arrow goby (*Clevelandia ios*), and cheekspot goby (*Ilypnus gilberti*). Non-native fish species captured included yellowfin goby (*Acanthogobius flavimanus*) and mosquitofish (*Gambusia affinis*). Fish species observed but not captured included striped mullet (*Mugii cephalus*) and bat ray (*Myliobatis californica*).

Potential tidewater goby predators observed around the lagoon in July 2017 included yellowfin goby and avian lagoon species, such as great blue heron (*Ardea herodias*), black-crowned night heron (*Nycticorax nycticorax*), snowy egret (*Egretta thula*), and great egret (*Ardea alba*). Evidence of raccoon (*Procyon lotor*) was also noted on the periphery of the lagoon and adjacent to the Proposed Project.

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Invertebrate species observed or captured included bulla snail (*Bulla gouldiana*), navanax (*Navanax inermis*), flat worms, California sea hare (*Aplysia californica*), various crabs, cockles, hornsnail (*Cerithidea* spp.), and oriental shrimp (*Palaemon macrodactylus*).

Water quality observations generally showed that at the time of the survey the lower San Luis Rey River was marine influenced, with Proposed Project and upstream stations having a surface layer with moderate salinity and water at the bottom having salinities approaching oceanic salinity. The water was generally warm and clear, and dissolved oxygen levels were moderate (Table 2).

Table 1. Water quality data for July 31, 2017, sampling efforts. Surface and bottom measurements taken within 15 centimeters of surface and bottom, respectively.

Location	Station Depth (m)	Vertical Profile	Temp (°C)	Sp Cond (mS/cm)	Salinity (psu)	pH	Turbidity (NTU)	DO (mg/L)
Proposed Project I-5 Bridge	1.22	Surface	26.0	24.46	14.8	7.93	0.0	7.27
		Bottom	26.6	43.81	28.2	8.08	2.1	4.75
Downstream of Proposed Project	0.30	Surface	22.1	46.14	30.0	8.09	0.9	5.73
		Bottom	22.1	46.13	30.0	8.16	0.3	5.74
Upstream of Proposed Project	0.61	Surface	26.0	24.46	14.8	7.93	0.0	7.27
		Bottom	27.6	40.88	28.1	7.98	6.0	5.40

September 2017 Sampling

During the September 2017 focused fish surveys, no tidewater goby or steelhead were detected. The following section describes general observations recorded during the September 8, 2017, survey event. It indicates the fish species captured, identifies potential tidewater goby predators, summarizes water quality data collected at the time of sampling, and provides other information relevant to the site, tidewater goby, and steelhead.

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Photo 2. September 8, 2017: Looking west adjacent to Proposed Project.

During the September 2017 fish surveys, fish species detected included topsmelt, opaleye, barred surfperch (*Amphistichus argenteus*), California killifish, diamond turbot, California halibut (*Paralichthys californicus*), barred pipefish, bay blenny (*Hypsoblennius gentilis*), arrow goby, and cheekspot goby. Non-native species observed or captured included yellowfin goby and mosquitofish. Other native fish species observed but not captured included striped mullet, California butterfly ray (*Gymnura marmorata*), and remnants of shovelnose guitarfish (*Rhinobatos productus*). Invertebrate species observed or captured included tunicates, bulla snail, navanax, California sea hare, various crabs, cockles, hornsnail, and oriental shrimp.

Potential tidewater goby predators observed in and around the lagoon in September 2017 included yellowfin goby and avian lagoon species, such as great blue heron, snowy egret, and great egret. In addition, black-crowned night heron, green heron (*Butorides virescens*), and belted kingfisher (*Megaceryle alcyon*) are potential tidewater goby predators that were documented along the river channel within the survey area. Raccoon (also a potential predator of tidewater goby) footprints were seen along the lagoon periphery and river channels near the bridges.

The water-quality monitoring results for the September 2017 sampling show that freshwater flow had diminished such that surface and bottom salinities were generally similar within and across sampling stations. The water was warm and generally clear. Dissolved oxygen levels were low except for downstream surface water, which was moderate (Table 3).

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Table 3. Water quality data for September 8, 2017, sampling efforts. Surface and bottom measurements taken within 15 centimeters of surface and bottom, respectively.

Location	Station Depth (m)	Vertical Profile	Temp (°C)	Sp Cond (mS/cm)	Salinity (psu)	pH	Turbidity (NTU)	DO (mg/L)
Proposed Project I-5 Bridge	0.86	Surface	22.38	42.003	27.09	7.95	6.7	2.91
		Bottom	22.33	41.862	26.90	7.94	0	2.69
Downstream of Proposed Project	0.51	Surface	22.37	41.494	26.63	7.85	0	5.74
		Bottom	21.94	43.637	28.17	7.84	0	3.32
Upstream of Proposed Project	0.57	Surface	23.06	40.797	26.12	7.86	4.3	1.99
		Bottom	24.16	41.256	26.58	7.90	1.6	2.01

Discussion and Recommendations

Steelhead and tidewater goby historically occurred in the San Luis Rey River, with both species fluctuating spatially and seasonally (Downie and Kajtaniak 2010; NMFS 2012; USFWS 2013; and Swenson 1999). Since the mouth of the San Luis Rey River opened and remained open in 2017, this was a potentially good year for either or both species to occupy the system. However, neither species was detected during the two sampling efforts.

The San Luis Rey River system was surveyed from the channel at the inlet of the ocean to approximately 1 mile upstream from the Proposed Project. During the first survey in July 2017, the upstream reaches up to 1 mile of the Proposed Project exceeded the height of the seine where water levels were greater than 2.5 meters (8 feet); therefore, these areas were not surveyed. However, during the second survey in September 2017, there were some pockets along the river periphery that were suitable for sampling. In general, there were more suitable sampling locations for tidewater goby during the July 2017 survey, with calm waters and sandy substrates at the Proposed Project site and downstream of the Proposed Project. In September 2017, the water level had receded, leaving open sand bars in the lower reaches of the river and channelizing currents at the Proposed Project site as well as both upstream and downstream of the Proposed Project site, supporting suitable conditions for steelhead but not for tidewater goby.

Overall water quality conditions/parameters were consistent during both the July 2017 and September 2017 survey efforts, even though there was evidence of channelized flow from the ocean to upstream of the Proposed Project. In September 2017, deeper, fast-flowing channels had formed along the southern lagoon boundary and the central portion of the river channel, extending from the mouth of the river to upstream of the Proposed Project. Evidence of wracking was also prevalent in these areas. Both

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sampling efforts characterized the San Luis Rey River system as marine influenced. Water quality parameters showed suitable temperatures and pH regimes for both tidewater goby and steelhead. Dissolved oxygen was depressed in September 2017 relative to July 2017; levels were not low enough to prevent fish utilization but were well below optimal for steelhead.

Although suitable conditions for tidewater goby existed in the San Luis Rey River during 2017, the system still presented natural challenges for tidewater goby to persist. The main challenges were the constant tidal flow throughout the season and the formation of fast flowing channels throughout the estuarine system. By the second sampling effort in September 2017, there were only a few isolated areas where there was calm water and open substrate. Additionally, during both 2017 surveys, avian predators were observed foraging in the areas of the calm water, which provide the most suitable habitat for tidewater goby. Additional anthropomorphic challenges for this species exist in this system and in general. This species is threatened by habitat loss and degradation attributable to human destruction and manipulation of coastal wetlands for urban development and agriculture, stream channelization, flood control projects, cattle grazing, and artificial breaching of creek mouths. Additionally, the presence of introduced species contributed to the elimination of several tidewater goby populations. Many exotic species are washed into tidewater goby watercourses from upstream sources. Although tidewater goby was not detected during the 2017 surveys, this species was detected in the San Luis Rey River in 2010 (USFWS 2013) at an upstream location. Because this species' presence fluctuates spatially and seasonally, there is still potential for tidewater goby to re-colonize the San Luis Rey River, including the Proposed Project area.

Although suitable conditions for steelhead existed in the San Luis Rey River during 2017, this species is still faced with anthropomorphic challenges that characterize the San Luis Rey River system, including channelization and urbanization from agricultural development, urban development, culverts, homeless encampments, and urban runoff. Additionally, reduction of high quality habitat resulting from streambank and upland soil erosion, loss of riparian vegetation, water diversion, and point and non–point source pollution from municipal development and agriculture has significantly reduced the distribution and abundance of steelhead (NRCS 2000). Because of the anthropomorphic challenges and reduction in high quality habitat, the San Luis Rey River does not support sufficient refugia for steelhead, including spawning and rearing habitats for the species. At best, the San Luis Rey River in its current condition only supports a migratory route for adult steelhead to search for suitable spawning habitat. To persist, anadromous salmonid minimally require adult migration pathways, spawning and incubation habitat, stream rearing habitat, forage and migration pathways, and estuarine habitat (NMFS 2000). In its current state, the San Luis Rey River does not meet the minimal requirements to support and sustain the life-cycle of anadromous salmonids. Lastly, there are no abundant source populations or any nearby refugia that could potentially re-colonize the area to help sustain an existing salmonid population in the marginal habitat found in the San Luis Rey River.

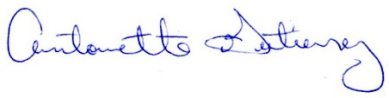
Based on input from several tidewater goby research scientists and based on the annual life cycle of the tidewater goby, documented population fluctuations, and their recolonizing ability, focused survey

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results are valid for a maximum of 1 year from the survey end date. Five consecutive years of negative survey results are needed to establish a history of absence. Therefore, it is recommended that surveys continue for the San Luis Rey River to support the recovery of tidewater goby. Additionally, in accordance with the 2006 Tidewater Goby Protocol: "For surveys conducted as part of a project clearance, additional sampling may be needed prior to initiation of those project activities that may affect the tidewater goby. If gobies are not found within the two survey periods, and the project will not be completed within 60 days of the last survey, a pre-project survey may be required for any part of the proposed project area that may affect the tidewater goby. The need for this survey will be evaluated on a case-by-case basis between the applicant and our field office (USFWS) that has jurisdiction over the area of interest."

If you have any questions or concerns regarding the results of these surveys, do not hesitate to contact me at 808.542.2941 or gutierrezantonette4@gmail.com or Robert Mooney, Project Principal, at 760.331.7897 or robert@consultmts.com.

Sincerely,



Antonette Gutierrez, Wildlife Biologist, TE-50992B-0

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Essential Fish Habitat Assessment for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project

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Introduction

This report summarizes the assessment of Essential Fish Habitat (EFH) for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project) located in the City of Oceanside, San Diego County, California (Figure 1). The report is provided in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (Federal Register 1997). The amendments require the delineation of EFH for all managed species. Federal action agencies which fund, permit, or carry out activities that may adversely affect EFH are required to consult with the National Marine Fisheries Service (NMFS) regarding the potential effects of their actions on EFH, and respond in writing to the NMFS' recommendations. The Proposed Project falls within three EFH Fishery Management Plans (FMPs), including Pacific Coast Groundfish, Coastal Pelagic Species, and Pacific Coast Salmon.

Proposed Action

The Proposed Project includes replacement of the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse effects on the San Luis Rey River and the surrounding riparian area.

Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open.

The Proposed Project area is based on the preliminary, estimated Proposed Project footprint, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (Figure 1). Currently, the Proposed Project impact area is approximately 13.11 acres and includes the bridge replacement as well as staging areas. Construction is currently scheduled to start in 2019 and take approximately 18 to 24 months to complete.

Methods

Focused fish surveys were performed by Marine Taxonomic Services Ltd. (MTS) on behalf of Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) in July and September 2017. These surveys included focused, protocol-level, presence/absence surveys for the federally listed endangered tidewater goby (*Eucyclogobius newberryi*) and focused, presence/absence surveys for southern California steelhead (hereafter steelhead;

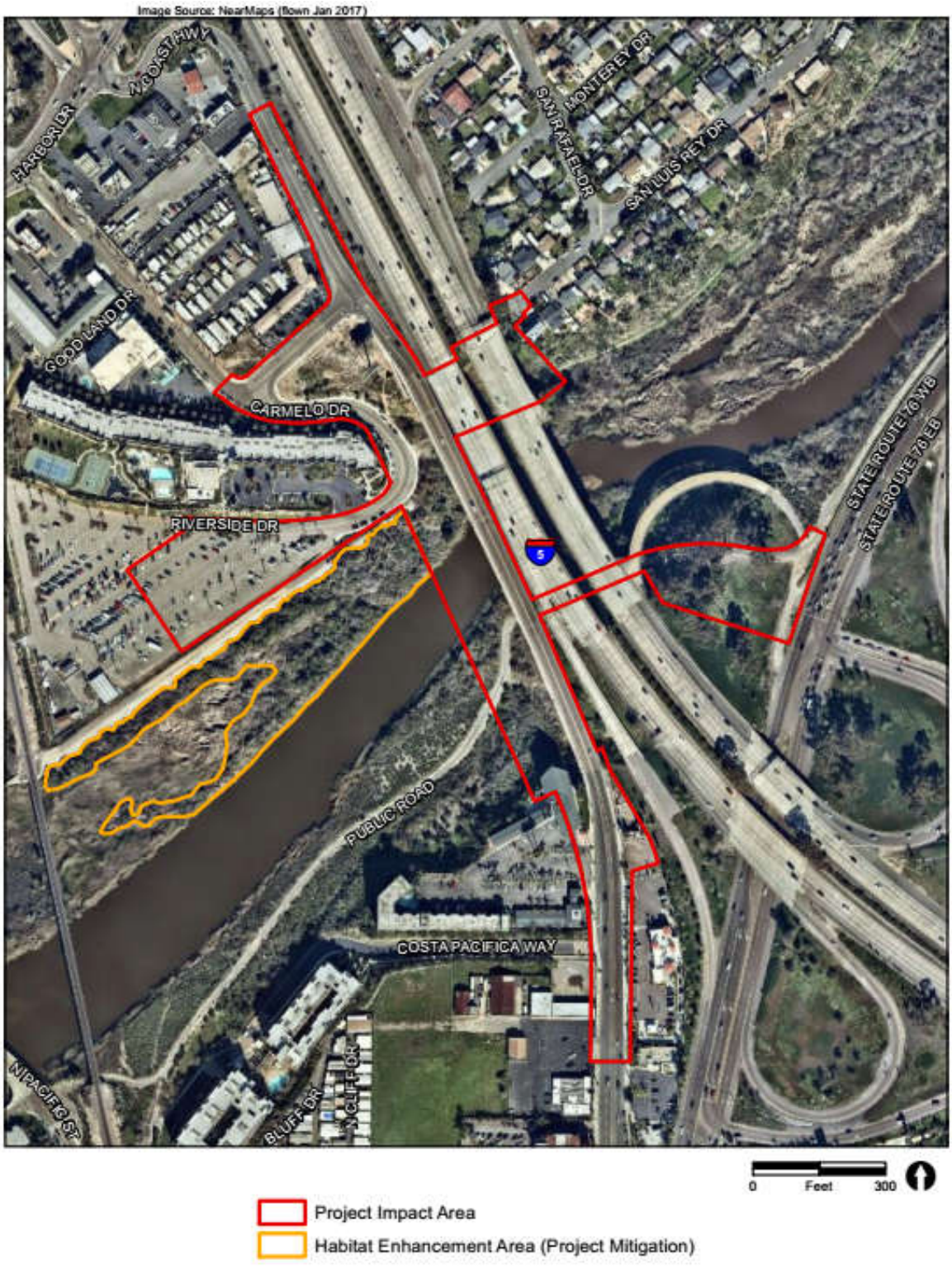


Figure 1. The above figure shows the location of the Proposed Project area and surrounding landscape. Note the figure shows a mitigation area that is part of Proposed Project elements that are not related to this assessment of EFH. Figure adapted from RECON (2017).

Oncorhynchus mykiss). The methods and results of the focused fish surveys are reported in *Fish Surveys within the San Luis Rey River for the Proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project, City of Oceanside, California* (MTS 2017).

In addition to the focused fish surveys (MTS 2017), general observations were made to evaluate aquatic species and habitats present during the fish surveys. This information was used to support the evaluation of fish habitat and potential effects presented in this EFH assessment. To ensure that this assessment was not solely dependent upon observations from the Proposed Project-specific fish surveys, an evaluation of the 2015 focused fish survey report (ECORP 2016) and other relevant literature was performed to better understand historical distribution of fish in the San Luis Rey River as well as in similar water bodies in the region.

Existing Habitat Conditions

The San Luis Rey River watershed is a mixture of developed and undeveloped land covering over 565 square miles and includes one of San Diego County's largest coastal wetlands, consisting of several areas of high ecological significance. The headwaters of the San Luis Rey River originate in the Cleveland National Forest and eventually connect to the Pacific Ocean. Lake Henshaw is a man-made lake that intersects the river in the upper portion of the watershed. The lowest portion of the watershed supports a bar-built estuary that is periodically open to the ocean. Substrates in the lower portion of the river include mud, sand, and rock rip rap. The inlet is unvegetated; however, ditch grass (*Ruppia maritima*) is found throughout the lagoon and the stem of the San Luis Rey River system.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (Figure 1). Within the Proposed Project vicinity, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges, and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

Site disturbances include man-made channels, homeless encampments, foot paths, and bridge crossings. The lagoon and river mouth are frequented by beach goers who potentially disturb wildlife and increase habitat loss. Where vegetation (riparian and freshwater marsh habitats) occurs, it maintains channel banks and shoreline, and acts to help filter chemical contaminants.

Habitat areas of particular concern (HAPC) relative to EFH are defined by regional fisheries councils. The HAPC with the greatest potential to occur within the Proposed Project area is eelgrass (*Zostera* spp.). However, no eelgrass habitat was observed within the immediate vicinity of the Proposed Project during the fish surveys performed by MTS (2017).

NMFS Managed Ichthyofauna Present in San Luis Rey River

Since the 1950s, there have been minimal efforts made to inventory the fish species within the San Luis Rey River (USFWS 2017). No managed fish species were captured during the 2017 focused fish surveys conducted for the Proposed Project. In 2015, a similar focused fish monitoring effort failed to find any managed fish species within or near the Proposed Project (ECORP 2016). The only fish species captured during the focused 2015 fish surveys was mosquitofish (*Gambusia affinis*).

Based on fish collections in similar nearby watersheds, including San Mateo Creek and Santa Margarita River (Warburton *et al.* 2000), three managed fish species have the potential to occur in the San Luis Rey River, including northern anchovy (*Engraulis mordax*), California scorpionfish (*Scorpaena gutatta*), and steelhead. The potential for these fish and their habitats to be found at least periodically within the San Luis Rey River or to be supported in the future is based on the similarity in habitats between the San Luis Rey River and these other nearby watersheds. In the case of steelhead, the historical presence of the species means it is possible that recovery efforts could lead to future utilization of the San Luis Rey River as habitat.

Table 1. The federally managed coastal pelagic fish species and pacific groundfish species with potential to occur in the San Luis Rey River

Common Name	Scientific Name
Coastal Pelagics FMP Northern Anchovy	*Engraulis mordax*
Pacific Groundfish FMP California Scorpionfish	*Scorpaena gutatta*
Pacific Coast Salmon FMP Southern California steelhead	*Oncorhynchus mykiss*

Potential Effects to Species-Specific EFH

The following text discusses the implications of Proposed Project actions and potential effects to biological habitats relative to NMFS-managed fish species within and adjacent to the Proposed Project.

Northern Anchovy

Adult northern anchovy are abundant in shallow nearshore habitats and estuaries (Emmett *et al*. 1991). Their use of estuaries as well as observations of northern anchovy in nearby estuaries (personal observation, Robert Mooney) mean that it is likely that northern anchovy occasionally occur in the San Luis Rey River estuary. Given that the species is pelagic, it has no particular site fidelity but is generally believed to move into estuaries during the spring and summer and is found offshore in fall and winter (Emmett *et al.* 1991). Prey items for larval northern anchovy juveniles include copepod eggs and nauplii, naked dinoflagellates, rotifers, ciliates, and

foraminiferans. Adults and juveniles typically consume phytoplankton, planktonic crustaceans, and fish larvae (Emmett *et al.* 1991). The prey items can generally be expected to occur in the lower San Luis Rey River; this is particularly true when the river mouth is open to the ocean.

Although there is potential habitat in the lower San Luis Rey River for northern anchovy, the Proposed Project has very low potential to adversely affect EFH for the northern anchovy. This determination is based on the absence of northern anchovy in recent and prior focused fish surveys performed within and adjacent to the Proposed Project (MTS 2017, ECORP 2016). Additionally, the northern anchovy is a schooling fish that does not associate with specific structure-related habitats in the estuary. Given that the Proposed Project will not permanently remove a significant amount of open water habitat and that use of the Proposed Project area by northern anchovy is likely minimal, the Proposed Project has negligible potential for long-term adverse effects to northern anchovy. Proposed Project actions may produce temporary disturbances that cause schools of norther anchovy (if present) to flee the work area. If northern anchovy were occupying potential habitat during construction, this would represent a minor alteration of habitat use within the lower San Luis Rey River.

California Scorpionfish

The California scorpionfish ranges from Santa Cruz, California, south to Uncle Sam Bank, Baja California, Mexico. California scorpionfish is a demersal species found over sandy and rocky habitats. It is a predominantly solitary species. However, its fidelity for natural and human-made features means that aggregations are often found near prominent features such as rocks, debris, and piles. Young California scorpionfish live in shallow habitats typically hidden within dense algae and bottom-encrusting organisms. Eggs are laid in a gelatinous mass that floats near the water's surface. The primary food items include juvenile crabs, small fishes (e.g., northern anchovy), octopus, isopods, and shrimps (EFH Core Team for West Coast Groundfish 1998).

The California scorpionfish has not been documented in the Proposed Project vicinity. However, there is the potential for California scorpionfish to occur in the Proposed Project area and the lower San Luis Rey River estuary. This species has been recorded in the San Mateo estuarine system north of the San Luis Rey River (Swift *et al.* 1994). The habitats within the lower San Luis Rey River are similar to the San Mateo estuarine system with sandy substrates, structure, and potential food items. However, the mouth of the San Luis Rey River is often closed, which means the system is subject to variation in salinity. Periods of increased flow will periodically mean that salinity drops prior to the river mouth opening. When the mouth is open, it allows for oceanic salinities required by this species. Similarly, prolonged periods with the mouth closed could lead to hypersaline conditions. These conditions are also found at the San Mateo estuarine system; however, the extent to which variability in water quality may control California scorpionfish across these estuaries is not known. Given that California scorpionfish were not observed in recent studies and that the Proposed Project vicinity does not provide any unique habitats for critical life stages (e.g., spawning), adverse effects to California scorpionfish EFH resulting from the Proposed Project are considered negligible. If the species were to be found, the Proposed Project effects could potentially be viewed as beneficial under Alternative 2, as installed components would at least temporarily increase structure for this structure-associated species.

Southern California Steelhead

Steelhead is naturally found in the western United States and has been introduced all over the world. Historically, steelhead has populated coastal watersheds throughout southern California. Steelhead is a migratory species that spends most of its life in the ocean and then returns to rivers and streams for spawning. Steelhead can survive in a wide range of water conditions, but this species does best where dissolved oxygen concentration is at least 7 parts per million. Young steelhead feed on zooplankton; adults feed on aquatic and terrestrial insects, mollusks, crustaceans, fish eggs, minnows, and other small fishes (NOAA 2016).

An adult steelhead was documented in the San Luis Rey River in 2007 in a pool at the College Avenue crossing in the City of Oceanside (CDFW 2007). While a few individual steelhead have been documented in the estuarine systems to the north of the San Luis Rey River – specifically, in the upper reaches of the San Mateo Creek and the Santa Margarita River (Damien Cie pers. comm. [Marine Corps Installation West-Marine Corps Base Camp Pendleton] October 2017 and Warburton, Swift, and Fisher 2000; respectively) – these populations are not self-sustaining. Most documented populations have been in decline since the mid-1900s, leading to the 1997 listing of the steelhead as a federally endangered species from the Santa Maria River at the north end to Malibu Creek (Federal Register 1997), currently the southernmost known, self-sustaining steelhead population.

The San Luis Rey River has historically provided habitat for steelhead. This means that recovery efforts could lead to steelhead populations returning to the San Luis Rey River in the future. Whether or not steelhead could be supported by the San Luis Rey River depends on whether alteration of habitat, fishing pressure, or larger scale processes (e.g., climate change) are responsible for their decline. NOAA (2016) indicated that the complexity of salmonid life history strategies make it difficult to assign any single factor as responsible for their decline.

Regardless of the reasons for the absence of steelhead from the San Luis Rey River, it is not likely that the Proposed Project will adversely affect EFH for this species. This determination is based on two factors. First, steelhead are currently absent from the San Luis Rey River, and sightings in other nearby systems are rare. This means the habitat is not suitable or is at least unavailable due to other population controlling factors. Second, the replacement bridge is not likely to alter hydrology in ways that would eliminate any potential EFH that could be utilized in the future if recovery efforts result in rebounding steelhead populations. There are other river crossings associated with street, railroad, and highway uses that already require an armored and static boundary for the river. Therefore, the Proposed Project would not necessarily lead to streambed alterations beyond those already existing.

General EFH Considerations

Potential adverse effects to habitat for managed fish species, if present, are expected to be minimal and temporary. Proposed Project actions that may affect the identified potential FMP-covered species' habitats include removal and replacement of piles, and placement of reinforcement forms. These actions and other construction activities are considered with general regards to potential effects to fish species and habitats relative to the below considerations.

Sedimentation and Turbidity

Any in-water work that involves bottom contact would result in temporary, localized increases in turbidity within and adjacent to the Proposed Project. The extent to which turbidity may be mitigated is addressed in other Proposed Project environmental review documents. Increases in turbidity could decrease the foraging efficiency of fishes; however, these potential adverse effects are likely be offset by the provision of additional food resources as invertebrates are released from the bottom or broken loose from pilings during construction. The extent to which one effect is offset by another is dependent upon species present and feeding strategies and cannot be predicted.

As suspended sediment settles, the increased sedimentation can have effects on epibenthic and infaunal invertebrates. These organisms can be smothered or else suffer from decreases in feeding efficiency.

Sedimentation and turbidity can generally be localized through implementation of best management practices (BMPs). Given that it is unlikely that managed species are present and given the ability for BMPs to limit the effects of turbidity and sedimentation in general, there is minimal potential for adverse effects to EFH. Thus, the Proposed Project may affect but is not likely to adversely affect EFH or managed fish species through an increase in sedimentation and turbidity.

Hazardous Materials and Chemical Spills

Hazardous materials and chemical spills could result from accidents on the work site. The Proposed Project could release hazardous substances into the environment as a result of an accidental discharge. However, the Proposed Project's adherence to BMPs will minimize the potential for accidents and provide for appropriate response and cleanup in the event an accident does occur.

Given the low probability of an accidental release of hazardous materials and given that BMPs will be implementated to minimize the effects of accidents and provide for accident response, the Proposed Project may affect but is not likely to adversely affect EFH or managed fish species in the event of an accidental release of hazardous materials.

Re-Suspenstion of Contaminants

Sediment disturbance in areas where bridge pilings are removed and replaced has the potential to redistribute contaminated sediments if contaminated sediments are present. There is no reason to expect that sediments within the construction footprint are more contaminated than surrounding sediments. Therefore, it is unlikely that contaminants would be released by construction activities. Thus, pending results of sediment evaluation, the Proposed Project is anticipated to have no effect on EFH or managed fish species through re-suspension of contaminants.

Habitat Modification and Shading

The new structures associated with the Proposed Project are similar to the existing structures and will have no adverse effects on water quality. Tidal flow, currents, or wave patterns are not

expected to be altered. If both structures are temporarily retained, there will be a net increase in over-water shading. This will result in minor losses of primary productivity, as photosynthesis will be depressed in shaded waters. However, eelgrass habitat is not present within or adjacent to the Proposed Project; therefore, there will be no adverse effects to this HAPC. Given there are no significant in-water habitats dominated by habitat forming primary producers, the Proposed Project may affect but is not likely to adversely affect EFH and managed fish species through reduction of primary productivity (e.g. plankton and periphyton).

Entrainment and Stranding

There are no Proposed Project elements that will lead to entrainment of fish or prey items for fish species. Additionally, there are no Proposed Project elements that are anticipated to significantly alter tidal flow and currents. Therefore, there is no increased risk for stranding. Thus, the Proposed Project is anticipated to have no effect on EFH or managed fish species through entrainment or stranding.

Predation Risk

Piles and bridge structures may attract some fish species and predatory avian species. The extent to which this increased predation risk would affect EFH and managed fish species is not certain. However, the Proposed Project would only increase the presence of bridge structures during the period when both structures are present. This will only occur if the existing bridge is not removed prior to construction of the new bridge. Thus, any increases in predation risk would be temporary. Given the minimal potential that EFH for managed species is present, this effect is minimal. Thus, the Proposed Project may affect but is not likely to adversely affect EFH and managed fish species through an increase in predation risk.

Food Resources

The Proposed Project will not change the distribution or availability of forage for managed species that may occur in the San Luis Rey River. There will be a temporary loss of encrusting communities on pile structures that are removed. This removal is minor and does not represent suitable forage for EFH-managed species in the San Luis Rey River system. Therefore, the Proposed Project is anticipated to have no effect on EFH or managed fish species through loss of food resources.

Spawning

The Proposed Project work areas are not suitable spawning habitat for any of the managed fish species. Additionally, there will be minimal alteration of the bottom, and there is no suitable nursery habitat for managed species in the Proposed Project area. Thus, the Proposed Project is anticipated to have no effect on EFH and managed fish species relative to spawning.

Conclusions

Although there is potential for managed fish species to occupy the San Luis Rey River when the river mouth is open to the ocean, any potential adverse effects to fish species resulting from Proposed Project actions are considered to be short-term and would cease at, or shortly after,

Proposed Project completion. It is anticipated that the newly constructed facilities will function similarly to existing facilities with regards to hydrology. Any associated species living on, around, and adjacent to the existing facility will similarly occur in association with the new facilities.

While it is possible for the Proposed Project to have unforeseen effects relating to accidents and minor redistribution of sediments, the probability of adverse effects is low. Moreover, the potential for managed fish species to occur is minimal and, therefore, adverse effects to EFH even in the event of an accident are negligible.

Therefore, it is determined that the Proposed Project may affect but it is not likely to adversely affect EFH and managed fish species.

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2015 FISH SURVEYS IN THE SAN LUIS REY RIVER FOR THE COAST HIGHWAY BRIDGE REPLACEMENT PROJECT



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1.0 INTRODUCTION

This letter report summarizes the results of the fish surveys for the federally listed endangered tidewater goby (*Eucyclogobius newberryi*) and southern California steelhead (*Oncorhynchus mykiss*) and Essential Fish Habitat (EFH) assessment conducted by ECORP Consulting, Inc. (ECORP) on behalf of Busby Biological Services, Inc. and RECON Environmental, Inc. for Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway Bridge Replacement Project (Proposed Project).

1.1 Location and Setting

The Proposed Project is located in the City of Oceanside, San Diego County, California immediately west of Interstate 5 (I-5), and crosses the San Luis Rey River approximately 0.61 kilometers (km) or 0.38 miles (mi) east of the Pacific Ocean (Figure 1). The Proposed Project is located within Township 11 South, Range 5 West, in Section 22 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968). The Proposed Project area is bordered on all sides by developed land, which includes I-5, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses. Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges, and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and estuarine. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, Diegan coastal sage scrub/southern riparian scrub transition, coastal brackish marsh, and eucalyptus woodland.

For the purposes of this report, the Project Survey Area consisted of open water habitats from the mouth of the San Luis Rey River to approximately 2.2 km (1.4 mi) upstream. The Project Survey Area was determined based on the availability of suitable habitat for sensitive aquatic resources and proximity to the Proposed Project. The San Luis Rey River runs generally in an east to west direction, with headwaters originating in the Cleveland National Forest and flowing to the Pacific Ocean. Lake Henshaw is located in the upper one-third of the watershed and has affected water flows in the San Luis Rey River since its construction in 1925 (escondido.org 2015). Flow in the San Luis Rey River most commonly occurs between November and March of each rain year. The San Luis Rey River is one of San Diego County's largest coastal wetlands and contains several areas of high ecological significance. It is home to many threatened and endangered species and is also a refuge for many other native species of fish, reptiles, amphibians, and birds.

1.2 Special-Status Species Accounts

The San Luis Rey River supports habitat for two federally listed as endangered fish species, tidewater goby and southern California steelhead. Historically, both species have been documented in the San Luis Rey River (Downie and Kajtaniak 2010; NMFS 2012; USFWS 2013). The following section describes both species in more detail.



Location: N:\2015\2015-083 Coast Highway Bridge Replacement\MAPS\Location_Vicinity\CHB_Vicinity_20150820.mxd (JDS)-dwagnon 8/21/2015

Map Date: 8/21/2015
Source: ESRI; NAIP 2014

Figure 1. Project Vicinity

2015-083 Fish Surveys for Coast Highway Bridge Replacement

ECORP Consulting, Inc.
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1.2.1 Tidewater Goby

The tidewater goby is a small fish (less than 50 millimeters [mm] or 2.0 inches [in] standard length) that primarily inhabits the benthic waters of coastal estuaries, lagoons, and marshes of California. Its habitat is characterized by shallow, brackish basins, usually in areas of reduced tidal influence (Swift et al. 1989). The tidewater goby exhibits a preference for a sand substrate component for breeding, but this species is also found on rocky, mud, and silt substrates. The tidewater goby lives to about 1 year of age and generally spends its entire life within estuaries, lagoons, or in freshwater habitats adjacent to these bodies of water (Swift et al. 1989). As part of its annual life cycle, this species can occur in high densities one year and be virtually absent in another.

The tidewater goby enters marine environments primarily through flushing events that are associated with the breaching of sandbars following high rainfall periods. These flushing events are thought to be the primary means for previously unoccupied habitats to be colonized (Lafferty et al. 1999). The tidewater goby is known to persist at least for short periods over a wide range of environmental conditions. These conditions include freshwater to hypersaline conditions (0 to 55 parts per thousand [ppt] salinity), both anoxic and hypoxic conditions (dissolved oxygen [DO] ranging from 1.5 to 20.0 milligrams per liter [mg/L]), varied water depths from 25 to 200 centimeters (cm) (9.8 to 78.7 [in]), and water temperatures from 8.0 to 35 degrees Celsius (°C) or 46 to 95 degrees Fahrenheit (°F) (USFWS 2007).

The tidewater goby has been documented in at least 135 localities; however, in recent years, several of these documented populations have been considered extirpated or in decline (USFWS 2005). Various factors have led to the decline of this species, including the introduction of nonnative species and habitat degradation. Because of the population declines and current threats to this species, the USFWS listed the tidewater goby as endangered in 1994 under the Federal Endangered Species Act. In 2005, the San Luis Rey River was identified as a potential reintroduction site in the Tidewater Goby Recovery Plan (USFWS 2005), and in 2013, it was designated as critical habitat for the species. Currently, the tidewater goby is known to occur in the San Luis Rey River (USFWS 2013).

1.2.2 Southern California Steelhead (steelhead)

The southern California steelhead Distinct Population Segment (DPS), including all naturally spawned populations of steelhead (and their progeny) in streams from the Santa Maria River to Malibu Creek, were listed as federally endangered in 1997, as a result of major population reductions region-wide (Federal Register 1997). A Southern Range Extension to include streams as far south as San Diego County was promulgated on May 1, 2002 (Federal Register 1999), and reaffirmed January 5, 2006 (Federal Register 2006).

The Southern California Steelhead Recovery Plan (Plan) (NMFS 2012) designates the San Luis Rey River watershed as a high priority for recovery of the species. Under the Plan, the immediate objectives are to increase steelhead abundance and to preserve the variety of life-history strategies that characterize steelhead populations. To meet these objectives, the Plan uses a Threat Assessment Process to identify, prioritize, and compare threats among southern California watersheds and to examine the possibilities for mitigation. As a result of this process, the Plan categorizes the San Luis Rey River as a high priority, or Core 1, basin. Core 1 population designation is based on several factors, including:

> *…the intrinsic potential of the population in an unimpaired condition, the role of the population in meeting the spatial and/or redundancy viability criteria, the conditions of the population, the severity of threats facing the populations, the potential ecological or genetic diversity the watershed and population could provide to the species, and the capacity of the watershed and population to respond to the critical recovery actions needed to abate those threats. Core 1 populations form the nucleus of the recovery strategy* (NMFS 2012).

However, there are many obstacles to steelhead recovery in the San Luis Rey River. Most notably, the over-allocation of water diversions in the basin not only results in less than suitable spawning, rearing, and passage flows in the mainstem San Luis Rey River but also results in premature (on a seasonal basis) dewatering of many miles of mainstem channel. These, combined with agricultural crossings and other barriers resulting either from 1) lower than suitable instream flows caused by upstream diversion, 2) historic channel modifications throughout the basin from agricultural or industrial practices, or 3) gravel mining operations that have acted to reroute the San Luis Rey streamflows into the old Fenton ponds, have further exacerbated the problem of successful upstream passage of adult steelhead, which is currently only infrequently possible during years of high flow.

2.0 METHODS

Surveys conducted in the San Luis Rey River followed the U.S. Fish and Wildlife Service (USFWS) Tidewater Goby Survey Protocol (USWFS 2006). Based on the survey protocol, the San Luis Rey River is considered a large water body, and two sampling methods (i.e., seining and minnow trapping) were required over two separate sampling periods between July 1 and October 31. As per the survey protocols, the two sampling periods were separated by 30 days.

A team of three ECORP fisheries biologists – Adam Schroeder, Max Murray, and Brian Zitt (USFWS 10[a][1][A] permitted tidewater goby biologist) – surveyed the Project Survey Area on July 15 and 16, 2015, and August 17 and 18, 2015. During each sampling period, 12 un-baited minnow traps with 3-mm (0.1-in) mesh were placed in suitable habitat locations with depths ranging from 0.5 to 1.5 meters (m) (1.6 to 4.9 feet [ft]). In addition, 3.3- and 5-m (10.8- and 16.4-ft) knotless nylon seine nets with 3-mm (0.1-in) delta mesh were used to the sample the Project Survey Area. Seine hauls were pulled in suitable habitats, from the mouth of the lagoon extending approximately 1.6 km (1.0 mi) upstream of the Coast Highway Bridge. Preference between the two net sizes was determined based on water depth, the presence of aquatic vegetation or algae, and the size of the area being sampled. Species captured in each seine haul and minnow trap were recorded, and all native species were immediately released unharmed in the area where they were captured. The locations of each sampling method were recorded using a handheld Global Positioning System (GPS) unit (Garmin 60CSx™) in Universal Transverse Mercator (UTM) coordinates, North American Datum (NAD) 1983 (Figure 2). Water quality data were collected using a Horiba multi-parameter meter (model U-52). Aquatic habitat features (e.g., tidal stages, water depths, substrate types, emergent/submergent vegetation, algae, artificial structures) and any visible disturbances were also recorded.



Location: N:\2015\2015-083 Coast Highway Bridge Replacement\MAPS\ISS_Survey_and_Mapping\FishCHB_SamplingLocations_20150820.mxd (JDS)-dwagnon 1/6/2016

Map Date: 1/6/2016
Photo Source: USGS 2012

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Scale in Meters
0 200

Figure 2. Sampling Locations

Fish Surveys for Coast Highway Bridge Replacement

An assessment of EFH was also conducted in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (Federal Register 1997). The amendments require the delineation of EFH for all managed species. Federal action agencies that fund, permit, or carry out activities that may adversely impact EFH are required to consult with the National Marine Fisheries Service (NMFS) regarding the potential effects of their actions on EFH and to respond in writing to the NMFS's recommendations. In addition to the surveys, a literature search was conducted to identify the known extant of special status fish species within the Project Survey Area.

3.0 RESULTS

This section summarizes the results of the fish surveys, including a literature review and site assessment. Photographs showing conditions along the Project Survey Area during the surveys are provided in Attachment A.

3.1 Literature Review

Historically, the tidewater goby has been known to occur in the San Luis Rey River; however, the number of surveys conducted since the 1950s has been extremely limited (USFWS 2013). In 2010, Kevin Lafferty documented the tidewater goby in the San Luis Rey River (USFWS 2013); however, in the following year, San Marino Environmental Associates reported negative surveys for the tidewater goby in the same system (Haglund and Baskin 2011).

Historically, reports of steelhead in the San Luis Rey River were largely anecdotal (CDFW 1946). Recent salmonids (potentially steelhead) in the San Luis Rey River watershed are also not well documented. One of the most recent sightings of steelhead in the San Luis Rey River occurred in 2007, when an adult steelhead was observed in a pool at the College Avenue crossing in the City of Oceanside (CDFW 2007).

3.2 Habitat Description

At the time of the 2015 surveys conducted for the Proposed Project, the San Luis Rey River was closed off to the Pacific Ocean. Water quality parameters taken during both survey periods indicate a freshwater system with little to no saltwater intrusion (salinity ranging from 3.2 to 3.4 ppt). Water temperature ranged from 23.61° to 25.45° C (74.50° to 77.81° F), while pH ranged from 8.43 to 8.73. Water visibility was poor, generally less than 0.3 m (11.8 in), with turbidity ranging from 21.1 to 160.0 nephelometric turbidity units (NTU), while DO fluctuated from 5.88 to 9.69 mg/L. Water quality data were consistent with what is expected in this type of system during the time of year in which the surveys were conducted. There were no noticeable differences between the water quality readings at the bottom or the surface of the water column. Water quality data are presented in Table 1.

Table 1. Water Quality Table

Date	Location in Water Column (Depth)	Time	Temperature (°C)	pH	Oxidation-Reduction Potential (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Total Dissolved Solids (g/L)	Salinity (ppt)
7/15/2015	Surface	8:34	23.65	8.48	92	6.00	35.4	9.69	3.78	3.3
7/15/2015	Bottom (1 m)	8:47	23.61	8.60	115	6.06	160.0	5.88	3.82	3.3
7/15/2015	Surface	8:48	23.94	8.66	82	6.03	38.9	7.21	3.80	3.3
7/15/2015	Surface	10:16	25.23	8.63	126	5.97	34.8	9.27	3.76	3.2
7/15/2015	Surface	11:37	25.16	8.72	129	6.02	37.1	9.53	3.79	3.3
7/15/2015	Bottom (1 m)	11:39	24.79	8.73	90	6.03	39.0	8.23	3.80	3.3
8/18/2015	Surface	8:58	25.45	8.43	153	6.19	21.1	9.18	3.90	3.4
8/18/2015	Bottom (1 m)	8:59	25.18	8.44	113	6.11	32.1	8.26	3.88	3.4
8/18/2015	Surface	10:56	25.44	8.67	140	6.22	29.9	7.56	3.92	3.4
8/18/2015	Bottom (1.3 m)	11:00	25.23	8.66	120	6.18	36.3	8.06	3.89	3.4

Water depths in the Project Survey Area ranged from 0.1 to 3.0 m (0.3 to 9.8 ft) throughout all open water habitats, with locations closest to the mouth containing good quality tidewater goby habitat. Upstream of the I-5 bridges, the channel becomes incised, with depths exceeding 2.0 m (6.6 ft). Throughout the Project Survey Area, substrate types consisted of sand, silt, and mud. Submergent vegetation (i.e., pondweed [*Potamogeton* species]) was only observed nearest the mouth of lagoon and was interspersed with filamentous algae. Emergent vegetation (e.g., bulrush [*Schoenoplectus californicus*], cattails [*Typha latifolia*], and various grasses) densely lined most portions of the stream channel upstream of the mouth. Water visibility was less than 0.3 m during both sampling periods, and no wrack was observed. Artificial structures were present in the form of riprap along the banks near the bridge abutments and miscellaneous/remnant concrete/rebar pilings under the I-5 bridge. Woody debris was sparse throughout the Project Survey Area and only located upstream of the Coast Highway Bridge.

The Project Survey Area is located within an EFH designation for three Fishery Management Plans – Pacific Coast Groundfish (Pacific Fishery Management Council [PFMC] 2014a), Coastal Pelagic Species (PFMC 2011), and Pacific Coast Salmon (PFMC 2014b). However, because the San Luis Rey River was closed off from the Pacific Ocean and lacked a marine influence at the time the surveys were conducted for this Proposed Project, the species managed under the EFH designations would not be present.

3.3 Fish Survey

A total of 72 seine hauls were pulled covering an average of 70 square meters (m^2) or 753.5 square feet (ft^2) per haul. No native fishes were detected during these surveys. Three nonnative species were captured by both seine and minnow traps, and included western mosquitofish (*Gambusia affinis*), oriental shrimp (*Palaemon macrodactylus*), and red swamp crayfish (*Procambarus clarkii*).

4.0 DISCUSSION

Sampling locations were selected based on the most appropriate habitat for finding the tidewater goby and the proximity to the Coast Highway Bridge. At the time of the surveys, the mouth of the San Luis Rey River was closed to the ocean, and sampling locations nearest the mouth possessed good quality habitat for the tidewater goby with water depths less than 2.0 m (6.6 ft) and mud/sand substrates. The sampling locations between the Pacific Street Bridge and the I-5 bridges contained a mix of good to moderate tidewater goby habitat, while upstream of the I-5 bridge, habitats were less suitable with water depths often greater than 2.0 m (6.6 ft). Although the Project Survey Area contained suitable habitat for the tidewater goby, no tidewater goby or other native fishes were detected during these surveys. Based on water quality readings, the system was considered freshwater and had no marine influence. As per the USFWS tidewater goby guidance, survey results are valid for a maximum of 1 year from the date the surveys ended.

Although steelhead historically occurred in the San Luis Rey River, the habitat present within the Project Survey Area lacked suitable spawning and rearing habitats for the species. Surface flows in the San Luis Rey River tend to vary with season, and no surface water was observed upstream of the lagoon at Benet Drive (approximately 2.9 km [1.8 mi] upstream of the Coast

Highway Bridge). The Project Survey Area would likely only be used by steelhead as a corridor through which they could migrate either upstream in search of spawning habitat (e.g., upper San Luis Rey tributaries) or downstream to the Pacific Ocean. This would only be possible during periods of high flow and of sufficient duration to sustain this movement. These high flows would be necessary to breach the sandbar at the mouth and overcome the various upstream obstacles in the San Luis Rey River. These upstream obstacles include various modifications and channelization to the river resulting in multi-channel (i.e., braided) conditions, vegetation snags, channel constrictions, and agricultural and urban development, including small-sized culverts in low-flow crossings. In addition to the Project Survey Area's not supporting steelhead spawning or rearing habitats, summer water temperatures are also likely to be unsuitable to support steelhead; suitable water temperatures are generally accepted to be less than 25° C (77° F) (Mathews and Berg 1997; Spina 2007). It is, therefore, unlikely the Project Survey Area provides summer refugia for salmonids.

It is the conclusion of this report that, at the time of these surveys, suitable habitat for tidewater goby exists within the Project Survey Area; however, the species is likely not present within the system. If the sandbar at the mouth of the lagoon were to open as a result of a large storm event, the Project Survey Area would likely shift from a freshwater to brackish or marine system, which may also allow the tidewater goby to re-colonize the San Luis Rey River. In the event the San Luis Rey River experiences periods of sustained tidal marine influence, the potential also exists for EFH species to be present within the Project Survey Area. These species would likely include coastal pelagic species, such as northern anchovy (*Engraulis mordax*) and Pacific sardine (*Sardinops sagax*). No groundfish species would likely be present even if the lagoon were open to tidal influences and considered brackish or marine. Additionally, steelhead may use the San Luis Rey River within the Project Survey Area but only infrequently and during years when conditions are suitable, and only as a corridor through which 1) adults must pass to reach upstream spawning tributaries, and 2) juveniles ("smolts") must pass from upstream rearing habitat (that is present only in certain tributaries) to the Pacific Ocean.

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ATTACHMENT A

Representative Site Photographs



A-1) A view of the mouth of the San Luis Rey River.



A-2) A view of the habitat just upstream of the Coast Highway and Interstate 5 Bridges.



A-3) A view of the habitat upstream of the Coast Highway Bridge.



A-4) An ECORP biologist collecting water quality data.



A-5) ECORP biologists pulling a seine net beneath the Pacific Street Bridge.



A-6) ECORP biologists checking a seine net beneath the Coast Highway Bridge.



A-7) A red swamp crayfish (*Procambarus clarkii*) captured with the seine net.



A-8) An oriental shrimp (*Palaemon* sp.) captured with the seine net.

Appendix I – Hydroacoustics Technical Memorandum for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (BRLS-5079(030))

Dewberry

MEMORANDUM

DATE: May 10, 2022

TO: Kevin Hovey, Caltrans District 11

FROM: Lindsay Tisch, Dewberry Engineers Inc.

SUBJECT: Hydroacoustics Technical Memorandum for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project [BRLS 5079 (030)]

Introduction

The purpose of this Bioacoustics Technical Memorandum is to provide an analysis of potential acoustic impacts of pile driving activities associated with the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Project) proposed by the City of Oceanside (City).

The Project site is located in northwestern San Diego County in the City of Oceanside, along the North Coast Highway, approximately 0.3 miles south of Harbor Drive, immediately west of and parallel to Interstate 5 (Figures 1 and 2 in Attachment A). The Project will replace the existing bridge, Bridge No. 57C-0322, where Coast Highway crosses the San Luis Rey River. The purpose of this project is to remove the existing structure and replace it with a new bridge designed to current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. The replacement bridge will conform to local, state, and federal environmental and planning policies using Highway Bridge Program (HBP) funds.

Project History

The existing Coast Highway Bridge was constructed in 1929. It is a 950-foot long five-span bridge with a cast-in-place concrete deck. The bridge is a total of approximately 49 feet wide, with a curb-to-curb width of approximately 40 feet providing two 12-foot traffic lanes plus 8-foot shoulders. It has a raised sidewalk along the west edge of deck. The approach spans (Spans 1 and 5) are rolled steel girders. Spans 2, 3, and 4 are each 268-foot-long steel truss spans. The truss spans have a total depth of approximately 40 feet, constructed of dual simple span riveted steel trusses. Piers 3 and 4 are located in the main river channel, supported on piles. Piers 2 and 5, located near the edges of the river channel are supported on spread footings. The existing abutments are seat type concrete abutments on spread footings. The bridge was widened to the east in 1952. The widening was removed in 1971 when the I-5 freeway was built, and the bridge was restored to its original configuration.

Project Description

The City is proposing to construct a replacement bridge for the Coast Highway Bridge (No. 57C-0322) over the San Luis Rey River due to it being structurally deficient, fracture critical and seismically vulnerable, as determined by the Federal Highway Administration criteria. For the complete project description, refer to Attachment B. Additionally, Attachment B contains the design sheets depicting the areas where pile driving will occur.

Proposed Replacement

Two build alignment alternatives are currently under consideration for the proposed project: replacing the bridge along the existing alignment or replacing the bridge immediately west of the existing alignment. No additional traffic lanes are proposed in the project; the existing two-lane bridge will be replaced with another two-lane bridge.

The structure Type Selection is underway. The preferred alternative proposed is an approximately 5-span, cast-in-place post-tensioned concrete box girder bridge on column piers along a new alignment just west of the existing bridge. The final bridge type chosen during final design may have slight variations to the proposed preferred alternative ; however, any modifications would not affect the overall environmental disturbance footprint studied in the technical studies and environmental documents.

Bridge construction is anticipated to require construction of a temporary trestle adjacent to the existing bridge and along the new bridge to facilitate access. Cofferdams and bubble curtains may be required to construct some of the bridge concrete piers and supports. Cofferdams will be installed along the banks of the river in order to construct the piers and supports on land while bubble curtains will be used to construct the piers and supports within the river. Details of the structure are summarized below and shown in Figure 3.

Bridge Demolition

Bridge demolition is anticipated to require construction of a temporary trestle adjacent to the existing bridge to facilitate demolition and provide temporary support during truss removal. As described above, cofferdams and bubble curtains are anticipated to facilitate removal of the existing bridge concrete piers. All demolition plans will be reviewed and approved by the Resident Engineer. Equipment used for demolition may include backhoes, excavators, hoe rams, hydraulic hammers, loaders, dump trucks, debris bins, flatbed trucks with cranes, forklifts, crawler cranes, air compressors, jackhammers, chipping guns, cutting torches, and saws.

General Pile Driving Activities

Pile driving will be required for the following activities:

- Construction Access across the River
    - Stream flow in the San Luis Rey River will be maintained during construction. Temporary construction trestles will be used to provide access over the River. Along the river banks, some temporary grading will be necessary to provide access for construction equipment. Work will be in conformance with City specifications as well as California Department of Fish and Wildlife, Regional Water Quality Control Board, U.S. Fish and Wildlife Service, and National Marine Fisheries Service regulatory requirements. Materials to construct the trestles may consist of steel pilings, steel cap beams and stringers, and timber decking. All work will be contained within the approved project area of disturbance. Equipment used may include light trucks, track mounted cranes, pile driving equipment, forklifts, excavators, and loaders. The trestles would remain in place for the duration of construction which may include staying in place over at least 1 winter season.
- New Bridge Construction
    - The piers and abutments will be constructed on site by installing rebar, placing forms, and pouring concrete. Once the piers and abutments are complete, falsework will be constructed to support the wet concrete for the superstructure. As temporary works, the falsework is designed by the Contractor. It generally consists of timber or steel posts, steel cap beams, and steel stringers. Timber joists and plywood forms are placed on top of the steel stringers.

Falsework spans are typically 20 to 60 feet long, however, longer spans are possible. The active river channel is approximately 150 feet wide, so it is likely that falsework supports will be installed within the river. At these locations the falsework will be supported on piles, which will be vibrated and driven into the ground. Falsework supports which are susceptible to flooding will be designed for stream flow and scour in case a flood event occurs during construction. Equipment used for the falsework construction may include light trucks, track mounted cranes, pile driving equipment, forklifts, generators, excavators, and loaders.

Affected Environment

Physical Conditions

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Action Area is bordered to the north and south by developed land, which includes SR-76, commercial properties, gas stations, lodging, parking lots, and residential development. Within the Action Area, the developed land largely consists of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; undeveloped land comprises a mix of native and non-native vegetation. The vegetation communities and land cover types found within the Action Area include urban/developed, disturbed habitat, open water (San Luis Rey River), freshwater marsh, disturbed southern riparian scrub, non-native riparian, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, and eucalyptus woodland. A large portion of the vegetation within the survey area has been subject to recent and historic disturbance, active management, and non-native plant invasion.

Special-Status Species

The Action Area provides potential habitat for two Federally-listed species: tidewater goby (*Eucyclogobius newberryi*) and southern California steelhead (*Oncorhynchus mykiss*). In addition, the San Luis Rey River is designated critical habitat for tidewater goby and is considered essential fish habitat (EFH) for groundfish, pelagic fish, or Pacific coast salmon species.

For further information on special-status species within the Action Area, please refer to the Biological Assessment (BA) which include discussions of potential impacts to these species and critical habitat and EFH designations, avoidance and minimization measures, and compensatory mitigation, that will be incorporated into the Project to reduce impacts.

Potential Hydroacoustic Effects

The BA prepared for the Project specified that potential hydroacoustic effects from pile driving within the San Luis Rey River may adversely impact federally-listed fish species. The installation of the temporary trestle and falsework and subsequent pile driving will take place within and immediately adjacent to the channel of the San Luis Rey River during the summer/early fall months (June 1 to October 31) when the potential for listed species to be present is low. Construction methodology for the Project piles is provided below.

Approximately 200 18 or 24-inch steel pipe piles will be installed to support falsework and the construction trestle. These temporary piles will be vibrated in and then driven with a drop hammer to confirm capacity. It is anticipated that a D30-52 hammer will be used. Currently, the Project intends to maintain stream flow in the San Luis Rey River during construction, therefore it is anticipated that approximately 10 feet of water

will be present at the time of pile installation. Pile installation is expected to occur on or after June 1 (start date is dependent on the approved in-water work window from the regulatory agencies) and take approximately 10 working days.

Using the 2021 NMFS Pile Driving Calculation spreadsheet, measured sound values from conditions similar to the Project site were entered in order to assess the potential hydroacoustic effects of pile driving activities within the San Luis Rey River (Attachment C). Caltrans used the following hydroacoustic values from the spreadsheet:

Installation of Temporary Trestle and Falsework:

- diesel impact hammer;
- 20 and 24-inch steel pipe piles (no sound data for 18-inch piles is available)
- water depth 10 feet (~3 meters) for piles driven in water
- approximately 100 piles driven in water; 100 piles driven on land
- attenuation with cofferdam on land and bubble curtains in water

The following assumptions for the Project were made:

- Piles will be installed using a vibratory hammer to approximately 5 feet of the design pile tip elevation;
- 150 pile hammer blows will be required to drive each of the 200 piles the remaining 5 feet of depth; and
- 10 piles installed per day

Based on these assumptions, it is estimated that 1,500 hammer blows will occur each day. NMFS states that the onset of physical injury occurs when the accumulated sound exposure levels (SEL) exceed 183 dB (for fish weighing less than 0.07 ounces [2 grams]) and 187 dB (for fish weighing greater than 0.07 ounces [2 grams]). Using the values from the pile driving spreadsheet, these numbers will be exceeded for the 20 and 24-inch piles driven in water as far as 681 feet from the piles, for the 20-inch piles driven on land as far as 316 feet from the piles, and for the 24-inch piles driven on land as far as 430 feet from the piles (Table 1). The land driven piles will have far less impact on fish because the further away the pile is from the wet channel during construction, the more attenuation will be achieved through transmission loss as the energy from the pile moves through the land toward the wet channel.

Table 1. Calculated Disturbance Threshold Distance for Pile Driving

	Distance (ft) to Threshold[1]			**Behavior**
	Onset of Physical Injury			
	Peak	**Cumulative SEL dB[2]**		**RMS**
	dB	**Fish ≥ 2 g**	**Fish ≤ 2 g**	**dB**
	206	**187**	**183**	**150**
20-inch pile on land	5	171	316	2413
24-inch pile on land	4	233	430	3281
20-inch pile in water	21	369	681	4460
24-inch pile in water	24	369	681	1776

[1]The values in this table have been converted to feet. The values in the spreadsheet are in meters

[2] This calculation assumes that single strike SELs < 150 dB do not accumulate to cause injury (Effective Quiet)

Attachments

1. **Attachment A Figures**
2. **Attachment B Project Description and Temporary Trestle Exhibit**
3. **Attachment C 2021 NMFS Pile Driving Calculation spreadsheet**

Attachment A

Figures

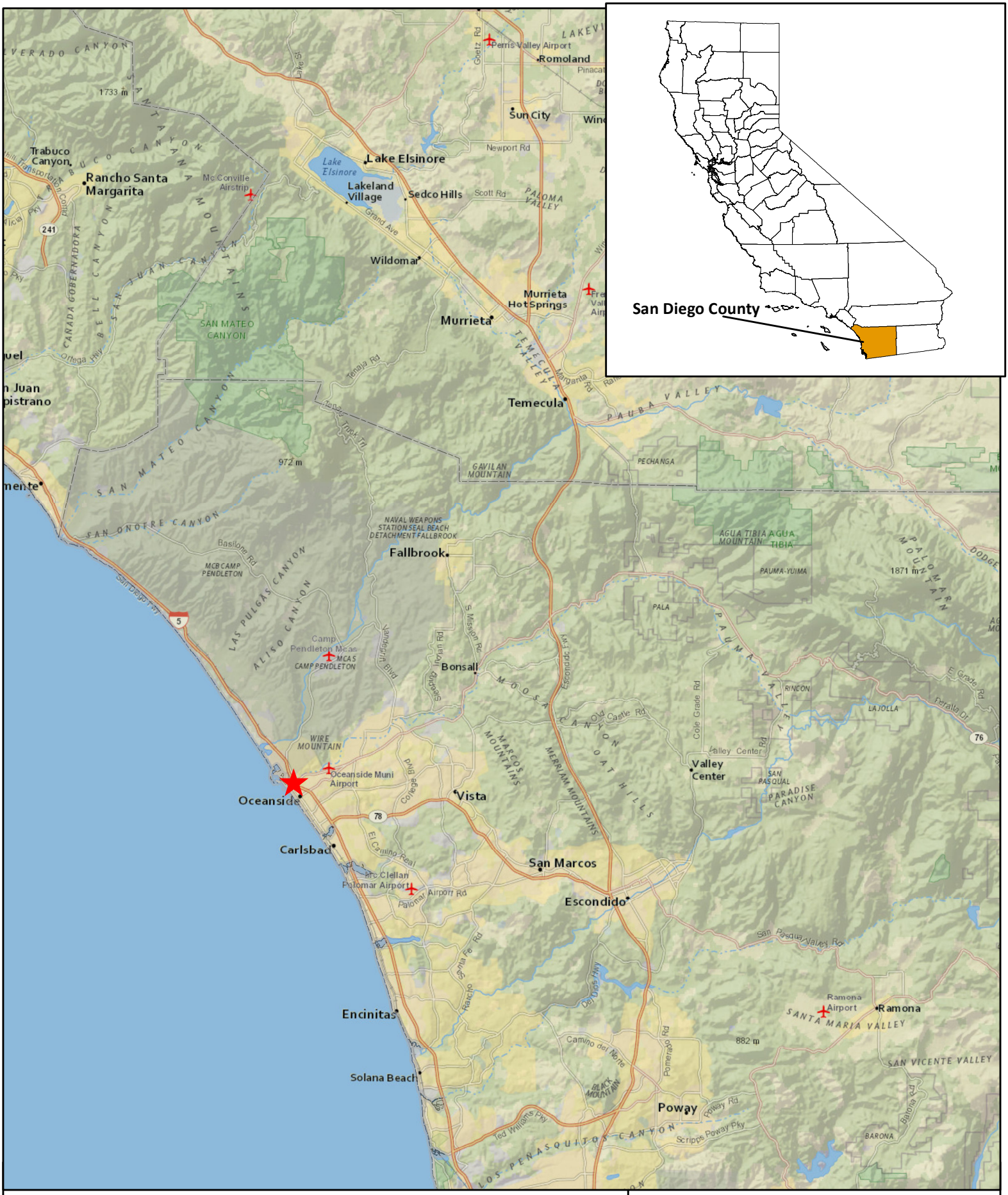


Figure 1. Regional Location

Coast Highway (Hill Street) Bridge (57C-0322) over the San Luis Rey River Replacement Project City of Oceanside, California



★ Project Location - Hill Street Bridge

N

0 37.5 75 150 Feet

Figure 2. Project Location

Coast Highway (Hill Street) Bridge (57C-0322) over the San Luis Rey River Replacement Project City of Oceanside, California

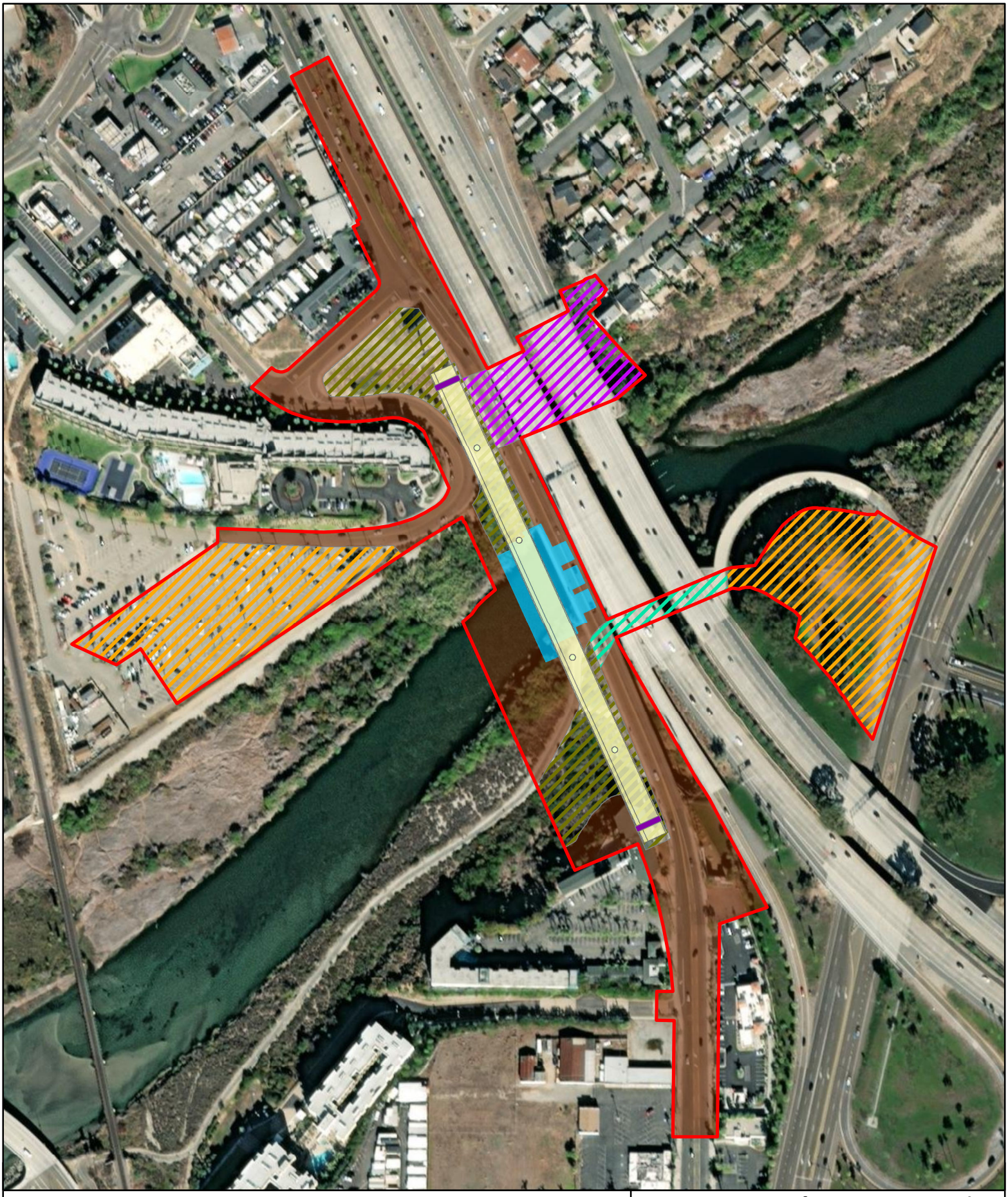


Figure 3. Area of Direct Impacts and Project Details

Coast Highway (Hill Street) Bridge (57C-0322) over the San Luis Rey River Replacement Project City of Oceanside, California

Attachment B

Project Description and Pile Driving Design

Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project Description

Introduction

The City of Oceanside (City) proposes to replace the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River, (Br. No. 57C0322). The bridge is located approximately 0.3 miles south of Harbor Drive, immediately west of and parallel to Interstate 5, in the City of Oceanside, San Diego County, California. The general setting is a perennial river surrounded by commercial development and includes roadways, curbs, and a sidewalk on the west side. The bridge currently carries vehicular, bicycle, and pedestrian traffic on Coast Highway over the San Luis Rey River. There is no curb-side on-street parking allowed on the bridge or near the bridge on the approach roadways.

The project is funded by the federal-aid Highway Bridge Program (HBP) administered by the Federal Highway Administration (FHWA) through Caltrans Local Assistance. The replacement bridge will meet current applicable City, American Association of State Highway and Transportation Officials (AASHTO), FHWA, and Caltrans design standards. The bridge would be replaced close to the same location; just immediately west of the current bridge alignment to maintain service on the existing roadway and bridge during construction.

Project Purpose and Need

The existing bridge was built in 1929, and is in poor structural condition. At 92 years old, the bridge is past its useful service life. The bridge is a "Fracture Critical" steel truss, because it is structurally non-redundant and has steel members loaded in tension - if one of these members fractured, it would cause a collapse of a span.

The purpose of this project is to remove the deteriorated, structurally deficient, fracture critical and seismically vulnerable, existing structure and replace it with a new bridge designed to current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. The replacement bridge will conform to local, state, and federal environmental and planning policies using HBP funds.

The project objectives are defined as:

- Remove the existing structural deficient, fracture critical, and seismically vulnerable bridge from service, and replace it with a new bridge built to current structural and geometric standards
- Improve public safety and pedestrian circulation through the addition of a raised sidewalk on the western side of the bridge
- Avoid adverse changes in traffic circulation and the community cohesion
- Minimize right-of-way take
- Minimize impacts to the river and riparian zone
- Offset the majority of project costs through State and Federal funding
- Facilitate and/or incorporate bike path connections to the San Luis Rey Trail and future bike path connection on the north side of the San Luis Rey River
- Make the bridge more pedestrian and bicycle friendly
- Improve the user experience for pedestrians and bicyclists on the trail below the bridge

- Reduce visual impacts and optimize scenic resources including the views of the Pacific Ocean and the San Luis Rey River
- Provide a context sensitive design solution appropriate for the scenic setting
- Give the bridge its own character as a City street, separate from the I-5 Freeway

Project Description

The Coast Highway runs from southeast to northwest at approximately a 30 degree angle to true north. For purposes of this Project Description, the Coast Highway is assumed to run north to south, and the San Luis Rey River flows from east to west.

Existing Bridge

The existing Coast Highway Bridge was constructed in 1929. It is a 950-foot long five-span bridge with a cast-in-place concrete deck. The approach spans (Spans 1 and 5) are rolled steel girders. Spans 2, 3, and 4 are each 268 foot long steel truss spans. The truss spans have a total depth of approximately 40 feet, constructed of dual simple span riveted steel trusses. Piers 3 and 4 are located in the main river supported on piles. Piers 2 and 5, located near the edges of the river are supported on spread footings. The existing abutments are seat type concrete abutments on spread footings. The bridge was widened to the east in 1952. The widening was removed in 1971 when the I-5 freeway was built, and the bridge was restored to its original configuration. The bridge is a total of approximately 49 feet wide, with a curb-to-curb width of approximately 40 feet providing two 12-foot traffic lanes plus 8-foot shoulders. It has a raised sidewalk along the west edge of deck.

The following utilities are attached to the bridge:

- 12-inch gas line – attached to the lower portion of the truss along the east side of the bridge
- 12-inch waterline – attached to the lower portion of the truss along the east side of the bridge
- 10-inch waterline – attached to the lower portion of the truss along the west side of the bridge
- 14-inch sewer force main – attached to the lower portion of the truss along the west side of the bridge
- Electrical and telecommunications lines – attached under the top deck along the west side of the bridge

There are also two sewer lines in the bridge vicinity. One runs down the center of Coast Highway, and terminates approximately 40 feet south of the bridge and does not cross the San Luis Rey River. The second sewer line runs under the bridge, on the downstream side of the bridge.

The San Luis Rey River Trail runs along the southern river bank and provides recreational and commuter uses for bicyclists and pedestrians. Access along this trail will be maintained during construction to the extent practical. Temporary closures and/or detours are anticipated to be needed during construction. After construction the trail will be returned to its pre-project condition or better.

On the north side of the river, there is a paved concrete pedestrian path near the top of the slope, which crosses under the I-5 bridges and under the existing Coast Highway Bridge and provides coastal access to the residential neighborhood to the east. This path will likely need to be modified to extend it under the new Coast Highway Bridge. Access along this trail will be maintained during construction to the extent

practical. Temporary closures and/or detours are anticipated to be needed during construction. After construction the trail will be returned to its pre-project condition or better.

Replacement Bridge

Two build alignment alternatives are currently under consideration for the proposed project: replacing the bridge along the existing alignment or replacing the bridge immediately west of the existing alignment. No additional traffic lanes are proposed in the project; the existing two lane bridge will be replaced with another two lane bridge.

The deck width on the new bridge will match existing conditions with two 12-foot-wide travel lanes and two 8-foot-wide shoulders for a curb to curb width of 40 feet. This roadway section is consistent with City and AASHTO standards for a facility of this type, and also matches the existing curb and gutter line along the Coast Highway. The shoulders may be reduced to 4 feet if required by Caltrans for funding purposes.

South of the bridge there are sidewalks on each side of the street. However, north of the bridge there is only a sidewalk on the west side of the street. New bridges and streets constructed to the City standard would generally have 6-feet wide sidewalks on each side, and the HBP program would generally participate in sidewalks where sidewalks currently exist. To provide the necessary pedestrian circulation, to align with the sidewalk north of the bridge, and to address the project objectives of improving the user experience for pedestrians and optimizing views of scenic resources, as well as maximize federal funding participation, a single 8-foot-wide sidewalk is proposed for the west side of the new bridge. The bridge barriers and railings will meet current crash testing requirements for vehicular and pedestrian railings and will be aesthetically pleasing. Coastal views will be considered when selecting bridge and rail types.

The structure Type Selection is underway. The preferred alternative proposed is a cast-in-place post-tensioned concrete box girder bridge on column piers along a new alignment just west of the existing bridge. The final bridge type chosen during final design may have slight variations to the proposed preferred alternative identified in the on-going Type Selection; however any modifications would not affect the overall environmental disturbance footprint studied in the technical studies and environmental documents.

Bridge construction is anticipated to require construction of a temporary trestle adjacent to the existing bridge and along the new bridge to facilitate access. Cofferdams may be required to construct some of the bridge concrete piers and supports.

Roadway Approach Work

The project will include new pavement, curbs, gutters, and sidewalks adjacent to the replacement bridge. The project will conform back to the existing roadway as quickly as practical. The curb-to-curb clear width of the street will match the width of the existing street and bridge. The approaches will transition as necessary to conform to the width of the sidewalk and roadway clear width on the bridge.

Utility Relocation

The existing utilities currently supported by the existing bridge will be relocated onto the new bridge. These utilities will remain in service during construction. Once the new bridge is complete, the utilities

will be relocated from the existing bridge to their final locations in the new bridge. Accommodations for other utilities and future utilities on the new bridge will be accommodated as practical.

Right-of-Way

The existing right-of-way for Coast Highway is approximately 75 feet at the bridge and widens both north and south of the existing bridge. Permanent right-of-way acquisition is anticipated. During construction temporary construction easements and permits to enter and construct are anticipated to be required.

There are several areas identified as potential construction staging areas that may require temporary construction easements (TCEs) or encroachment permits from the California Department of Transportation (Caltrans). The following parcels are identified as potential staging areas:

- APN 143-010-150
- APN 143-040-450
- APN 143-040-550
- APN 143-090-180
- Portions of Caltrans Right-of-Way under Interstate 5 bridges over the San Luis Rey River

Traffic Handling

Since constructing the new bridge on a separate alignment just west of the existing bridge is the proposed alternative, traffic will remain on the existing bridge during construction. This will minimize traffic impacts during construction. Once the proposed bridge is constructed, traffic will be cutover from the existing bridge onto the new bridge. During the cutover traffic will be impacted with delays and short-term closures as necessary to make the transition. A traffic handling plan will be submitted by the contractor for approval prior to construction beginning. Once the traffic is fully transitioned onto the new bridge, the existing bridge will be demolished.

Demolition Activities

Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specifications modified to meet environmental permit requirements. All concrete and other debris resulting from the demolition of the existing bridge will be removed from the project site and properly disposed of by the contractor. Prior to construction, the contractor is required to prepare a bridge demolition plan in conformance with environmental permits and the Caltrans Standard Specifications. Bridge demolition is anticipated to require construction of a temporary trestle adjacent to the existing bridge to facilitate demolition and provide temporary support during truss removal. Cofferdams are anticipated to facilitate removal of the existing bridge concrete piers. All demolition plans will be reviewed and approved by the Resident Engineer. Equipment used for demolition may include backhoes, excavators, hoe rams, hydraulic hammers, loaders, dump trucks, debris bins, flatbed trucks with cranes, forklifts, crawler cranes, air compressors, jackhammers, chipping guns, cutting torches, and saws.

Construction Activities

Construction will consist of the following activities in this general order:

Clearing, Grubbing, and Tree removals

Portions of existing roadway, sidewalks, curbs, gutters, hardscape and landscaping in conflict with new construction would be removed. Areas around the corners of the new bridge would be cleared of vegetation, fencing, and planter beds to gain access for constructing the new bridge. Vegetation and trees in the River within the footprint of the new bridge would be removed as shown on the plans and allowed by the environmental permits.

Construction Staging Areas/Site Access

Contractor lay down areas will be in flat unused areas inside the project direct impact limits. Access to the project site south of the River could be achieved from SR-76 east of the project site. A temporary access road could be cut into the slope at SR-76, and follow the San Luis River Trail under the I-5 bridges. This path would provide good access from the SR-76 and provide a relatively gradual slope for the access road. Access to the project site north of the River could be achieved from Monterey Dr and Riverside Dr.

Construction Access across the River

Stream flow in the San Luis Rey River will be maintained during construction. It is envisioned that temporary construction trestles would be used to provide access over the River. Along the river banks, some temporary grading will be necessary to provide access for construction equipment. Work will be in conformance with City specifications as well as California Department of Fish and Wildlife, Regional Water Quality Control Board, U.S. Fish and Wildlife Service, and National Marine Fisheries Service regulatory requirements. Materials to construct the trestles may consist of steel pilings, steel cap beams and stringers, and timber decking. All work will be contained within the approved project area of disturbance. Equipment used may include: light trucks, track mounted cranes, pile driving equipment, forklifts, excavators, and loaders. The trestles would remain in place for the duration of construction which may include staying in place over at least 1 winter season.

New Bridge Foundations

Due to the scour and liquefaction potential of the soils at the project site, the foundations for the replacement bridge will be supported by large diameter piles. Cast-In-Drilled-Hole (CIDH) piles are recommended in the Preliminary Foundation Report for the project. These piles could be up to approximately 180 inches in diameter and over 200 feet deep. Groundwater will be encountered during drilling for the CIDH piles. The CIDH pile construction may require the use of high density drilling slurry and steel casings. Prior to construction, a pile installation plan will be prepared by the contractor for approval by the Resident Engineer, in conformance with applicable permits, project specifications, environmental measures and conditions. All drilling slurry from the CIDH pile construction will be contained and properly disposed of offsite.

Equipment used may include: a crane or excavator mounted drill rig for the piles, a crane to set the rebar cages in the drilled holes, dump trucks, compaction equipment, and a truck mounted concrete boom pump. If slurry is used, there will be mixing tanks, recirculating pumps, and holding tanks for the waste slurry to be trucked offsite.

New Bridge Construction

Cast-in-place concrete construction, which places concrete in-situ using temporary shoring called “falsework,” is generally the preferred, most economical, and by far the most common construction method for highway bridges in California. It is feasible for this site, and was used for the I-5 bridges to the

east, which were built in the early 1970's, and more recently for the Pacific Street Bridge to the west, which was completed in 2008. As such, cast-in-place is the anticipated construction method for this project. The basic construction sequence is described below:

The piers and abutments will be constructed on site by installing rebar, placing forms, and pouring concrete. Once the piers and abutments are complete, falsework will be constructed to support the wet concrete for the superstructure. As temporary works, the falsework is designed by the Contractor. It generally consists of timber or steel posts, steel cap beams, and steel stringers. Timber joists and plywood forms are placed on top of the steel stringers. Falsework spans are typically 20 to 60 feet long, however, longer spans are possible. The active river channel is approximately 150 feet wide, so it is likely that falsework supports will be installed within the river. At these locations the falsework will be supported on piles, which are vibrated and driven into the ground. Falsework supports which are susceptible to flooding will be designed for stream flow and scour in case a flood event occurs during construction. Equipment used for the falsework construction may include: light trucks, track mounted cranes, pile driving equipment, forklifts, generators, excavators, and loaders.

Once the falsework is complete, the vast majority of the work commences from above on top of the falsework. The girders are formed, rebar is placed, and the concrete is poured. Concrete is typically placed from the ends of the bridge using truck mounted concrete boom pumps. Since this bridge will be approximately 980 feet long, concrete to the center of the bridge may need to be pumped using a concrete pump located on an access road or construction trestles below the bridge. For a multi-cell concrete box girder, the superstructure is placed in two pours, with the stem and soffit poured first and then the top deck placed in the second pour. Between the two concrete pours, utilities are installed in the cells. After the deck is complete and has reached the required strength, the superstructure is typically post-tensioned from abutment to abutment. Equipment used may include: light trucks, small cranes to lift rebar and forms into place, concrete trucks, and truck mounted concrete boom pumps.

After the bridge is prestressed, the falsework is removed, backfill is placed behind the abutments, and roadway base materials are placed along the roadway approaches. The roadway will be prepared for final surfacing and the barriers and railings will be installed. Equipment used may include: light trucks, small cranes and fork lifts, loaders, dump trucks, pavers, and compaction equipment. Excavations up to 30+ feet are necessary at the proposed bridge abutments and piers. Excavations for the approach roadway and utilities in the approach roadway may be up 15+ feet.

The falsework would remain in place for the duration of the new bridge construction which may include staying in place over at least 1 winter season. The falsework could be removed before the existing bridge is demolished.

Landscaping

Below the bridge, the river will be restored to its existing condition, with minimal changes to slopes and grades. Some rock slope protection may be required along the slopes to protect the abutments. Areas that are disturbed during construction will be restored using local native riparian landscaping to revegetate the slopes and river banks. Minor landscaping improvements may occur within the street corridor along the reconstructed bridge approaches.

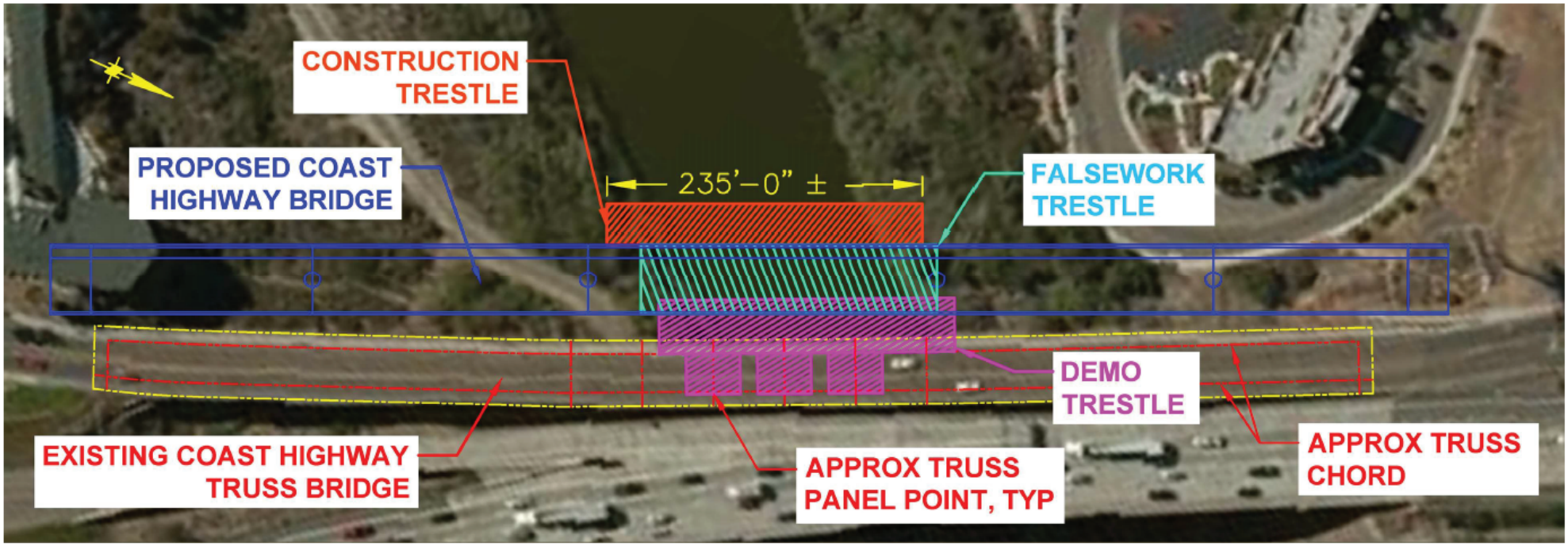
Environmental Documentation and Permits

The following environmental documents and permits are anticipated to be required:

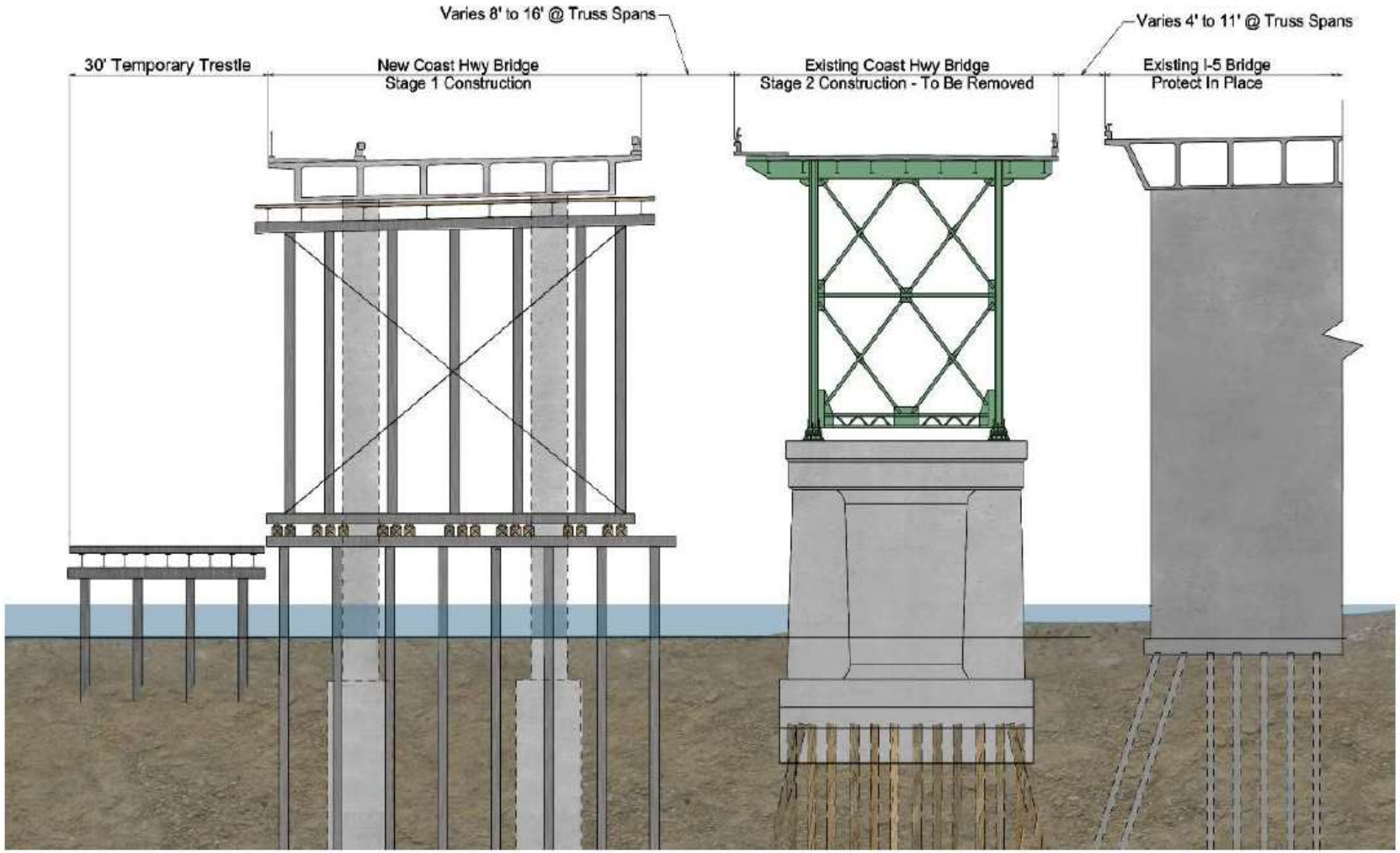
- Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA)
- Categorical Exclusion (CE) pursuant to the National Environmental Policy Act (NEPA)
- Section 7, Federal Endangered Species Act consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service
- Section 404 Permit and Section 408 Permission from the United States Army Corps of Engineers (USACE)
- Section 401, Clean Water Act, Water Quality Certification from the Regional Water Quality Control Board (RWQCB)
- Section 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife (CDFW)

Construction Sequence/Schedule and Timing

Construction is currently scheduled to start in 2024 and take approximately 24 to 30 months to complete. An in-creek work window will be determined during the environmental permitting process with the resource agencies. Temporary works such as the trestles and falsework that may need to stay in place over at least one winter season will be coordinated with the environmental permitting agencies and the Army Corps levee group. An in-creek work window of June 1 to October 31 is anticipated.



TEMPORARY TRESTLE EXHIBIT



TEMPORARY TRESTLE EXHIBIT

Attachment C

2021 NMFS Pile Driving Calculation Spreadsheet

Dewberry

IMPACT PILE DRIVING REPORT

PRINT IN LANDSCAPE TO CAPTURE ENTIRE SCREEN

(if OTHER INFO or NOTES get cut-off, please include information elsewhere)

Coast Highway Bridge Replacement Project

PROJECT INFORMATION	PEAK	SELss	RMS
Attenuated Single strike level (dB)	203	171	182
Distance associated with single strike level (meters)	10	10	10
Transmission loss constant	15		
Number of piles per day	10		
Number of strikes per pile	150		
Number of strikes per day	1500		
Cumulative SEL at measured distance	203		

OTHER INFO Approximately 200 18 or 24 inch steel pipe piles will be driven; anticipating 10 piles per day with 150 blows per pile; contractor will likely vibrate piles to 5 feet above tip then drive the remaining 5 feet

NOTES A bubble curtain will be installed around each pile as it's driven; water levels expected to be approximately 10 feet within the isolated work area

Attenuation 5

RESULTANT ISOPLETHS

(Range to Effects)

FISHES

	ONSET OF PHYSICAL INJURY		BEHAVIOR
	Peak Isopleth	SEL_{cum} Isopleth	RMS Isopleth
		Fish ≥ 2 g	Fish < 2 g	
ISOPLETHS (meters)	6.3	112.4	207.7	1359.4

SEA TURTLES

	PTS ONSET		BEHAVIOR
	Peak Isopleth	SEL_{cum} Isopleth	RMS Isopleth
ISOPLETHS (meters)	0.1	8.3	29.3

MARINE MAMMALS

	LF Cetacean	MF Cetaceans	HF Cetaceans	PW Pinniped	OW Pinnipeds
PTS ONSET (Peak isopleth, meters)	0.9	0.2	11.7	1.0	0.1
PTS ONSET (SEL_{cum} isopleth, meters)	207.4	7.4	247.0	111.0	8.1

	ALL MM
Behavior (RMS isopleth, meters)	292.9

IMPACT PILE DRIVING REPORT

PRINT IN LANDSCAPE TO CAPTURE ENTIRE SCREEN
(if OTHER INFO or NOTES get cut-off, please include information elsewhere)

Coast Highway Bridge Replacement Project

PROJECT INFORMATION	PEAK	SELss	RMS
Attenuated Single strike level (dB)	193	166	178
Distance associated with single strike level (meters)	10	10	10
Transmission loss constant	15		
Number of piles per day	10		
Number of strikes per pile	150		
Number of strikes per day	1500		
Cumulative SEL at measured distance	198		

OTHER INFO Approximately 200 18 or 24 inch steel pipe piles will be driven; anticipating 10 piles per day with 150 blows per pile; contractor will likely vibrate piles to 5 feet above tip then drive the remaining 5 feet

NOTES A cofferdam will be installed along the shoreline; soils may be saturated; piles will be driven on land behind the cofferdam

Attenuation 5

RESULTANT ISOPLETHS

(Range to Effects)

FISHES

	ONSET OF PHYSICAL INJURY		BEHAVIOR
	Peak Isopleth	SEL_{cum} Isopleth	RMS Isopleth
		Fish ≥ 2 g	Fish < 2 g	
ISOPLETHS (meters)	1.4	52.2	96.4	735.6

SEA TURTLES

	PTS ONSET		BEHAVIOR
	Peak Isopleth	SEL_{cum} Isopleth	RMS Isopleth
ISOPLETHS (meters)	0.0	3.8	15.8

MARINE MAMMALS

	LF Cetacean	MF Cetaceans	HF Cetaceans	PW Pinniped	OW Pinnipeds
PTS ONSET (Peak isopleth, meters)	0.2	0.0	2.5	0.2	0.0
PTS ONSET (SEL_{cum} isopleth, meters)	96.3	3.4	114.7	51.5	3.8
	ALL MM				
Behavior (RMS isopleth, meters)	158.5				

IMPACT PILE DRIVING REPORT

PRINT IN LANDSCAPE TO CAPTURE ENTIRE SCREEN
(if OTHER INFO or NOTES get cut-off, please include information elsewhere)

Coast Highway Bridge Replacement Project

PROJECT INFORMATION	PEAK	SELss	RMS
Attenuated Single strike level (dB)	204	171	176
Distance associated with single strike level (meters)	10	10	10
Transmission loss constant	15		
Number of piles per day	10		
Number of strikes per pile	150		
Number of strikes per day	1500		
Cumulative SEL at measured distance	203		

OTHER INFO Approximately 200 18 or 24 inch steel pipe piles will be driven; anticipating 10 piles per day with 150 blows per pile; contractor will likely vibrate piles to 5 feet above tip then drive the remaining 5 feet

NOTES A bubble curtain will be installed around each pile as it's driven; water levels expected to be approximately 10 feet within the isolated work area

Attenuation 5

RESULTANT ISOPLETHS

(Range to Effects)

FISHES

	ONSET OF PHYSICAL INJURY		BEHAVIOR
	Peak	SEL_{cum} Isopleth	RMS
	Isopleth	Fish ≥ 2 g	Fish < 2 g	Isopleth
ISOPLETHS (meters)	7.4	112.4	207.7	541.2

SEA TURTLES

	PTS ONSET		BEHAVIOR
	Peak Isopleth	SEL_{cum} Isopleth	RMS Isopleth
ISOPLETHS (meters)	0.1	8.3	11.7

MARINE MAMMALS

	LF Cetacean	MF Cetaceans	HF Cetaceans	PW Pinniped	OW Pinnipeds
PTS ONSET (Peak isopleth, meters)	1.0	0.2	13.6	1.2	0.1
PTS ONSET (SEL_{cum} isopleth, meters)	207.4	7.4	247.0	111.0	8.1

	ALL MM
Behavior (RMS isopleth, meters)	116.6

IMPACT PILE DRIVING REPORT

PRINT IN LANDSCAPE TO CAPTURE ENTIRE SCREEN
(if OTHER INFO or NOTES get cut-off, please include information elsewhere)

Coast Highway Bridge Replacement Project

PROJECT INFORMATION	PEAK	SELss	RMS
Attenuated Single strike level (dB)	192	168	180
Distance associated with single strike level (meters)	10	10	10
Transmission loss constant	15		
Number of piles per day	10		
Number of strikes per pile	150		
Number of strikes per day	1500		
Cumulative SEL at measured distance	200		

OTHER INFO Approximately 200 18 or 24 inch steel pipe piles will be driven; anticipating 10 piles per day with 150 blows per pile; contractor will likely vibrate piles to 5 feet above tip then drive the remaining 5 feet

NOTES A cofferdam will be installed along the shoreline; soils may be saturated; piles will be driven on land behind the cofferdam

Attenuation 5

RESULTANT ISOPLETHS

(Range to Effects)

FISHES

	ONSET OF	PHYSICAL	INJURY	BEHAVIOR
	Peak	SEL_{cum} Isopleth		RMS
	Isopleth	Fish ≥ 2 g	Fish < 2 g	Isopleth
ISOPLETHS (meters)	1.2	70.9	131.0	1000.0

SEA TURTLES

	PTS ONSET		BEHAVIOR
	Peak Isopleth	SEL_{cum} Isopleth	RMS Isopleth
ISOPLETHS (meters)	0.0	5.2	21.5

MARINE MAMMALS

	LF Cetacean	MF Cetaceans	HF Cetaceans	PW Pinniped	OW Pinnipeds
PTS ONSET (Peak isopleth, meters)	0.2	0.0	2.2	0.2	0.0
PTS ONSET (SEL_{cum} isopleth, meters)	130.9	4.7	155.9	70.0	5.1

	ALL MM
Behavior (RMS isopleth, meters)	215.4

Appendix J – Light-footed Ridgway's Rail Survey Reports

Konecny Biological Services
Biological Consulting, Research, Conservation

June 12, 2021

Recon Environmental
4629 Cass Street, # 192
San Diego, California, 92109

Attn: Ms. Wendy Loeffler

Re: Results of a Focused Survey for the Light-footed Ridgway's Rail at the Coast Highway Bridge Replacement Site, City of Oceanside, San Diego County, California, 2021.

Dear Ms. Loeffler:

This letter report presents the results of a focused survey for the light-footed Ridgway's rail (*Rallus obsoletus levipes*; LFRR) (formerly light-footed clapper rail, *Rallus longirostris levipes*), at the Coast Highway Bridge Replacement Project (Project) site in the City of Oceanside, north-coastal San Diego County, California (Figures 1). The LFRR is listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). This coastal southern California subspecies is one of three subspecies of federally endangered *R. obsoletus*, which was formerly *R. longirostris* but recently taxonomically reclassified by the American Ornithologist Society because of genetic studies (Chesser *et al.* 2014).

Surveys for the LFRR were conducted by wildlife biologist John Konecny. The surveys were conducted in accordance with the recommendations provided to the USFWS by the Clapper Rail Study Team (2009). This activity is authorized by John Konecny's USFWS Section 10(a) (1) (A) permit number TE-837308-7. No LFRRs were detected in the survey area in 2021.

INTRODUCTION

The LFRR is a slender, tawny-breasted bird with grayish edges on brown centered back feathers, olive wing coverts, vertical white bars on the flanks, a white stripe over the eye, and a partially orange bill. LFRR occurred historically along the coast of southern California from Carpinteria Marsh in Santa Barbara County south to San Quintín, Baja California, Mexico (Grinnell and Miller 1944, USFWS 1994).

The LFRR is a permanent resident of coastal salt marsh traversed by tidal sloughs, usually characterized by cordgrass (*Spartina foliosa*) and pickleweed (*Salicornia* spp.) (Grinnell and Miller 1944, USFWS 1994). LFRRs have also nested in freshwater marsh characterized by cattails (*Typha* sp.) and bulrush (*Scirpus* sp.) at Buena Vista, Agua Hedionda, Batiquitos, San Elijo, and San Dieguito Lagoons in San Diego County (Zembal *et al*. 2014; and in spiny rush (*Juncus acutus*) at Naval Air Station (NAS) Point Mugu.

LFRRs forage primarily on crustaceans when present. They will also feed on mollusks, small fish, aquatic insects, grasshoppers, small vertebrates, and in some cases, seeds (Eddleman and Conway 1998). LFRRs forage within emergent vegetation or along the ecotone between mudflats and marsh (Zembal and Fancher 1988), and in the central drains of tidal creeks at low tide. Surface gleaning and shallow probing compose approximately 90 percent of foraging time, while LFRRs very irregularly probe deep into the substrate (Zembal and Fancher 1988).

Populations of LFRRs have undergone decline in the United States due to the rail's limited distribution and destruction and degradation of coastal salt marsh habitat. The statewide LFRR population in 2020 was reported to be 362 pairs in 19 marshes (Zembal *et al.* 2020). This is a decline from the all-time high of 656 pairs in 2016 and 514 pairs in 2017. The 2020 total is the second lowest total reported since 2009, the lowest being 308 pairs in 2019. Forty-one percent of these pairs were found in two coastal salt marsh complexes at Upper Newport Bay and the Tijuana Marsh National Wildlife Refuge (NWR).

Eight other marshes had more than ten breeding pairs in 2020: Batiquitos Lagoon, San Elijo Lagoon, Seal Beach NWR, Point Mugu NWR, San Dieguito Lagoon, San Dieguito Lagoon, Buena Vista Lagoon, and the San Diego River had between 10 and 42 pairs each, representing an additional 49% of the state total. The remaining nine marshes had between one and nine pairs, representing 10% of the state population. Zembal (2018) attributes the continued decline of the LFRR to ocean inlet closure, unchecked predation, rising sea level, and climatological effects on territorial manifestation including reduced vocalization.

Zembal and Massey (1986) have shown that paired LFRR can be detected "clappering" throughout the year but have a bimodal peak in vocalizing during mid-February to mid-April and again in September through October. The initial peak in "clappering" vocalizing corresponds to the onset of breeding season, and the second peak is thought to function in pair formation in the fall (Zembal and Massey 1986). In contrast to "clappering", single male and female "kekking" is highly seasonal, almost exclusively occurring between February and June.

PROJECT LOCATION

The Project site includes the existing Coast Highway (Hill Street) Bridge over the San Luis Rey River and adjacent proposed access routes and staging yards. The LFRR survey area is located south of South Oceanside Harbor Drive, immediately west of, and parallel to Interstate 5 (I-5), and east of the Pacific Ocean at the mouth of the San Luis Rey River in the City of Oceanside, California (Figure 1). The site is located within Township 11 South, Range 5 West, and in Section 22 of the U.S. Geological Survey Oceanside 7.5-minute quadrangle.

PROJECT SITE DESCRIPTION

The lower San Luis Rey River typically runs perennially through the City of Oceanside and ponds at the river's mouth. The habitat in this reach of the river is primarily southern willow riparian woodland characterized by arroyo willow (*Salix lasiolepis*), black willow (*S. gooddingii*), sandbar willow (*S. hindsiana*), and mule fat (*Baccharis salicifolia*), with scattered cottonwood (*Populus fremontii*), sycamore (*Plantanus racemosa*), tamarisk (*Tamarix* sp.), and patches of giant reed (*Arundo donax*).

The eastern portion of the survey area is dominated by riparian woodland that transitions into freshwater marsh characterized by cattail and bulrush in the western portion of the survey area. Portions of the banks of the San Luis Rey River are lined with concrete or riprap. Elevation within the survey area ranges from approximately three to seven feet (one to two meters) above mean sea level.

METHODS

Six focused LFRR survey events were conducted at least seven days apart in all potentially suitable coastal brackish marsh habitat within the project site survey area between March 29 and May 6, 2021. The survey area is composed of all LFRR suitable habitat within the estimated proposed project footprint (i.e., the existing North Coast Highway bridge and adjacent access routes and staging yards), as well as within all suitable habitat within a 500-foot buffer of the estimated proposed project footprint.

At the present time, there is no formal USFWS sanctioned survey methodology for the LFRR, and the USFWS leaves the survey methodology to the discretion of the permitted biologist. The LFRR surveys were conducted in accordance with the recommendations provided to the USFWS by the Clapper Rail Study Team (2009). Surveys were conducted at either dawn or dusk. Each dawn and dusk survey lasted approximately three hours. Dawn surveys were conducted from pre-dawn to no later than three-hours after sunrise. Dusk surveys were initiated three hours before sunset and continued until dark. A summary of the environmental conditions on the eleven survey dates is provided in Table 1 below.

Table 1. Summary of Weather Conditions During Six Light-footed Ridgway's Rail Survey Events for the Coast Highway Bridge Replacement Project in 2021.

Survey #	Date	Surveyor (Species)*	Time	Weather Conditions
1	03/29/2021	JK (LFRR)	1540-1925	0% overcast, 67-64ºF, wind 1-3 mph
2	04/05/2021	JK (LFRR)	1640-1930	20% overcast, 67-59ºF, wind 7-10 mph
3	04/12/2021	JK (LFRR)	1645-1940	50% overcast, 66-62ºF, wind 5-7 mph
4	04/19/2021	JK (LFRR)	0640-0910	100% overcast, 60-64ºF, wind 1-3 mph
5	04/28/2021	JK (LFRR)	0630-0855	80% overcast, 68-74ºF, wind 5-7 mph
6	05/06/2021	JK (LFRR)	1635-1940	50% overcast, 68-65ºF, wind 7-10 mph

*JK = John Konecny; LFRR = light-footed Ridgeway's rail

The surveys were conducted by walking the path along the levee of the riverbank, stopping at stations approximately 100 feet (33 meters) apart along the perimeter of the survey area, and listening for vocalizing LFRRs. If LFRRs were not detected passively, a digital call-prompt of the LFRR's "dueting" was played with an iPod and amplified speakers at 30-second intervals. A response was listened for before proceeding to the next survey station.

RESULTS

No LFRR's were detected in the project survey area in 2021. No other endangered or threatened species were detected within the project survey area during the 2021 focused surveys.

DISCUSSION

Described as "formerly common in all coastal marshes" by Grinnell and Miller (1944), the LFRR has never been a common bird species at San Luis Rey River in recent history. Since the LFRR range-wide survey was initiated in 1980, LFRR have been detected at the river mouth, main river channel, and Guajome Lake. Only one pair was detected at the river mouth in 1992 in the brackish water marsh. At Guajome Lake, one pair was mapped in 1983, and two pairs were detected in 1984 (Zembal *et al.* 2014).

One pair of LFRR was detected in the upstream reach of the San Luis Rey River in 2010 near Foussat Road. One advertising male and one single clappering LFRR were also detected during a 2010 survey further upstream. Three pairs of LFRRs were detected in 2011. Three pairs and one advertising male (male defending territory) were detected in 2012, and four pairs were detected in 2013 and 2014 (Konecny 2014, Zembal *et al.* 2014). Since then, the population has declined.

One pair of LFRR was detected on the north side of the San Luis Rey Riverbank between I-5 and the railroad tracks in 2014 and 2015 (Zembal *et al* 2020, Konecny 2015). The 2014 detection was the first pair detected in that area since 1992.

No LFRR nest monitoring was conducted as part of this survey, and no young were observed in the marsh. It is highly likely though that this pair is successfully breeding and contributing to the LFRR population in this area. LFRRs will likely continue to inhabit the freshwater marsh of the San Luis Rey River, and the numbers may increase depending on the reproductive success of this pair identified in 2015 and others detected upstream and outside the Project site, as well as the continued availability of freshwater marsh habitat.

CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represent my work. The results of focused surveys for listed species are typically considered valid for one year by the USFWS and CDFW. If you have any questions or require additional information, please call me at (760) 390-8959.

Sincerely,

John K. Konecny
Wildlife Biologist
TE837308-7

REFERENCES CITED

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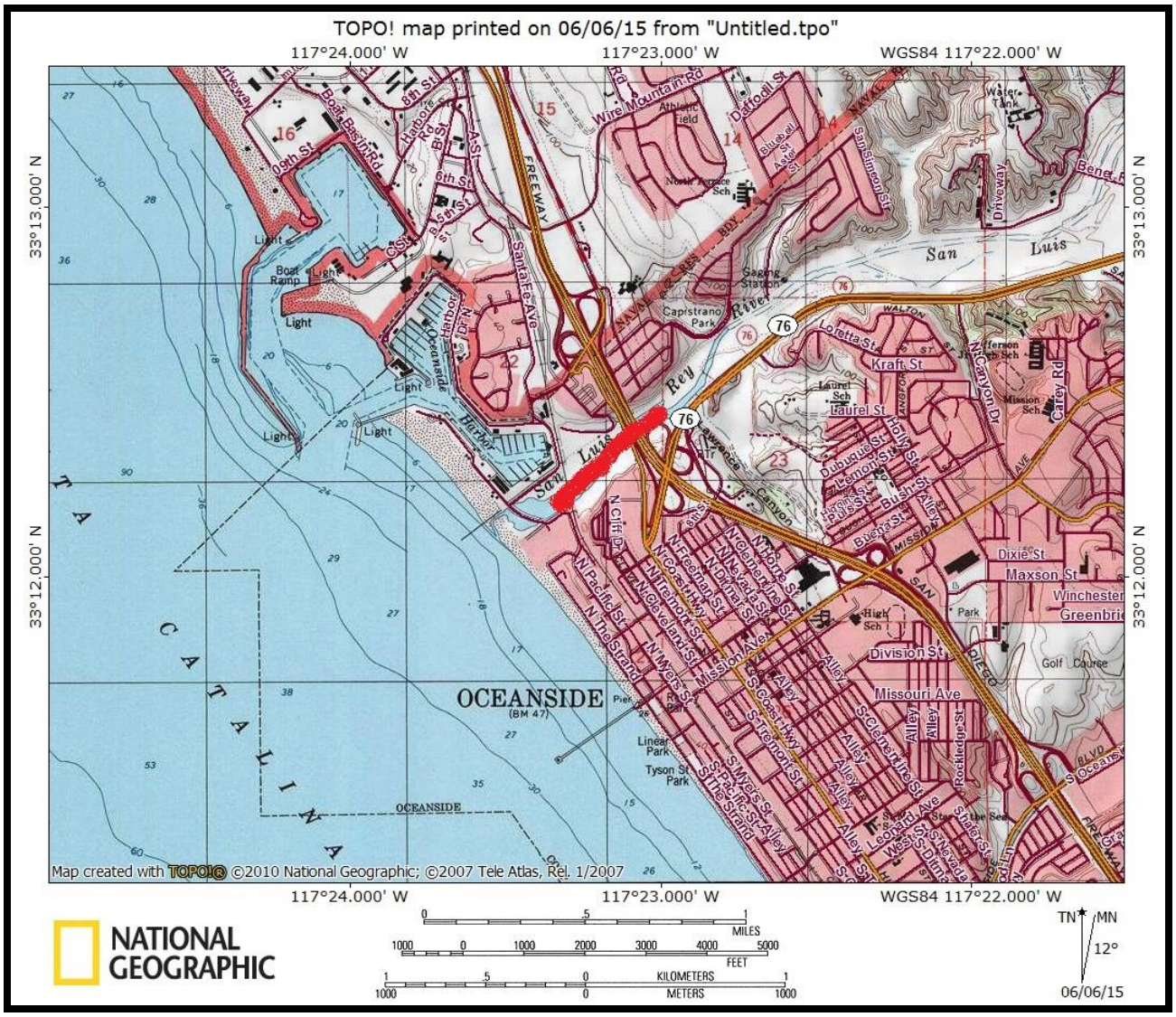


Figure 1. Location of the Coast Highway Bridge Replacement Light-footed Ridgway's Rail Survey Area (shown in red), City of Oceanside, San Diego County, California, 2021.

RECON

An Employee-Owned Company

September 22, 2017

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Reference: Results of a Focused Survey for the Light-footed Ridgway's Rail for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project, City of Oceanside, San Diego County, California, 2017 (RECON 7380)

Dear Ms. Love:

This letter report presents the results of a focused survey for the light-footed Ridgway's rail (*Rallus obsoletus levipes*; LFRR) (formerly light-footed clapper rail, *Rallus longirostris levipes*), at the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Project) site in the City of Oceanside, north–coastal San Diego County, California (Figure 1). The LFRR is listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). This coastal southern California subspecies is one of three subspecies of federally endangered *R. obsoletus*, which was formerly *R. longirostris* but recently taxonomically reclassified by the American Ornithologist Union because of genetic studies (Chesser et al. 2014).

Surveys for the LFRR were conducted by wildlife biologist John Konecny. The surveys were conducted in accordance with the recommendations provided to the USFWS by the Clapper Rail Study Team (2009). This activity is authorized by John Konecny's USFWS Section 10(a)(1)(A) permit number TE-837308-6 and a CDFW Memorandum of Understanding. No LFRRs were detected in the survey area in 2017.

INTRODUCTION

The LFRR is a slender, tawny-breasted bird with grayish edges on brown centered back feathers, olive wing coverts, vertical white bars on the flanks, a white stripe over the eye, and a partially orange bill. LFRR occurred historically along the coast of southern California from Carpinteria Marsh in Santa Barbara County south to San Quintín, Baja California, Mexico (Grinnell and Miller 1944; USFWS 1994).

The LFRR is a permanent resident of coastal salt marsh traversed by tidal sloughs, usually characterized by cordgrass (*Spartina foliosa*) and pickleweed (*Salicornia* spp.) (Grinnell and Miller 1944; USFWS 1994). LFRRs have also nested in freshwater marsh characterized by cattails (*Typha* sp.) and bulrush (*Schoenoplectus* [=*Scirpus*] spp.) at Buena Vista, Agua Hedionda, Batiquitos, San Elijo, and San Dieguito lagoons in San Diego County (Zembal et al. 2016) and in spiny rush (*Juncus acutus*) at Naval Air Station (NAS) Point Mugu.

LFRRs forage primarily on crustaceans when present. They will also feed on mollusks, small fish, aquatic insects, grasshoppers, small vertebrates, and in some cases, seeds (Eddleman and Conway 1998). LFRRs forage within emergent vegetation or along the ecotone between mudflats and marsh (Zembal and Fancher 1988), and in the central drains of tidal creeks at low tide. Surface gleaning and shallow probing compose approximately 90 percent of foraging time, while LFRRs very irregularly probe deep into the substrate (Zembal and Fancher 1988).

Populations of LFRRs have undergone decline in the United States due to the rail's limited distribution and destruction and degradation of coastal salt marsh habitat. The statewide LFRR population in 2016 was reported to be 654 pairs in 18 marshes (Zembal et al. 2016), which represents the highest count since the statewide census began in 1980. The 2016 total is 21 pairs greater than the 2015 count of 633 pairs. Fifty percent of these pairs were found in two coastal salt marsh complexes at Upper Newport Bay and the Tijuana Marsh National Wildlife Refuge (NWR). Five other marshes – NAS Point Mugu, Batiquitos Lagoon, San Elijo Lagoon, Seal Beach NWR, and Kendall–Frost Marsh in Mission Bay – had between 16 and 70 pairs each, representing an additional 45 percent of the state total. The remaining 11 marshes had between one and 14 pairs, representing five percent of the state population.

Zembal and Massey (1986) have shown that paired LFRR can be detected "clappering" throughout the year, but have a bimodal peak in vocalizing during mid-February to mid-April and again in September through October. The initial peak in "clappering" vocalizing corresponds to the onset of breeding season, and the second peak is thought to function in pair formation in the fall (Zembal and Massey 1986). In contrast to "clappering", single male and female "kekking" is highly seasonal, almost exclusively occurring between February and June.

PROJECT LOCATION

The Project site includes the existing Coast Highway (Hill Street) Bridge over the San Luis Rey River and all potential direct impact areas (i.e., proposed bridge footprints for two alternatives, construction access routes, construction staging areas, and temporary work areas), and on-site mitigation areas. The Project site is located south of South Oceanside Harbor Drive, adjacent and roughly parallel to Interstate 5 (I-5), north of State Route 76, and east of the Pacific Ocean at the mouth of the San Luis Rey River in the City of Oceanside, California (see Figure 1). The site is located within Township 11 South, Range 5 West, and in Sections 22 and 23 of the U.S. Geological Survey Oceanside 7.5-minute quadrangle.

PROJECT SITE DESCRIPTION

The lower San Luis Rey River typically runs perennially through the City of Oceanside and ponds at the river's mouth. The habitat in this reach of the river is primarily southern willow riparian woodland characterized by arroyo willow (*Salix lasiolepis*), Goodding's black willow (*S. gooddingii*), narrow-leaf willow (*S. exigua*), and mule fat (*Baccharis salicifolia*), with scattered cottonwood (*Populus fremontii*), sycamore (*Platanus racemosa*), tamarisk (*Tamarix* sp.), and patches of giant reed (*Arundo donax*). However, much of the north bank of the San Luis Rey River, west of the Coast Highway bridge, supports riparian vegetation dominated by non-native species such as Brazilian pepper tree (*Schinus terebinthifolius*), tamarisk, giant reed, and Canary Island date palm (*Phoenix canariensis*).

The eastern portion of the survey area is dominated by riparian woodland that transitions into freshwater marsh characterized by cattail and bulrush in the western portion of the survey area. In the western portion of the survey area, portions of the banks of the San Luis Rey River are lined with concrete or riprap. Elevation within the survey area ranges from approximately three to seven feet (one to two meters) above mean sea level.

METHODS

Six focused LFRR survey events were conducted at least seven days apart in all potentially suitable coastal freshwater and brackish marsh habitat within Project site survey area between 24 March and 4 May 2017. The survey area is composed of all LFRR suitable habitat within the estimated proposed Project direct impact area (i.e., existing and proposed bridge footprints, construction access routes, construction staging areas, temporary work areas), on-site mitigation areas, and adjacent areas sufficient to account for the extent of potential indirect Project impacts (i.e., a 500-foot buffer).

At the present time, there is no formal USFWS sanctioned survey methodology for the LFRR, and the USFWS leaves the survey methodology to the discretion of the permitted biologist. The LFRR surveys were

conducted in accordance with the recommendations provided to the USFWS by the Clapper Rail Study Team (2009). Surveys were conducted at either dawn or dusk. Each dawn and dusk survey lasted approximately three hours. Dawn surveys were conducted from pre-dawn to no later than three-hours after sunrise. Dusk surveys were initiated three hours before sunset and continued until dark. A summary of dates, times, and weather conditions for the six survey events is provided in Table 1 below.

Table 1
Summary of Weather Conditions during Six Light-footed Ridgway's Rail Survey Events for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project Site, 2017

Survey #	Date	Surveyor	Time	Weather Conditions
1	03/24/2017	JK	0620–0945	100% overcast, 62–67°F, wind 3-5 mph
2	04/01/2017	JK	1610–1910	100% overcast, 70–67°F, wind 3-5 mph
3	04/09/2017	JK	0620–0925	100% overcast, 63–66°F, wind 3-5 mph
4	04/16/2017	JK	0615–0910	100% overcast, 60–65°F, wind 1-3 mph
5	04/24/2017	JK	1615–1925	100% overcast, 72–64°F, wind 3-5 mph
6	05/04/2017	JK	1610–1925	100% overcast, 68–63°F, wind 3-5 mph

JK = John Konecny; °F = degrees Fahrenheit; mph = miles per hour.

The surveys were conducted by walking the pedestrian and bike paths along the levee on both sides of the river bank, stopping at stations approximately 100 feet (33 meters) apart along the perimeter of the survey area, and listening for vocalizing LFRRs. If LFRRs were not detected passively, a digital call-prompt of the LFRR's "dueting" was played with an iPod and amplified speakers at 30-second intervals. A response was listened for before proceeding to the next survey station.

RESULTS

No LFRRs were detected in the survey area for the Project site in 2017. No other endangered or threatened species were detected within the Project site during the 2017 focused surveys. A single Virginia rail (*Rallus limicola*) was heard vocalizing east of I-5 on three of the surveys.

DISCUSSION

Described as "formerly common in all coastal marshes" by Grinnell and Miller (1944), the LFRR has never been a common bird species at San Luis Rey River in recent history. Since the LFRR range-wide survey was initiated in 1980, LFRR have been detected at the river mouth, main river channel, and Guajome Lake. Only one pair was detected in 1992 in the freshwater marsh at the river mouth. At Guajome Lake, one pair was mapped in 1983, and two pairs were detected in 1984 (Zembal et al. 2016).

One pair of LFRRs was detected in the upstream reach of the San Luis Rey River in 2010 near Foussat Road. One advertising male and one single clappering LFRR were also detected during a 2010 survey farther upstream. Three pairs of LFRRs were detected in 2011. Three pairs and one advertising male (male defending territory) were detected in 2012, and four pairs were detected in 2013 and 2014.

One LFRR pair was detected immediately east of the Coast Highway bridge in 2014 (Konecny 2014). This was the first pair detected in the current survey area since 1992 (Zembal et al. 2016). One pair of LFRRs was also detected in 2015 on the north bank of the San Luis Rey River, approximately 1,000 feet downstream of the Coast Highway Bridge (Konecny 2015).

CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represents my work. The results of focused surveys for listed species are typically considered valid for one year by the USFWS and CDFW. If you have any questions or require additional information, please contact me at (760) 390-8959 or jkonecny1234@gmail.com.

Sincerely,



John Konecny
Senior Biologist
TE-837308-6

JK:BAO:eab

cc: Perry Schacht, Moffatt & Nichol
Matt Burgard, Drake Haglan & Associates
Richard Greenbauer, City of Oceanside
Michelle Blake, Caltrans

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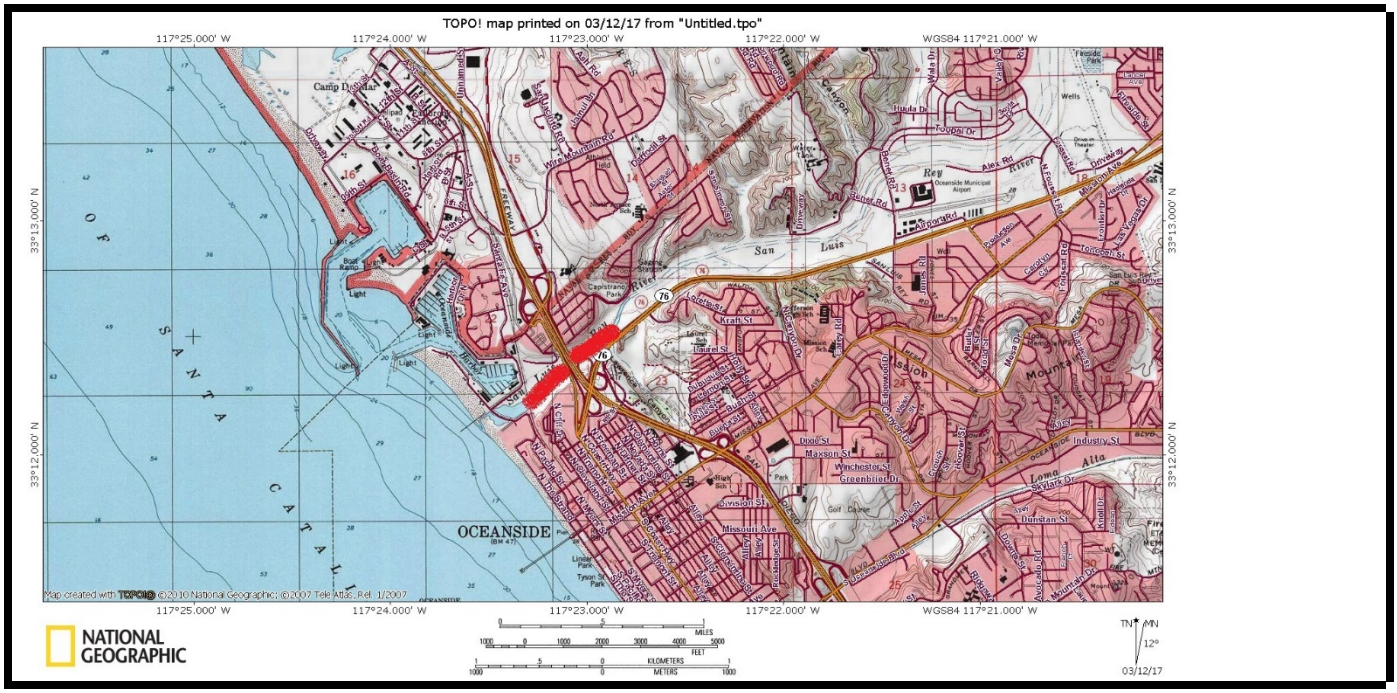


Figure 1. Location of the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project Light-footed Ridgway's Rail Survey Area (shown in red), City of Oceanside, San Diego County, California, 2017.

Konecny Biological Services
Biological Consulting, Research, Conservation

September 28, 2015

Busby Biological Services, Inc.
4629 Cass Street, # 192
San Diego, California, 92109
Attn: Ms. Melissa Busby

Re: Results of a Focused Survey for the Light-footed Ridgway's Rail at the Coast Highway Bridge Replacement Site, City of Oceanside, San Diego County, California, 2015.

Dear Ms. Busby:

This letter report presents the results of a focused survey for the light-footed Ridgway's rail (*Rallus obsoletus levipes*; LFRR) (formerly light-footed clapper rail, *Rallus longirostris levipes*), at the Coast Highway Bridge Replacement Project (Project) site in the City of Oceanside, north-coastal San Diego County, California (Figures 1 and 2). The LFRR is listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). This coastal southern California subspecies is one of three subspecies of federally endangered *R. obsoletus*, which was formerly *R. longirostris* but recently taxonomically reclassified by the American Ornithologist Union because of genetic studies (Chesser *et al.* 2014).

Surveys for the LFRR were conducted by wildlife biologist John Konecny. The surveys were conducted in accordance with the recommendations provided to the USFWS by the Clapper Rail Study Team (2009). This activity is authorized by John Konecny's USFWS Section 10(a) (1) (A) permit number TE-837308-6 and a CDFW Memorandum of Understanding. One pair of LFRRs was detected in the western portion of the survey area in 2015.

INTRODUCTION

The LFRR is a slender, tawny-breasted bird with grayish edges on brown centered back feathers, olive wing coverts, vertical white bars on the flanks, a white stripe over the eye, and a partially orange bill. LFRR occurred historically along the coast of southern California from Carpinteria Marsh in Santa Barbara County south to San Quintín, Baja California, Mexico (Grinnell and Miller 1944, USFWS 1994).

The LFRR is a permanent resident of coastal salt marsh traversed by tidal sloughs, usually characterized by cordgrass (*Spartina foliosa*) and pickleweed (*Salicornia* spp.) (Grinnell and Miller 1944, USFWS 1994). LFRRs have also nested in freshwater marsh characterized by cattails (*Typha* sp.) and bulrush (*Scirpus* sp.) at Buena Vista, Agua Hedionda, Batiquitos, San Elijo, and San Dieguito Lagoons in San Diego County (Zembal *et al.* 2014; and in spiny rush (*Juncus acutus*) at Naval Air Station (NAS) Point Mugu.

LFRRs forage primarily on crustaceans when present. They will also feed on mollusks, small fish, aquatic insects, grasshoppers, small vertebrates, and in some cases, seeds (Eddleman and Conway 1998). LFRRs forage within emergent vegetation or along the ecotone between mudflats and marsh (Zembal and Fancher 1988), and in the central drains of tidal creeks at low tide. Surface gleaning and shallow probing compose approximately 90 percent of foraging time, while LFRRs very irregularly probe deep into the substrate (Zembal and Fancher 1988).

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Populations of LFRRs have undergone decline in the United States due to the rail's limited distribution and destruction and degradation of coastal salt marsh habitat. The statewide LFRR population in 2014 was reported to be 528 pairs in 21 marshes (Zembal *et al.* 2014), which represents the highest count since the statewide census began in 1980. The 2014 total is three pairs greater than the 2013 count of 525 pairs. Fifty-six percent of these pairs were found in two coastal salt marsh complexes at Upper Newport Bay and the Tijuana Marsh National Wildlife Refuge (NWR). Six other marshes–NAS Point Mugu, Batiquitos Lagoon, San Elijo Lagoon, Buena Vista Lagoon, Seal Beach NWR, and Kendall-Frost Marsh in Mission Bay–had between 16 and 49 pairs each, representing an additional 34 percent of the state total. The remaining 13 marshes had between one and nine pairs.

Zembal and Massey (1986) have shown that paired LFRR can be detected "clappering" throughout the year, but have a bimodal peak in vocalizing during mid-February to mid-April and again in September through October. The initial peak in "clappering" vocalizing corresponds to the onset of breeding season, and the second peak is thought to function in pair formation in the fall (Zembal and Massey 1986). In contrast to "clappering," single male and female "kekking" is highly seasonal, almost exclusively occurring between February and June.

PROJECT LOCATION

The Project site includes the existing Coast Highway (Hill Street) Bridge over the San Luis Rey River and adjacent proposed access routes and staging yards. The LFRR survey area is located south of South Oceanside Harbor Drive, immediately west of and parallel to Interstate 5 (I-5), and east of the Pacific Ocean at the mouth of the San Luis Rey River in the City of Oceanside, California (Figures 1 and 2). The site is located within Township 11 South, Range 5 West, and in Section 22 of the U.S. Geological Survey Oceanside 7.5-minute quadrangle.

PROJECT SITE DESCRIPTION

The lower San Luis Rey River typically runs perennially through the City of Oceanside and ponds at the River's mouth. The habitat in this reach of the river is primarily southern willow riparian woodland characterized by arroyo willow (*Salix lasiolepis*), black willow (*S. gooddingii*), sandbar willow (*S. hindsiana*), and mule fat (*Baccharis salicifolia*), with scattered cottonwood (*Populus fremontii*), sycamore (*Plantanus racemosa*), tamarisk (*Tamarix* sp.), and patches of giant reed (*Arundo donax*).

The eastern portion of the survey area is dominated by riparian woodland that transitions into freshwater marsh characterized by cattail and bulrush in the western portion of the survey area. Portions of the banks of the San Luis Rey River are lined with concrete or riprap. Elevation within the survey area ranges from approximately three to seven feet (one to two meters) above mean sea level.

METHODS

Six focused LFRR survey events were conducted at least seven days apart in all potentially suitable coastal brackish marsh habitat within Project site survey area between 28 March and 11 May 2015. The survey area is composed of all LFRR suitable habitat within the estimated proposed project footprint (i.e., the existing North Coast Highway bridge and adjacent access routes and staging yards), as well as within all suitable habitat within a 500-foot buffer of the estimated proposed project footprint.

The LFRR surveys were conducted in accordance with the recommendations provided to the USFWS by the Clapper Rail Study Team (2009). Each survey event consisted of two surveys with the exception of the first survey, which was done in one morning. The easternmost section of the survey area was surveyed concurrently with the LFRR surveys for the adjacent Army Corps of Engineers San Luis Rey River Flood

Risk Management Area project. Surveys were conducted at either dawn or dusk. Each dawn and dusk survey lasted approximately two hours. Dawn surveys were conducted from pre-dawn to no later than three-hours after sunrise, with the exception of the first survey which lasted a bit longer. Dusk surveys were initiated three hours before sunset and continued until dark. A summary of the environmental conditions on the eleven survey dates is provided in Table 1 below.

Table 1. Summary of Weather Conditions During Six Light-footed Ridgway's Rail Survey Events for the Coast Highway Bridge Replacement Project in 2015.

Survey #	Date	Surveyor (Species)*	Time	Weather Conditions
1	03/28/2015	JK (LFRR)	0920-1145	100% overcast, 65-67°F, wind 3-5 mph
2A	04/04/2015	JK (LFRR)	1620-1830	100% overcast, 70-68°F, wind 7-10 mph
2B	04/06/2015	JK (LFRR)	1600-1825	100% overcast, 64-62°F, wind 7-10 mph
3A	04/14/2015	JK (LFRR)	1620-1825	100% overcast, 68-66°F, wind 10-15 mph
3B	04/16/2015	JK (LFRR)	1820-1835	100% overcast, 72-62°F, wind 10-15 mph
4A	04/21/2015	JK (LFRR)	1625-1840	100% overcast, 68-65°F, wind 7-10 mph
4B	04/23/2015	JK (LFRR)	1805-1825	100% overcast, 68-66°F, wind 7-10 mph
5A	04/29/2015	JK (LFRR)	0615-0825	100% overcast, 58-62°F, wind 3-5 mph
5B	05/01/2015	JK (LFRR)	0610-0625	100% overcast, 58-61°F, wind 3-5 mph
6A	05/09/2015	JK (LFRR)	0615-0825	100% overcast, 59-62°F, wind 3-5 mph
6B	05/11/2015	JK (LFRR)	0610-0825	100% overcast, 64-60°F, wind 3-5 mph

*JK = John Konecny; LFRR = light-footed Ridgway's rail

The surveys were conducted by walking the bike path along the levee on both sides of the river bank, stopping at stations approximately 100 feet (33 meters) apart along the perimeter of the survey area, and listening for vocalizing LFRRs. If LFRRs were not detected passively, a digital call-prompt of the LFRR's "dueting" was played with an iPod and amplified speakers at 30-second intervals. A response was listened for before proceeding to the next survey station.

RESULTS

One pair of LFRRs was detected on the north bank of the San Luis Rey River in the western portion of the survey area for the Project site in 2015 (see Figure 2). No other endangered or threatened species were detected within the Project site during the 2015 focused surveys.

DISCUSSION

Described as "formerly common in all coastal marshes" by Grinnell and Miller (1944), the LFRR has never been a common bird species at San Luis Rey River in recent history. Since the LFRR range-wide survey was initiated in 1980, LFRR have been detected at the river mouth, main river channel, and Guajome Lake. Only one pair was detected in 1992 in the freshwater marsh at the river mouth. At Guajome Lake, one pair was mapped in 1983, and two pairs were detected in 1984 (Zembal *et al.* 2014).

One pair of LFRRs was detected in the upstream reach of the San Luis Rey River in 2010 near Foussat Road. One advertising male and one single clappering LFRR were also detected during a 2010 survey farther upstream. Three pairs of LFRRs were detected in 2011. Three pairs and one advertising male were detected in 2012, and four pairs were detected in 2013 and 2014 (Konecny 2014, Zembal *et al.* 2014).

One pair of LFRRs was detected on the north side of the San Luis Rey River bank between I-5 and the railroad tracks in 2014 (Zembal *et al* 2014). This was the first pair detected in the current survey area since 1992.

No LFRR nest monitoring was conducted as part of this survey, and no young were observed in the marsh. It is highly likely though that this pair is successfully breeding and contributing to the LFRR population in this area. LFRRs will likely continue to inhabit the freshwater and coastal brackish marshes of the San Luis Rey River, and the numbers may increase depending on the reproductive success of this pair identified in 2015 and others detected upstream and outside the Project site, as well as the continued availability of freshwater marsh and coastal brackish marsh habitat.

CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represent my work. The results of focused surveys for listed species are typically considered valid for one year by the USFWS and CDFW. If you have any questions or require additional information, please call me at (760) 390-8959.

Sincerely,



John K. Konecny
Wildlife Biologist
TE837308-6

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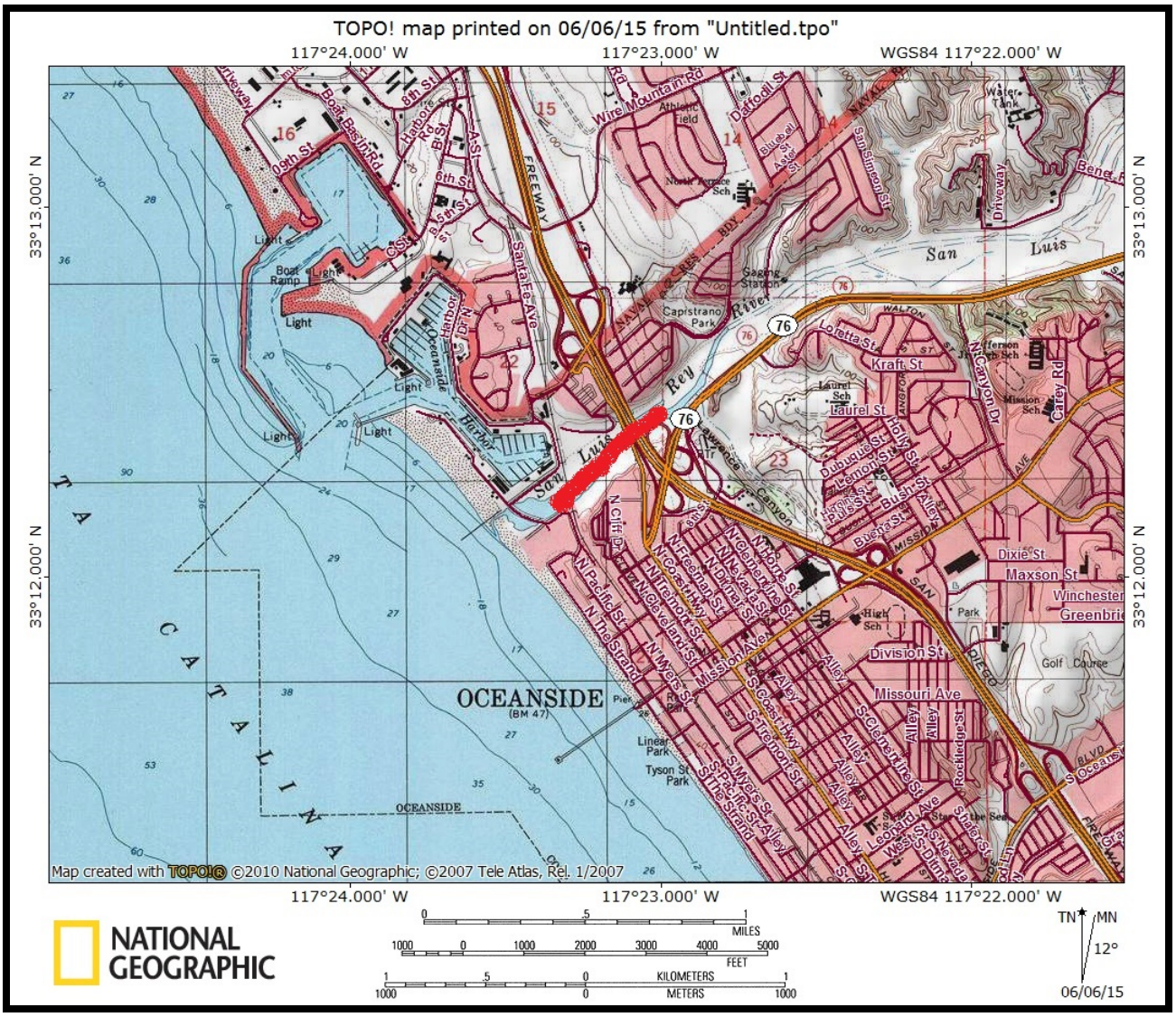


Figure 1. Location of the Coast Highway Bridge Replacement Light-footed Ridgway's Rail Survey Area (shown in red), City of Oceanside, San Diego County, California, 2015.



Figure 2. Location of the Pair of Light-footed Ridgway's Rails Detected at the Coast Highway Bridge Replacement Site, City of Oceanside, San Diego County, 2015. (red P = pair, survey area in yellow).

Appendix K – Noise Analysis of Sensitive Biological Areas for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement, Oceanside, California

Noise Analysis of Sensitive Biological Areas for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Oceanside, California

Prepared for
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April 24, 2023

Jessica Fleming, Senior Noise Specialist

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ATTACHMENTS

1: SoundPLAN Data – Traffic Noise
2: SoundPLAN Data – Construction Noise
3: Noise Contour Acreage Calculations

Acronyms and Abbreviations

Caltrans	California Department of Transportation
CIDH	Cast-In-Drilled-Hole
City	City of Oceanside
CNEL	community noise equivalent level
dB	decibel
dB(A)	A-weighted decibel
FHWA	Federal Highway Administration
Hz	hertz
I-5	Interstate 5
L_{dn}	day-night level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
LOS	level of service
L_{XX}	percentile-exceeded sound level
mPa	micro-Pascals
mph	miles per hour
project	Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement
RCNM	Road Constriction Noise Model, Version 1.1
SPL	sound pressure level
v/l/h	vehicles per lane per hour

1.0 Introduction

The City of Oceanside (City) proposes to replace the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River (Br. No. 57C-0322; Project Number BRLS-5079[030]). The bridge is located approximately 0.3 mile south of Harbor Drive, immediately west of and parallel to Interstate 5 (I-5), in the city of Oceanside, San Diego County, California (Figure 1). The general setting is a perennial river surrounded by commercial; Coast Highway (Hill Street) includes roadways, curbs, and a sidewalk on the west side of the road and bridge. The bridge currently carries vehicular, bicycle, and pedestrian traffic on Coast Highway over the San Luis Rey River. There is no curbside on-street parking allowed on the bridge or near the bridge on the approach roadways. The project vicinity is shown in Figures 2a and 2b.

The Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (project) is funded by the federal-aid Highway Bridge Program administered by the Federal Highway Administration (FHWA) through the California Department of Transportation (Caltrans) Local Assistance Program. The replacement bridge will meet current applicable City, American Association of State Highway and Transportation Officials, FHWA, and Caltrans design standards. Two build alignment alternatives are currently under consideration for the proposed project. Alternative 1 involves replacement of the existing bridge in nearly the same alignment as the existing bridge. Alternative 2 (proposed alignment) involves building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open to maintain service on the existing roadway and bridge during construction.

The purpose of this analysis is to assess the potential effect of construction and vehicle traffic noise on the adjacent noise-sensitive wildlife species. For purposes of this report, the existing ambient noise level, which is approximately 70 A-weighted decibel (dB) average sound level (dB(A) L_{eq}) immediately adjacent to the project impact area, is used for assessing potential effects to federally or state-listed sensitive bird species within the study area. An increase in the ambient noise level could potentially affect sensitive target species.

2.0 Project Purpose and Description

2.1 Purpose and Need

The proposed project is needed because the existing bridge was built in 1929 and is in poor structural condition. At 92 years old, the bridge is past its useful service life. The bridge is a "Fracture Critical" steel truss because it is structurally non-redundant and has steel members loaded in tension–if one of these members fractured, it would cause collapse of a span.

The purpose of this project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area.



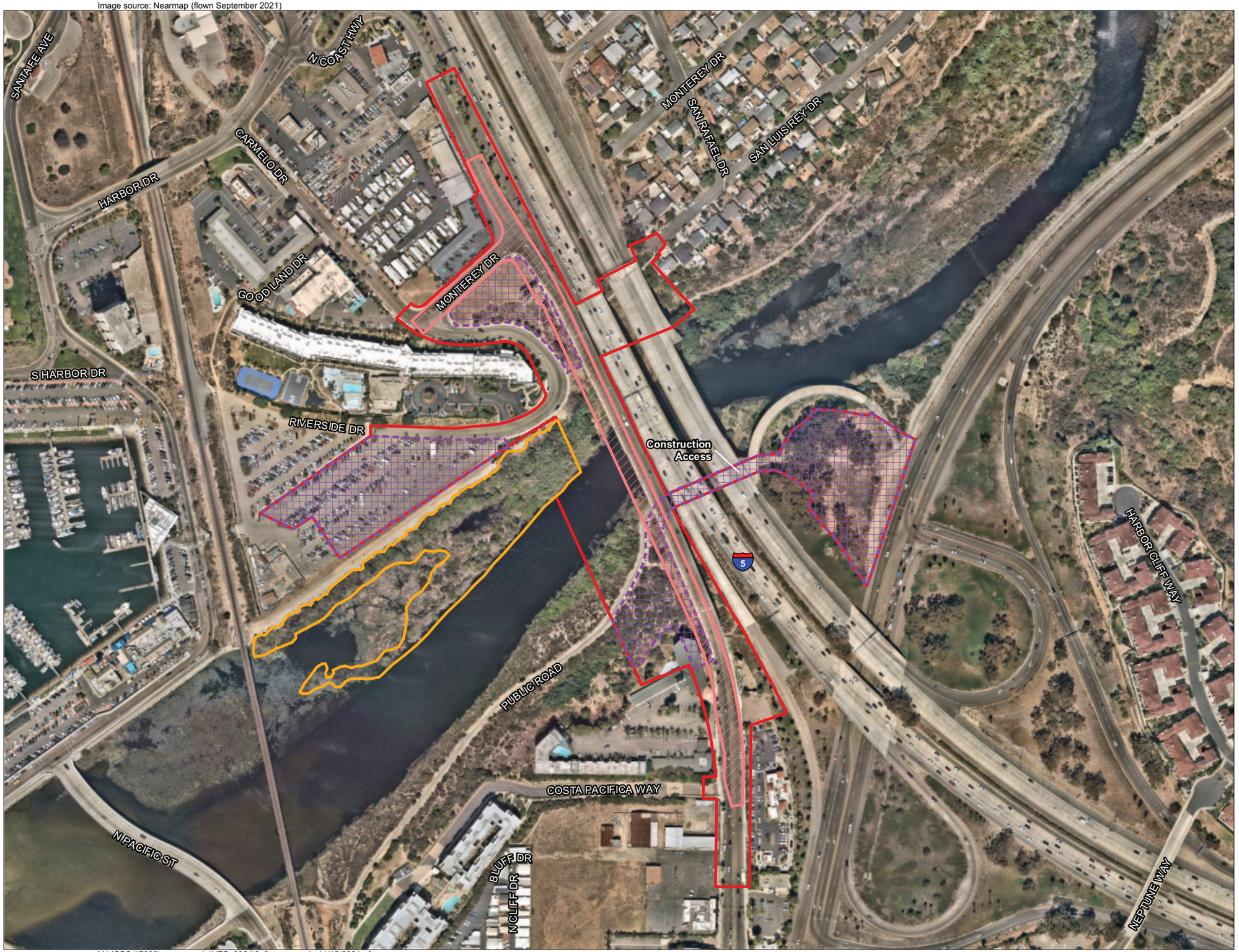
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Project Location

FIGURE 1

Regional Location

Image source: Nearmap (flown September 2021)



Project Impact Area

Habitat Enhancement Area (Project Mitigation)

Alternative 1 Alignment

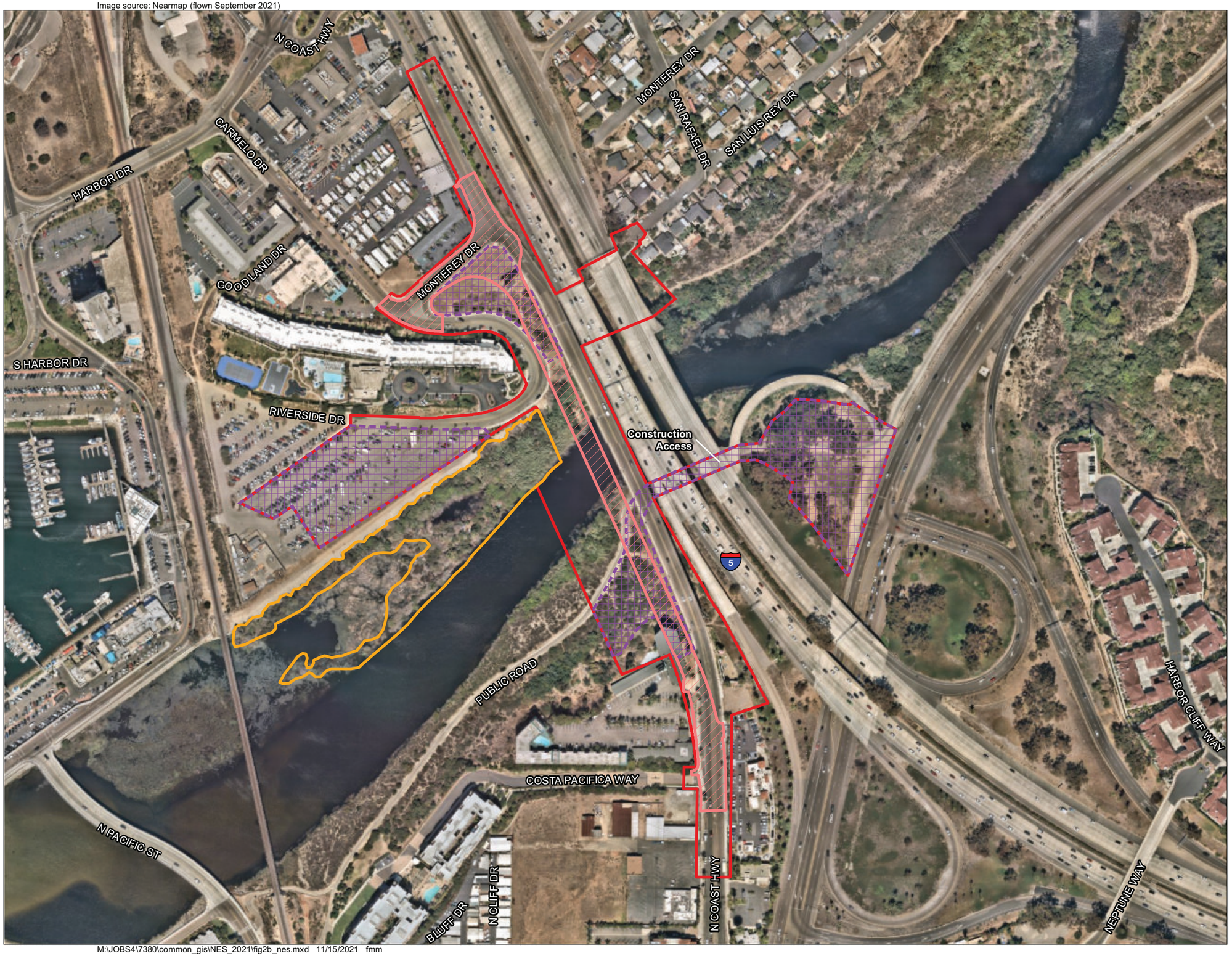
Staging Areas

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FIGURE 2a
Project Impact Area
Alternative 1

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Image source: Nearmap (flown September 2021)



Project Impact Area

Habitat Enhancement Area (Project Mitigation)

Alternative 2 Alignment

Staging Areas

0 Feet 250

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FIGURE 2b

Project Impact Area
Alternative 2

2.2 Project Description

The Coast Highway runs from southeast to northwest at an approximate 30-degree angle to true north. For purposes of this Project Description, it is assumed that Coast Highway runs north to south and the San Luis Rey River flows from east to west.

2.2.1 Existing Bridge

The existing Coast Highway Bridge was constructed in 1929. It is a 950-foot-long five-span bridge with a cast-in-place concrete deck. The approach spans (Spans 1 and 5) are rolled steel girders. Spans 2, 3, and 4 are each 268-foot-long steel truss spans. The truss spans have a total depth of approximately 40 feet, constructed of dual simple span riveted steel trusses. Piers 3 and 4 are located in the main river and are supported on piles. Piers 2 and 5, located near the edges of the river, are supported on spread footings. The existing abutments are seat type concrete abutments on spread footings. The bridge was widened to the east in 1952. The widening was removed in 1971 when I-5 was built, and the bridge was restored to its original configuration. The bridge is a total of approximately 49 feet wide, with a curb-to-curb width of approximately 40 feet providing two 12-foot traffic lanes plus 8-foot shoulders. It has a raised sidewalk along the west edge of the deck.

The following utilities are attached to the bridge:

- 12-inch gas line – attached to the lower portion of the truss along the east side of the bridge;
- 12-inch waterline – attached to the lower portion of the truss along the east side of the bridge;
- 10-inch waterline – attached to the lower portion of the truss along the west side of the bridge;
- 14-inch sewer force main – attached to the lower portion of the truss along the west side of the bridge; and
- Electrical and telecommunications lines – attached under the top deck along the west side of the bridge.

There are also two sewer lines in the bridge vicinity. One runs down the center of Coast Highway, and terminates approximately 40 feet south of the bridge, and does not cross the San Luis Rey River. The second sewer line runs under the bridge, on the downstream side of the bridge.

The San Luis Rey River Trail runs along the southern riverbank and provides recreational and commuter uses for bicyclists and pedestrians. Access along this trail will be maintained during construction to the extent practical. Temporary closures and/or detours are anticipated to be needed during construction. After construction the trail will be returned to its pre-project condition of better.

On the north side of the river, there is a paved concrete pedestrian path near the top of the slope, which crosses under the I-5 bridges and under the existing Coast Highway Bridge, and provides

coastal access to the residential neighborhood to the east. This path will likely need to be modified to extend it under the new Coast Highway Bridge. Access along this trail will be maintained during construction to the extent practical. Temporary closures and/or detours are anticipated to be needed during construction. After construction, the trail will be returned to its pre-project condition or better.

2.2.2 Replacement Bridge

Two build alignment alternatives are currently under consideration for the project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. No additional traffic lanes are proposed in the project; the existing two-lane bridge will be replaced with another two-lane bridge. The preferred alternative is that the bridge would be replaced close to the same location, immediately west of the current bridge alignment to maintain service on the existing roadway and bridge during construction.

The deck width on the new bridge will match existing conditions with two 12-foot-wide travel lanes and two 8-foot-wide shoulders for a curb-to-curb width of 40 feet. This roadway section is consistent with City and American Association of State Highway and Transportation Officials for a facility of this type, and also matches the existing curb and gutter line along Coast Highway. The shoulders may be reduced to 4 feet if required by Caltrans for funding purposes.

South of the bridge, there are sidewalks on each side of the street. However, north of the bridge there is only a sidewalk on the west side of the street. New bridges and streets constructed to the City standard would generally have 6-foot-wide sidewalks on each side, and the Highway Bridge Program would generally participate in sidewalks where sidewalks currently exist. To provide the necessary pedestrian circulation, to align with the sidewalk north of the bridge, and to address the project objectives of improving the user experience for pedestrians and optimizing views of scenic resources, as well as maximize federal funding participation, a single 8-foot-wide sidewalk is proposed for the west side of the new bridge. The bridge barriers and railings will meet current crash testing requirements for vehicular and pedestrian railings and will be aesthetically pleasing. Coastal views will be considered when selecting bridge and rail types.

The structure Type Selection is underway. The preferred alternative proposed is a cast-in-place post-tensioned concrete box girder bridge on column piers along a new alignment just west of the existing bridge. The final bridge type chosen during final design may have slight variations to the proposed preferred alternative identified in the on-going Type Selection; however, any modifications would not affect the overall environmental disturbance footprint studied in the technical studies and environmental documents. Bridge construction is anticipated to require construction of a temporary trestle adjacent to the existing bridge and along the new bridge to facilitate access. Cofferdams and bubble curtains may be required to construct some of the bridge concrete piers and supports. Cofferdams will be installed along the banks of the river in order to construct the piers and supports on land while bubble curtains will be used to construct the piers and supports within the river.

The alternate bridge alignments are shown in Figures 2a and 2b.

2.2.3 Roadway Approach Work

The project will include new pavement, curbs, gutters, and sidewalks adjacent to the replacement bridge. The project will conform back to the existing roadway as quickly as practical. The curb-to-curb clear width of the street will match the width of the existing street and bridge. The approaches will transition as necessary to conform to the width of the sidewalk and roadway clear width on the bridge.

2.2.4 Utility Relocation

The existing utilities currently supported by the existing bridge will be relocated onto the new bridge. These utilities will remain in service during construction. Once the new bridge is complete, the utilities will be relocated from the existing bridge to their final locations in the new bridge. Accommodations for other utilities and future utilities on the new bridge will be accommodated as practical.

2.2.5 Right-of-Way

The existing right-of-way for Coast Highway is approximately 75 feet at the bridge and widens both north and south of the existing bridge. Permanent right-of-way acquisition is anticipated. During construction, temporary construction easements and permits to enter and construct are anticipated to be required.

There are several areas identified as potential construction staging areas that may require temporary construction easements or encroachment permits from Caltrans (see Figures 2a and 2b). The following parcels are identified as potential staging areas:

- Assessor's Parcel Number (APN) 143-010-150,
- APN 143-040-450,
- APN 143-040-550,
- APN 143-090-180, and
- Portions of Caltrans Right-of-Way under I-5 bridges over the San Luis Rey River.

2.2.6 Traffic Handling

Since constructing the new bridge on a separate alignment just west of the existing bridge is the proposed alternative, traffic will remain on the existing bridge during construction. This will minimize traffic impacts during construction. Once the proposed bridge is constructed, traffic will be cutover from the existing bridge onto the new bridge. During the cutover traffic will be impacted with delays and short-term closures as necessary to make the transition. A traffic handling plan will be submitted by the contractor for approval prior to construction beginning. Once the traffic is fully transitioned onto the new bridge, the existing bridge will be demolished.

2.2.7 Demolition Activities

Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specifications 60-2.01C (2nd paragraph) which states: "Remove piling, piers, abutments, footings, and pedestals to 1 foot below the ground line or 3 feet below finished grade, whichever is lower." These may be modified to meet environmental permit requirements. All concrete and other debris resulting from the demolition of the existing bridge will be removed from the project site and properly disposed of by the contractor. Prior to construction, the contractor is required to prepare a bridge demolition plan in conformance with environmental permits and the Caltrans Standard Specifications. Bridge demolition is anticipated to require construction of a temporary trestle adjacent to the existing bridge to facilitate demolition and provide temporary support during truss removal. Cofferdams and bubble curtains are anticipated to facilitate removal of the existing bridge concrete piers. Cofferdams will be installed along the banks of the river in order to demolish the piers and supports on land while bubble curtains will be used to demolish the piers and supports within the river. All demolition plans will be reviewed and approved by the Resident Engineer. Equipment used for demolition may include backhoes, excavators, hoe rams, hydraulic hammers, loaders, dump trucks, debris bins, flatbed trucks with cranes, forklifts, crawler cranes, air compressors, jackhammers, chipping guns, cutting torches, and saws.

2.2.8 Construction Activities

Construction will consist of the activities described in the following sections, which will be completed in the general order presented.

2.2.8.1 Clearing, Grubbing, and Tree Removals

Portions of existing roadway, sidewalks, curbs, gutters, hardscape, and landscaping in conflict with new construction would be removed. Areas around the corners of the new bridge would be cleared of vegetation, fencing, and planter beds to gain access for constructing the new bridge. Vegetation and trees in the river within the footprint of the new bridge would be removed as shown on the plans and allowed by the environmental permits.

2.2.8.2 Construction Staging Areas/Site Access

Contractor lay down areas will be in flat unused areas inside the project direct impact limits. Access to the project site south of the river could be achieved from State Route 76 (SR-76) east of the project site. A temporary access road could be cut into the slope at SR-76 and follow the San Luis Rey River Trail under the I-5 bridges. This path would provide good access from SR-76 and provide a relatively gradual slope for the access road. Access to the project site north of the river could be achieved from Monterey Drive and Riverside Drive.

2.2.8.3 Construction Access Across the River

Stream flow in the San Luis Rey River will be maintained during construction. It is envisioned that a temporary construction trestle would be used to provide access over the river. Along the riverbanks,

some temporary grading will be necessary to provide access for construction equipment. Work will be in conformance with City specifications as well as U.S. Army Corps of Engineers, California Department of Fish and Wildlife, Regional Water Quality Control Board, U.S. Fish and Wildlife Service, and National Marine Fisheries Service regulatory requirements. Materials to construct the trestle may consist of steel pilings, steel cap beams and stringers, and timber decking. All work will be contained within the approved project area of disturbance. Equipment used may include light trucks, track mounted cranes, pile driving equipment, forklifts, excavators, and loaders. The trestles would remain in place for the duration of construction which may include staying in place over at least one to two winter seasons.

2.2.8.4 New Bridge Foundations

Due to the scour and liquefaction potential of the soils at the project site, the foundations for the replacement bridge will be supported by large diameter piles. Cast-In-Drilled-Hole (CIDH) piles are recommended in the Preliminary Foundation Report for the project. These piles could be up to approximately 180 inches in diameter and over 200 feet deep. Groundwater will be encountered during drilling for the CIDH piles. The CIDH pile construction may require the use of high density drilling slurry and steel casings. Prior to construction, a pile installation plan will be prepared by the contractor for approval by the Resident Engineer, in conformance with applicable permits, project specifications, environmental measures and conditions. All drilling slurry from the CIDH pile construction will be contained and properly disposed of off-site.

Equipment used may include a crane- or excavator-mounted drill rig for the piles, a crane to set the rebar cages in the drilled holes, dump trucks, compaction equipment, and a truck mounted concrete boom pump. If slurry is used, there will be mixing tanks, recirculating pumps, and holding tanks for the waste slurry to be trucked off-site.

2.2.8.5 New Bridge Construction

Cast-in-place concrete construction, which places concrete in-situ using temporary shoring called "falsework," is generally the preferred, most economical, and by far the most common construction method for highway bridges in California. It is feasible for this site, and was used for the I-5 bridges to the east, which were built in the early 1970s, and more recently for the Pacific Street Bridge to the west, which was completed in 2008. As such, cast-in-place is the anticipated construction method for this project. The basic construction sequence is described below.

The piers and abutments will be constructed on site by installing rebar, placing forms, and pouring concrete. Once the piers and abutments are complete, falsework will be constructed to support the wet concrete for the superstructure. As temporary works, the falsework is designed by the contractor. It generally consists of timber or steel posts, steel cap beams, and steel stringers. Timber joists and plywood forms are placed on top of the steel stringers. Falsework spans are typically 20 to 60 feet long; however, longer spans are possible. The active river channel is approximately 150 feet wide, so it is likely that falsework supports will be installed within the river. At these locations, the falsework will be supported on piles, which are vibrated and driven into the ground. Falsework supports which are susceptible to flooding will be designed for stream flow and scour in case a flood event occurs

during construction. Equipment used for the falsework construction may include light trucks, track-mounted cranes, pile driving equipment, forklifts, generators, excavators, and loaders.

Once the falsework is complete, the vast majority of the work commences from above on top of the falsework. The girders are formed, rebar is placed, and the concrete is poured. Concrete is typically placed from the ends of the bridge using truck-mounted concrete boom pumps. Since this bridge will be approximately 980 feet long, to reach the center of the bridge, concrete may need to be pumped using a concrete pump located on an access road or construction trestles below the bridge. For a multi-cell concrete box girder, the superstructure is placed in two pours, with the stem and soffit poured first and then the top deck placed in the second pour. Between the two concrete pours, utilities are installed in the cells. After the deck is complete and has reached the required strength, the superstructure is typically post-tensioned from abutment to abutment. Equipment used may include light trucks, small cranes to lift rebar and forms into place, concrete trucks, and truck-mounted concrete boom pumps.

After the bridge is pre-stressed, the falsework is removed, backfill is placed behind the abutments, and roadway base materials are placed along the roadway approaches. The roadway will be prepared for final surfacing, and the barriers and railings will be installed. Equipment used may include light trucks, small cranes and forklifts, loaders, dump trucks, pavers, and compaction equipment.

Excavations up to 30+ feet are necessary at the proposed bridge abutments and piers. Excavation for the approach roadway and utilities in the approach roadway may be up to 15+ feet.

The falsework would remain in place for the duration of the new bridge construction which may include staying in place over at least one winter season. The falsework could be removed before the existing bridge is demolished.

2.2.8.6 Landscaping

Below the bridge, the river will be restored to its existing condition, with minimal changes to slopes and grades. Some rock slope protection may be required along the slopes to protect the abutments. Areas that are disturbed during construction will be restored using local native upland or riparian, as appropriate, landscaping to revegetate the slopes and riverbanks. Minor landscaping improvements may occur within the street corridor along the reconstructed bridge approaches.

2.2.9 Construction Sequence/Schedule and Timing

Construction is currently scheduled to start in 2024 and take approximately 24 to 30 months to complete. An in-creek work window will be determined during the environmental permitting process with the resource agencies. Temporary works such as the trestles and falsework that may need to stay in place over at least one winter season will be coordinated with the environmental permitting agencies and the U.S. Army Corps of Engineers levee group.

2.2.10 Mitigation Areas

For either project alternative, much of the mitigation is planned to be accomplished on-site within suitable areas within the project impact area and on adjacent areas owned or managed by the City, referred to as the Habitat Enhancement Area (see Figures 2a and 2b). Upon completion of construction, the following revegetation efforts are proposed within temporary impact areas: creation and restoration of Diegan coastal sage scrub; re-establishment and restoration of freshwater marsh and southern riparian scrub; and restoration of open water. Vegetation within the Habitat Enhancement Area, located immediately west of the project impact area and north of the San Luis Rey River, will be enhanced through removal of non-native plant species and planting of native riparian plant species.

3.0 Fundamentals of Noise

The following is a brief discussion of fundamental traffic noise concepts. For a detailed discussion, refer to Caltrans' Technical Noise Supplement (Caltrans 2013), a technical supplement to the Traffic Noise Analysis Protocol, which is available on the Caltrans website (http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf).

3.1 Sound, Noise, and Acoustics

Sound is defined as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as a loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

3.2 Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or hertz (Hz; e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz, or thousands of Hz. The audible frequency range for humans is generally between 20 and 20,000 Hz.

3.3 Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes

for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this huge range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 mPa.

3.4 Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than the sound level produced by one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB.

3.5 A-Weighted Decibels

The decibel scale alone does not adequately characterize how noise is perceived. Because animals do not hear equally well at all frequencies, frequency weighting is a method to quantitatively account for these differing sensitivities, particularly when considering whether a sound might affect an animal's hearing.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000 to 8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. In comparison, birds generally hear best at frequencies between about 1,000 and 5,000 Hz. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level–expressed in units of dB(A)–can be computed based on this information. The A-weighted scale is used for assessing the effects of noise on birds. The use of the A-weighted overestimates the effects of traffic noise on bird hearing because traffic and construction noises are predominantly low frequency.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments about the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with highway traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted decibels or dB(A). Table 1 describes typical A-weighted noise levels for various noise sources.

Table 1 Typical A-Weighted Noise Levels		
Common Outdoor Activities	Noise Level [dB(A)]	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 miles per hour		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	— 70 —	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	— 60 —	
		Large business office
Quiet urban daytime	— 50 —	Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing
SOURCE: Caltrans 2013		

3.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in noise analysis.

Equivalent Sound Level (L_{eq}): L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level ($L_{eq}[h]$) is the energy average of A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria used by Caltrans and the FHWA.

Percentile-Exceeded Sound Level (L_{xx}): L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).

Maximum Sound Level (L_{max}): L_{max} is the highest instantaneous sound level measured during a specified period.

Day-Night Level (L_{dn}): L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10 p.m. and 7 a.m.

Community Noise Equivalent Level (CNEL): Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m., and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours between 7 p.m. and 10 p.m.

3.7 Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

3.7.1 Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and, therefore, can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

3.7.2 Ground Absorption

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation is also expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance.

3.7.3 Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

3.7.4 Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction. Vegetation between the highway and receiver is rarely effective in reducing noise because it does not create a solid barrier.

3.8 Noise Effects on Wildlife

Increased levels of noise have the potential to affect behavioral and physiological responses in wildlife receivers. Adverse responses to increased noise may include hearing loss, the temporary masking of vocalizations used in communication during the breeding season, nest abandonment, and/or decreased predator awareness, thereby resulting in a decrease in the reproductive and overall fitness of certain animal species (Fletcher 1980, 1990). Increased noise from roadway traffic has the potential to create a situation of long-term hearing loss in wildlife species. Almost all avian species rely heavily on acoustic communication for species and individual recognition, mate selection, territorial defense, and other social activities. There are three general overlapping categories of noise effects on birds: hearing damage and temporary threshold shift, masking, and other physiological and behavioral responses. In the case of direct auditory effects, the specific category depends primarily on the level of noise exposure, which is highly correlated with the proximity of the bird(s) to the noise source.

Birds (as well as humans and other animals) show a shift in hearing sensitivity in response to sounds that are sufficiently long and/or intense. Data show that birds can tolerate continuous (e.g., up to 72 hours) exposure to noises up to 110 dB(A) without experiencing hearing damage or permanent threshold shift. A Permanent Threshold Shift, or permanent hearing loss, occurs if the intensity and duration of the noise is sufficient to damage the delicate inner ear sensory hair cells. At continuous noise levels below 110 dB(A) down to about 93 dB(A), birds can experience a temporary threshold shift. This temporary threshold shift can last from seconds to days depending on the intensity and duration of the noise to which the animal was exposed.

Masking is the interference with the detection of one biologically relevant sound by another and refers to the increase in thresholds for detection or discrimination of sounds in the presence of

another sound. Continuous noise of sufficient intensity in the frequency region of bird hearing can have a detrimental effect on a bird's ability to detect and discriminate between the vocal signals of other birds.

Within the terrestrial ecosystem, bird species potentially use sound more frequently and for longer durations than any other group of wildlife and, therefore, are the focus of the potential effects analysis of this report. More specifically, the bird species associated with the study area that also have a federal or state regulatory status of threatened or endangered are analyzed within this report. These special-status bird species include the light-footed Ridgway's rail (*Rallus obsoletus levipes*), coastal California gnatcatcher (*Polioptila californica californica*), and least Bell's vireo (*Vireo bellii pusillus*). Hydroacoustic issues that may affect aquatic wildlife species are addressed in the *Bioacoustics Technical Memorandum for the Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (BRLS-5079(030))*, prepared by Drake Haglan and Associates (2017).

4.0 Modeling Results

Noise sensitive receivers, as defined for this analysis, include threatened or endangered noise sensitive biological species. Modeled receiver points were selected based on the general location of sensitive biological resources located within the habitat and the availability of access to the project area for measurements.

4.1 Traffic Noise Prediction

The traffic noise algorithms from the FHWA Traffic Noise Model, version 2.5 (FHWA 2004), was used to develop existing and future traffic noise level contours from the Coast Highway Bridge and surrounding roadways. Noise level predictions and contour mapping was developed using the Traffic Noise Model algorithms in the SoundPlan Essential (noise model), version 3.0 and 4.1, noise modeling software. Inputs to the noise model include the three-dimensional coordinates of the roadways, noise receivers, and topographic or planned barriers that would affect noise propagation; vehicle volumes and speeds, by type of vehicle; and vehicle noise-emission characteristics. The model outputs are noise level contour maps. Traffic situations are typically complex, with vehicles of many types moving at various speeds. Therefore, assumptions of average traffic values, such as volumes, speed, and vehicle mix, must be made when modeling traffic noise.

Receiver height in the habitat was modeled at 3 feet above ground elevation. The 3-foot elevation represents the location for noise assessment for noise sensitive bird species nesting heights.

4.2 Traffic Parameters

Existing and future traffic volumes on all study area roadways were taken from the *Coast Highway Corridor Existing Conditions Review and Analysis* (Coast Highway Corridor Report; IBI Group 2014). Existing speeds were developed from site visits and driving the alignment. Vehicle mixes for Coast Highway and I-5 were developed from Caltrans truck traffic counts on I-5 (Caltrans 2016a).

The project would not increase the traffic capacity of the Coast Highway Bridge. Post-construction traffic speeds and vehicle mixes on Coast Highway and other area roadways were assumed to be the same as those used in the existing conditions. Traffic volumes and speeds for the Coast Highway Bridge were taken from the Coast Highway Corridor Report. Based on the Coast Highway Corridor Report, peak-hour traffic volumes are 927 vehicles per lane per hour (v/l/h) and traffic speeds are 25 miles per hour (mph). Information provided in the *Interstate 5 North Coast Corridor Project Draft Environmental Impact Report/Environmental Impact Statement* indicates that during peak commute periods, the section of I-5 adjacent to the Coast Highway Bridge would operate at and above capacity during various times of the day (Caltrans 2010). For purposes of modeling freeway noise, Caltrans used the maximum level of service (LOS) "C" traffic v/l/h, which is approximately 1,800 v/l/h for general purpose lanes and 1,500 v/l/h for high occupancy vehicle lanes (Caltrans 2010). The maximum LOS C traffic capacity was used as this represents the greatest number of vehicles operating on the roadway at the highest speed. Generally, a high LOS rating indicates high volumes of traffic, which tend to result in slower speeds, while a lower LOS ratings result in lower traffic volumes, both of which result in lower traffic noise levels. I-5 traffic speeds were modeled at 65 mph for automobiles and medium trucks, and 55 mph for heavy trucks. Table 2 provides the traffic volume mix used in traffic noise modeling. All traffic volumes used for each alternative are the same. SoundPLAN data is provided in Attachment 1.

Table 2
Traffic Volume Mix Used in Traffic Noise Model

Roadway Segment	Modeled Traffic Volume (v/l/h)[1]	Automobiles[2]	Medium Trucks[2]	Heavy Trucks[2]
Coast Highway Bridge	927	92.9%	3.3%	3.8%
Interstate 5	1,800 mainlines 1,500 HOV lanes	92.9%	3.3%	3.8%

SOURCE: Caltrans 2016a
[1]Updated existing condition traffic volumes for the Coast Highway Bridge provided by SANDAG are less than this volume from the Coast Highway Corridor Report; however, the higher volume of 927 v/l/h was modeled as a conservative analysis.
[2]Updated Caltrans 2020 truck counts indicate a vehicle mix of 95.2% automobiles, 2.3% medium trucks, and 3.8% heavy trucks; however, the higher truck volumes shown in this table were modeled as a conservative analysis.

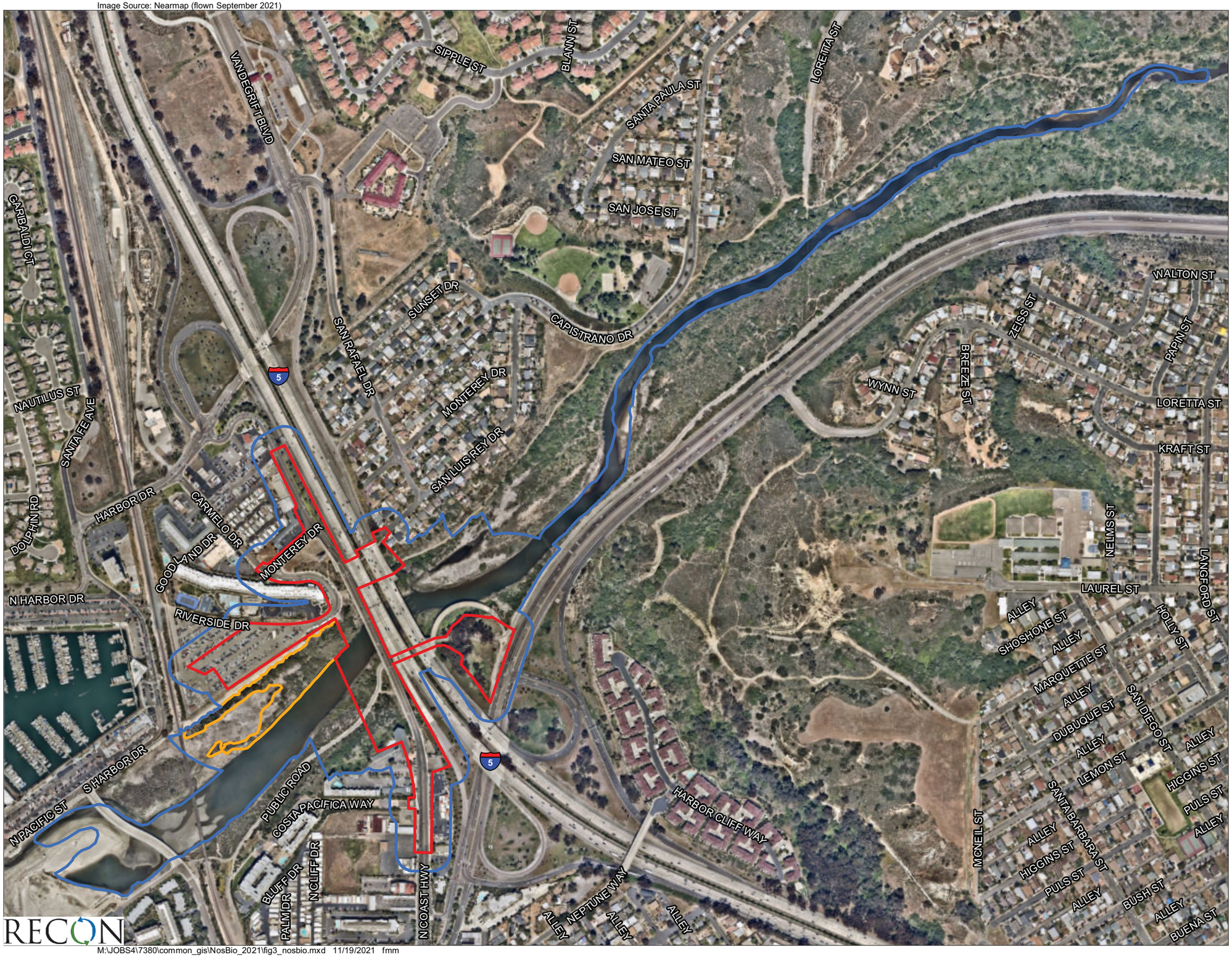
4.3 Modeled Existing Traffic Noise Levels

Existing traffic noise levels were modeled for the Biological Study Area that is defined in the Natural Environment Study prepared by RECON 2023 (Figure 3). The traffic noise contours for existing conditions are shown on Figure 4.

4.4 Future Operations

As noted previously, future noise levels were modeled using the same traffic volumes as the existing condition, thus the changes in noise operation noise contours are due to the change in location and alignment of the Coast Highway Bridge. For impacts analysis, each of the future build conditions was compared to the existing condition. Traffic noise contours are shown on Figures 5 and 6 for Alternative 1 and Alternative 2, respectively.

Image Source: Nearmap (flown September 2021)



Project Impact Area

Biological Study Area

Habitat Enhancement Area (Project Mitigation)

0 Feet 500

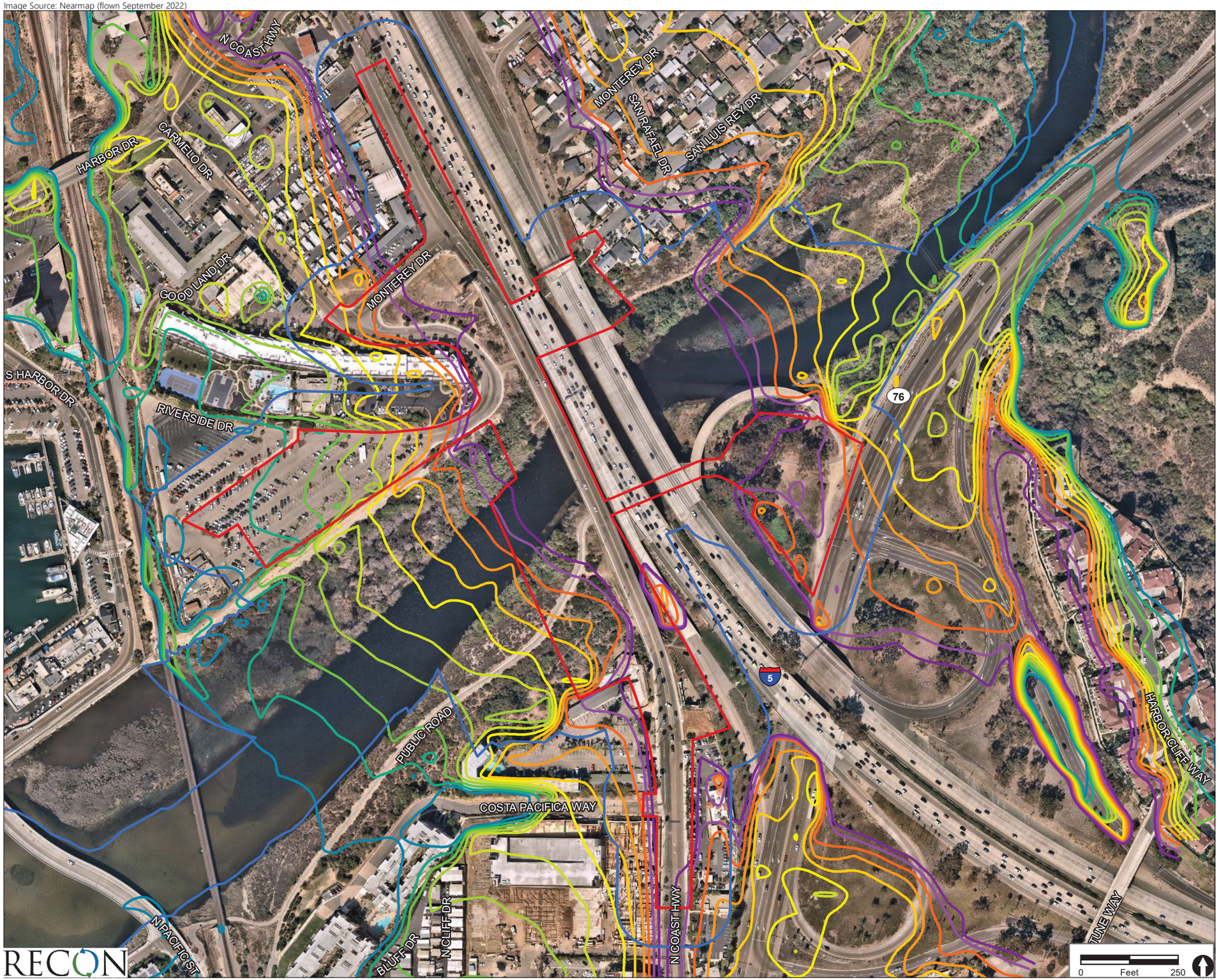
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FIGURE 3

Biological Study Area and Project Impact Area on Aerial Photograph

Image Source: Nearmap (flown September 2022)



Project Impact Area

Biological Study Area

Existing Traffic Noise

- 60 dB(A) L_{eq}
- 61 dB(A) L_{eq}
- 62 dB(A) L_{eq}
- 63 dB(A) L_{eq}
- 64 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 66 dB(A) L_{eq}
- 67 dB(A) L_{eq}
- 68 dB(A) L_{eq}
- 69 dB(A) L_{eq}
- 70 dB(A) L_{eq}

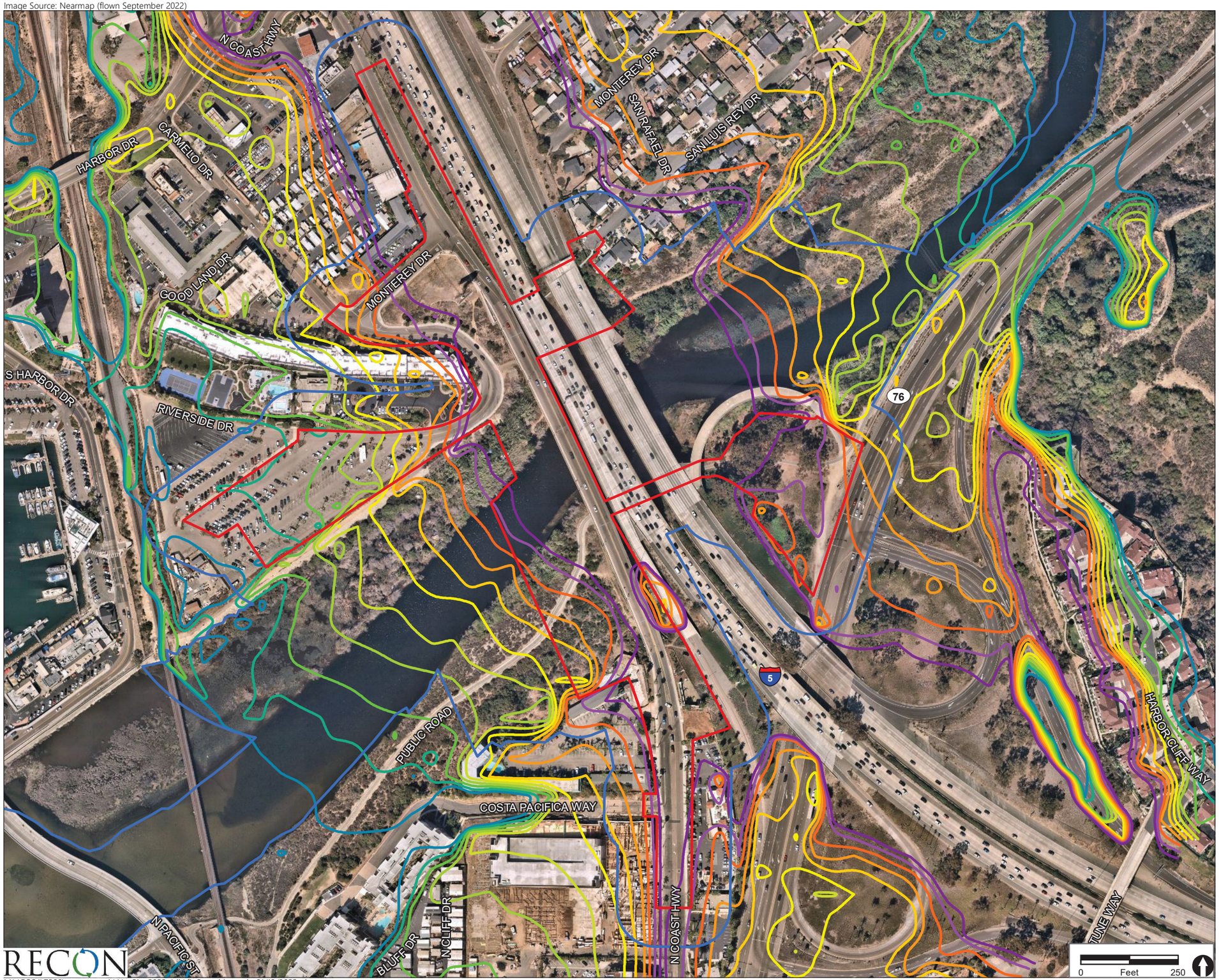
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FIGURE 4

Existing Traffic Noise Contours

Image Source: Nearmap (flown September 2022)



Project Impact Area

Biological Study Area

Alternative 1 Traffic Noise

- 60 dB(A) L_{eq}
- 61 dB(A) L_{eq}
- 62 dB(A) L_{eq}
- 63 dB(A) L_{eq}
- 64 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 66 dB(A) L_{eq}
- 67 dB(A) L_{eq}
- 68 dB(A) L_{eq}
- 69 dB(A) L_{eq}
- 70 dB(A) L_{eq}

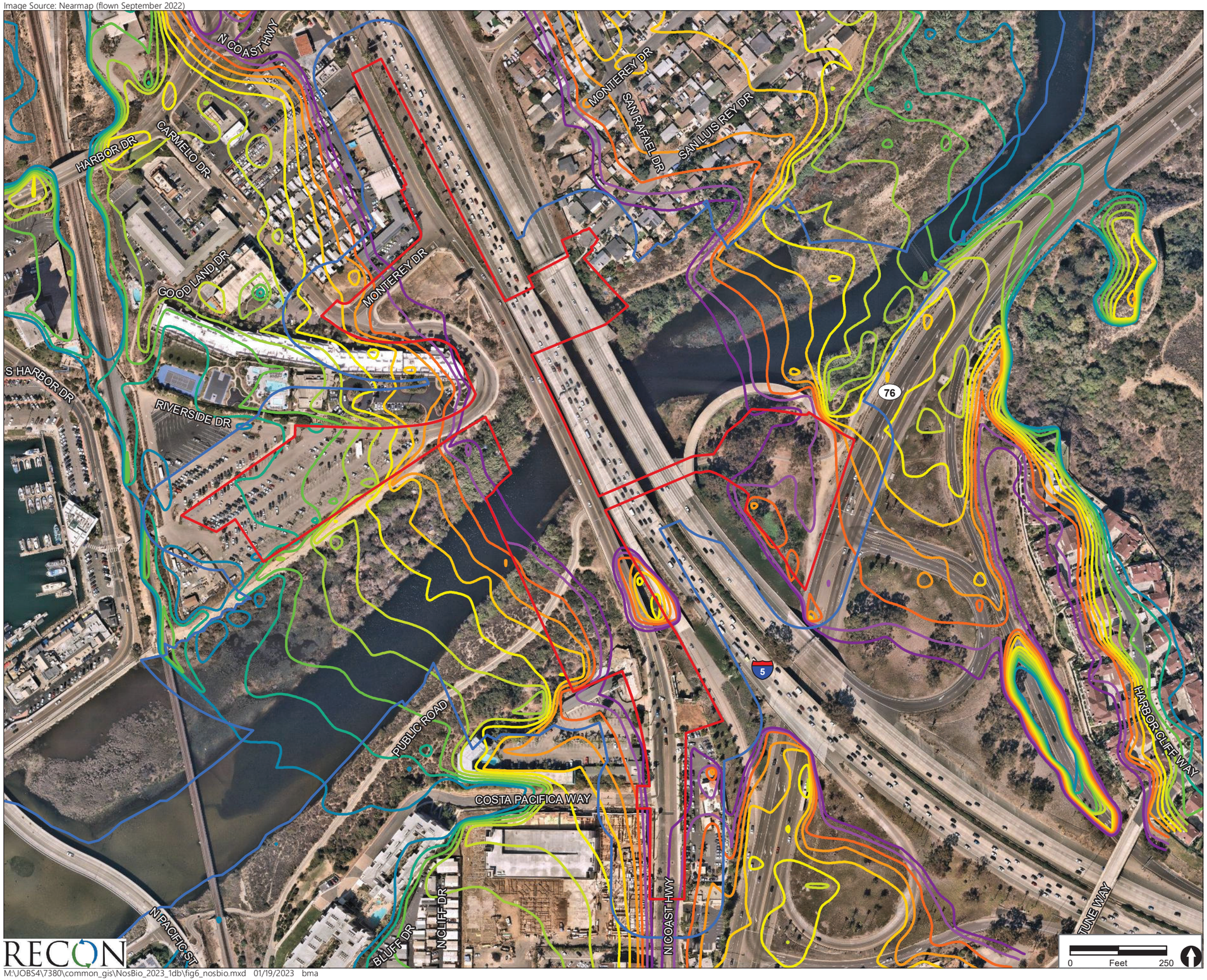
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FIGURE 5

Alternative 1 Traffic Noise Contours

Image Source: Nearmap (flown September 2022)



Project Impact Area

Biological Study Area

Alternative 2 Traffic Noise

- 60 dB(A) L_{eq}
- 61 dB(A) L_{eq}
- 62 dB(A) L_{eq}
- 63 dB(A) L_{eq}
- 64 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 66 dB(A) L_{eq}
- 67 dB(A) L_{eq}
- 68 dB(A) L_{eq}
- 69 dB(A) L_{eq}
- 70 dB(A) L_{eq}

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FIGURE 6

Alternative 2 Traffic Noise Contours

4.5 Construction Noise Prediction

The FHWA's Road Construction Noise Model, Version 1.1 (RCNM), was used to develop reference noise levels, which were converted to sound power levels for use in the noise model to develop noise level contours from the anticipated bridge and roadway construction activities. Inputs to RCNM include equipment types and numbers, and distances between noise sources and receiver points. The RCNM outputs are noise levels at the selected distances. Atmospheric attenuation in RCNM is fixed at a drop-off rate of 6 dB(A) per doubling of distance; thus, no additional attenuation is provided in the model for an acoustically soft site.

4.6 Construction Scenarios

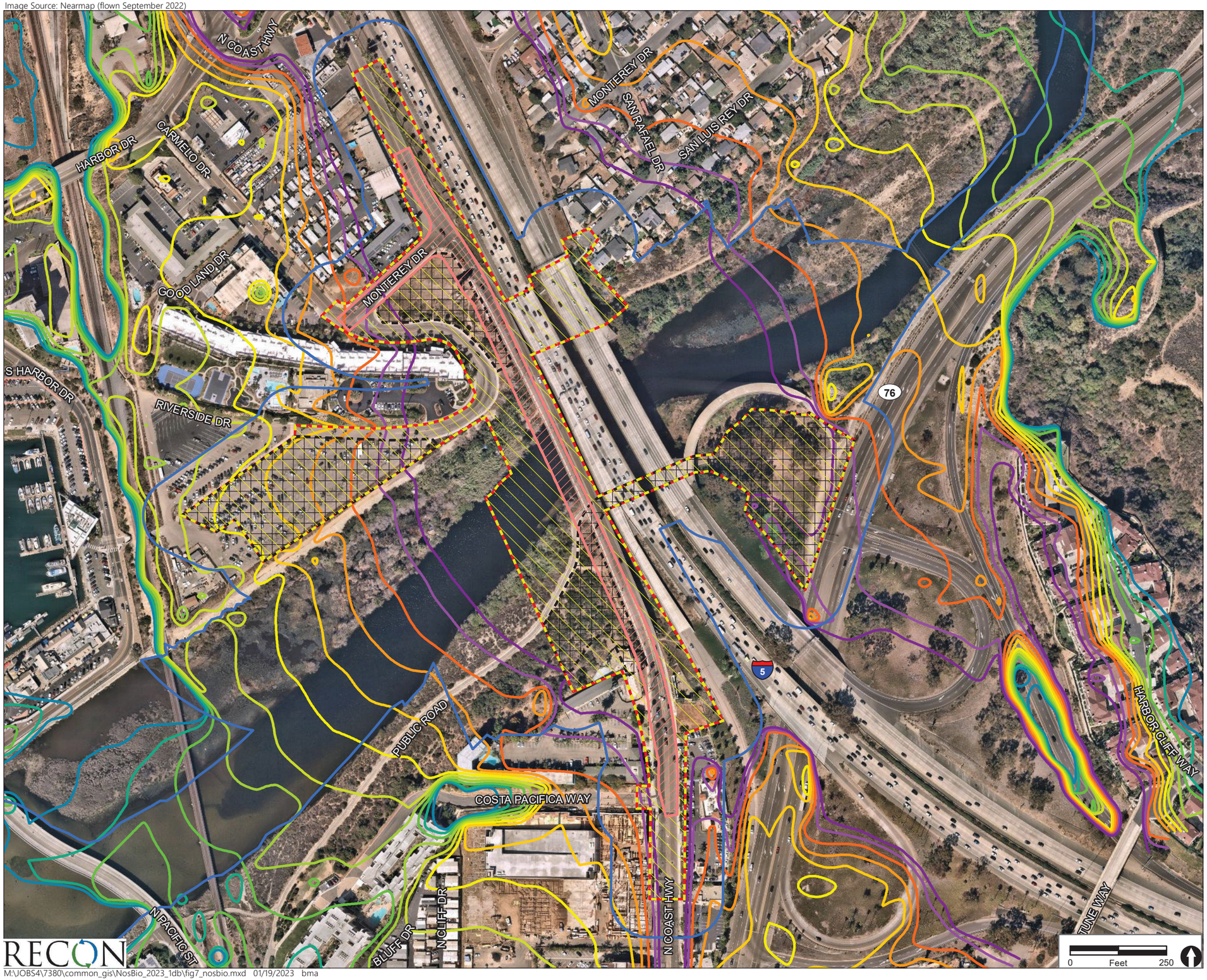
For the purposes of this noise assessment, construction equipment can be considered to operate in two modes: stationary and mobile. Stationary equipment operates in one location for one or more days at a time, with either a fixed-power operation, such as pumps, generators, and compressors, or a variable noise operation, such as pile drivers, rock drills, and pavement breakers.

Mobile equipment moves around the construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders. Noise impacts from stationary equipment are assessed from the center of the equipment, while noise impacts for mobile construction equipment are assessed from the center of the equipment activity or construction site. For linear construction, such as a roadway or pipeline, construction noise is assessed from the centerline of the alignment.

Each phase of construction has a specific equipment mix depending on the work to be accomplished during that phase. Each phase also has its own noise characteristics; some have high continuous noise levels and some have high impact noise levels. The L_{eq} of each phase is determined by combining the L_{eq} contributions from each piece of equipment used in that phase.

In order to assess noise generated during project grubbing and clearing activities, it was generally assumed that two excavators, haul trucks, and a loader would be required. Abutment construction would require the use of a dozer, haul trucks, rollers, and a grader. Bridge construction would require cranes, a grader, welders, generators, air compressors, pumps, and concrete truck. Paving would involve a paving machine, a truck, and two rollers, which would pave a minimum of 300 linear feet per day. For purposes of this analysis, pavement-breaking activities assume that the backhoe-mounted jackhammer would only operate for 15 minutes in 1 hour, after which it would shut down and a loader would finish breaking the asphalt loose and scoop it up to be loaded into the back of a haul truck or stockpiled out of the construction area. While pavement breaking includes mobile noise sources, it is assessed as a stationary activity as the equipment moves more slowly than grading or paving activities. Pile-driving would be employed to erect falsework required for the bridge deck construction; however, pile driving would not be employed to construct the actual bridge as bridge piles would be cast-in-place. The Alternative 1 construction noise-level contours for pile driving are shown in Figure 7; grubbing and clearing, abutment, and bridge construction are shown in Figure 8; and paving are shown in Figure 9. The Alternative 2 construction noise-level contours pile driving are shown in Figure 10; grubbing and clearing, abutment, and bridge construction are shown in Figure 11; and paving are shown in Figure 12. SoundPLAN data is provided in Attachment 2.

Image Source: Nearmap (flown September 2022)



Project Impact Area
Biological Study Area
Permanent Impacts
Temporary Impacts
Staging Areas

Combined Traffic and Alternative 1 Pile Driving Noise

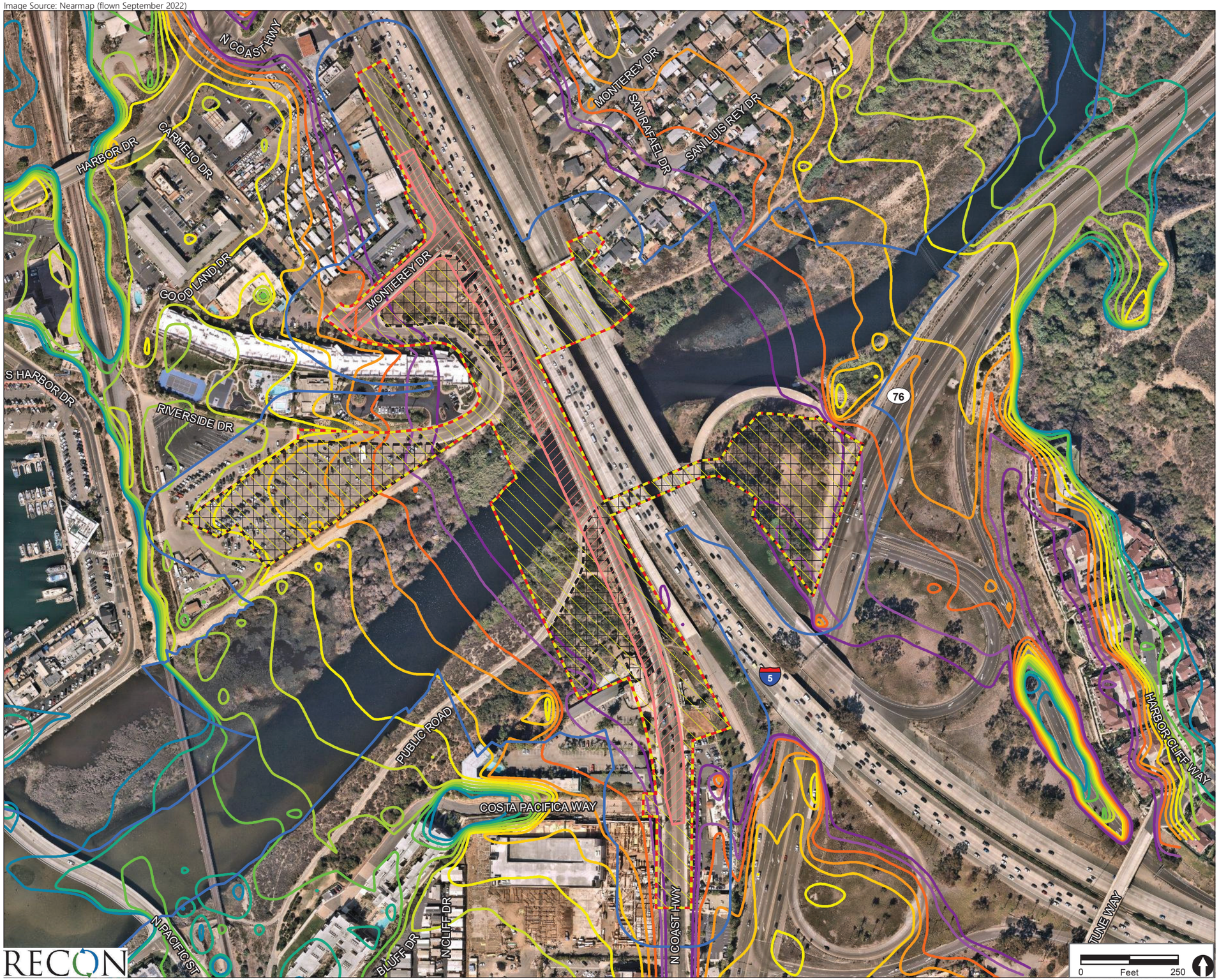
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- 61 dB(A) L_{eq}
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- 65 dB(A) L_{eq}
- 66 dB(A) L_{eq}
- 67 dB(A) L_{eq}
- 68 dB(A) L_{eq}
- 69 dB(A) L_{eq}
- 70 dB(A) L_{eq}

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FIGURE 7
Alternative 1
Pile Driving Noise Contours

Image Source: Nearmap (flown September 2022)



Project Impact Area
Biological Study Area
Permanent Impacts
Temporary Impacts
Staging Areas

Combined Traffic and Alternative 1 Construction Noise

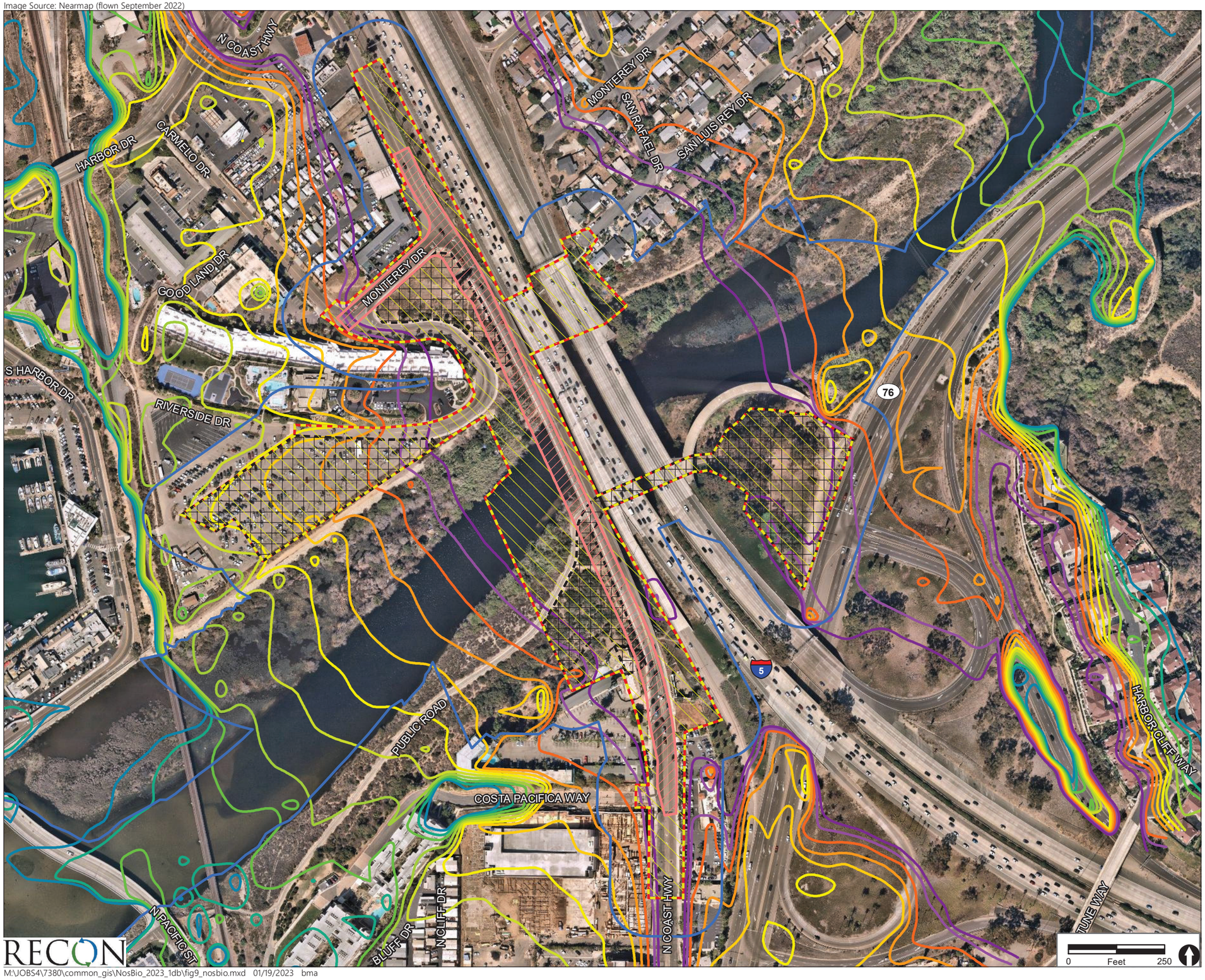
60 dB(A) L_{eq}
61 dB(A) L_{eq}
62 dB(A) L_{eq}
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64 dB(A) L_{eq}
65 dB(A) L_{eq}
66 dB(A) L_{eq}
67 dB(A) L_{eq}
68 dB(A) L_{eq}
69 dB(A) L_{eq}
70 dB(A) L_{eq}

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FIGURE 8
Alternative 1 Abutment and Bridge Construction Noise Contours

Image Source: Nearmap (flown September 2022)



Project Impact Area
Biological Study Area
Permanent Impacts
Temporary Impacts
Staging Areas

Combined Traffic and Alternative 1 Paving Noise

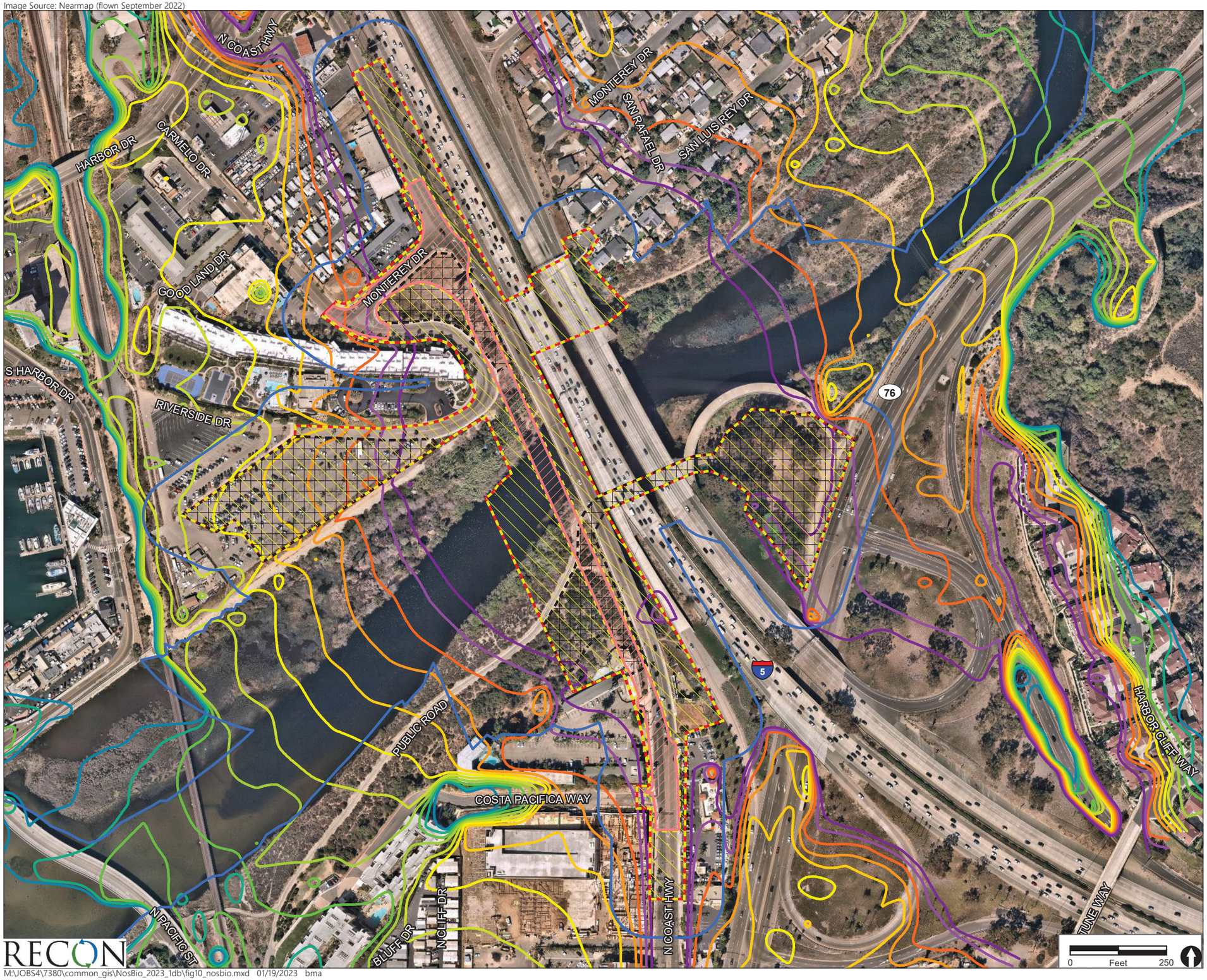
- 60 dB(A) L_{eq}
- 61 dB(A) L_{eq}
- 62 dB(A) L_{eq}
- 63 dB(A) L_{eq}
- 64 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 66 dB(A) L_{eq}
- 67 dB(A) L_{eq}
- 68 dB(A) L_{eq}
- 69 dB(A) L_{eq}
- 70 dB(A) L_{eq}

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FIGURE 9
Alternative 1
Paving Noise Contours

Image Source: Nearmap (flown September 2022)



Project Impact Area
Biological Study Area
Permanent Impacts
Temporary Impacts
Staging Areas

Combined Traffic and Alternative 2 Pile Driving Noise

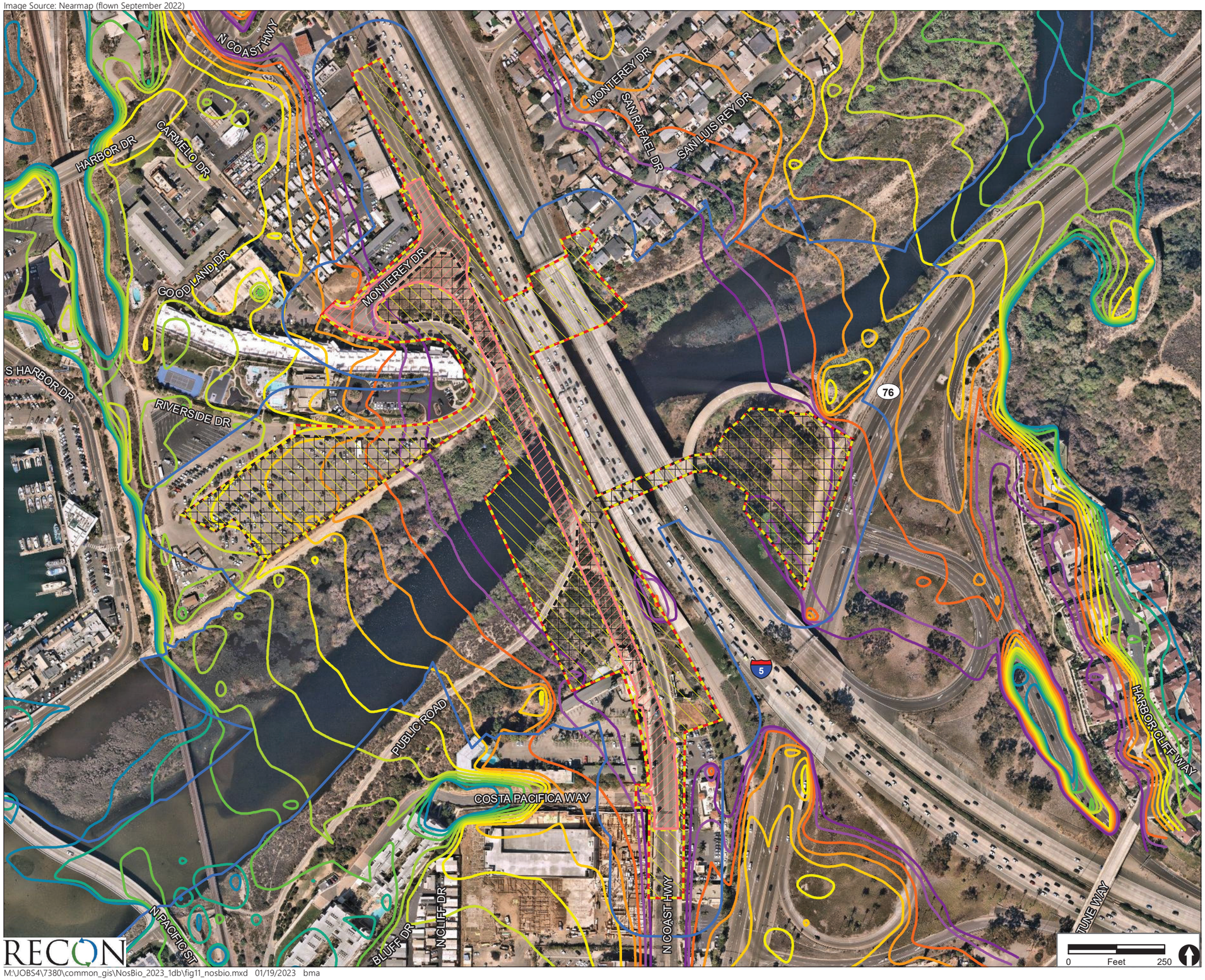
- 60 dB(A) L_{eq}
- 61 dB(A) L_{eq}
- 62 dB(A) L_{eq}
- 63 dB(A) L_{eq}
- 64 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 66 dB(A) L_{eq}
- 67 dB(A) L_{eq}
- 68 dB(A) L_{eq}
- 69 dB(A) L_{eq}
- 70 dB(A) L_{eq}

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FIGURE 10
Alternative 2
Pile Driving Noise Contours

Image Source: Nearmap (flown September 2022)



Project Impact Area
Biological Study Area
Permanent Impacts
Temporary Impacts
Staging Areas

Combined Traffic and Alternative 2 Construction Noise

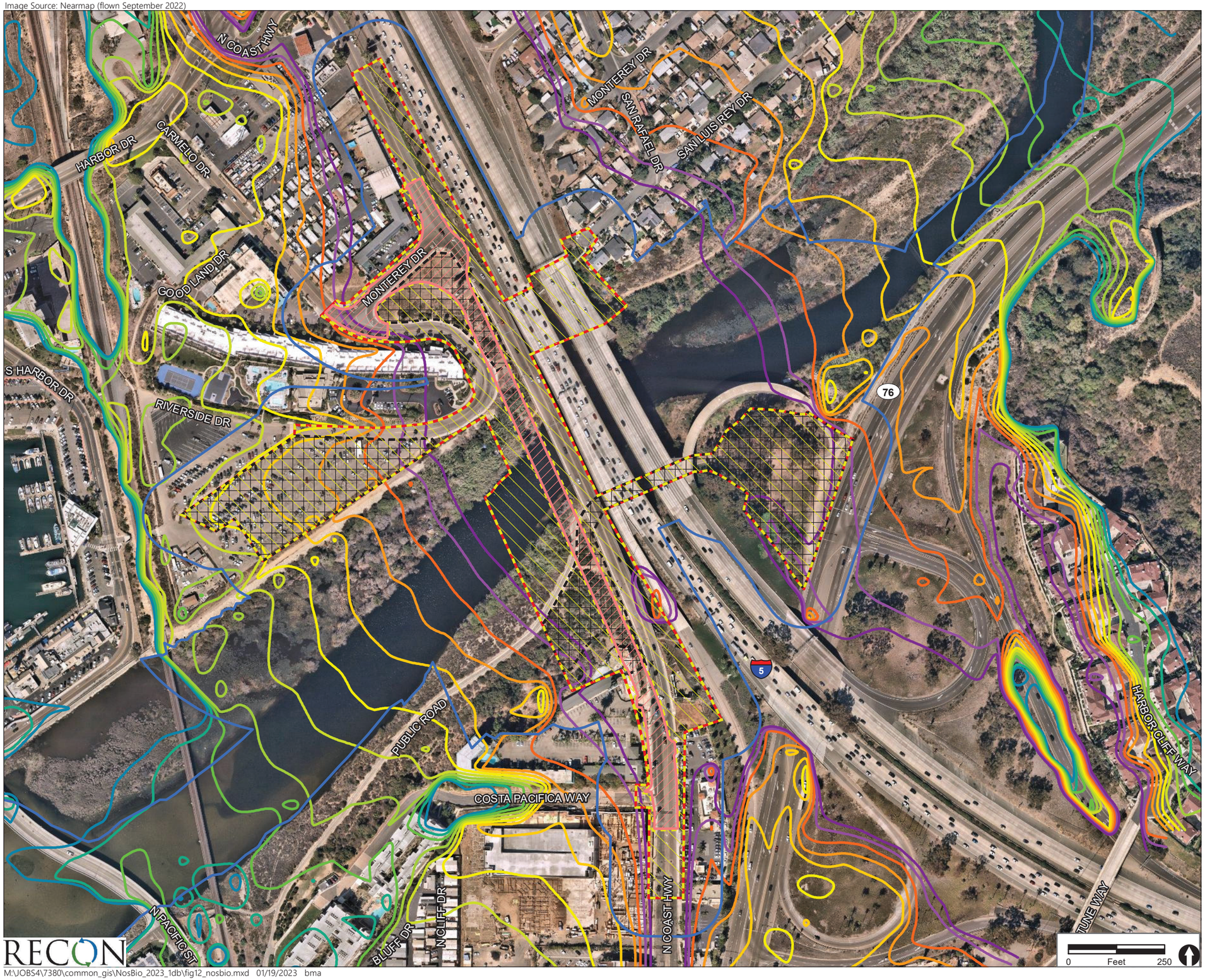
- 60 dB(A) L_{eq}
- 61 dB(A) L_{eq}
- 62 dB(A) L_{eq}
- 63 dB(A) L_{eq}
- 64 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 66 dB(A) L_{eq}
- 67 dB(A) L_{eq}
- 68 dB(A) L_{eq}
- 69 dB(A) L_{eq}
- 70 dB(A) L_{eq}

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FIGURE 11
Alternative 2 Abutment and Bridge Construction Noise Contours

Image Source: Nearmap (flown September 2022)



Project Impact Area

Biological Study Area

Alternative 2 New Bridge Alignment

Alternative 2 Temporary Impacts

Staging Areas

Combined Traffic and Alternative 2 Paving Noise

- 60 dB(A) L_{eq}
- 61 dB(A) L_{eq}
- 62 dB(A) L_{eq}
- 63 dB(A) L_{eq}
- 64 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 66 dB(A) L_{eq}
- 67 dB(A) L_{eq}
- 68 dB(A) L_{eq}
- 69 dB(A) L_{eq}
- 70 dB(A) L_{eq}

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FIGURE 12
Alternative 2
Paving Noise Contours

5.0 Analytical Criteria and Impact Methodology

Based on the Caltrans *Technical Guidance for Assessment and Mitigation of the Effects of Highway and Road Construction Noise on Birds* (Caltrans Avian Noise Guidance), in 1987, a biologist developed a criterion for a California highway project by measuring noise levels at the nests of birds along a highway. On average, these levels approximated 60 dB(A) L_{eq} (Caltrans 2016b). The assessment assumed that if birds were successfully breeding, then this noise level is, by definition, not detrimental to the birds.

However, during the same time period a study prepared by the California Department of Fish and Wildlife identified 60 dB(A) L_{eq} as a traffic noise that would begin to raise concerns about potential masking of communication sounds between birds by traffic noise (Caltrans 2016b). In this case the 60 dB(A) L_{eq} came from an auditory model that calculated whether noise levels from traffic rose above ambient noise levels enough to affect acoustic communication between two birds (Caltrans 2016b).

According to the Caltrans Avian Noise Guidance, neither case was intended to set a precedent or become a standard for noise-impact mitigation. The 60 dB(A) L_{eq} limit for traffic noise only applies, at best, under a narrow range of specific conditions having to with the sound-affecting aspects of the habitat, the species life style, and dependence on acoustic communication, the level of existing ambient noise, as well as whether the species' predators use acoustic signals to locate their prey (Caltrans 2016b). Therefore, Caltrans indicates the use of 60 dB(A) L_{eq} provides only a crude and probably conservative estimate of impacts to avian species.

There are several reasons Caltrans has come to this conclusion:

1. Birds do not hear as well as humans at low frequencies which contain the bulk of energy in traffic noise;

2. Bird vocalizations are at higher frequencies than traffic noise;

3. The use of the A scale on the sound level meter which mirrors human hearing, as opposed to bird hearing, overestimates the effects of traffic noise on bird hearing because traffic and construction noises are predominantly low frequency; and

4. Birds, like humans, can and do employ a number of short-term behavioral strategies for hearing in noise such as turning their heads, changing height or location, raising their voice, and timing their communication to coincide with periods of low noise.

Existing ambient noise levels in the vicinity of the project are dominated by vehicle traffic on I-5. As demonstrated in the noise modeling (see Figure 4), existing noise levels exceed 60 dB(A) L_{eq} at an approximate maximum distance of 1,500 feet downstream of the existing Coast Highway Bridge, and 1,250 feet upstream of the existing bridge. In fact, existing ambient noise levels are generally 70 dB(A) L_{eq} immediately adjacent to the project impact area. For purposes of this analysis, the existing condition (i.e., existing ambient noise level) is used as the baseline against which future predicted construction (temporary) and operations (permanent) impacts are calculated.

Sensitive bird species and their habitats currently exposed to traffic noise at or above the existing 70 dB(A) L_{eq} ambient noise level were compared to post-construction predicted traffic noise levels for the No Build, i.e., existing condition, and both project Alternatives 1 and 2. The No Build Alternative assumes no change in the roadway alignment or topography. Alternative 1 includes realignment of the current bridge slightly west, but partially overlapping its current location, with associated changes in roadway topography. Alternative 2 includes the realignment of the bridge to the west of its current location.

6.0 Effects Analyses

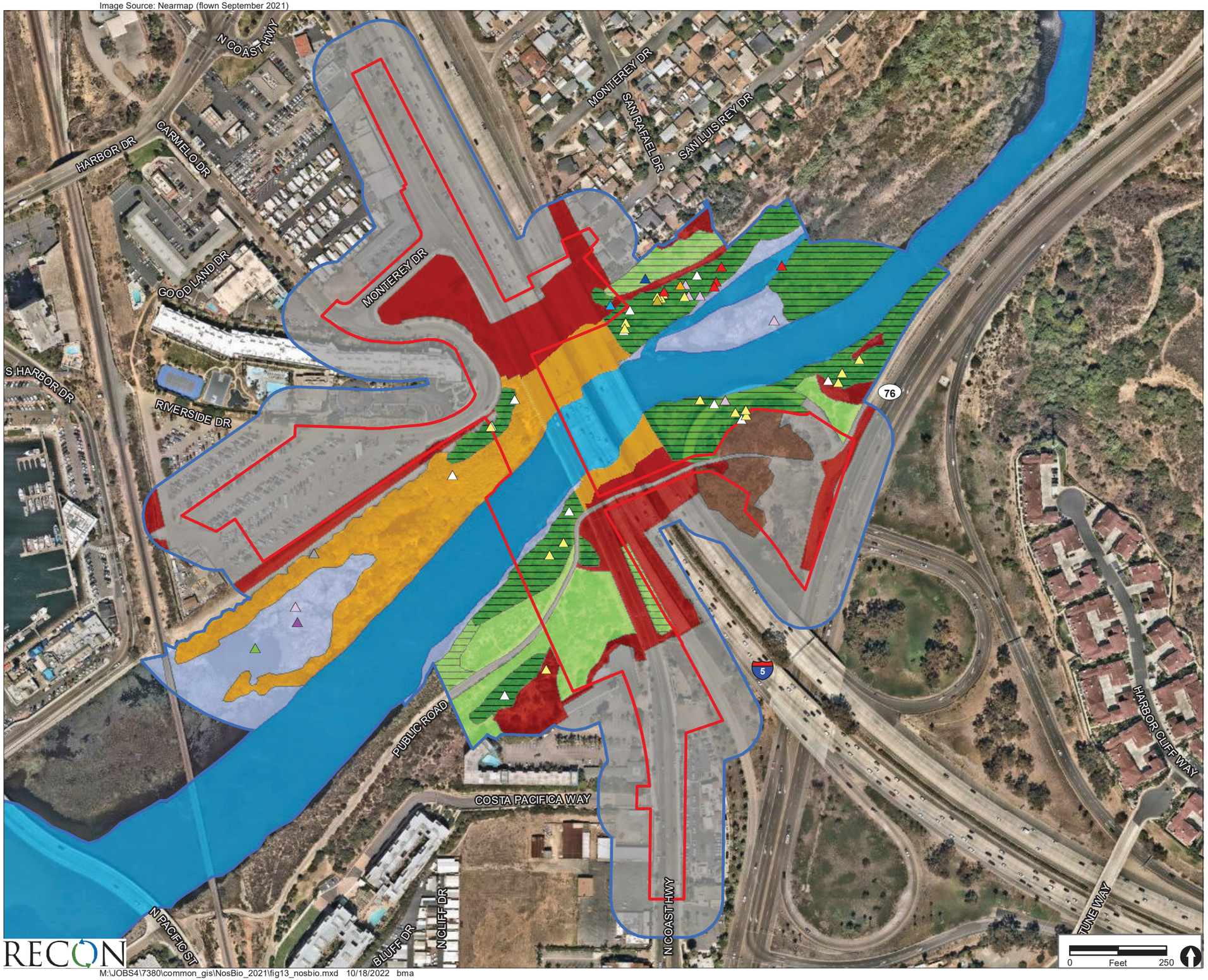
The initial phase of the effects analyses for the various project alternatives included the calculation of the area of vegetation communities within the Biological Study Area, as defined in the Natural Environment Study (RECON 2021), that is encompassed within the various 70 dB(A) L_{eq} traffic noise polygons generated by the noise model, as adjusted to form the maximum average 70 dB(A) L_{eq} contour (refer to Section 5.0). Vegetation community mapping was completed by RECON in 2015, 2016, 2017, and 2021, using vegetation classifications identified by Holland (1986) as modified by Oberbauer et al. (2008). Vegetation communities are shown in Figure 13.

Both alignment alternatives contain riparian and upland vegetation communities, which sensitive wildlife species are known to utilize for part or all of their lifecycles. The maximum average 60 through 70 dB(A) L_{eq} noise contours within these vegetation communities for existing conditions and both alignment alternatives are shown on Figures 4 through 12. Existing traffic noise contours are shown on Figure 4 and discussed in Section 6.1 below. Traffic-operational (permanent) noise contours are shown on Figures 5 and 6 for Alternative 1 and Alternative 2, respectively, and discussed in Sections 6.2 and 6.3 below. Combined traffic and construction-related (temporary) noise contours are shown on Figures 7 through 9 for Alternative 1 and Figures 10 through 12 for Alternative 2; and are discussed in Sections 6.4 and 6.5 below.

6.1 Existing Condition Noise Analysis

For purposes of this analysis, the existing condition (i.e., ambient noise levels) is the baseline against which future predicted construction (temporary) and operations (permanent) impacts are calculated. Existing condition noise contours are displayed on Figure 4. These contours reflect ambient noise conditions along the existing bridge alignment. These conditions serve as the baseline for comparison against predicted future noise levels of both project alternatives. The existing vegetation communities within the Biological Study Area exposed to noise levels of 70 dB(A) L_{eq} or greater are summarized in Table 3. As discussed above, the 70 dB(A) L_{eq} is used as the analysis point because that is the general existing ambient noise level adjacent to the project impact area. Calculations are provided in Attachment 3.

Image Source: Nearmap (flown September 2021)



Project Impact Area

Biological Study Area

Sensitive Avian Species Observed

2015	2017	2021	
△	▲		Clark's Marsh Wren
▲			Light-footed Ridgway's Rail
▲			Olive-sided Flycatcher
▲			Western Least Bittern
△	△	▲	Yellow Warbler
	▲		Yellow-breasted Chat
	▲		Least Bell's Vireo
		▲	Coastal California Gnatcatcher

Vegetation Communities and Land Cover Types

- Diegan Coastal Sage Scrub
- Disturbed Diegan Coastal Sage Scrub
- Disturbed Southern Riparian Scrub
- Freshwater Marsh
- Open Water
- Non-native Riparian
- Eucalyptus Woodland
- Disturbed Habitat
- Urban/Developed

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FIGURE 13
Vegetation Communities

Table 3 Operation Noise Effects within Biological Study Area					
	Existing	Alternative 1		Alternative 2	
Vegetation Community	Acres	Acres	Delta*	Acres	Delta*
Diegan Coastal Sage Scrub	0.1	0.1	0.0	0.3	0.2
Disturbed Diegan Coastal Sage Scrub	0.5	0.4	0.0	0.4	-0.1
Disturbed Habitat	3.8	3.8	-0.1	3.7	-0.2
Disturbed Southern Riparian Scrub	1.8	1.9	0.0	1.9	0.0
Eucalyptus Woodland	0.6	0.6	0.0	0.6	0.0
Freshwater Marsh	0.4	0.4	0.0	0.4	0.0
Non-native Riparian	1.6	1.6	0.0	1.6	0.0
Open Water	2.5	2.5	0.0	2.5	0.0
Urban/developed	10.7	10.5	-0.2	10.8	0.1
*Grand Total**	22.0	21.8	-0.2	22.2	0.2
SOURCE: Attachment 3. * Any discrepancies in totals are due to rounding.					

6.2 Alternative 1 – Traffic (Operations) Noise Analysis

6.2.1 Predicted Traffic (Operations) Noise Levels

The predicted traffic (operations) noise contours for Alternative 1 are shown in Figure 5. As shown in Table 3, under Alternative 1, the future 70 dB(A) L_{eq} contour would encompass 0.1 acre of Diegan coastal sage scrub, 0.4 acre of disturbed Diegan coastal sage scrub, 3.8 acres of disturbed habitat, 1.9 acres of disturbed southern riparian scrub, 0.6 acres of eucalyptus woodland, 0.4 acre of freshwater marsh, 1.6 acres non-native riparian, 2.5 acres of open water, and 10.5 acres of urban/developed.

6.2.2 Potential Effects

The net effect of traffic noise associated with Alternative 1 would be the difference between the existing condition and the predicted future maximum average 70 dB(A) L_{eq} traffic noise contours. Since Alternative 1 would physically replace the existing bridge in nearly the same location, there would be minimal change in traffic noise compared to the existing condition. The 70 dB(A) L_{eq} traffic noise contour associated with Alternative 1 would encompass 0.1 acre less of disturbed habitat and 0.2 acre less of urban/developed land. The Alternative 1 noise contour would encompass the same amount of area of all other habitat types as the existing condition. As shown when comparing Figures 4 and 5, Alternative 1 would result in only minimal adjustments to the existing ambient noise contours, and these changes in noise levels would not be audible. Therefore, Alternative 1 would not result in a substantial permanent change in the noise levels within the surrounding habitat.

6.3 Alternative 2 – Traffic (Operations) Noise Analysis

6.3.1 Predicted Traffic (Operations) Noise Levels

Alternative 2 would physically replace the existing bridge slightly west of the existing bridge location, thus the net effect of traffic noise associated with Alternative 2 would be the difference between the existing condition and the predicted future maximum average 70 dB(A) L_{eq} traffic noise contours. The 60 through 70 dB(A) L_{eq} predicted traffic (operations) noise contours for the Alternative 2 are shown in Figure 6. As shown in Table 3, under Alternative 2, the future 70 dB(A) L_{eq} noise contour encompasses 0.3 acre of Diegan coastal sage scrub, 0.4 acre of disturbed Diegan coastal sage scrub, 3.7 acres of disturbed habitat, 1.9 acres of disturbed southern riparian scrub, 0.6 acres of eucalyptus woodland, 0.4 acres of freshwater marsh, 1.6 acres of non-native riparian, 2.5 acres of open water, and 10.8 acres of urban/developed.

6.3.2 Potential Effects

The net effect of traffic noise associated with Alternative 2 would be the difference between the existing condition and the predicted future 70 dB(A) L_{eq} operations contour. Therefore, subtracting the existing condition from the predicted future operations 70 dB(A) L_{eq} noise contour results in the net effect of Alternative 2. The 70 dB(A) L_{eq} traffic noise contour associated with Alternative 2 would encompass 0.2 acre more of Diegan coastal sage scrub, 0.1 acre less of disturbed Diegan coastal sage scrub, 0.2 acre less of disturbed habitat and 0.1 acre more of urban/developed land. The Alternative 2 noise contour would encompass the same amount of area of all other habitat types as the existing condition. As shown when comparing Figures 4 and 6, Alternative 2 would result in only minimal adjustments to the existing ambient noise contours, and these changes in noise levels would not be audible. Therefore, Alternative 2 would not result in a substantial permanent change in the noise levels within the surrounding habitat.

6.4 Alternative 1 – Construction Noise Analysis

6.4.1 Predicted Construction Noise Levels

During construction activities, the noise sources in the project area would include vehicle traffic on I-5 and construction equipment. The 60 through 70 dB(A) L_{eq} predicted combined construction and traffic noise contours for Alternative 1 are shown in Figures 7 through 9. The existing vegetation communities (see Figure 13) within the Biological Study Area that are encompassed within the predicted construction 70 dB(A) L_{eq} noise contours under Alternative 1 are summarized in Table 4.

Table 4 Project Alternative 1 Construction Noise Effects within Biological Study Area							
	Existing	Pile-driving		Construction		Paving	
Vegetation Community	Acres	Acres	Delta*	Acres	Delta*	Acres	Delta*
Diegan Coastal Sage Scrub	0.1	1.4	1.3	1.0	0.9	0.8	0.7
Disturbed Diegan Coastal Sage Scrub	0.5	0.6	0.1	0.6	0.1	0.5	0.0
Disturbed Habitat	3.8	4.5	0.6	4.4	0.5	4.3	0.5
Disturbed Southern Riparian Scrub	1.8	2.7	0.8	2.5	0.6	2.5	0.6
Eucalyptus Woodland	0.6	1.0	0.4	1.0	0.4	1.0	0.4
Freshwater Marsh	0.4	0.7	0.4	0.6	0.3	0.6	0.3
Non-native Riparian	1.6	2.4	0.8	2.0	0.3	1.9	0.3
Open Water	2.5	3.7	1.2	3.2	0.7	3.2	0.7
Urban/developed	10.7	13.2	2.5	12.7	2.0	13.0	2.3
*Grand Total**	22.0	30.3	8.2	27.9	5.8	27.9	5.8
SOURCE: Attachment 3. *Any discrepancies in totals are due to rounding.							

6.4.2 Potential Effects

The net effect of construction noise associated with Alternative 1 would be the difference between the existing condition 70 dB(A) L_{eq} noise contour and the predicted 70 dB(A) L_{eq} construction and traffic noise contour. Therefore, subtracting the existing condition from the predicted future construction and traffic 70 dB(A) L_{eq} noise contour results in the net effect of Alternative 1. Under Alternative 1, the future 60 dB(A) L_{eq} noise contour would encompass an additional 5.8 to 8.2 acres within the Biological Study Area. Based on the net change in acreage shown in Figures 7 through 9, Alternative 1 would result in a slight temporary increase in the noise levels within the surrounding habitat during construction activities.

6.5 Alternative 2 – Construction Noise Analysis

6.5.1 Predicted Construction Noise Levels

During construction activities, the noise sources in the project area would include vehicle traffic on I-5 and the Coast Highway Bridge and construction equipment. The 60 through 70 dB(A) L_{eq} predicted combined construction and traffic noise contours for Alternative 2 are shown in Figures 10 through 12. The existing vegetation communities (see Figure 13) within the Biological Study Area that are encompassed within the predicted construction 70 dB(A) L_{eq} noise contours under Alternative 2 are summarized in Table 5.

Table 5 Project Alternative 2 Construction Noise Effects within Biological Study Area							
	Existing	Pile-driving		Construction		Paving	
Vegetation Community	Acres	Acres	Delta	Acres	Delta	Acres	Delta
Diegan Coastal Sage Scrub	0.1	1.3	1.2	1.1	1.0	0.9	0.8
Disturbed Diegan Coastal Sage Scrub	0.5	0.5	0.1	0.5	0.0	0.5	0.0
Disturbed Habitat	3.8	4.4	0.6	4.3	0.5	4.3	0.5
Disturbed Southern Riparian Scrub	1.8	2.7	0.8	2.5	0.7	2.5	0.6
Eucalyptus Woodland	0.6	1.0	0.4	1.0	0.4	1.0	0.4
Freshwater Marsh	0.4	0.7	0.4	0.6	0.3	0.6	0.3
Non-native Riparian	1.6	2.5	0.9	2.0	0.4	2.0	0.4
Open Water	2.5	3.8	1.3	3.3	0.8	3.2	0.7
Urban/developed	10.7	13.5	2.8	13.2	2.5	13.7	2.9
*Grand Total**	22.0	30.6	8.5	28.4	6.4	28.6	6.5
SOURCE: Attachment 3. * Any discrepancies in totals are due to rounding.							

6.5.2 Potential Effects

The net effect of construction noise associated with Alternative 2 would be the difference between the existing condition 70 dB(A) L_{eq} noise contour and predicted 70 dB(A) L_{eq} construction and traffic noise contour. Therefore, subtracting the existing condition from the predicted future construction and traffic 70 dB(A) L_{eq} noise contour results in the net effect of Alternative 2. Under Alternative 2, the future 70 dB(A) L_{eq} noise contour would encompass an additional 6.4 to 8.5 acres within the Biological Study Area. Based on the net change in acreage shown in Figures 10 through 12, Alternative 2 would result in a slight temporary increase in the noise levels within the surrounding habitat during construction activities.

7.0 Conclusions

7.1 Traffic (Operations) Noise

The project would not increase the capacity of the Coast Highway Bridge; thus, the changes in operation noise contours are due to the change in location and alignment of the Coast Highway Bridge. Operational noise contours for Alternative 1 and Alternative 2 were compared to the existing condition. The 70 dB(A) L_{eq} traffic noise contour associated with Alternative 1 would encompass 0.1 acre less of disturbed habitat and 0.2 acre less of urban/developed land. The 70 dB(A) L_{eq} traffic noise contour associated with Alternative 2 would encompass 0.2 acre more of Diegan coastal sage scrub, 0.1 acre less of disturbed Diegan coastal sage scrub, 0.2 acre less of disturbed habitat and 0.1 acre more of urban/developed land. As shown when comparing Figures 4 through 6, Alternatives 1 and 2 would result in only minimal adjustments to the existing ambient noise contours, and these changes in noise levels would not be audible. Alternative 1 and Alternative 2 would not result in a substantial permanent change in the noise levels within the surrounding habitat.

7.2 Construction Noise

During construction activities, the noise sources in the project area would include vehicle traffic on I-5 and construction equipment. When comparing the existing ambient noise levels shown in Figure 4 to the construction noise contours shown in Figure 7 through 12, construction activities under both alternatives would result in an increase in ambient noise levels throughout the Biological Study Area. Based on the net change in acreage, Alternatives 1 and 2 would result in a temporary increase in the noise levels within the surrounding habitat during construction activities.

8.0 List of Preparers

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2023 Coast Highway (Hill Street) over San Luis Rey River Replacement Natural Environment Study. April.

ATTACHMENTS

ATTACHMENT 1

SoundPLAN Data – Traffic Noise

7380 Coast Highway
(Hill Street) Bridge over San Luis Rey River Replacement
SoundPLAN Data - Traffic Noise

Stationing	ADT	Traffic values Vehicles type	Vehicle nar day		Speed	Control device	Constr. Speed	Affect. veh.	Road surface	Gradient Min / Max
km	Veh/24h		Veh/h		km/h		km/h	%		%
I-5 SB Inside Lanes		Traffic direction:	In entry direction							
0+256	86400	Total	-	3600	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Automobiles	-	3341	105	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Medium trucks	-	122	105	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Heavy trucks	-	137	89	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Buses	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Motorcycles	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+331	-					-	-	-	-	-
I- SB Outside Lane		Traffic direction:	In entry direction							
0+256	86400	Total	-	3600	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Automobiles	-	3341	105	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Medium trucks	-	122	105	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Heavy trucks	-	137	89	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Buses	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Motorcycles	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+338	-					-	-	-	-	-
I-5 NB Inside lane		Traffic direction:	In entry direction							
0+256	86400	Total	-	3600	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Automobiles	-	3341	105	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Medium trucks	-	122	105	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Heavy trucks	-	137	89	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Buses	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Motorcycles	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+344	-					-	-	-	-	-
I-5 NB Outside Lane		Traffic direction:	In entry direction							
0+256	86400	Total	-	3600	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Automobiles	-	3341	105	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Medium trucks	-	122	105	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Heavy trucks	-	137	89	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Buses	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Motorcycles	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+256	86400	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+335	-					-	-	-	-	-
Coast Highway SB		Traffic direction:	In entry direction							
0+000	23328	Total	-	972	-	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Automobiles	-	903	40	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Medium trucks	-	32	40	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Heavy trucks	-	37	40	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Buses	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Motorcycles	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+219	-					-	-	-	-	-
Coast Highway NB		Traffic direction:	In entry direction							
0+000	23328	Total	-	972	-	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Automobiles	-	903	40	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Medium trucks	-	32	40	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Heavy trucks	-	37	40	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Buses	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Motorcycles	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	23328	Auxiliary Vehicle	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+212	-					-	-	-	-	-

7380 Coast Highway
(Hill Street) Bridge over San Luis Rey River Replacement
SoundPLAN Data - Traffic Noise

No.	Receiver name	Coordinates (meters) X	Y	Height (meters)	Existing L(Aeq1h) dB(A)	Alternative 1 L(Aeq1h) dB(A)	Alternative 2 L(Aeq1h) dB(A)
1	1	464132.76	3674370.75	18.40	77.8	77.8	77.8
2	2	464148.01	3674382.88	20.16	75.1	75.1	75.1
3	3	464117.16	3674413.52	23.51	76.0	76.0	76.0
4	4	464098.52	3674448.01	26.30	77.8	77.8	77.8
5	5	464070.07	3674505.47	25.45	77.4	77.4	77.4
6	6	464062.04	3674518.64	25.46	77.6	77.6	77.6
7	7	463958.14	3674465.38	22.81	77.6	77.6	77.6
8	8	463978.78	3674409.98	22.23	76.3	76.4	76.3
8	8	463978.78	3674409.98	25.23	77.7	77.7	77.7
9	9	463919.95	3674370.28	19.13	67.6	67.6	67.5
10	10	463887.27	3674354.66	17.16	65.7	65.8	65.7
11	11a	463932.36	3674309.20	12.82	65.4	65.3	65.4
11	11a	463932.36	3674309.20	15.82	68.2	68.1	68.3
12	11b	464000.13	3674309.69	11.02	69.9	69.8	69.8
12	11b	464000.13	3674309.69	14.02	71.8	71.8	71.8
13	11c	464019.75	3674294.62	8.60	71.0	71.1	71.4
13	11c	464019.75	3674294.62	11.60	73.9	74.0	74.0
14	11d	463872.34	3674287.61	9.84	62.0	62.0	62.1
15	11e	463827.10	3674279.35	9.65	61.8	61.8	61.8
16	11f	463797.32	3674283.10	9.58	61.0	61.1	61.1
17	12a	464143.19	3674080.92	10.81	68.9	69.0	72.0
17	12a	464143.19	3674080.92	13.81	69.5	69.8	72.0
18	12b	464157.58	3674057.22	20.39	73.2	73.3	73.6
18	12b	464157.58	3674057.22	23.39	75.9	76.0	76.1
19	12c	464046.96	3673990.63	18.50	67.1	67.0	67.1
20	12d	464166.08	3673977.93	20.14	70.5	70.1	70.6
20	12d	464166.08	3673977.93	23.14	72.7	72.5	72.8
21	13	464197.60	3673962.62	20.64	71.0	71.5	71.1
22	14	464455.99	3674199.18	32.06	71.3	71.2	71.2
23	15	463991.43	3673946.17	9.01	60.0	59.6	59.8
24	16	463743.60	3674090.38	4.55	55.1	55.1	55.3
25	17	463734.10	3674174.14	4.57	52.7	53.2	53.4
26	18	463712.51	3674308.84	13.08	62.4	62.3	62.3

ATTACHMENT 2

SoundPLAN Data – Construction Noise

Source name	Reference	Level	Frequency spectrum [dB(A)]									Corrections		
				63	125	250	500	1	2	4	8	Cwall	CI	CT
			dB(A)	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	dB(A)	dB(A)	dB(A)
Bridge_Construction	Lw/unit	Piling	-									-	-	-
Bridge_Construction		Construction	114									-	-	-
Bridge_Construction		Paving	-									-	-	-
Bridge_Construction		Lmax	-									-	-	-
Paving	Lw/unit	Piling	-									-	-	-
Paving		Construction	-									-	-	-
Paving		Paving	113.6									-	-	-
Paving		Lmax	-									-	-	-
PileEngine	Lw/unit	Piling	87.6	68.8	79.8	82.3	80.8	81	76.2	70	60.9	-	-	-
PileEngine		Construction	-	-	-	-	-	-	-	-	-	-	-	-
PileEngine		Paving	-	-	-	-	-	-	-	-	-	-	-	-
PileEngine		Lmax	-	-	-	-	-	-	-	-	-	-	-	-
Piling	Lw/unit	Piling	119.6									-	-	-
Piling		Construction	-									-	-	-
Piling		Paving	-									-	-	-
Piling		Lmax	-									-	-	-
North Staging Area	Lw/unit	Piling	93.7									-	-	-
North Staging Area		Construction	96.7									-	-	-
North Staging Area		Paving	96.7									-	-	-
North Staging Area		Lmax	-									-	-	-
West Staging Area	Lw/unit	Piling	93.7									-	-	-
West Staging Area		Construction	96.7									-	-	-
West Staging Area		Paving	96.7									-	-	-
West Staging Area		Lmax	-									-	-	-
East Staging Area	Lw/unit	Piling	93.7									-	-	-
East Staging Area		Construction	96.7									-	-	-
East Staging Area		Paving	96.7									-	-	-
East Staging Area		Lmax	-									-	-	-

7380 Coast Highway
(Hill Street) Bridge over San Luis Rey River Replacement
SoundPLAN Data - Construction Noise

No.	Receiver name	Coordinates X (meters)	Coordinates Y (meters)	Height (meters)	Alternative 1 Piling	Alternative 1 Construction dB(A)	Alternative 1 Paving	Alternative 2 Piling	Alternative 2 Construction dB(A)	Alternative 2 Paving
1	1	464132.76	3674370.75	18.40	63.8	58.2	59.2	63.0	58.1	58.7
2	2	464148.01	3674382.88	20.16	62.7	57.1	58.0	62.0	56.9	57.7
3	3	464117.16	3674413.52	23.51	59.7	56.6	57.8	59.2	56.1	57.8
4	4	464098.52	3674448.01	26.30	57.6	56.3	57.4	57.5	55.2	57.5
5	5	464070.07	3674505.47	25.45	54.6	54.3	55.2	54.5	52.7	55.5
6	6	464062.04	3674518.64	25.46	54.2	53.9	54.7	54.4	52.1	55.0
7	7	463958.14	3674465.38	22.81	55.9	65.8	60.0	55.8	54.7	60.1
8	8	463978.78	3674409.98	22.23	58.5	68.2	70.1	58.3	63.5	72.1
9	9	463919.95	3674370.28	19.13	59.0	57.4	63.0	58.8	56.8	64.9
10	10	463882.62	3674354.61	17.00	57.8	54.9	57.5	57.8	54.6	58.7
11	11a	463932.36	3674309.20	12.82	61.6	56.4	57.4	61.6	57.3	58.3
12	11b	464000.13	3674309.69	11.02	65.5	62.9	63.8	65.5	65.2	65.6
13	11c	464019.75	3674294.62	8.60	67.7	64.9	65.5	67.9	67.6	67.2
14	11d	463872.34	3674287.61	9.84	59.0	54.5	55.5	59.0	54.8	56.3
15	11e	463827.10	3674279.35	9.65	57.5	53.0	53.6	57.5	53.1	54.4
16	11f	463797.32	3674283.10	9.58	56.5	51.9	52.5	56.4	52.0	53.2
17	12a	464143.19	3674080.92	10.81	72.7	74.8	68.2	69.3	72.7	71.6
18	12b	464157.58	3674057.22	20.39	66.1	71.2	70.2	64.9	77.3	77.2
19	12c	464046.96	3673990.63	18.50	60.9	55.5	54.8	60.6	57.2	56.1
20	12d	464166.08	3673977.93	20.14	58.0	57.0	57.3	57.9	69.7	64.5
21	13	464197.60	3673962.62	20.64	56.6	54.8	55.3	56.5	65.1	59.9
22	14	464455.99	3674199.18	32.06	53.6	48.9	49.6	53.2	49.8	49.9
23	15	463991.43	3673946.17	9.01	56.0	49.6	49.4	56.7	51.1	50.5
24	16	463743.60	3674090.38	4.55	51.9	47.4	47.9	51.7	48.2	48.6
25	17	463734.10	3674174.14	4.57	49.8	46.3	47.2	49.6	46.9	48.0
26	18	463712.51	3674308.84	13.08	54.1	49.2	49.6	54.0	49.1	50.3

ATTACHMENT 3

Noise Contour Acreage Calculations

Existing Traffic Noise	Acreage
60 db(A) Leq	**15.8**
Diegan Coastal Sage Scrub	0.6
Disturbed Diegan Coastal Sage Scrub	0.2
Disturbed Habitat	0.9
Disturbed Southern Riparian Scrub	1.3
Freshwater Marsh	2.2
Non-native Riparian	1.7
Open Water	4.0
Urban/Developed	4.9
65 db(A) Leq	**17.7**
Diegan Coastal Sage Scrub	1.6
Disturbed Diegan Coastal Sage Scrub	0.2
Disturbed Habitat	1.3
Disturbed Southern Riparian Scrub	1.8
Eucalyptus Woodland	0.5
Freshwater Marsh	0.7
Non-native Riparian	1.3
Open Water	2.1
Urban/Developed	8.3
70 db(A) Leq	**22.0**
Diegan Coastal Sage Scrub	0.1
Disturbed Diegan Coastal Sage Scrub	0.5
Disturbed Habitat	3.8
Disturbed Southern Riparian Scrub	1.8
Eucalyptus Woodland	0.6
Freshwater Marsh	0.4
Non-native Riparian	0.5
Non-native Riparian/Disturbed Habitat	1.1
Open Water	2.5
Urban/Developed	10.7
Grand Total	**55.5**

Traffic Noise	Acreage	Δ
60 db(A) Leq	**15.8**	**0.1**
Diegan Coastal Sage Scrub	0.6	0.0
Disturbed Diegan Coastal Sage Scrub	0.2	0.0
Disturbed Habitat	0.9	0.0
Disturbed Southern Riparian Scrub	1.3	0.0
Freshwater Marsh	2.2	0.0
Non-native Riparian	1.7	0.0
Open Water	4.0	0.0
Urban/Developed	4.9	0.0
65 db(A) Leq	**17.8**	**0.1**
Diegan Coastal Sage Scrub	1.5	-0.1
Disturbed Diegan Coastal Sage Scrub	0.2	0.0
Disturbed Habitat	1.3	0.0
Disturbed Southern Riparian Scrub	1.8	0.0
Eucalyptus Woodland	0.5	0.0
Freshwater Marsh	0.7	0.0
Non-native Riparian	1.3	0.0
Open Water	2.1	-0.1
Urban/Developed	8.5	0.2
70 db(A) Leq	**21.8**	**-0.2**
Diegan Coastal Sage Scrub	0.1	0.0
Disturbed Diegan Coastal Sage Scrub	0.4	0.0
Disturbed Habitat	3.8	-0.1
Disturbed Southern Riparian Scrub	1.9	0.0
Eucalyptus Woodland	0.6	0.0
Freshwater Marsh	0.4	0.0
Non-native Riparian	0.5	0.0
Non-native Riparian/Disturbed Habitat	1.1	0.0
Open Water	2.5	0.0
Urban/Developed	10.5	-0.2
Grand Total	**55.4**	**0.0**

Exist>60	Alt1> 60	Δ
55.5	55.4	0.0
2.3	2.3	0.0
0.8	0.8	0.0
6.0	6.0	0.0
5.0	5.0	0.0
3.2	3.2	0.0
2.7	2.8	0.0
5.8	5.7	0.0
8.2	8.1	-0.1

Existing Traffic Noise	Acreage
60 db(A) Leq	**15.8**
Diegan Coastal Sage Scrub	0.6
Disturbed Diegan Coastal Sage Scrub	0.2
Disturbed Habitat	0.9
Disturbed Southern Riparian Scrub	1.3
Freshwater Marsh	2.2
Non-native Riparian	1.7
Open Water	4.0
Urban/Developed	4.9
65 db(A) Leq	**17.7**
Diegan Coastal Sage Scrub	1.6
Disturbed Diegan Coastal Sage Scrub	0.2
Disturbed Habitat	1.3
Disturbed Southern Riparian Scrub	1.8
Eucalyptus Woodland	0.5
Freshwater Marsh	0.7
Non-native Riparian	1.3
Open Water	2.1
Urban/Developed	8.3
70 db(A) Leq	**22.0**
Diegan Coastal Sage Scrub	0.1
Disturbed Diegan Coastal Sage Scrub	0.5
Disturbed Habitat	3.8
Disturbed Southern Riparian Scrub	1.8
Eucalyptus Woodland	0.6
Freshwater Marsh	0.4
Non-native Riparian	0.5
Non-native Riparian/Disturbed Habitat	1.1
Open Water	2.5
Urban/Developed	10.7
Grand Total	**55.5**

Traffic Noise	Acreage	Δ
60 db(A) Leq	**15.6**	**-0.1**
Diegan Coastal Sage Scrub	0.5	0.0
Disturbed Diegan Coastal Sage Scrub	0.2	0.0
Disturbed Habitat	0.9	0.0
Disturbed Southern Riparian Scrub	1.3	0.0
Freshwater Marsh	2.2	0.0
Non-native Riparian	1.7	0.0
Open Water	3.9	-0.1
Urban/Developed	4.9	0.0
65 db(A) Leq	**17.5**	**-0.2**
Diegan Coastal Sage Scrub	1.4	-0.2
Disturbed Diegan Coastal Sage Scrub	0.2	0.1
Disturbed Habitat	1.4	0.2
Disturbed Southern Riparian Scrub	1.8	0.0
Eucalyptus Woodland	0.5	0.0
Freshwater Marsh	0.7	0.0
Non-native Riparian	1.2	-0.1
Open Water	2.0	-0.1
Urban/Developed	8.2	-0.1
70 db(A) Leq	**22.2**	**0.2**
Diegan Coastal Sage Scrub	0.3	0.2
Disturbed Diegan Coastal Sage Scrub	0.4	-0.1
Disturbed Habitat	3.7	-0.2
Disturbed Southern Riparian Scrub	1.9	0.0
Eucalyptus Woodland	0.6	0.0
Freshwater Marsh	0.4	0.0
Non-native Riparian	0.5	0.0
Non-native Riparian/Disturbed Habitat	1.1	0.0
Open Water	2.5	0.0
Urban/Developed	10.8	0.1
Grand Total	**55.3**	**-0.2**

Exist>60	Alt1> 60	Δ
55.5	55.3	-0.2
2.3	2.3	0.0
0.8	0.8	0.0
6.0	6.0	0.0
5.0	5.0	0.0
3.2	3.2	0.0
2.7	2.8	0.0
5.8	5.6	-0.1
8.2	8.1	-0.1

Existing Traffic Noise	Acreage	Pile Driving Noise	Acreage	Δ
60 db(A) Leq	**15.8**	**60 db(A) Leq**	**10.0**	**-5.8**
Diegan Coastal Sage Scrub	0.6	Diegan Coastal Sage Scrub	0.0	-0.6
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.0	-0.2
Disturbed Habitat	0.9	Disturbed Habitat	0.2	-0.8
Disturbed Southern Riparian Scrub	1.3	Disturbed Southern Riparian Scrub	0.0	-1.3
Freshwater Marsh	2.2	Freshwater Marsh	1.2	-1.0
Non-native Riparian	1.7	Non-native Riparian	0.6	-1.1
Open Water	4.0	Open Water	6.6	2.6
Urban/Developed	4.9	Urban/Developed	1.5	-3.5
65 db(A) Leq	**17.7**	**65 db(A) Leq**	**20.6**	**2.9**
Diegan Coastal Sage Scrub	1.6	Diegan Coastal Sage Scrub	0.8	-0.7
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.2	0.1
Disturbed Habitat	1.3	Disturbed Habitat	1.4	0.1
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.3	0.5
Eucalyptus Woodland	0.5	Eucalyptus Woodland	0.1	-0.4
Freshwater Marsh	0.7	Freshwater Marsh	1.3	0.7
Non-native Riparian	1.3	Non-native Riparian	1.7	0.4
Open Water	2.1	Open Water	3.6	1.4
Urban/Developed	8.3	Urban/Developed	9.2	1.0
70 db(A) Leq	**22.0**	**70 db(A) Leq**	**30.3**	**8.2**
Diegan Coastal Sage Scrub	0.1	Diegan Coastal Sage Scrub	1.4	1.3
Disturbed Diegan Coastal Sage Scrub	0.5	Disturbed Diegan Coastal Sage Scrub	0.6	0.1
Disturbed Habitat	3.8	Disturbed Habitat	4.5	0.6
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.7	0.8
Eucalyptus Woodland	0.6	Eucalyptus Woodland	1.0	0.4
Freshwater Marsh	0.4	Freshwater Marsh	0.7	0.4
Non-native Riparian	0.5	Non-native Riparian	1.3	0.8
Non-native Riparian/Disturbed Habitat	1.1	Non-native Riparian/Disturbed Habitat	1.1	0.0
Open Water	2.5	Open Water	3.7	1.2
Urban/Developed	10.7	Urban/Developed	13.2	2.5
Grand Total	**55.5**	**Grand Total**	**60.8**	**5.3**

Existing Traffic Noise	Acreage	Construction Noise	Acreage	Δ
60 db(A) Leq	**15.8**	**60 db(A) Leq**	**10.8**	**-5.0**
Diegan Coastal Sage Scrub	0.6	Diegan Coastal Sage Scrub	0.0	-0.6
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.0	-0.2
Disturbed Habitat	0.9	Disturbed Habitat	0.2	-0.7
Disturbed Southern Riparian Scrub	1.3	Disturbed Southern Riparian Scrub	0.0	-1.3
Freshwater Marsh	2.2	Freshwater Marsh	1.6	-0.5
Non-native Riparian	1.7	Non-native Riparian	0.7	-1.0
Open Water	4.0	Open Water	6.6	2.6
Urban/Developed	4.9	Urban/Developed	1.7	-3.2
65 db(A) Leq	**17.7**	**65 db(A) Leq**	**21.6**	**3.9**
Diegan Coastal Sage Scrub	1.6	Diegan Coastal Sage Scrub	1.3	-0.3
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.3	0.1
Disturbed Habitat	1.3	Disturbed Habitat	1.5	0.2
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.5	0.7
Eucalyptus Woodland	0.5	Eucalyptus Woodland	0.1	-0.4
Freshwater Marsh	0.7	Freshwater Marsh	1.0	0.3
Non-native Riparian	1.3	Non-native Riparian	2.0	0.7
Open Water	2.1	Open Water	3.6	1.4
Urban/Developed	8.3	Urban/Developed	9.5	1.2
70 db(A) Leq	**22.0**	**70 db(A) Leq**	**27.9**	**5.8**
Diegan Coastal Sage Scrub	0.1	Diegan Coastal Sage Scrub	1.0	0.9
Disturbed Diegan Coastal Sage Scrub	0.5	Disturbed Diegan Coastal Sage Scrub	0.6	0.1
Disturbed Habitat	3.8	Disturbed Habitat	4.4	0.5
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.5	0.6
Eucalyptus Woodland	0.6	Eucalyptus Woodland	1.0	0.4
Freshwater Marsh	0.4	Freshwater Marsh	0.6	0.3
Non-native Riparian	0.5	Non-native Riparian	0.8	0.3
Non-native Riparian/Disturbed Habitat	1.1	Non-native Riparian/Disturbed Habitat	1.1	0.0
Open Water	2.5	Open Water	3.2	0.7
Urban/Developed	10.7	Urban/Developed	12.7	2.0
Grand Total	**55.5**	**Grand Total**	**60.3**	**4.8**

Existing Traffic Noise	Acreage	Paving Noise	Acreage	Δ
60 db(A) Leq	**15.8**	**60 db(A) Leq**	**10.8**	**-4.9**
Diegan Coastal Sage Scrub	0.6	Diegan Coastal Sage Scrub	0.0	-0.6
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.0	-0.2
Disturbed Habitat	0.9	Disturbed Habitat	0.2	-0.7
Disturbed Southern Riparian Scrub	1.3	Disturbed Southern Riparian Scrub	0.0	-1.3
Freshwater Marsh	2.2	Freshwater Marsh	1.6	-0.5
Non-native Riparian	1.7	Non-native Riparian	0.7	-1.0
Open Water	4.0	Open Water	6.6	2.6
Urban/Developed	4.9	Urban/Developed	1.7	-3.2
65 db(A) Leq	**17.7**	**65 db(A) Leq**	**21.5**	**3.9**
Diegan Coastal Sage Scrub	1.6	Diegan Coastal Sage Scrub	1.5	-0.1
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.3	0.1
Disturbed Habitat	1.3	Disturbed Habitat	1.5	0.2
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.5	0.7
Eucalyptus Woodland	0.5	Eucalyptus Woodland	0.1	-0.4
Freshwater Marsh	0.7	Freshwater Marsh	1.0	0.3
Non-native Riparian	1.3	Non-native Riparian	2.0	0.7
Open Water	2.1	Open Water	3.6	1.4
Urban/Developed	8.3	Urban/Developed	9.1	0.9
70 db(A) Leq	**22.0**	**70 db(A) Leq**	**27.9**	**5.8**
Diegan Coastal Sage Scrub	0.1	Diegan Coastal Sage Scrub	0.8	0.7
Disturbed Diegan Coastal Sage Scrub	0.5	Disturbed Diegan Coastal Sage Scrub	0.5	0.0
Disturbed Habitat	3.8	Disturbed Habitat	4.3	0.5
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.5	0.6
Eucalyptus Woodland	0.6	Eucalyptus Woodland	1.0	0.4
Freshwater Marsh	0.4	Freshwater Marsh	0.6	0.3
Non-native Riparian	0.5	Non-native Riparian	0.8	0.3
Non-native Riparian/Disturbed Habitat	1.1	Non-native Riparian/Disturbed Habitat	1.1	0.0
Open Water	2.5	Open Water	3.2	0.7
Urban/Developed	10.7	Urban/Developed	13.0	2.3
Grand Total	**55.5**	**Grand Total**	**60.3**	**4.8**

Existing Traffic Noise	Acreage	Pile Driving Noise	Acreage	Δ
60 db(A) Leq	**15.8**	**60 db(A) Leq**	**9.9**	**-5.9**
Diegan Coastal Sage Scrub	0.6	Diegan Coastal Sage Scrub	0.0	-0.6
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.0	-0.2
Disturbed Habitat	0.9	Disturbed Habitat	0.2	-0.8
Disturbed Southern Riparian Scrub	1.3	Disturbed Southern Riparian Scrub	0.0	-0.1
Freshwater Marsh	2.2	Freshwater Marsh	1.2	-1.7
Non-native Riparian	1.7	Non-native Riparian	0.5	4.9
Open Water	4.0	Open Water	6.6	-2.5
Urban/Developed	4.9	Urban/Developed	1.4	-4.9
65 db(A) Leq	**17.7**	**65 db(A) Leq**	**20.4**	**2.7**
Diegan Coastal Sage Scrub	1.6	Diegan Coastal Sage Scrub	0.9	-0.6
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.3	0.1
Disturbed Habitat	1.3	Disturbed Habitat	1.4	0.2
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.3	0.5
Eucalyptus Woodland	0.5	Eucalyptus Woodland	0.1	-0.4
Freshwater Marsh	0.7	Freshwater Marsh	1.4	0.7
Non-native Riparian	1.3	Non-native Riparian	1.6	0.3
Open Water	2.1	Open Water	3.5	1.3
Urban/Developed	8.3	Urban/Developed	8.9	0.7
70 db(A) Leq	**22.0**	**70 db(A) Leq**	**30.6**	**8.5**
Diegan Coastal Sage Scrub	0.1	Diegan Coastal Sage Scrub	1.3	1.2
Disturbed Diegan Coastal Sage Scrub	0.5	Disturbed Diegan Coastal Sage Scrub	0.5	0.1
Disturbed Habitat	3.8	Disturbed Habitat	4.4	0.6
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.7	0.8
Eucalyptus Woodland	0.6	Eucalyptus Woodland	1.0	0.4
Freshwater Marsh	0.4	Freshwater Marsh	0.7	0.4
Non-native Riparian	0.5	Non-native Riparian	1.4	0.9
Non-native Riparian/Disturbed Habitat	1.1	Non-native Riparian/Disturbed Habitat	1.1	0.0
Open Water	2.5	Open Water	3.8	1.3
Urban/Developed	10.7	Urban/Developed	13.5	2.8
Grand Total	**55.5**	**Grand Total**	**60.8**	**5.3**

Existing Traffic Noise	Acreage	Construction Noise	Acreage	Δ
60 db(A) Leq	**15.8**	**60 db(A) Leq**	**10.8**	**-4.9**
Diegan Coastal Sage Scrub	0.6	Diegan Coastal Sage Scrub	0.0	-0.6
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.0	-0.2
Disturbed Habitat	0.9	Disturbed Habitat	0.2	-0.7
Disturbed Southern Riparian Scrub	1.3	Disturbed Southern Riparian Scrub	0.0	0.3
Freshwater Marsh	2.2	Freshwater Marsh	1.6	-1.5
Non-native Riparian	1.7	Non-native Riparian	0.7	4.9
Open Water	4.0	Open Water	6.6	-2.2
Urban/Developed	4.9	Urban/Developed	1.7	-4.9
65 db(A) Leq	**17.7**	**65 db(A) Leq**	**21.0**	**3.3**
Diegan Coastal Sage Scrub	1.6	Diegan Coastal Sage Scrub	1.2	-0.4
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.4	0.2
Disturbed Habitat	1.3	Disturbed Habitat	1.5	0.3
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.5	0.7
Eucalyptus Woodland	0.5	Eucalyptus Woodland	0.1	-0.4
Freshwater Marsh	0.7	Freshwater Marsh	1.0	0.3
Non-native Riparian	1.3	Non-native Riparian	1.9	0.6
Open Water	2.1	Open Water	3.5	1.3
Urban/Developed	8.3	Urban/Developed	9.0	0.7
70 db(A) Leq	**22.0**	**70 db(A) Leq**	**28.4**	**6.4**
Diegan Coastal Sage Scrub	0.1	Diegan Coastal Sage Scrub	1.1	1.0
Disturbed Diegan Coastal Sage Scrub	0.5	Disturbed Diegan Coastal Sage Scrub	0.5	0.0
Disturbed Habitat	3.8	Disturbed Habitat	4.3	0.5
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.5	0.7
Eucalyptus Woodland	0.6	Eucalyptus Woodland	1.0	0.4
Freshwater Marsh	0.4	Freshwater Marsh	0.6	0.3
Non-native Riparian	0.5	Non-native Riparian	0.9	0.4
Non-native Riparian/Disturbed Habitat	1.1	Non-native Riparian/Disturbed Habitat	1.1	0.0
Open Water	2.5	Open Water	3.3	0.8
Urban/Developed	10.7	Urban/Developed	13.2	2.5
Grand Total	**55.5**	**Grand Total**	**60.3**	**4.8**

Existing Traffic Noise	Acreage	Paving Noise	Acreage	Δ
60 db(A) Leq	**15.8**	**60 db(A) Leq**	**10.8**	**-4.9**
Diegan Coastal Sage Scrub	0.6	Diegan Coastal Sage Scrub	0.0	-0.6
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.0	-0.2
Disturbed Habitat	0.9	Disturbed Habitat	0.2	-0.7
Disturbed Southern Riparian Scrub	1.3	Disturbed Southern Riparian Scrub	0.0	0.3
Freshwater Marsh	2.2	Freshwater Marsh	1.6	-1.5
Non-native Riparian	1.7	Non-native Riparian	0.7	4.9
Open Water	4.0	Open Water	6.6	-2.3
Urban/Developed	4.9	Urban/Developed	1.7	-4.9
65 db(A) Leq	**17.7**	**65 db(A) Leq**	**20.8**	**3.2**
Diegan Coastal Sage Scrub	1.6	Diegan Coastal Sage Scrub	1.4	-0.2
Disturbed Diegan Coastal Sage Scrub	0.2	Disturbed Diegan Coastal Sage Scrub	0.4	0.2
Disturbed Habitat	1.3	Disturbed Habitat	1.5	0.3
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.5	0.7
Eucalyptus Woodland	0.5	Eucalyptus Woodland	0.1	-0.4
Freshwater Marsh	0.7	Freshwater Marsh	1.0	0.3
Non-native Riparian	1.3	Non-native Riparian	1.9	0.6
Open Water	2.1	Open Water	3.5	1.4
Urban/Developed	8.3	Urban/Developed	8.6	0.3
70 db(A) Leq	**22.0**	**70 db(A) Leq**	**28.6**	**6.5**
Diegan Coastal Sage Scrub	0.1	Diegan Coastal Sage Scrub	0.9	0.8
Disturbed Diegan Coastal Sage Scrub	0.5	Disturbed Diegan Coastal Sage Scrub	0.5	0.0
Disturbed Habitat	3.8	Disturbed Habitat	4.3	0.5
Disturbed Southern Riparian Scrub	1.8	Disturbed Southern Riparian Scrub	2.5	0.6
Eucalyptus Woodland	0.6	Eucalyptus Woodland	1.0	0.4
Freshwater Marsh	0.4	Freshwater Marsh	0.6	0.3
Non-native Riparian	0.5	Non-native Riparian	0.8	0.4
Non-native Riparian/Disturbed Habitat	1.1	Non-native Riparian/Disturbed Habitat	1.1	0.0
Open Water	2.5	Open Water	3.2	0.7
Urban/Developed	10.7	Urban/Developed	13.7	2.9
Grand Total	**55.5**	**Grand Total**	**60.3**	**4.8**

Appendix L – Least Bell's Vireo Survey Reports

BUSBY
Biological Services

August 9, 2021

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: SOUTHWESTERN WILLOW FLYCATCHER AND LEAST BELL'S VIREO 2021 SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY (HILL STREET) BRIDGE OVER SAN LUIS REY RIVER REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally and state-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and least Bell's vireo (*Vireo bellii pusillus*) that were conducted in 2021 by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2). The 2021 surveys were completed to update the results of the surveys conducted in 2017 for the Proposed Project.

PROJECT INFORMATION

The Proposed Project includes replacement of the existing Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. RECON provided BBS with a survey area based on the preliminary, estimated Proposed Project impact area, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (Attachment 1: Figure 3).

The main portion of the Proposed Project includes Coast Highway Bridge that is immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California

(Attachment 1: Figures 1 through 3). Other project components (e.g., roadway approaches, construction staging and access areas) extend north and south along Coast Highway and east along the north side of the San Luis Rey River. The Proposed Project is located within Township 11 South, Range 5 West, and in Sections 22 and 23 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (Attachment 1: Figure 3). Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

SPECIES INFORMATION

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a small, olive-colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of willow flycatcher, it is distinguished by breeding distribution, song, call and plumage. The southwestern willow flycatcher is a neotropic migrant that is endemic to the Americas and is a summer breeding resident in the southwestern U.S., specifically within Arizona, New Mexico, southern California, southern portions of Nevada and Utah, southwestern Colorado, far western Texas, and extreme northwestern Mexico (U.S. Fish and Wildlife Service [USFWS] 2002). It is the only subspecies of willow flycatcher that is known to breed in southern California, ranging from Kern County to San Diego County. This species arrives on breeding territories by late April to early May and migrates southward again to wintering areas in southern Mexico, Central America, and northern South America in August and September. The two other subspecies of willow flycatcher (e.g., *E. t. brewsteri* and *E. t. adastus*) migrate through southern California in the spring and fall to and from their breeding grounds in northern California.

The southwestern willow flycatcher typically breeds in patchy to dense, well-developed riparian woodlands that occur along streams, rivers, lakes, or other wetlands, are below 8,000 feet in elevation, and provide surface water and/or saturated soil during mid-summer (Sedgwick 2000; Sogge et al. 1997; USFWS 2002). Typical breeding habitat for southwestern willow flycatcher is composed of native riparian plant species such as willows (*Salix* spp.) and mule fat (*Baccharis salicifolia*) in patches at least two acres in size or in linear-shaped habitats at least 10 meters (33 feet) wide (Sogge et al. 1997). However, the species has also been observed successfully breeding in riparian communities dominated by extensive patches of invasive, non-native species such as tamarisk (*Tamarix ramosissima*) and Russian olive (*Eleagnus angustifolia*) (USFWS 2002).

Once a common species in southern California, in the early 20th century the southwestern willow flycatcher population collapsed from the combined effects of habitat loss and nest parasitism by brown-headed cowbird (*Molothrus ater*; Craig and Williams 1998; Garrett and Dunn 1981; Sedgwick 2000; Unitt 2004; USFWS 2002), which is an obligate brood parasite that has been documented to lay its eggs in the nests of over 200 different bird species, often causing death to some or all of the host species eggs and nestlings (Eastzer et al. 1980). As of 2003, in southern California, the southwestern willow flycatcher bred locally at 75 known sites within 18 drainages from San Diego to Santa Barbara and Kern counties and the Owens Valley, most notably within the San Luis Rey, Santa Ana, Santa Ynez, Owens, and Kern rivers, which supported approximately 70 percent of known territories (Sogge et. al. 2003).

Least Bell's Vireo

The least Bell's vireo is a small, olive-gray colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of Bell's Vireo, the least Bell's vireo is endemic to California and Baja California, Mexico. This highly migratory species arrives in California in mid-March and departs by late September to fly south to wintering grounds near the tip of Baja California, Mexico. This species formally bred in lowland riparian habitat ranging from coastal Southern California through the Sacramento and San Joaquin Valleys as far north as Redbluff, and other scattered locations east of the Sierra Nevada (United States Fish and Wildlife Service [USFWS] 1998; Grinnell and Miller 1986).

The least Bell's vireo is dependent upon riparian habitat during the breeding season and prefers willow-dominated woodland or scrub that typically exists along streams and rivers. Other habitat types used include *Baccharis* scrub, mixed oak/willow woodland, mesquite woodland, and elderberry scrub. Habitat characteristics that appear to be essential for vireo occupation include dense cover from 3 to 6 feet in height for nesting and foraging, and a stratified canopy providing both foraging habitat and song perches for territorial advertisement.

By the time least Bell's vireo was listed by the California Department of Fish and Wildlife (CDFW) in 1984 it had been extirpated from much of its former range and was restricted to eight counties south from Santa Barbara with just 300 pairs statewide (Unitt 2004). Declines were caused by widespread clearing of riparian habitat combined with brood parasitism by brown-headed cowbirds, whose increase in California was as dramatic as the species' decline. Currently, with restriction of habitat destruction, extensive cowbird trapping, and protection from the federal and state Endangered Species Acts, populations have recovered in some areas of cismontane southern California. Populations are expanding into former ranges, with the northernmost sighting from Santa Clara County, California (Brown 1993, Kus 2002). San Diego County holds the largest breeding population of least Bell's vireo in the state, where it is a fairly common breeder in appropriate habitats, primarily in the coastal lowlands (Unitt 2004).

METHODS

Methods used for the habitat assessment and focused surveys are described, below.

Habitat Assessment

Prior to initiating the focused surveys for southwestern willow flycatcher and least Bell's vireo, a focused habitat assessment was conducted by a qualified biologist to identify locations of suitable southwestern willow flycatcher and least Bell's vireo habitat (i.e., willow-dominated woodland and scrub along the San Luis Rey River) within the estimated Proposed Project impact area and surrounding 500-foot buffer (Attachment 1: Figure 3). The biologist conducted the habitat assessment by walking throughout the Proposed Project impact area and buffer and assessing the vegetation communities based on plant species composition, height, and density for their potential to support the southwestern willow flycatcher and least Bell's vireo. The biologist drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems (GIS) specialist using ArcGIS software. These previously mapped southwestern willow flycatcher and least Bell's vireo suitable habitat polygons were verified during the first protocol surveys for the species in 2021.

Focused Surveys

A USFWS-permitted biologist conducted focused, protocol-level surveys for the southwestern willow flycatcher and least Bell's vireo in accordance with the current USFWS-accepted survey protocols, titled *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* and *Least Bell's Vireo Survey Guidelines*, and as summarized below (Sogge et al. 2010; USFWS 2001). Sensitive species detections were recorded electronically using a hand-held Global Positioning Systems (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

Southwestern Willow Flycatcher

The southwestern willow flycatcher survey protocol entails intensive surveys of suitable habitat as well as detailed datasheets documenting detections, habitat, and other information about the southwestern willow flycatcher. Five surveys were conducted during the three survey periods outlined in the protocol, including one survey conducted during the first period (May 15 to June 1), two surveys conducted during the second period (June 1 to June 24), and two surveys conducted during the third period (June 24 to July 17). All surveys were conducted between approximately 0530 and 1030 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the southwestern willow flycatcher.

The USFWS Willow Flycatcher Survey and Detection Form was completed during each survey. Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the southwestern willow flycatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded southwestern willow flycatcher vocalization playbacks were used only to elicit initial calls from the southwestern willow flycatcher and were not used

frequently or to elicit further behaviors. Pre-recorded vocalizations were played for a period of 10 to 15 seconds and were generally repeated approximately every 70 to 100 feet within the surveyed habitat. No more than approximately 0.6 mile of suitable habitat was surveyed per day by the USFWS-permitted biologist.

Least Bell's Vireo

The least Bell's vireo survey protocol includes a total of eight surveys that are conducted at least 10 days apart during the protocol survey window of April 10 to July 31. All surveys were conducted between approximately dawn and 1100 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the least Bell's vireo. Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the least Bell's vireo. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas. No more than approximately 3 linear kilometers (1.8 miles; 50 hectares) of suitable habitat was surveyed per day, per the protocol.

RESULTS

The results of the habitat assessment and focused, protocol-level surveys for southwestern willow flycatcher and least Bell's vireo are presented in this section.

Habitat Assessment

A habitat assessment was conducted within the Proposed Project impact area and 500-foot buffer by RECON on March 7, 2017 (Attachment 1: Figure 3). RECON biologists updated the vegetation mapping in 2021, updating the area of suitable habitat for the species. An approximate total of 8.46 acres of suitable southwestern willow flycatcher and least Bell's vireo habitat was identified within the Proposed Project impact area and surrounding 500-foot buffer, and included in the 2021 surveys. Potentially suitable habitat that required surveys includes non-native riparian and disturbed southern riparian scrub. This potentially suitable habitat ranges from low to moderate quality for southwestern willow flycatcher and least Bell's vireo and is briefly described below.

Approximately 3.48 acres of non-native riparian occurs along the north bank of the San Luis Rey River and contains a dense canopy ranging in height from approximately 15 to 30 feet and is dominated by non-native plant species such as Brazilian pepper tree (*Schinus terebinthifolius*), tamarisk, giant reed (*Arundo donax*), and Canary Island date palm (*Phoenix canariensis*), with scattered native species such as Hinds' willow (*Salix exigua* var. *hindsiana*), arroyo willow (*Salix lasiolepis*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*). The understory ranges from open to dense vegetation and is dominated by native species such as mule fat (*Baccharis salicifolia*), southern cattail (*Typha domingensis*), California bulrush (*Schoenoplectus californicus*), western poison oak (*Toxicodendron diversilobum*), yerba mansa (*Anemopsis californica*), and coyote brush (*Baccharis pilularis*), and non-native species such as castor bean (*Ricinus communis*) and garden nasturtium (*Tropaeolum majus*). Non-native riparian provides low quality habitat for the southwestern willow flycatcher and least Bell's vireo, because it contains a high level of

disturbance and high density of non-native plant species not typically associated with the species' preferred habitat.

Approximately 4.98 acres of disturbed southern riparian scrub occurs in patches in the survey area, predominantly on the north and south banks of the San Luis Rey River. This vegetation community contains a dense canopy ranging in height from approximately 15 to 20 feet and is dominated by native species such as Hinds' willow and arroyo willow, with scattered invasive, non-native species such as tamarisk and giant reed. The understory ranges from open to dense vegetation and is dominated by native species such as mule fat, southern cattail, California bulrush, western poison oak, and coyote brush. In addition, a small, disjunct patch of disturbed southern riparian scrub occurs south of the San Luis Rey River and the bike path. The disturbed southern riparian scrub within the survey area provides moderate quality habitat for the southwestern willow flycatcher and least Bell's vireo, because it is dominated by native riparian species typically associated with the species but also contains a low to moderate level of disturbance and a low to moderate density of non-native plant species not typically associated with the species' preferred habitat.

Focused Surveys

The focused, protocol-level surveys were conducted within approximately 8.46 acres of potentially suitable habitat within the Proposed Project impact area and surrounding 500-foot buffer between May 21 and July 9, 2021 for southwestern willow flycatcher and between April 20 and July 9, 2021 for least Bell's vireo. No southwestern willow flycatcher or least Bell's vireo were detected within the Proposed Project impact area or the 500-foot survey buffer. Surveys were conducted during appropriate weather conditions by USFWS-permitted BBS biologists Erik LaCoste (TE-837308-6), Charles Vettes (TE-20160B-2), and Darin Busby (TE-115373-4). Dates, times, weather conditions, and surveyors for the focused surveys are provided in Tables 1 and 2, below.

Table 1. Southwestern Willow Flycatcher Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precip	
1	5/21/21	Start	0600	58	2-4	100	0	E. LaCoste
		End	0800	60	3-6	60	0	
2	6/01/21	Start	0700	61	0-1	100	0	E. LaCoste
		End	0900	63	2-4	100	0	C. Vettes
3	6/15/21	Start	0600	64	1-3	100	0	C. Vettes
		End	0800	66	2-4	60	0	
4	6/25/21	Start	0530	61	0-1	100	0	C. Vettes
		End	0730	62	1-3	100	0	
5	7/09/21	Start	0600	71	0-2	100	0	C. Vettes
		End	0800	76	1-4	35	0	

Table 2. Least Bell's Vireo Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precipitation	
1	4/20/21	Start	0820	59	2-5	100	0	D. Busby C. Vettes
		End	1020	63	3-7	0	0	
2	4/30/21	Start	0800	67	0-1	0	0	E. LaCoste C. Vettes
		End	1000	74	2-4	0	0	
3	5/11/21	Start	0815	61	1-3	100	0	E. LaCoste C. Vettes
		End	1015	62	2-4	100	0	
4	5/21/21	Start	0800	60	3-6	60	0	E. LaCoste
		End	1000	65	3-6	20	0	
5	6/1/21	Start	0900	61	2-4	100	0	E. LaCoste C. Vettes
		End	1100	63	3-5	50	0	
6	6/15/21	Start	0800	66	2-4	60	0	E. LaCoste
		End	1000	68	5-7	30	0	
7	6/25/21	Start	0730	62	1-3	100	0	C. Vettes
		End	0930	63	1-3	100	0	
8	7/9/21	Start	0800	68	1-4	35	0	C. Vettes
		End	1000	70	2-6	10	0	

A total of 63 wildlife species were detected during the focused surveys (Attachment 2). One sensitive species, yellow warbler (*Setophaga petechia*), a CDFW species of special concern, was detected during the focused surveys (Attachment 1: Figure 3). It should be noted that the yellow warbler location in Figure 3 (Attachment 1) reflects repeated detections of the same individual(s) from one survey to the next and is not intended to represent the quantity of individuals present but rather a territory for this pair or individual. Attachment 5 includes the completed USFWS Willow Flycatcher Survey and Detection Form. The survey data will be submitted to the California Natural Diversity Database (CNDDB) by RECON Environmental, Inc. by the end of 2021.

SUMMARY

No southwestern willow flycatcher or least Bell's vireo were detected within or adjacent to the Proposed Project survey area during the focused, protocol-level surveys conducted for the species during the 2021 breeding season. However, these species have potential to occur, as the patches of potentially suitable habitat within the Proposed Project impact area and 500-foot survey buffer provide low to moderate quality habitat for this species. Although this habitat is largely disturbed and contains non-native plant species not typically associated with the species' preferred habitat, the habitat within the survey area is contiguous with larger swaths of potentially suitable habitat east of the survey area.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Charles Vettes at charles@busbybiological.com or (559) 707-0548 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.

cc: Wendy Loeffler, RECON Environmental
Perry Schacht, Moffatt & Nichol
Matt Burgard, Dewberry | Drake Haglan
David Toschak, City of Oceanside
Richard Greenbauer, City of Oceanside
Kevin Hovey, Caltrans

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected
Attachment 3: Willow Flycatcher Survey and Detection Form

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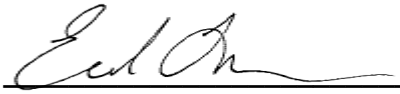
U.S. Geological Survey (USGS)
1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1997)

PROJECT BIOLOGIST SIGNATURE PAGE

The project biologists performing focused, protocol-level southwestern willow flycatcher and least Bell's vireo surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) were qualified to survey for these species. The undersigned project biologists certify this report to be a complete and accurate account of the findings and conclusions of surveys for southwestern willow flycatcher and least Bell's vireo conducted for the Proposed Project during spring 2021.



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.
ESA Permit Number TE-115373-4



Erik LaCoste
Senior Biologist
Busby Biological Services, Inc.
ESA Permit Number TE-027736-6



Charles Vettes
Biologist
Busby Biological Services, Inc.
ESA Permit Number TE-20160B-2

ATTACHMENT 1 – Figures



Project Location

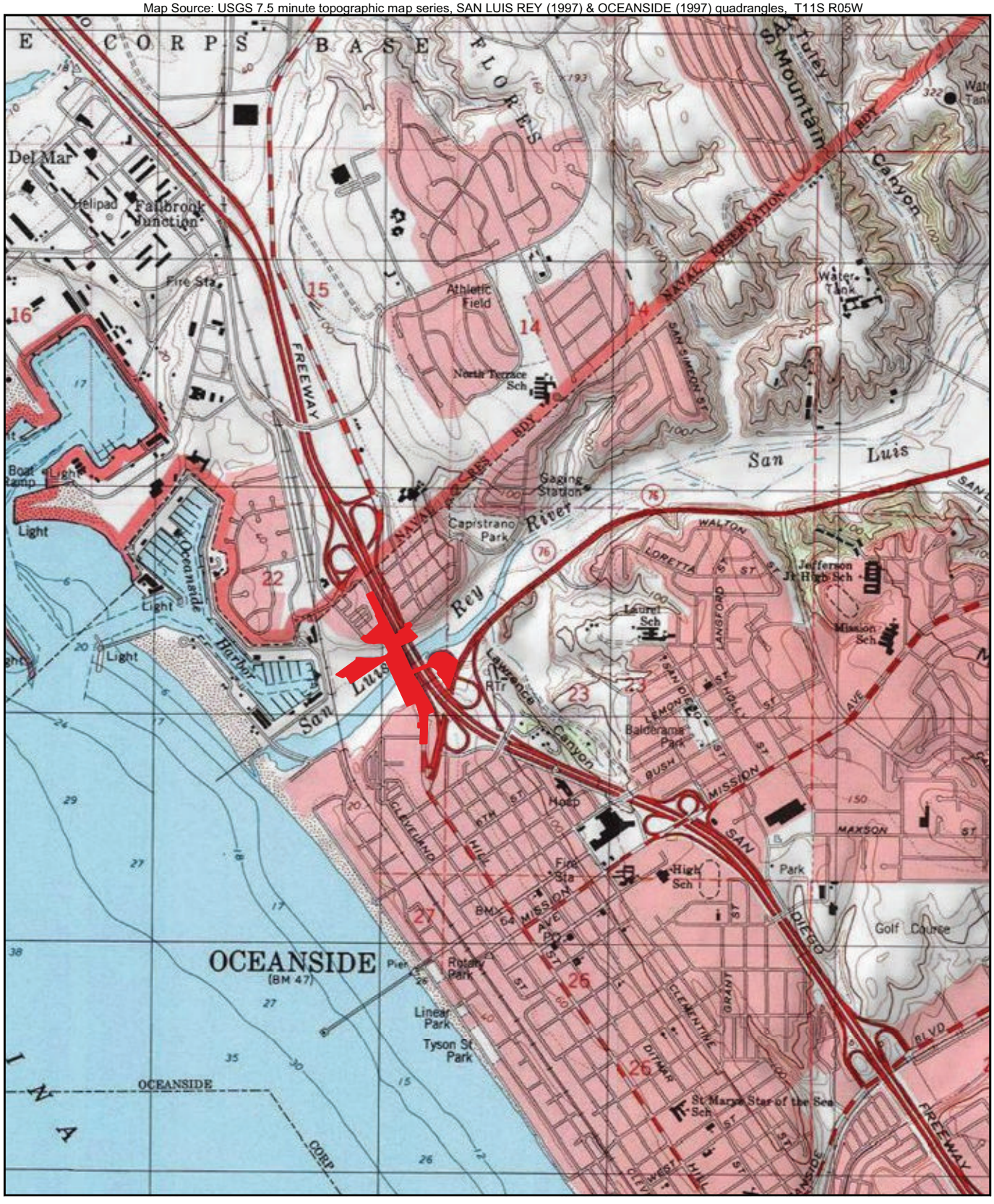
RECON

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FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



0 Feet 2,000

Project Impact Area

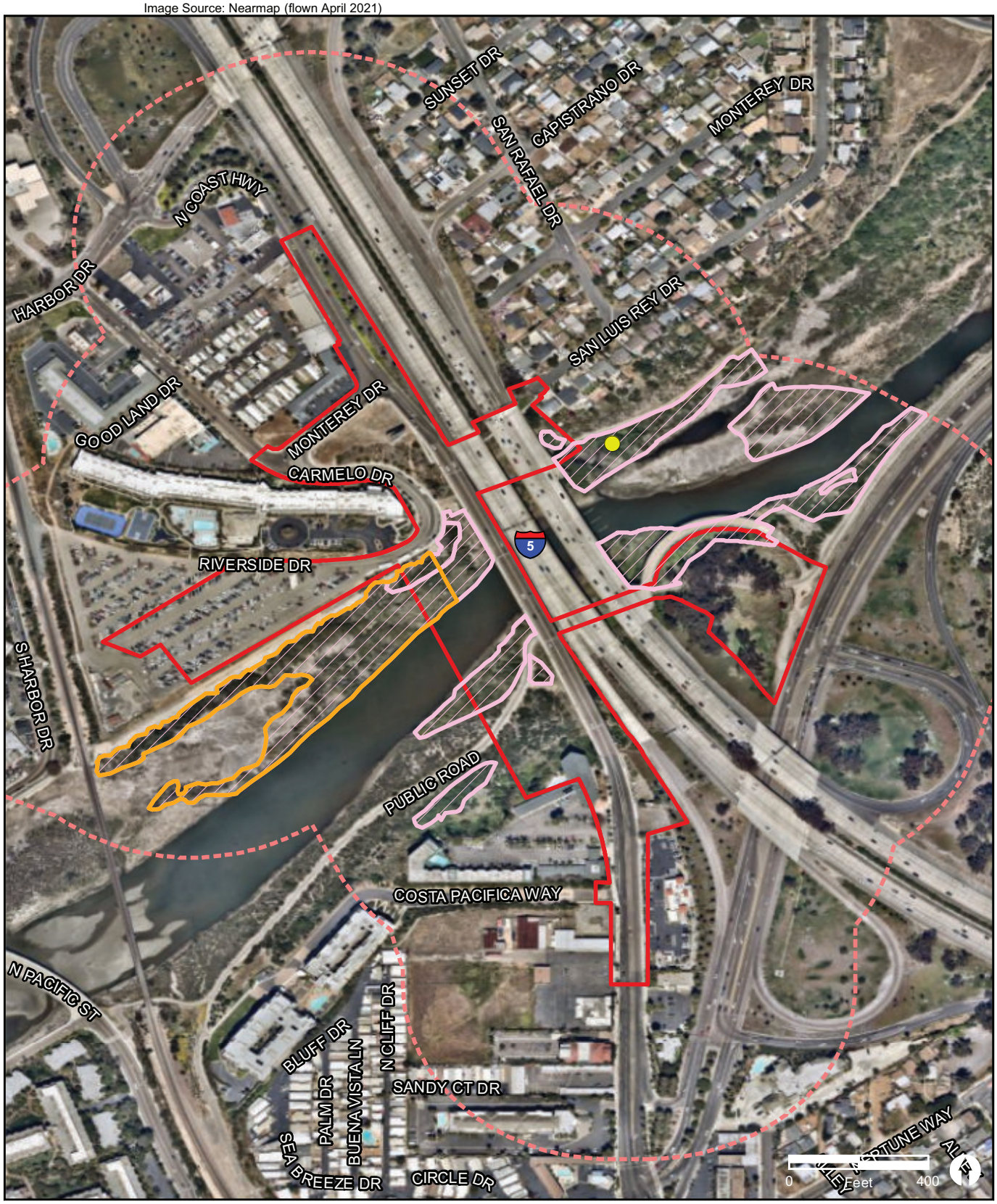
FIGURE 2

Project Location on USGS Map

RECON

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Image Source: Nearmap (flown April 2021)



Project Impact Area

500-foot Buffer

Habitat Enhancement Area (Project Mitigation)

Least Bell's Vireo and Southwestern Willow Flycatcher Survey Area

Sensitive Wildlife Species Observations

Yellow Warbler

FIGURE 3

Least Bell's Vireo and Southwestern Willow Flycatcher Survey Results

RECON

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ATTACHMENT 2 – Wildlife Species Detected

VERTEBRATES	
Class Aves	**Birds**
Order Anseriformes	**Ducks, Geese, and Swans**
Family Anatidae	**Ducks, Geese, and Swans**
Anas platyrhynchos	Mallard
Order Podicipediformes	**Grebes**
Family Podicipedidae	**Grebes**
Podilymbus podiceps	Pied-billed Grebe
Order Psittaciformes	**Parrots**
Family Psittacidae	**Parrots**
	Unidentified Parrot
Order Pelecaniformes	**Pelicans, Herons, Ibises, and Allies**
Family Threskiornithidae	**Ibises and Spoonbills**
Plegadis chihi	White-faced Ibis
Family Phalacrocoracidae	**Cormorants**
Phalacrocorax auritus albociliatus	Double-crested Cormorant
Family Ardeidae	**Bitterns, Herons, and Allies**
Ardea alba	Great Egret
Ardea Herodias	Great Blue Heron
Butorides virescens	Green Heron
Egretta thula	Snowy Egret
Nycticorax nycticorax	Black-crowned Night-heron
Order Cathartiformes	**New World Vultures**
Family Vulturidae or Cathartidae	**New World Vultures**
Order Accipitriformes	**Hawks, Kites, Eagles, and Allies**
Family Pandionidae	**Ospreys**
Pandion haliaetus	Osprey
Family Accipitridae	**Hawks, Kites, Eagles, and Allies**
Accipiter cooperii	Cooper's Hawk
Buteo lineatus	Red-shouldered Hawk
Buteo jamaicensis	Red-tailed Hawk
Order Charadriiformes	**Shorebirds, Gulls, Auks, and Allies**
Family Charadriidae	**Plovers**
Charadrius vociferus	Killdeer
Family Scolopacidae	**Sandpipers and Snipes**
Tringa semipalmata	Willet
Family Laridae	**Terns and Gulls**
Hydroprogne caspia	Caspian Tern

	Unidentified Gull
Family Recurvirostridae	**Stilts and Avocets**
Recurvirostra americana	American Avocet
Order Columbiformes	**Pigeons and Doves**
Family Columbidae	**Pigeons and Doves**
Columba livia	Rock Pigeon
Streptopelia decaocto	Eurasian Collared-dove
Zenaida macroura	Mourning Dove
Order Falconiformes	**Falcons and Kestrel**
Family Falconidae	**Falcons and Kestrel**
Falco sparverius	American Kestrel
Order Apodiformes	**Swifts and Hummingbirds**
Family Apodidae	**Swifts**
Aeronautes saxatalis	White-throated Swift
Family Trochilidae	**Hummingbirds**
Calypte anna	Anna's Hummingbird
Calypte costae	Costa's Hummingbird
Selasphorus rufus	Rufous Hummingbird
Selasphorus sasin	Allen's Hummingbird
Order Passeriformes	**Perching Birds**
Family Picadae	**Sapsuckers and Woodpeckers**
Picoides nuttallii	Nuttall’s Woodpecker
Family Tyrannidae	**Tyrant Flycatchers**
Contopus sordidulus	Western Wood-Pewee
Empidonax difficilis	Pacific-slope Flycatcher
Sayornis nigricans	Black Phoebe
Tyrannus vociferans	Cassin's Kingbird
Family Vireonidae	**Tyrant Flycatchers**
Vireo gilvus	Warbling Vireo
Vireo huttoni	Hutton's Vireo
Family Corvidae	**Crows and Jays**
Aphelocoma californica	California Scrub-jay
Family Alaudidae	**Larks**
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Family Hirundinidae	**Swallows**
Hirundo pyrrhonota	Cliff Swallow
Stelgidopteryx serripennis	Northern Rough-winged Swallow

Hirundo rustica erythrogaster	Barn Swallow
Family Aegithalidae	**Bushtits**
Psaltriparus minimus	Bushtit
Family Troglodytidae	**Wrens**
Thryomanes bewickii	Bewick's Wren
Thryomanes bewickii	House Wren
Family Timaliidae	**Babblers**
Chamaea fasciata	Wrentit
Family Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	Northern Mockingbird
Toxostoma redivivum	California Thrasher
Family Sturnidae	**Starlings**
Sturnus vulgaris	European Starling
Family Parulidae	**Wood-Warblers**
Cardellina pusilla	Wilson's Warbler
Geothlypis trichas	Common Yellowthroat
Vermivora celata	Orange-crowned Warbler
Setophaga coronata	Yellow-rumped Warbler
*Setophaga petechia**	Yellow Warbler
Family Emberizidae	**Emberizids**
Melospiza melodia	Song Sparrow
Zonotrichia leucophrys	White-crowned Sparrow
Pipilo crissalis	California Towhee
Pipilo maculatus	Spotted Towhee
Family Cardinalidae	**Cardinals and Allies**
Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae	**Blackbirds**
Agelaius phoeniceus	Red-winged Blackbird
Icterus cucullatus	Hooded Oriole
Quiscalus mexicanus	Great-tailed Grackle
Family Fringillidae	**Fringilline and Cardueline Finches and Allies**
Carduelis psaltria	Lesser Goldfinch
Carpodacus mexicanus	House Finch

ATTACHMENT 3 – USFWS Willow Flycatcher Survey and Detection Form

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Coast Highway Bridge Replacement State CA County San Diego
USGS Quad Name Oceanside Elevation 0-7 (meters)
Creek, River, Wetland, or Lake Name San Luis Rey
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ***Yes*** X ***No*** ___

Survey Coordinates: Start: E 464343 N 3674317 UTM Datum NAD83 (See instructions)
Stop: E 463794 N 3674067 UTM Zone 11S
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
***** Fill in additional site information on back of this page *****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) Charles Vettes	Date 5/21/21 Start 0600 Stop 0800 Total hrs 2	0	0	0	N	N/A			N/A	
Survey # 2 Observer(s) C.V.	Date 6/1/21 Start 0700 Stop 0900 Total hrs 2	0	0	0	N	N/A			N/A	
Survey # 3 Observer(s) C.V.	Date 6/15/21 Start 0600 Stop 0800 Total hrs ___	0	0	0	N	N/A			N/A	
Survey # 4 Observer(s) C.V.	Date 6/25/21 Start 0530 Stop 0730 Total hrs ___	0	0	0	N	N/A			N/A	
Survey # 5 Observer(s) C.V.	Date 7/9/21 Start 0600 Stop 0800 Total hrs 2	0	0	0	N	N/A			N/A	

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS. N/A
	0	0	0	0	

Reporting Individual Charles Vettes Date Report Completed August 2021
US Fish and Wildlife Service Permit # 20160B-2 State Wildlife Agency Permit # SC-012825
Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Charles Vettes Phone # 559-707-0548
Affiliation Busby Biological Services, Inc. E-mail charles@busbybiological.com
Site Name Coast Highway Bridge Replacement Date Report Completed August 2021
Was this site surveyed in a previous year? Yes X No ___ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes X No ___ Not Applicable ___
If site name is different, what name(s) was used in the past? ___
If site was surveyed last year, did you survey the same general area this year? Yes X No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County X State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) City of Oceanside

Length of area surveyed: ~0.4 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

___ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

X Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Schinus terebinthifolius, Tamarix ramosissima, Salix lasiolepis

Average height of canopy (Do not include a range): 7 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.
No willow flycatchers were detected. Survey area contains low to moderate quality habitat for the species.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
N/A						

Attach additional sheets if necessary

BUSBY
Biological Services

October 10, 2017

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: LEAST BELL'S VIREO 2017 SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY (HILL STREET) BRIDGE OVER SAN LUIS REY RIVER REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally and state-listed endangered least Bell's vireo (*Vireo bellii pusillus*) that were conducted in 2017 by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2).

PROJECT INFORMATION

The Proposed Project includes replacement of the existing Coast Highway (Hill Street) bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. RECON provided BBS with a survey area based on the preliminary, estimated Proposed Project impact area, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (see Attachment 1: Figure 3).

The main portion of the Proposed Project (i.e., Coast Highway bridge) is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (see Attachment 1: Figures 1 through 3). Other project components (e.g., roadway approaches, construction staging and access areas) extend north and south along Coast Highway and east along the north side of the San Luis Rey River. The Proposed Project is located within

Township 11 South, Range 5 West, and in Sections 22 and 23 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; see Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (see Attachment 1: Figure 3). Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

SPECIES INFORMATION

The least Bell's vireo is a small, olive-gray colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of Bell's Vireo, the least Bell's vireo is endemic to California and Baja California, Mexico. This highly migratory species arrives in California in mid-March and departs by late September to fly south to wintering grounds near the tip of Baja California, Mexico. This species formerly bred in lowland riparian habitat ranging from coastal Southern California through the Sacramento and San Joaquin Valleys as far north as Redbluff, and other scattered locations east of the Sierra Nevada (United States Fish and Wildlife Service [USFWS] 1998; Grinnell and Miller 1986).

The least Bell's vireo is dependent upon riparian habitat during the breeding season and prefers willow-dominated woodland or scrub that typically exists along streams and rivers. Other habitat types used include *Baccharis* scrub, mixed oak/willow woodland, mesquite woodland, and elderberry scrub. Habitat characteristics that appear to be essential for vireo occupation include dense cover from 3 to 6 feet in height for nesting and foraging, and a stratified canopy providing both foraging habitat and song perches for territorial advertisement.

By the time least Bell's vireo was listed by the California Department of Fish and Wildlife (CDFW) in 1984 it had been extirpated from much of its former range and was restricted to eight counties south from Santa Barbara with just 300 pairs statewide (Unitt 2004). Declines were caused by widespread clearing of riparian habitat combined with brood parasitism by brown-headed cowbirds (*Molothrus ater*), whose increase in California was as dramatic as the species' decline. Currently, with restriction of habitat destruction, extensive cowbird trapping, and protection from the federal and state Endangered Species Acts, populations have recovered in some areas of coastal southern California. Populations are expanding into former ranges, with the northernmost sighting from Santa Clara County, California (Brown 1993; Kus 2002). San Diego County holds the largest breeding population of least Bell's vireo in the state, where it is a fairly common breeder in appropriate habitats, primarily in the coastal lowlands (Unitt 2004).

METHODS

Methods used for the habitat assessment and focused surveys are described, below.

Habitat Assessment Methods

Prior to initiating the focused surveys for least Bell's vireo, a focused habitat assessment was conducted by qualified biologists to identify locations of suitable least Bell's vireo habitat (i.e., willow-dominated woodland and scrub along the San Luis Rey River) within the estimated Proposed Project impact area and surrounding 500-foot buffer (see Attachment 1: Figure 3). Biologists conducted the habitat assessment by walking throughout the Proposed Project impact area and buffer and assessing the vegetation communities based on plant species composition, height, and density for their potential to support the least Bell's vireo. Biologists drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems (GIS) specialist using ArcGIS software.

Focused Survey Methods

Qualified biologists conducted focused, protocol-level surveys for the least Bell's vireo in accordance with the current USFWS survey protocol, titled *Least Bell's Vireo Survey Guidelines* (USFWS 2001). Eight surveys were conducted at least 10 days apart during the protocol survey window of April 10 to July 31. All surveys were conducted between approximately dawn and 1100 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the least Bell's vireo. Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the least Bell's vireo. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas. No more than approximately 3 linear kilometers (50 hectares) of suitable habitat was surveyed per day, per the protocol.

Sensitive species detections were recorded electronically using a hand-held Global Positioning Systems (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

RESULTS

The results of the habitat assessment and focused, protocol-level least Bell's vireo surveys are presented in this section.

Habitat Assessment Results

Qualified BBS biologist Darin Busby and RECON biologist Brenna Ogg initially identified potentially suitable least Bell's vireo habitat within the Proposed Project impact area and

500-foot buffer on March 20, 2015. Following Proposed Project design revisions, additional habitat assessments were performed by RECON biologists Gerry Scheid and JR Sundberg on October 24, 2016, and Brian Parker on March 7, 2017. During these habitat assessments, additional potentially suitable least Bell's vireo habitat was identified, and the 2017 survey area maps were updated (see Attachment 1: Figure 3). An approximate total of 7.14 acres of suitable least Bell's vireo habitat was identified within the Proposed Project impact area and surrounding 500-foot buffer, and included in the 2017 surveys.

Potentially suitable habitat that required surveys includes non-native riparian and disturbed southern riparian scrub. This potentially suitable habitat ranges from low to moderate quality for least Bell's vireo and is briefly described below.

The dominant vegetation community within the survey area is non-native riparian. The majority of this vegetation community occurs along the north bank of the San Luis Rey River and contains a dense canopy ranging in height from approximately 15 to 30 feet and is dominated by plant species such as Brazilian pepper tree (*Schinus terebinthifolius*), saltcedar (*Tamarix ramosissima*), giant reed (*Arundo donax*), and Canary Island date palm (*Phoenix canariensis*), with scattered Hinds' willow (*Salix exigua* var. *hindsiana*), arroyo willow (*Salix lasiolepis*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*). The understory ranges from open to dense vegetation and is dominated by species such as mule fat (*Baccharis salicifolia*), southern cattail (*Typha domingensis*), California bulrush (*Schoenoplectus californicus*), western poison oak (*Toxicodendron diversilobum*), castor bean (*Ricinus communis*), garden nasturtium (*Tropaeolum majus*), and coyote brush (*Baccharis pilularis*). Non-native riparian provides low quality habitat for the least Bell's vireo, because it contains a high level of disturbance and high density of non-native plant species not typically associated with the species' preferred habitat.

Disturbed southern riparian scrub occurs in relatively small patches in the survey area, predominantly on the north and south banks of the San Luis Rey River. This vegetation community contains a dense canopy ranging in height from approximately 15 to 20 feet and is dominated by Hinds' willow and arroyo willow with scattered invasive, non-native species such as saltcedar and giant reed. The understory ranges from open to dense vegetation and is dominated by species such as mule fat, southern cattail, California bulrush, western poison oak, and coyote brush. In addition, a small, disjunct patch of disturbed southern riparian scrub occurs south of the San Luis Rey River and the bike path. The disturbed southern riparian scrub with the survey area provides moderate quality habitat for the least Bell's vireo, because it is dominated by native riparian species typically associated with the species but also contains a low to moderate level of disturbance and a low to moderate density of non-native plant species not typically associated with the species' preferred habitat.

Focused Survey Results

The focused, protocol-level surveys were conducted within and adjacent to 7.14 acres of potentially suitable habitat within the Proposed Project impact area and surrounding 500-foot buffer between April 12 and July 24, 2017. One least Bell's vireo pair was detected during the first five surveys. The pair, including a natal female with a blue leg band on the left leg, was detected foraging and singing in the disturbed southern riparian scrub and freshwater marsh in several locations east of the Coast Highway bridge and north of the San Luis Rey River. All observations were outside the Proposed Project impact area but

within the 500-foot buffer. No nests or nesting behavior were detected during the surveys. Surveys were conducted during appropriate weather conditions by qualified BBS biologists Darin Busby, Erik LaCoste, and Garrett Huffman, with support from BBS biologist Andrew Kort. Dates, times, weather conditions, and surveyors for the focused surveys are provided in Table 1, below.

Table 1. Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precip	
1	4/12/17	Start	0700	52	1-3	0	0	D. Busby A. Kort
		End	0930	67	1-3	0	0	
2	5/3/17	Start	0900	67	1-3	0	0	D. Busby A. Kort
		End	1100	71	3-5	0	0	
3	5/15/17	Start	0900	67	2-4	10	0	E. LaCoste A. Kort
		End	1100	68	2-4	10	0	
4	6/5/17	Start	0900	65	1-2	100	0	E. LaCoste A. Kort
		End	1100	66	2-4	100	0	
5	6/20/17	Start	0850	71	0-1	100	0	E. LaCoste A. Kort
		End	1050	74	1-2	50	0	
6	7/3/17	Start	0845	71	1-2	50	0	E. LaCoste A. Kort
		End	1045	75	3-5	0	0	
7	7/14/17	Start	0645	71	0-1	100	0	E. LaCoste A. Kort
		End	0845	71	0-1	100	0	
8	7/24/17	Start	0700	74	0-1	100	0	G. Huffman A. Kort
		End	0900	77	3-6	100	0	

A total of 58 wildlife species were detected during the focused surveys (Attachment 2). Besides the least Bell's vireo that were detected, three other sensitive species – Clark's marsh wren (*Cistothorus palustris clarkae*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens auricollis*) – all of which are considered CDFW species of special concern, were detected within the 500-foot survey buffer (see Attachment 1: Figure 3). Yellow warbler was also detected within the Proposed Project impact area, west of the existing Coast Highway bridge. It should be noted that the locations of sensitive species in Figure 3 of Attachment 1 may reflect repeated detections of the same individuals of a species from one survey to the next and are not intended to represent the quantity of individuals present.

SUMMARY

One least Bell's vireo pair was detected within the survey area (outside the Proposed Project impact area but within the 500-foot buffer) during the focused, protocol-level surveys conducted for the species during the 2017 breeding season. No nests or nesting behavior were detected during the surveys; however, suitable nesting habitat occurs within and adjacent to the 2017 least Bell's vireo survey area.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Melissa Busby at melissa@busbybiological.com or (858) 334-9507 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.

cc: Brenna Ogg, RECON Environmental
Perry Schacht, Moffatt & Nichol
Matt Burgard, Drake Haglan & Associates
Richard Greenbauer, City of Oceanside
Michelle Blake, Caltrans

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected

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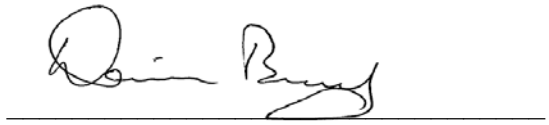
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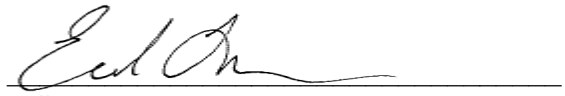
U.S. Geological Survey (USGS)
1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1997)

PROJECT BIOLOGIST SIGNATURE PAGE

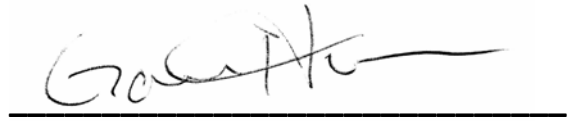
The project biologists performing focused, protocol-level, least Bell's vireo (*Vireo bellii pusillus*) surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) were qualified to survey for this species. The undersigned project biologists certify this report to be a complete and accurate account of the findings and conclusions of surveys for least Bell's vireo conducted for the Proposed Project during spring 2017.



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.



Erik LaCoste
Senior Biologist
Busby Biological Services, Inc.



Garrett Huffman
Biologist
Busby Biological Services, Inc.

ATTACHMENT 1 – Figures



Project Location

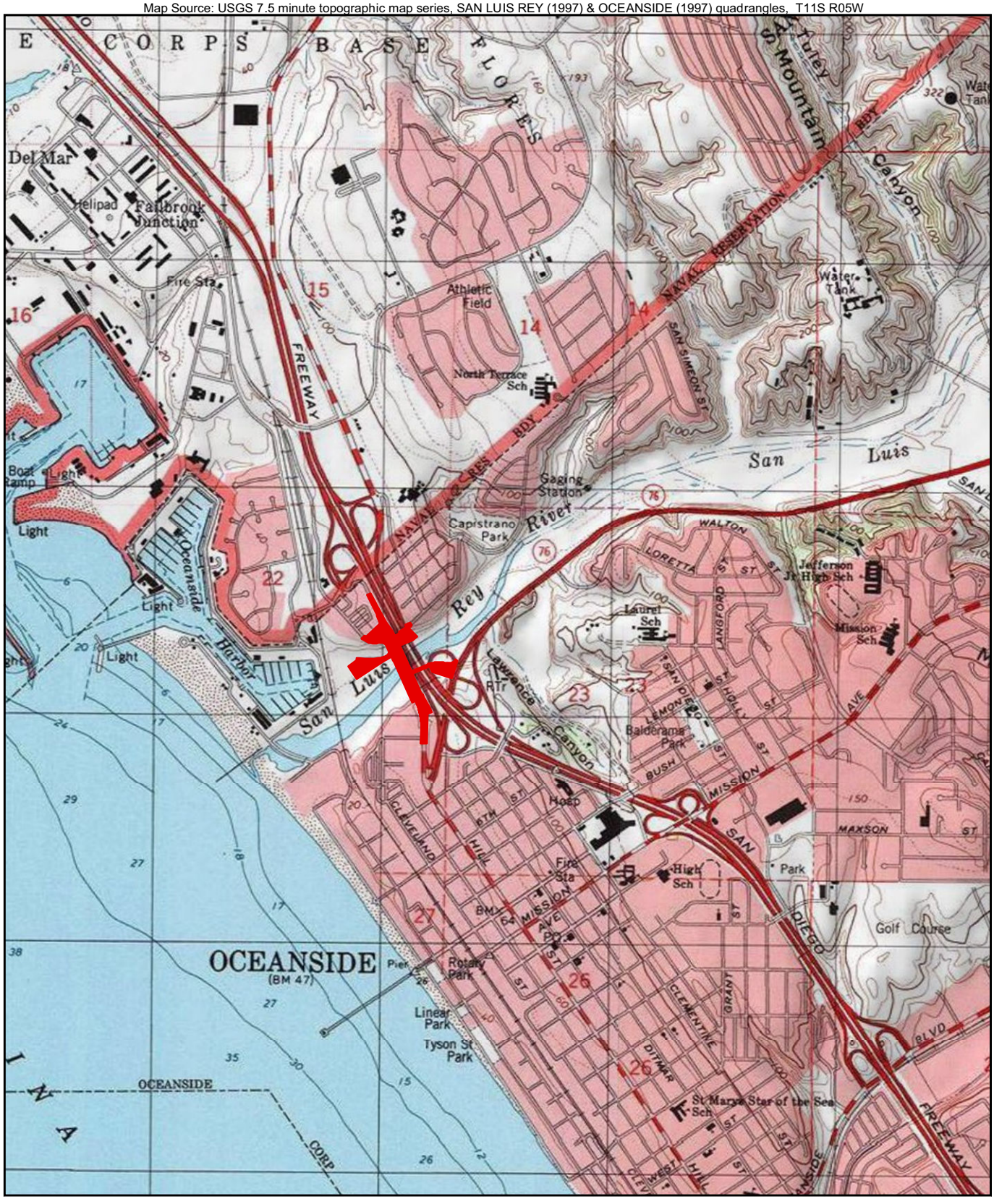
RECON

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FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



Project Impact Area

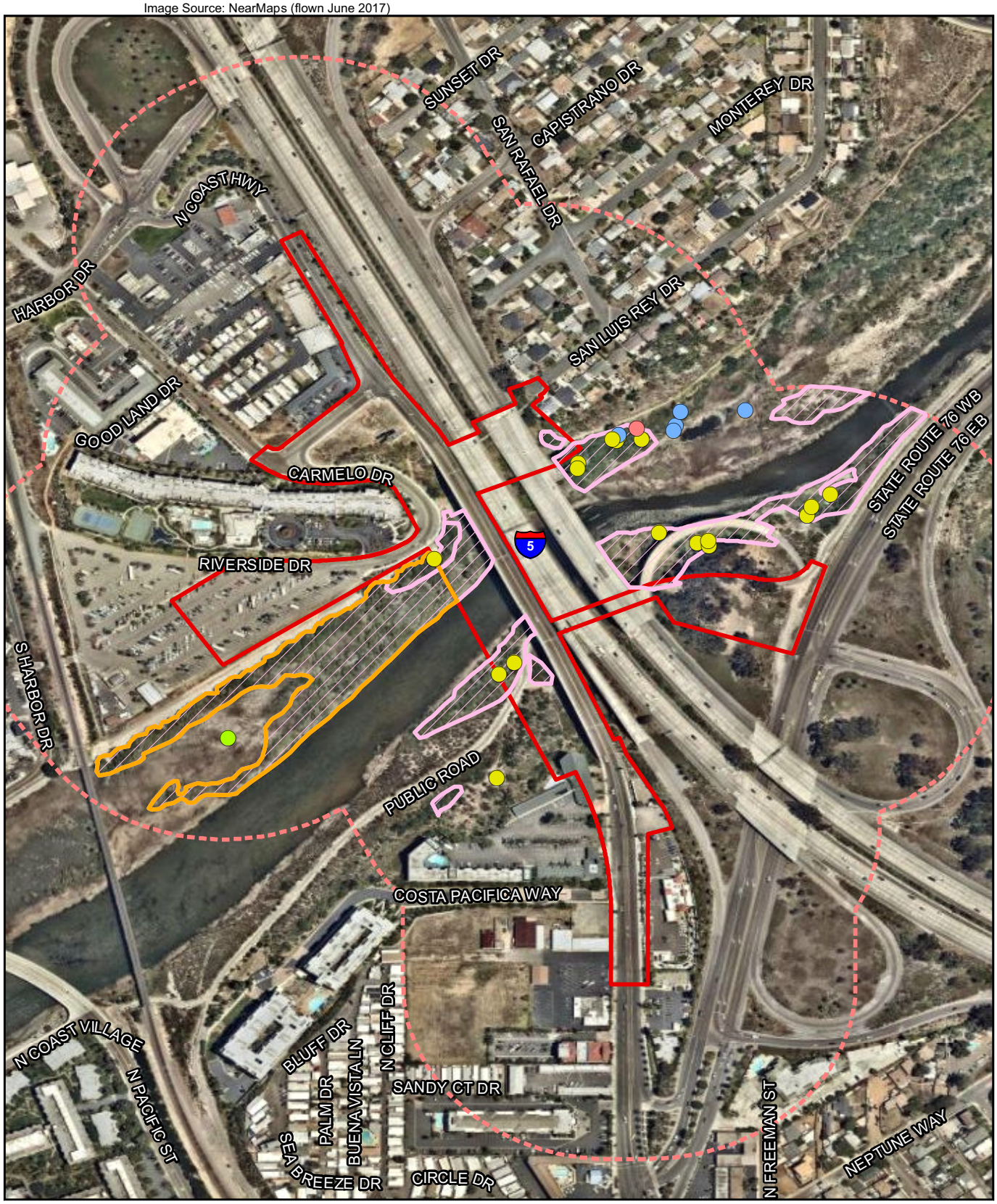
FIGURE 2

Project Location on USGS Map

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Image Source: NearMaps (flown June 2017)



Project Impact Area
500-foot Buffer
Habitat Enhancement Area (Project Mitigation)
Least Bell's Vireo and Southwestern Willow Flycatcher Survey Area

Wildlife Observations

- Least Bell's Vireo
- Marsh Wren
- Yellow Warbler
- Yellow-breasted Chat

0 Feet 400

FIGURE 3

Least Bell's Vireo and Southwestern Willow Flycatcher Survey Results

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ATTACHMENT 2 – Wildlife Species Detected

Attachment 2 - Wildlife Species Detected

VERTEBRATES		
Class Aves		**Birds**
Order Anseriformes		**Ducks, Geese, and Swans**
Family Anatidae		**Ducks, Geese, and Swans**
	Anas platyrhynchos	Mallard
	Oxyura jamaicensis	Ruddy Duck
Order Podicipediformes		**Grebes**
Family Podicipedidae		**Grebes**
	Aechmophorus occidentalis	Western Grebe
	Podiceps nigricollis cakifornicus	Eared Grebe
Order Pelecaniformes		**Pelicans, Herons, Ibises, and Allies**
Family Pelicanidae		**Pelicans**
	Oelecanus occidentalis californicus	Brown Pelican
Family Phalacrocoracidae		**Cormorants**
	Phalacrocorax auritus albociliatus	Double-crested Cormorant
Family Ardeidae		**Bitterns, Herons, and Allies**
	Ardea alba	Great Egret
	Ardea Herodias	Great Blue Heron
	Egretta thula	Snowy Egret
	Nycticorax nycticorax	Black-crowned Night-heron
Order Cathartiformes		**New World Vultures**
Family Vulturidae or Cathartidae		**New World Vultures**
	Cathartes aura	Turkey Vulture
Order Accipitriformes		**Hawks, Kites, Eagles, and Allies**
Family Accipitridae		**Hawks, Kites, Eagles, and Allies**
	Pandion haliaetus	Osprey
	Buteo jamaicensis	Red-tailed Hawk
Order Charadriiformes		**Shorebirds, Gulls, Auks, and Allies**
Family Scolopacidae		**Sandpipers and Snipes**
	Actitis macularius	Spotted Sandpiper
Family Laridae		**Plovers**
	Larus occidentalis	Western Gull
Order Columbiformes		**Pigeons and Doves**
Family Columbidae		**Pigeons and Doves**
	Columba livia	Rock Pigeon
	Streptopelia decaocto	Eurasian Collared-dove
	Zenaida macroura	Mourning Dove
Order Apodiformes		**Swifts and Hummingbirds**
Family Apodidae		**Swifts**
	Aeronautes saxatalis	White-throated Swift
Family Trochilidae		**Hummingbirds**
	Calypte anna	Anna's Hummingbird
	Selasphorus rufus	Rufous Hummingbird

	Selasphorus sasin	Allen's Hummingbird
Order Passeriformes		**Perching Birds**
Family Picadae		**Sapsuckers and Woodpeckers**
	Picoides nuttallii	Nuttall's Woodpecker
Family Tyrannidae		**Tyrant Flycatchers**
	Empidonax difficilis difficilis	Pacific-slope Flycatcher
	Sayornis nigricans	Black Phoebe
Family Vireonidae		**Vireos**
	Vireo bellii pusillus	Least Bell's Vireo
	Vireo huttoni	Hutton's Vireo
Family Corvidae		**Crows and Jays**
	Aphelocoma californica	Western Scrub-jay
Family Alaudidae		**Larks**
	Corvus brachyrhynchos	American Crow
	Corvus corax	Common Raven
Family Hirundinidae		**Swallows**
	Hirundo pyrrhonota	Cliff Swallow
	Stelgidopteryx serripennis	Northern Rough-winged Swallow
	Hirundo rustica erythrogaster	Barn Swallow
Family Aegithalidae		**Bushtits**
	Psaltriparus minimus	Bushtit
Family Troglodytidae		**Wrens**
	Thryomanes bewickii	Bewick's Wren
	Cistothorus palustris clarkae	Clark's Marsh Wren
Family Timaliidae		**Babblers**
	Chamaea fasciata	Wrentit
Family Mimidae		**Mockingbirds and Thrashers**
	Mimus polyglottos	Northern Mockingbird
	Toxostoma redivivum	California Thrasher
Family Sturnidae		**Starlings**
	Sturnus vulgaris	European Starling
Family Parulidae		**Wood-Warblers**
	Dendroica petechia	Yellow Warbler
	Geothlypis trichas	Common Yellowthroat
	Vermivora celata	Orange-crowned Warbler
	Icteria virens auricollis	Yellow-breasted Chat
Family Emberizidae		**Emberizids**
	Melospiza melodia	Song Sparrow
	Pipilo crissalis	California Towhee
	Pipilo maculatus	Spotted Towhee
Family Cardinalidae		**Cardinals and Allies**
	Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae		**Blackbirds**
	Agelaius phoeniceus	Red-winged Blackbird
	Icterus cucullatus	Hooded Oriole
	Icterus bullockii	Bullock's Oriole
	Quiscalus mexicanus	Great-tailed Grackle

Family Fringillidae		**Fringilline and Cardueline Finches and Allies**
	Carduelis psaltria	Lesser Goldfinch
	Carpodacus mexicanus	House Finch
Class Mammalia		**Mammals**
Order Lagomorpha		**Rabbits, Hares, and Pikas**
Family Leporidae		**Rabbits and Hares**
	Sylvilagus audubonii	Desert Cottontail
Order Rodentia		**Rodents**
Family Sciuridae		**Squirrels and Chipmunks**
	Spermophilus beecheyi	California Ground Squirrel
Order Carnivora		**Carnivores**
Family Canidae		**Dogs and foxes**
	Canis familiaris	Domestic Dog
Family Procyonidae		**Raccoons and Relatives**
	Procyon lotor	Raccoon

BUSBY
Biological Services

January 5, 2016

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: LEAST BELL'S VIREO SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY BRIDGE REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally and state-listed endangered least Bell's vireo (*Vireo bellii pusillus*) that were conducted by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway Bridge Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2).

PROJECT INFORMATION

The Proposed Project includes replacement of the existing Coast Highway bridge. While the details of the Proposed Project design are not currently known, RECON, in coordination with Moffatt & Nichol, provided BBS with a preliminary, estimated Proposed Project footprint, which includes the existing bridge as well as all associated access routes and staging yards (Attachment 1: Figure 3). The Proposed Project is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (see Attachment 1: Figures 1 and 2). The Proposed Project is located within Township 11 South, Range 5 West, and in Section 22 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968) (see Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level (amsl).

The Proposed Project area is bordered on all sides by developed land, which includes Interstate 5, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses. Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges, and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and estuarine. Other vegetation communities present in smaller proportions include

disturbed Diegan coastal sage scrub, Diegan coastal sage scrub/southern riparian scrub transition, coastal brackish marsh, and eucalyptus woodland.

SPECIES INFORMATION

The least Bell's vireo is a small, olive-gray colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of Bell's Vireo, the least Bell's vireo is endemic to California and Baja California, Mexico. This highly migratory species arrives in California in mid-March and departs by late September to fly south to wintering grounds near the tip of Baja California, Mexico. This species formally bred in lowland riparian habitat ranging from coastal Southern California through the Sacramento and San Joaquin Valleys as far north as Redbluff, and other scattered locations east of the Sierra Nevada (United States Fish and Wildlife Service [USFWS] 1998; Grinnell and Miller 1986).

The least Bell's vireo is dependent upon riparian habitat during the breeding season and prefers willow-dominated woodland or scrub that typically exists along streams and rivers. Other habitat types used include *Baccharis* scrub, mixed oak/willow woodland, mesquite woodland, and elderberry scrub. Habitat characteristics that appear to be essential for vireo occupation include dense cover from 3 to 6 feet in height for nesting and foraging, and a stratified canopy providing both foraging habitat and song perches for territorial advertisement.

By the time least Bell's vireo was listed by the California Department of Fish and Wildlife (CDFW) in 1984 it had been extirpated from much of its former range and was restricted to eight counties south from Santa Barbara with just 300 pairs statewide (Unitt 2004). Declines were caused by widespread clearing of riparian habitat combined with brood parasitism by brown-headed cowbirds (*Molothrus ater*), whose increase in California was as dramatic as the species' decline. Currently, with restriction of habitat destruction, extensive cowbird trapping, and protection from the federal and state Endangered Species Acts, populations have recovered in some areas of cismontane southern California. Populations are expanding into former ranges, with the northernmost sighting from Santa Clara County, California (Brown 1993, Kus 2002). San Diego County holds the largest breeding population of least Bell's vireo in the state, where it is a fairly common breeder in appropriate habitats, primarily in the coastal lowlands (Unitt 2004).

METHODS

Methods used for the habitat assessment and focused surveys are described below.

Habitat Assessment Methods

Prior to initiating the focused surveys for least Bell's vireo, a focused habitat assessment was conducted by qualified biologists to identify locations of suitable least Bell's vireo habitat within the estimated Proposed Project footprint and surrounding 500-foot buffer (Attachment 1: Figure 4). Biologists conducted the habitat assessment by walking throughout the Proposed Project footprint and buffer and assessing the vegetation communities based on plant species composition, height, and density for their potential to support the least Bell's vireo. Biologists drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems (GIS) specialist using ArcGIS software.

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Qualified BBS biologists conducted focused, protocol-level surveys for the least Bell's vireo in accordance with the current USFWS survey protocol, titled *Least Bell's Vireo Survey Guidelines* (USFWS 2001). Eight surveys were conducted at least 10 days apart during the protocol survey window of April 10 to July 31. All surveys were conducted between approximately dawn and 1100 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the least Bell's vireo. Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the least Bell's vireo. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas. No more than approximately 3 linear kilometers (50 hectares) of suitable habitat was surveyed per day, per the protocol.

Sensitive species detections were recorded electronically using a hand-held Global Positioning Systems (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

RESULTS

The results of the habitat assessment and focused, protocol-level least Bell's vireo surveys are presented in this section.

Habitat Assessment Results

BBS biologist Darin Busby and RECON biologist Brenna Ogg identified an approximate total of 7.17 acres of potentially suitable least Bell's vireo habitat within the Proposed Project footprint and 500-foot buffer during the habitat assessment conducted on March 20, 2015 (see Least Bell's Vireo Survey Area on Attachment 1: Figure 4). Potentially suitable habitat that required surveys includes non-native riparian and disturbed southern riparian scrub. This potentially suitable habitat ranges from low to moderate quality for least Bell's vireo and is briefly described below.

The dominant vegetation community within the survey area is non-native riparian. The majority of this vegetation community occurs along the north bank of the San Luis Rey River and contains a dense canopy ranging in height from approximately 15 to 30 feet and is dominated by plant species such as Brazilian pepper tree (*Schinus terebinthifolius*), saltcedar (*Tamarix ramosissima*), giant reed (*Arundo donax*), Canary Island date palm (*Phoenix canariensis*). This community also contains scattered Hinds' willow (*Salix exigua* var. *hindsiana*), arroyo willow (*Salix lasiolepis*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*), and an open to dense understory dominated by plant species such as mule fat (*Baccharis salicifolia*), southern cattail (*Typha domingensis*), California bulrush (*Schoenoplectus californicus*), western poison oak (*Toxicodendron diversilobum*), castor

bean (*Ricinus communis*), garden nasturtium (*Tropaeolum majus*), and coyote brush (*Baccharis pilularis*). Non-native riparian provides low quality habitat for the least Bell's vireo, because it contains a high level of disturbance and high density of nonnative plant species not typically associated with the species' preferred habitat.

Disturbed southern riparian scrub occurs in relatively small patches in the survey area, predominantly on the north and south banks of the San Luis Rey River. This vegetation community contains a dense canopy ranging in height from approximately 15 to 20 feet and is dominated by Hinds' willow and arroyo willow. This community contains scattered saltcedar and giant reed, and an open to dense understory dominated by species such as mule fat, southern cattail, California bulrush, western poison oak, and coyote brush. In addition, a small, disjunct patch of disturbed southern riparian scrub occurs south of the San Luis Rey River and the bike path. This patch borders Eucalyptus woodland containing scattered river red gum (*Eucalyptus camaldulensis*) ranging in height from approximately 30 to 40 feet. The disturbed southern riparian scrub provides moderate quality habitat for the least Bell's vireo, because it is dominated by native riparian species typically associated with the species but also contains a low to moderate level of disturbance and a low to moderate density of nonnative plant species not typically associated with the species' preferred habitat.

Focused Survey Results

No least Bell's vireos were detected within the approximately 7.17 acres of potentially suitable habitat within and adjacent to the Proposed Project area during the eight focused, protocol-level surveys conducted between May 6 and July 30, 2015. Surveys were conducted during appropriate weather conditions by qualified BBS biologists Darin Busby and Laurie Gorman, with support from qualified biologist Travis Cooper. Dates and survey conditions during the focused surveys are provided in Table 1, below.

Table 1. Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precipitation	
1	5/6/15	Start	0650	62	0-1	100	0	Darin Busby Laurie Gorman
		End	0830	63	0-1	100	0	
2	5/18/15	Start	0630	60	0-1	95	0	Darin Busby
		End	0900	66	0-4	70	0	
3	6/1/15	Start	0630	64	0-1	100	0	Darin Busby
		End	0830	65	0-1	100	0	
4	6/12/15	Start	0600	65	0-2	100	0	Travis Cooper
		End	0830	66	0-2	100	0	
5	6/23/15	Start	0600	68	0-1	100	0	Travis Cooper Laurie Gorman
		End	0815	69	0-2	100	0	
6	7/7/15	Start	0540	65	0-1	100	0	Darin Busby
		End	0725	66	0-3	100	0	
7	7/17/15	Start	0540	68	0-1	100	0	Darin Busby
		End	0720	69	0-1	100	0	
8	7/30/15	Start	0600	66	0-1	100	0	Darin Busby Melissa Busby
		End	0800	68	1-2	100	0	

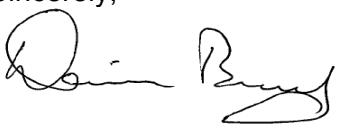
A total of 58 wildlife species were detected during the focused surveys (Attachment 2). Of these 58 species, four sensitive species – olive-sided flycatcher (*Contopus cooperi*), Clark's marsh wren (*Cistothorus palustris clarkae*), western least Bittern (*Ixobrychus exilis*), and yellow warbler (*Dendroica petechia*) – all of which are considered CDFW species of special concern, were detected (see Attachment 1: Figure 4). In addition, one brown-headed cowbird, a brood parasite, was detected and recorded just outside the eastern edge of the survey area during the focused surveys (UTM Coordinate: 33.207748°, -117.383793°; Attachment 1: Figure 4). It should be noted that the locations of sensitive species in Figure 4 of Attachment 1 may reflect repeated detections of the same individuals of a species from one survey to the next and are not intended to represent the quantity of individuals present.

SUMMARY

No least Bell's vireos were detected within or adjacent to the Proposed Project area during the focused, protocol-level surveys conducted for the species during the 2015 breeding season.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Melissa Busby at melissa@busbybiological.com or (858) 334-9507 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.

cc: Brenna Ogg, RECON
Alyssa Muto, RECON

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected

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1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1975)

PROJECT BIOLOGIST SIGNATURE PAGE

The project biologists performing focused, protocol-level, least Bell's vireo (*Vireo bellii pusillus*) surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) were qualified to survey for this species. The undersigned project biologists certify this report to be a complete and accurate account of the findings and conclusions of surveys for least Bell's vireo conducted for the Proposed Project during spring 2015.



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.
ESA Permit Number TE-115373-3



Laurie Gorman
Senior Biologist / Project Manager
Busby Biological Services, Inc.
ESA Permit Number TE-233367-2



Travis Cooper
Principal Biologist / Owner
Cooper Biological Services
ESA Permit Number TE-170389-5

ATTACHMENT 1 – Figures



Project Location

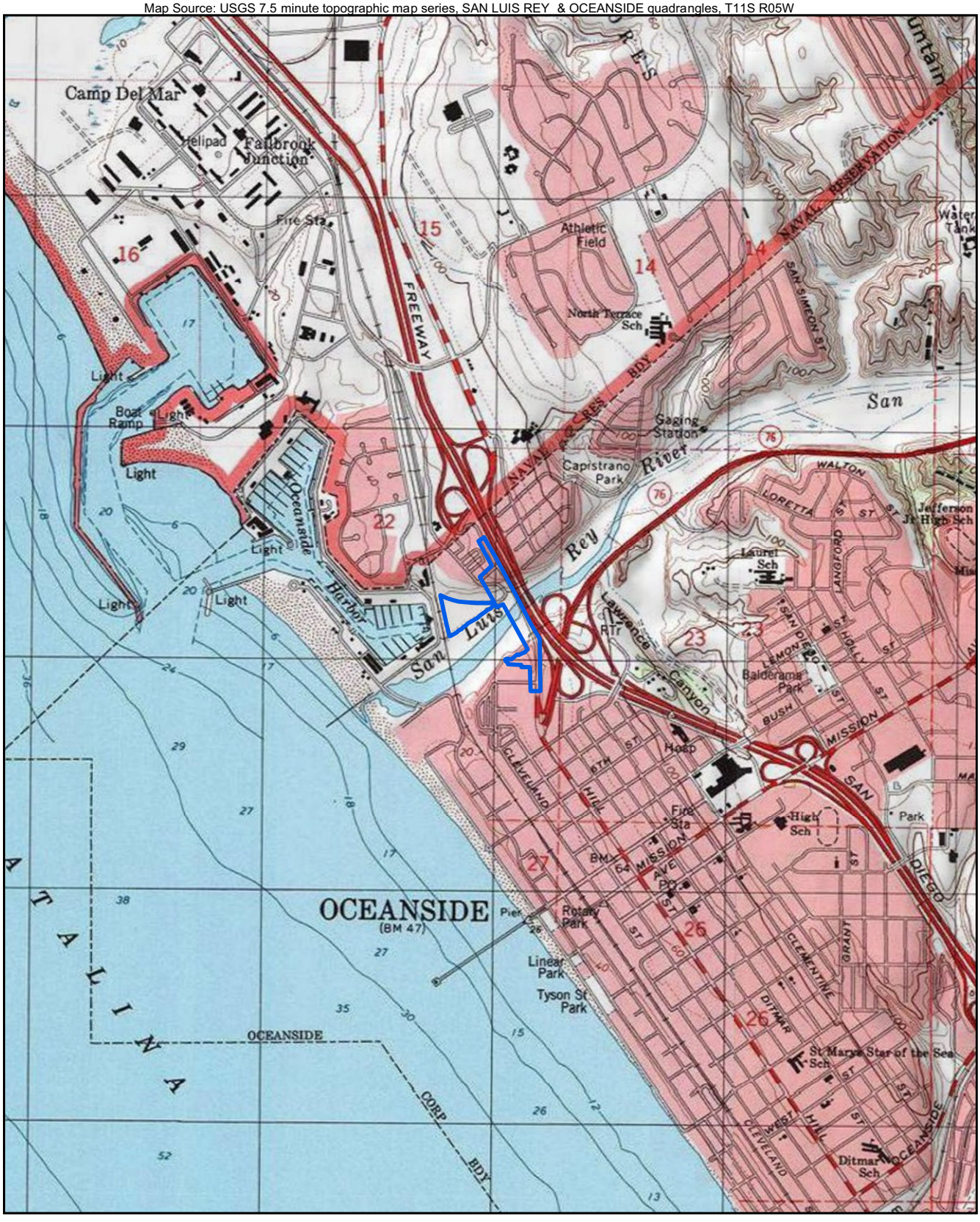
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FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY & OCEANSIDE quadrangles, T11S R05W



0 Feet 2,000

Project Boundary

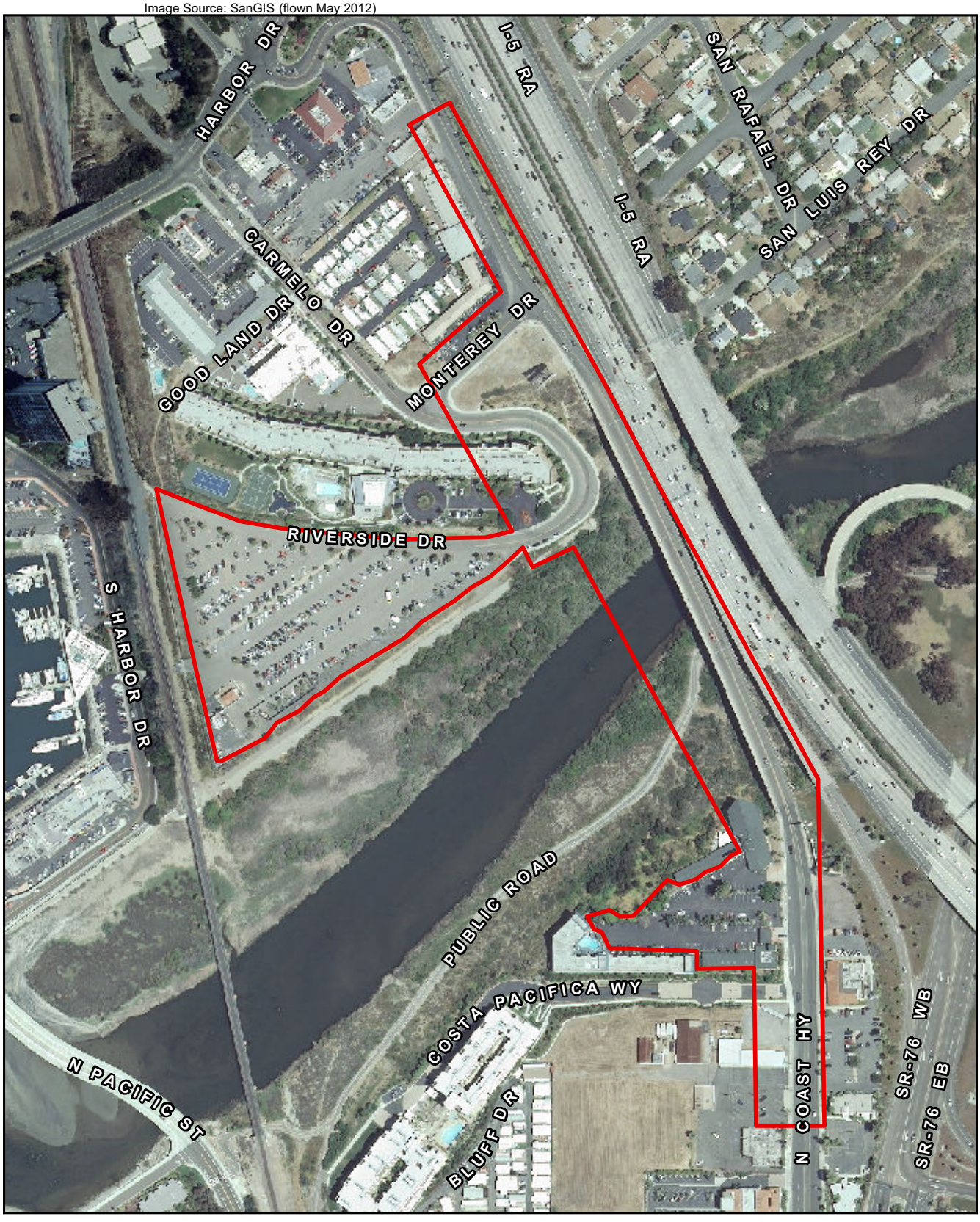
FIGURE 2

Project Vicinity - USGS Topographic Map

RECON

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Image Source: SanGIS (flown May 2012)



Project Boundary

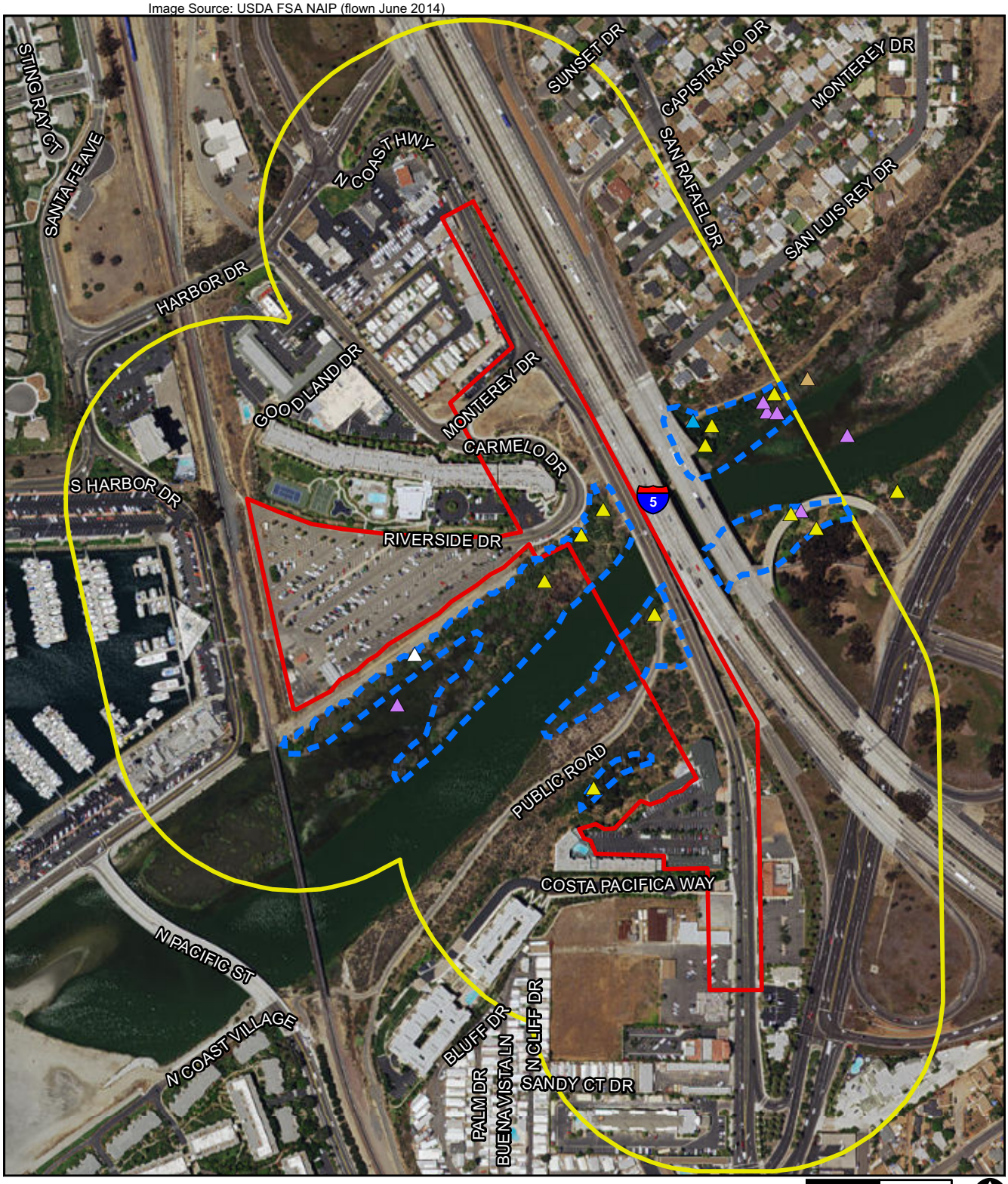
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FIGURE 3

Project Vicinity - Aerial

Image Source: USDA FSA NAIP (flown June 2014)



Project Boundary

500ft Buffer of Project Boundary

Least Bell's Vireo Survey Area

Sensitive Species

- Clark's Marsh Wren
- Olive-sided Flycatcher
- Western Least Bittern
- Yellow Warbler

Brood Parasite

- Brown-headed Cowbird

0 Feet 400

FIGURE 4

Least Bell's Vireo Survey Area and Results

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ATTACHMENT 2 – Wildlife Species Detected

Attachment 2 - Wildlife Species Detected

VERTEBRATES		
Class Aves		**Birds**
Order Anseriformes		**Ducks, Geese, and Swans**
Family Anatidae		**Ducks, Geese, and Swans**
	Anas platyrhynchos	Mallard
	Oxyura jamaicensis	Ruddy Duck
Order Podicipediformes		**Grebes**
Family Podicipedidae		**Grebes**
	Podilymbus podiceps	Pied-billed Grebe
Order Pelecaniformes		**Pelicans, Herons, Ibises, and Allies**
Family Ardeidae		**Bitterns, Herons, and Allies**
	Ardea alba	Great Egret
	Ardea Herodias	Great Blue Heron
	Butorides virescens	Green Heron
	Egretta thula	Snowy Egret
	Ixobrychus exilis	Least Bittern
	Nycticorax nycticorax	Black-crowned Night-Heron
Order Accipitriformes		**Hawks, Kites, Eagles, and Allies**
Family Accipitridae		**Hawks, Kites, Eagles, and Allies**
	Buteo jamaicensis	Red-tailed Hawk
Order Gruiformes		**Cranes and Rails**
Family Rallidae		**Rails, Fallinules, and Coots**
	Fulica americana	American Coot
	Gallinula galeata	Common Gallinule
Order Falconiformes		**Caracaras and Falcons**
Family Falconidae		**Caracaras and Falcons**
	Falco sparverius	American Kestrel
Order Charadriiformes		**Shorebirds, Gulls, Auks, and Allies**
Family Charadriidae		**Plovers**
	Charadrius vociferous	Killdeer
Family Laridae		**Plovers**
	Hydroprogne caspia	Caspian Tern
	Larus occidentalis	Western Gull
Order Columbiformes		**Pigeons and Doves**
Family Columbidae		**Pigeons and Doves**
	Columba livia	Rock Pigeon
	Zenaida macroura	Mourning Dove
Order Apodiformes		**Swifts and Hummingbirds**
Family Apodidae		**Swifts**
	Aeronautes saxatalis	White-throated Swift
Family Trochilidae		**Hummingbirds**
	Calypte anna	Anna's Hummingbird

	Calypte costae	Costa's Hummingbird
	Selasphorus sasin	Allen's Hummingbird
Order Passeriformes		**Perching Birds**
Family Tyrannidae		**Tyrant Flycatchers**
	Contopus cooperi	Olive-sided Flycatcher
	Contopus sordidulus	Western Wood-Pewee
	Sayornis nigricans	Black Phoebe
	Tyrannus vociferans	Cassin's Kingbird
Family Corvidae		**Crows and Jays**
	Aphelocoma californica	Western Scrub-Jay
Family Alaudidae		**Larks**
	Corvus brachyrhynchos	American Crow
	Corvus corax	Common Raven
Family Hirundinidae		**Swallows**
	Hirundo pyrrhonota	Cliff Swallow
	Stelgidopteryx serripennis	Northern Rough-winged Swallow
Family Paridae		**Chickadees and Titmice**
Family Aegithalidae		**Bushtits**
	Psaltriparus minimus	Bushtit
Family Troglodytidae		**Wrens**
	Cistothorus palustris clarkae	Clark's Marsh Wren
	Psaltriparus minimus	Bushtit
Family Regulidae		**Kinglets**
	Regulus calendula	Ruby-crowned Kinglet
Family Sylviidae		**Gnatcatchers**
Family Timaliidae		**Babblers**
	Chamaea fasciata	Wrentit
Family Mimidae		**Mockingbirds and Thrashers**
	Mimus polyglottos	Northern Mockingbird
	Toxostoma redivivum	California Thrasher
Family Sturnidae		**Starlings**
	Sturnus vulgaris	European Starling
Family Parulidae		**Wood-Warblers**
	Dendroica petechia	Yellow Warbler
	Geothlypis trichas	Common Yellowthroat
	Vermivora celata	Orange-crowned Warbler
	Wilsonia pusilla	Wilson's Warbler
Family Emberizidae		**Emberizids**
	Melospiza melodia	Song Sparrow
	Pipilo crissalis	California Towhee
	Pipilo maculatus	Spotted Towhee
Family Cardinalidae		**Cardinals and Allies**
	Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae		**Blackbirds**
	Agelaius phoeniceus	Red-winged Blackbird
	Icterus cucullatus	Hooded Oriole
	Molothrus ater	Brown-headed Cowbird

	Quiscalus mexicanus	Great-tailed Grackle
Family Fringillidae		**Fringilline and Cardueline Finches and Allies**
	Carduelis psaltria	Lesser Goldfinch
	Carpodacus mexicanus	House Finch
Family Passeridae		**Old World Sparrows**
	Passer domesticus	House Sparrow
Class Mammalia		**Mammals**
Order Lagomorpha		**Rabbits, Hares, and Pikas**
Family Leporidae		**Rabbits and Hares**
	Sylvilagus audubonii	Desert Cottontail
Order Rodentia		**Rodents**
Family Sciuridae		**Squirrels and Chipmunks**
	Spermophilus beecheyi	California Ground Squirrel
Order Carnivora		**Carnivores**
Family Canidae		**Dogs and foxes**
	Canis familiaris	Domestic Dog
Family Procyonidae		**Raccoons and Relatives**
	Procyon lotor	Raccoon

Appendix M – Southwestern Willow Flycatcher Survey Reports

BUSBY
Biological Services

August 9, 2021

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: SOUTHWESTERN WILLOW FLYCATCHER AND LEAST BELL'S VIREO 2021 SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY (HILL STREET) BRIDGE OVER SAN LUIS REY RIVER REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally and state-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and least Bell's vireo (*Vireo bellii pusillus*) that were conducted in 2021 by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2). The 2021 surveys were completed to update the results of the surveys conducted in 2017 for the Proposed Project.

PROJECT INFORMATION

The Proposed Project includes replacement of the existing Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. RECON provided BBS with a survey area based on the preliminary, estimated Proposed Project impact area, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (Attachment 1: Figure 3).

The main portion of the Proposed Project includes Coast Highway Bridge that is immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California

(Attachment 1: Figures 1 through 3). Other project components (e.g., roadway approaches, construction staging and access areas) extend north and south along Coast Highway and east along the north side of the San Luis Rey River. The Proposed Project is located within Township 11 South, Range 5 West, and in Sections 22 and 23 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (Attachment 1: Figure 3). Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

SPECIES INFORMATION

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a small, olive-colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of willow flycatcher, it is distinguished by breeding distribution, song, call and plumage. The southwestern willow flycatcher is a neotropic migrant that is endemic to the Americas and is a summer breeding resident in the southwestern U.S., specifically within Arizona, New Mexico, southern California, southern portions of Nevada and Utah, southwestern Colorado, far western Texas, and extreme northwestern Mexico (U.S. Fish and Wildlife Service [USFWS] 2002). It is the only subspecies of willow flycatcher that is known to breed in southern California, ranging from Kern County to San Diego County. This species arrives on breeding territories by late April to early May and migrates southward again to wintering areas in southern Mexico, Central America, and northern South America in August and September. The two other subspecies of willow flycatcher (e.g., *E. t. brewsteri* and *E. t. adastus*) migrate through southern California in the spring and fall to and from their breeding grounds in northern California.

The southwestern willow flycatcher typically breeds in patchy to dense, well-developed riparian woodlands that occur along streams, rivers, lakes, or other wetlands, are below 8,000 feet in elevation, and provide surface water and/or saturated soil during mid-summer (Sedgwick 2000; Sogge et al. 1997; USFWS 2002). Typical breeding habitat for southwestern willow flycatcher is composed of native riparian plant species such as willows (*Salix* spp.) and mule fat (*Baccharis salicifolia*) in patches at least two acres in size or in linear-shaped habitats at least 10 meters (33 feet) wide (Sogge et al. 1997). However, the species has also been observed successfully breeding in riparian communities dominated by extensive patches of invasive, non-native species such as tamarisk (*Tamarix ramosissima*) and Russian olive (*Eleagnus angustifolia*) (USFWS 2002).

Once a common species in southern California, in the early 20th century the southwestern willow flycatcher population collapsed from the combined effects of habitat loss and nest parasitism by brown-headed cowbird (*Molothrus ater*; Craig and Williams 1998; Garrett and Dunn 1981; Sedgwick 2000; Unitt 2004; USFWS 2002), which is an obligate brood parasite that has been documented to lay its eggs in the nests of over 200 different bird species, often causing death to some or all of the host species eggs and nestlings (Eastzer et al. 1980). As of 2003, in southern California, the southwestern willow flycatcher bred locally at 75 known sites within 18 drainages from San Diego to Santa Barbara and Kern counties and the Owens Valley, most notably within the San Luis Rey, Santa Ana, Santa Ynez, Owens, and Kern rivers, which supported approximately 70 percent of known territories (Sogge et. al. 2003).

Least Bell's Vireo

The least Bell's vireo is a small, olive-gray colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of Bell's Vireo, the least Bell's vireo is endemic to California and Baja California, Mexico. This highly migratory species arrives in California in mid-March and departs by late September to fly south to wintering grounds near the tip of Baja California, Mexico. This species formally bred in lowland riparian habitat ranging from coastal Southern California through the Sacramento and San Joaquin Valleys as far north as Redbluff, and other scattered locations east of the Sierra Nevada (United States Fish and Wildlife Service [USFWS] 1998; Grinnell and Miller 1986).

The least Bell's vireo is dependent upon riparian habitat during the breeding season and prefers willow-dominated woodland or scrub that typically exists along streams and rivers. Other habitat types used include *Baccharis* scrub, mixed oak/willow woodland, mesquite woodland, and elderberry scrub. Habitat characteristics that appear to be essential for vireo occupation include dense cover from 3 to 6 feet in height for nesting and foraging, and a stratified canopy providing both foraging habitat and song perches for territorial advertisement.

By the time least Bell's vireo was listed by the California Department of Fish and Wildlife (CDFW) in 1984 it had been extirpated from much of its former range and was restricted to eight counties south from Santa Barbara with just 300 pairs statewide (Unitt 2004). Declines were caused by widespread clearing of riparian habitat combined with brood parasitism by brown-headed cowbirds, whose increase in California was as dramatic as the species' decline. Currently, with restriction of habitat destruction, extensive cowbird trapping, and protection from the federal and state Endangered Species Acts, populations have recovered in some areas of cismontane southern California. Populations are expanding into former ranges, with the northernmost sighting from Santa Clara County, California (Brown 1993, Kus 2002). San Diego County holds the largest breeding population of least Bell's vireo in the state, where it is a fairly common breeder in appropriate habitats, primarily in the coastal lowlands (Unitt 2004).

METHODS

Methods used for the habitat assessment and focused surveys are described, below.

Habitat Assessment

Prior to initiating the focused surveys for southwestern willow flycatcher and least Bell's vireo, a focused habitat assessment was conducted by a qualified biologist to identify locations of suitable southwestern willow flycatcher and least Bell's vireo habitat (i.e., willow-dominated woodland and scrub along the San Luis Rey River) within the estimated Proposed Project impact area and surrounding 500-foot buffer (Attachment 1: Figure 3). The biologist conducted the habitat assessment by walking throughout the Proposed Project impact area and buffer and assessing the vegetation communities based on plant species composition, height, and density for their potential to support the southwestern willow flycatcher and least Bell's vireo. The biologist drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems (GIS) specialist using ArcGIS software. These previously mapped southwestern willow flycatcher and least Bell's vireo suitable habitat polygons were verified during the first protocol surveys for the species in 2021.

Focused Surveys

A USFWS-permitted biologist conducted focused, protocol-level surveys for the southwestern willow flycatcher and least Bell's vireo in accordance with the current USFWS-accepted survey protocols, titled *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* and *Least Bell's Vireo Survey Guidelines*, and as summarized below (Sogge et al. 2010; USFWS 2001). Sensitive species detections were recorded electronically using a hand-held Global Positioning Systems (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

Southwestern Willow Flycatcher

The southwestern willow flycatcher survey protocol entails intensive surveys of suitable habitat as well as detailed datasheets documenting detections, habitat, and other information about the southwestern willow flycatcher. Five surveys were conducted during the three survey periods outlined in the protocol, including one survey conducted during the first period (May 15 to June 1), two surveys conducted during the second period (June 1 to June 24), and two surveys conducted during the third period (June 24 to July 17). All surveys were conducted between approximately 0530 and 1030 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the southwestern willow flycatcher.

The USFWS Willow Flycatcher Survey and Detection Form was completed during each survey. Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the southwestern willow flycatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded southwestern willow flycatcher vocalization playbacks were used only to elicit initial calls from the southwestern willow flycatcher and were not used

frequently or to elicit further behaviors. Pre-recorded vocalizations were played for a period of 10 to 15 seconds and were generally repeated approximately every 70 to 100 feet within the surveyed habitat. No more than approximately 0.6 mile of suitable habitat was surveyed per day by the USFWS-permitted biologist.

Least Bell's Vireo

The least Bell's vireo survey protocol includes a total of eight surveys that are conducted at least 10 days apart during the protocol survey window of April 10 to July 31. All surveys were conducted between approximately dawn and 1100 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the least Bell's vireo. Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the least Bell's vireo. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas. No more than approximately 3 linear kilometers (1.8 miles; 50 hectares) of suitable habitat was surveyed per day, per the protocol.

RESULTS

The results of the habitat assessment and focused, protocol-level surveys for southwestern willow flycatcher and least Bell's vireo are presented in this section.

Habitat Assessment

A habitat assessment was conducted within the Proposed Project impact area and 500-foot buffer by RECON on March 7, 2017 (Attachment 1: Figure 3). RECON biologists updated the vegetation mapping in 2021, updating the area of suitable habitat for the species. An approximate total of 8.46 acres of suitable southwestern willow flycatcher and least Bell's vireo habitat was identified within the Proposed Project impact area and surrounding 500-foot buffer, and included in the 2021 surveys. Potentially suitable habitat that required surveys includes non-native riparian and disturbed southern riparian scrub. This potentially suitable habitat ranges from low to moderate quality for southwestern willow flycatcher and least Bell's vireo and is briefly described below.

Approximately 3.48 acres of non-native riparian occurs along the north bank of the San Luis Rey River and contains a dense canopy ranging in height from approximately 15 to 30 feet and is dominated by non-native plant species such as Brazilian pepper tree (*Schinus terebinthifolius*), tamarisk, giant reed (*Arundo donax*), and Canary Island date palm (*Phoenix canariensis*), with scattered native species such as Hinds' willow (*Salix exigua* var. *hindsiana*), arroyo willow (*Salix lasiolepis*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*). The understory ranges from open to dense vegetation and is dominated by native species such as mule fat (*Baccharis salicifolia*), southern cattail (*Typha domingensis*), California bulrush (*Schoenoplectus californicus*), western poison oak (*Toxicodendron diversilobum*), yerba mansa (*Anemopsis californica*), and coyote brush (*Baccharis pilularis*), and non-native species such as castor bean (*Ricinus communis*) and garden nasturtium (*Tropaeolum majus*). Non-native riparian provides low quality habitat for the southwestern willow flycatcher and least Bell's vireo, because it contains a high level of

disturbance and high density of non-native plant species not typically associated with the species' preferred habitat.

Approximately 4.98 acres of disturbed southern riparian scrub occurs in patches in the survey area, predominantly on the north and south banks of the San Luis Rey River. This vegetation community contains a dense canopy ranging in height from approximately 15 to 20 feet and is dominated by native species such as Hinds' willow and arroyo willow, with scattered invasive, non-native species such as tamarisk and giant reed. The understory ranges from open to dense vegetation and is dominated by native species such as mule fat, southern cattail, California bulrush, western poison oak, and coyote brush. In addition, a small, disjunct patch of disturbed southern riparian scrub occurs south of the San Luis Rey River and the bike path. The disturbed southern riparian scrub within the survey area provides moderate quality habitat for the southwestern willow flycatcher and least Bell's vireo, because it is dominated by native riparian species typically associated with the species but also contains a low to moderate level of disturbance and a low to moderate density of non-native plant species not typically associated with the species' preferred habitat.

Focused Surveys

The focused, protocol-level surveys were conducted within approximately 8.46 acres of potentially suitable habitat within the Proposed Project impact area and surrounding 500-foot buffer between May 21 and July 9, 2021 for southwestern willow flycatcher and between April 20 and July 9, 2021 for least Bell's vireo. No southwestern willow flycatcher or least Bell's vireo were detected within the Proposed Project impact area or the 500-foot survey buffer. Surveys were conducted during appropriate weather conditions by USFWS-permitted BBS biologists Erik LaCoste (TE-837308-6), Charles Vettes (TE-20160B-2), and Darin Busby (TE-115373-4). Dates, times, weather conditions, and surveyors for the focused surveys are provided in Tables 1 and 2, below.

Table 1. Southwestern Willow Flycatcher Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precip	
1	5/21/21	Start	0600	58	2-4	100	0	E. LaCoste
		End	0800	60	3-6	60	0	
2	6/01/21	Start	0700	61	0-1	100	0	E. LaCoste
		End	0900	63	2-4	100	0	C. Vettes
3	6/15/21	Start	0600	64	1-3	100	0	C. Vettes
		End	0800	66	2-4	60	0	
4	6/25/21	Start	0530	61	0-1	100	0	C. Vettes
		End	0730	62	1-3	100	0	
5	7/09/21	Start	0600	71	0-2	100	0	C. Vettes
		End	0800	76	1-4	35	0	

Table 2. Least Bell's Vireo Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precipitation	
1	4/20/21	Start	0820	59	2-5	100	0	D. Busby C. Vettes
		End	1020	63	3-7	0	0	
2	4/30/21	Start	0800	67	0-1	0	0	E. LaCoste C. Vettes
		End	1000	74	2-4	0	0	
3	5/11/21	Start	0815	61	1-3	100	0	E. LaCoste C. Vettes
		End	1015	62	2-4	100	0	
4	5/21/21	Start	0800	60	3-6	60	0	E. LaCoste
		End	1000	65	3-6	20	0	
5	6/1/21	Start	0900	61	2-4	100	0	E. LaCoste C. Vettes
		End	1100	63	3-5	50	0	
6	6/15/21	Start	0800	66	2-4	60	0	E. LaCoste
		End	1000	68	5-7	30	0	
7	6/25/21	Start	0730	62	1-3	100	0	C. Vettes
		End	0930	63	1-3	100	0	
8	7/9/21	Start	0800	68	1-4	35	0	C. Vettes
		End	1000	70	2-6	10	0	

A total of 63 wildlife species were detected during the focused surveys (Attachment 2). One sensitive species, yellow warbler (*Setophaga petechia*), a CDFW species of special concern, was detected during the focused surveys (Attachment 1: Figure 3). It should be noted that the yellow warbler location in Figure 3 (Attachment 1) reflects repeated detections of the same individual(s) from one survey to the next and is not intended to represent the quantity of individuals present but rather a territory for this pair or individual. Attachment 5 includes the completed USFWS Willow Flycatcher Survey and Detection Form. The survey data will be submitted to the California Natural Diversity Database (CNDDB) by RECON Environmental, Inc. by the end of 2021.

SUMMARY

No southwestern willow flycatcher or least Bell's vireo were detected within or adjacent to the Proposed Project survey area during the focused, protocol-level surveys conducted for the species during the 2021 breeding season. However, these species have potential to occur, as the patches of potentially suitable habitat within the Proposed Project impact area and 500-foot survey buffer provide low to moderate quality habitat for this species. Although this habitat is largely disturbed and contains non-native plant species not typically associated with the species' preferred habitat, the habitat within the survey area is contiguous with larger swaths of potentially suitable habitat east of the survey area.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Charles Vettes at charles@busbybiological.com or (559) 707-0548 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.

cc: Wendy Loeffler, RECON Environmental
Perry Schacht, Moffatt & Nichol
Matt Burgard, Dewberry | Drake Haglan
David Toschak, City of Oceanside
Richard Greenbauer, City of Oceanside
Kevin Hovey, Caltrans

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected
Attachment 3: Willow Flycatcher Survey and Detection Form

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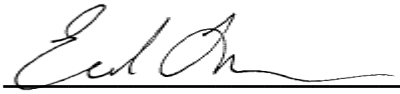
U.S. Geological Survey (USGS)
1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1997)

PROJECT BIOLOGIST SIGNATURE PAGE

The project biologists performing focused, protocol-level southwestern willow flycatcher and least Bell's vireo surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) were qualified to survey for these species. The undersigned project biologists certify this report to be a complete and accurate account of the findings and conclusions of surveys for southwestern willow flycatcher and least Bell's vireo conducted for the Proposed Project during spring 2021.



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.
ESA Permit Number TE-115373-4



Erik LaCoste
Senior Biologist
Busby Biological Services, Inc.
ESA Permit Number TE-027736-6



Charles Vettes
Biologist
Busby Biological Services, Inc.
ESA Permit Number TE-20160B-2

ATTACHMENT 1 – Figures



Project Location

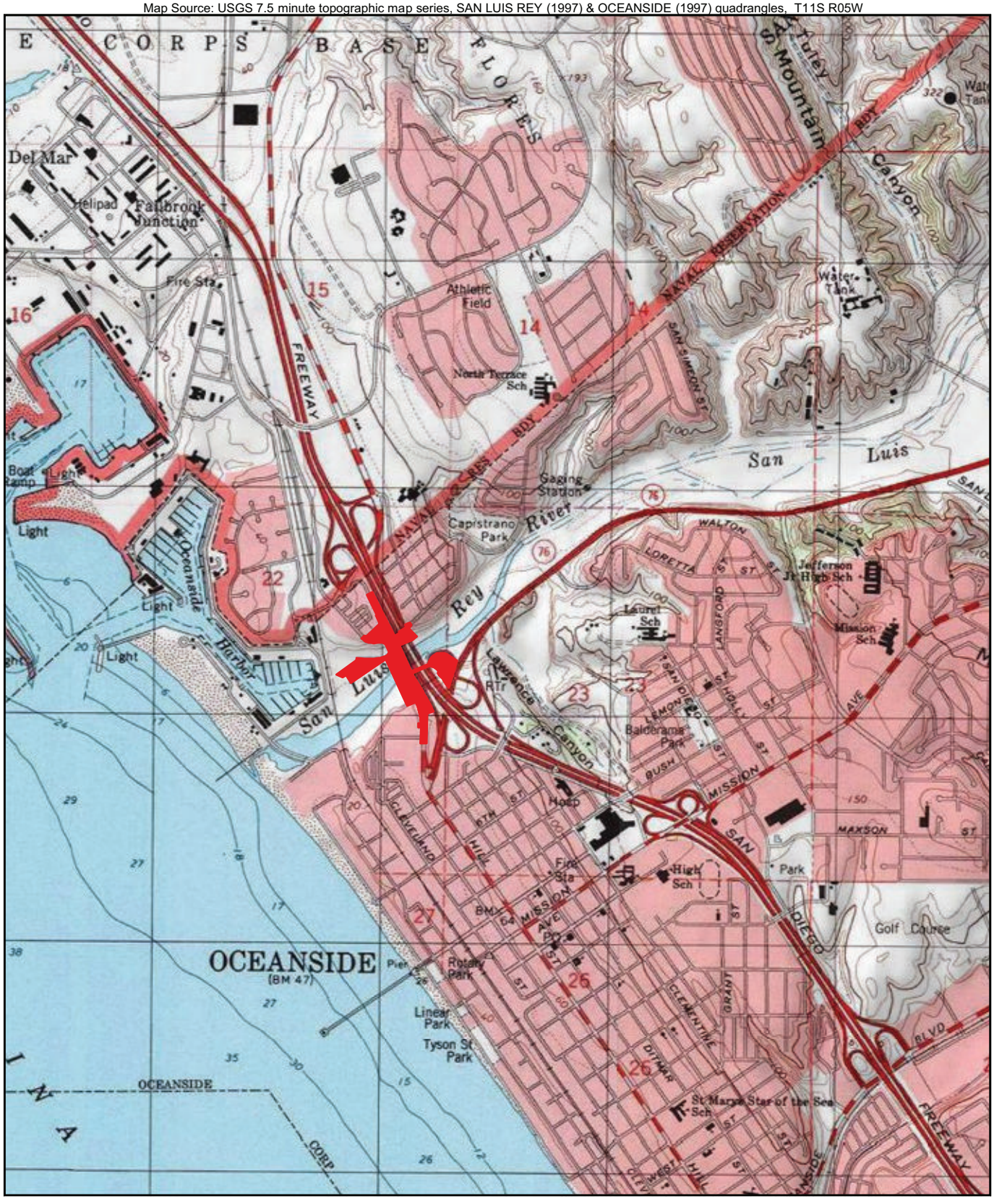
FIGURE 1

Regional Location

RECON

M:\JOBS4\7380\common_gis\fig1.mxd 4/14/2015 sab

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



0 Feet 2,000

Project Impact Area

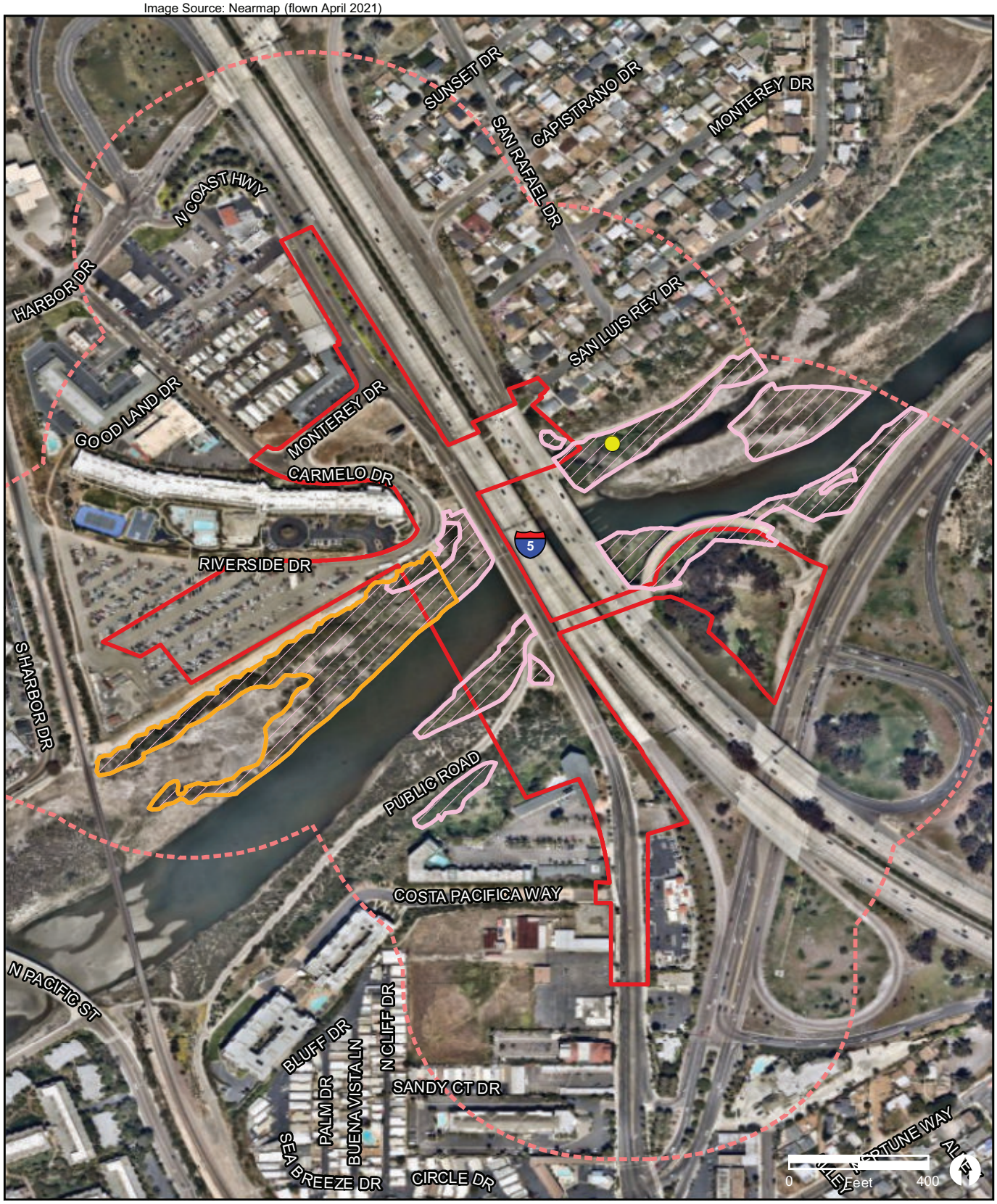
FIGURE 2

Project Location on USGS Map

RECON

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Image Source: Nearmap (flown April 2021)



Project Impact Area

500-foot Buffer

Habitat Enhancement Area (Project Mitigation)

Least Bell's Vireo and Southwestern Willow Flycatcher Survey Area

Sensitive Wildlife Species Observations

Yellow Warbler

FIGURE 3

Least Bell's Vireo and Southwestern Willow Flycatcher Survey Results

RECON

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ATTACHMENT 2 – Wildlife Species Detected

VERTEBRATES	
Class Aves	**Birds**
Order Anseriformes	**Ducks, Geese, and Swans**
Family Anatidae	**Ducks, Geese, and Swans**
Anas platyrhynchos	Mallard
Order Podicipediformes	**Grebes**
Family Podicipedidae	**Grebes**
Podilymbus podiceps	Pied-billed Grebe
Order Psittaciformes	**Parrots**
Family Psittacidae	**Parrots**
	Unidentified Parrot
Order Pelecaniformes	**Pelicans, Herons, Ibises, and Allies**
Family Threskiornithidae	**Ibises and Spoonbills**
Plegadis chihi	White-faced Ibis
Family Phalacrocoracidae	**Cormorants**
Phalacrocorax auritus albociliatus	Double-crested Cormorant
Family Ardeidae	**Bitterns, Herons, and Allies**
Ardea alba	Great Egret
Ardea Herodias	Great Blue Heron
Butorides virescens	Green Heron
Egretta thula	Snowy Egret
Nycticorax nycticorax	Black-crowned Night-heron
Order Cathartiformes	**New World Vultures**
Family Vulturidae or Cathartidae	**New World Vultures**
Order Accipitriformes	**Hawks, Kites, Eagles, and Allies**
Family Pandionidae	**Ospreys**
Pandion haliaetus	Osprey
Family Accipitridae	**Hawks, Kites, Eagles, and Allies**
Accipiter cooperii	Cooper's Hawk
Buteo lineatus	Red-shouldered Hawk
Buteo jamaicensis	Red-tailed Hawk
Order Charadriiformes	**Shorebirds, Gulls, Auks, and Allies**
Family Charadriidae	**Plovers**
Charadrius vociferus	Killdeer
Family Scolopacidae	**Sandpipers and Snipes**
Tringa semipalmata	Willet
Family Laridae	**Terns and Gulls**
Hydroprogne caspia	Caspian Tern

	Unidentified Gull
Family Recurvirostridae	**Stilts and Avocets**
Recurvirostra americana	American Avocet
Order Columbiformes	**Pigeons and Doves**
Family Columbidae	**Pigeons and Doves**
Columba livia	Rock Pigeon
Streptopelia decaocto	Eurasian Collared-dove
Zenaida macroura	Mourning Dove
Order Falconiformes	**Falcons and Kestrel**
Family Falconidae	**Falcons and Kestrel**
Falco sparverius	American Kestrel
Order Apodiformes	**Swifts and Hummingbirds**
Family Apodidae	**Swifts**
Aeronautes saxatalis	White-throated Swift
Family Trochilidae	**Hummingbirds**
Calypte anna	Anna's Hummingbird
Calypte costae	Costa's Hummingbird
Selasphorus rufus	Rufous Hummingbird
Selasphorus sasin	Allen's Hummingbird
Order Passeriformes	**Perching Birds**
Family Picadae	**Sapsuckers and Woodpeckers**
Picoides nuttallii	Nuttall’s Woodpecker
Family Tyrannidae	**Tyrant Flycatchers**
Contopus sordidulus	Western Wood-Pewee
Empidonax difficilis	Pacific-slope Flycatcher
Sayornis nigricans	Black Phoebe
Tyrannus vociferans	Cassin's Kingbird
Family Vireonidae	**Tyrant Flycatchers**
Vireo gilvus	Warbling Vireo
Vireo huttoni	Hutton's Vireo
Family Corvidae	**Crows and Jays**
Aphelocoma californica	California Scrub-jay
Family Alaudidae	**Larks**
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Family Hirundinidae	**Swallows**
Hirundo pyrrhonota	Cliff Swallow
Stelgidopteryx serripennis	Northern Rough-winged Swallow

Hirundo rustica erythrogaster	Barn Swallow
Family Aegithalidae	**Bushtits**
Psaltriparus minimus	Bushtit
Family Troglodytidae	**Wrens**
Thryomanes bewickii	Bewick's Wren
Thryomanes bewickii	House Wren
Family Timaliidae	**Babblers**
Chamaea fasciata	Wrentit
Family Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	Northern Mockingbird
Toxostoma redivivum	California Thrasher
Family Sturnidae	**Starlings**
Sturnus vulgaris	European Starling
Family Parulidae	**Wood-Warblers**
Cardellina pusilla	Wilson's Warbler
Geothlypis trichas	Common Yellowthroat
Vermivora celata	Orange-crowned Warbler
Setophaga coronata	Yellow-rumped Warbler
*Setophaga petechia**	Yellow Warbler
Family Emberizidae	**Emberizids**
Melospiza melodia	Song Sparrow
Zonotrichia leucophrys	White-crowned Sparrow
Pipilo crissalis	California Towhee
Pipilo maculatus	Spotted Towhee
Family Cardinalidae	**Cardinals and Allies**
Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae	**Blackbirds**
Agelaius phoeniceus	Red-winged Blackbird
Icterus cucullatus	Hooded Oriole
Quiscalus mexicanus	Great-tailed Grackle
Family Fringillidae	**Fringilline and Cardueline Finches and Allies**
Carduelis psaltria	Lesser Goldfinch
Carpodacus mexicanus	House Finch

ATTACHMENT 3 – USFWS Willow Flycatcher Survey and Detection Form

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Coast Highway Bridge Replacement State CA County San Diego
USGS Quad Name Oceanside Elevation 0-7 (meters)
Creek, River, Wetland, or Lake Name San Luis Rey
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ***Yes*** X ***No*** ___

Survey Coordinates: Start: E 464343 N 3674317 UTM Datum NAD83 (See instructions)
Stop: E 463794 N 3674067 UTM Zone 11S
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
***** Fill in additional site information on back of this page *****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) Charles Vettes	Date 5/21/21 Start 0600 Stop 0800 Total hrs 2	0	0	0	N	N/A			N/A	
Survey # 2 Observer(s) C.V.	Date 6/1/21 Start 0700 Stop 0900 Total hrs 2	0	0	0	N	N/A			N/A	
Survey # 3 Observer(s) C.V.	Date 6/15/21 Start 0600 Stop 0800 Total hrs ___	0	0	0	N	N/A			N/A	
Survey # 4 Observer(s) C.V.	Date 6/25/21 Start 0530 Stop 0730 Total hrs ___	0	0	0	N	N/A			N/A	
Survey # 5 Observer(s) C.V.	Date 7/9/21 Start 0600 Stop 0800 Total hrs 2	0	0	0	N	N/A			N/A	

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS. N/A
	0	0	0	0	

Reporting Individual Charles Vettes Date Report Completed August 2021
US Fish and Wildlife Service Permit # 20160B-2 State Wildlife Agency Permit # SC-012825
Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Charles Vettes Phone # 559-707-0548
Affiliation Busby Biological Services, Inc. E-mail charles@busbybiological.com
Site Name Coast Highway Bridge Replacement Date Report Completed August 2021
Was this site surveyed in a previous year? Yes X No ___ Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes X No ___ Not Applicable ___
If site name is different, what name(s) was used in the past? ___
If site was surveyed last year, did you survey the same general area this year? Yes X No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County X State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) City of Oceanside

Length of area surveyed: ~0.4 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

___ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

X Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Schinus terebinthifolius, Tamarix ramosissima, Salix lasiolepis

Average height of canopy (Do not include a range): 7 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.
No willow flycatchers were detected. Survey area contains low to moderate quality habitat for the species.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
N/A						

Attach additional sheets if necessary

BUSBY
Biological Services

October 10, 2017

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: SOUTHWESTERN WILLOW FLYCATCHER 2017 SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY (HILL STREET) BRIDGE OVER SAN LUIS REY RIVER REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally and state-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*) that were conducted in 2017 by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2).

PROJECT INFORMATION

The Proposed Project includes replacement of the existing Coast Highway (Hill Street) bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. RECON provided BBS with a survey area based on the preliminary, estimated Proposed Project impact area, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (see Attachment 1: Figure 3).

The main portion of the Proposed Project (i.e., Coast Highway Bridge) is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (see Attachment 1: Figures 1 through 3). Other project components (e.g., roadway approaches, construction staging and access areas) extend north and south along Coast Highway and east along the north side of the San Luis Rey River. The Proposed Project is

located within Township 11 South, Range 5 West, and in Sections 22 and 23 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; see Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (see Attachment 1: Figure 3). Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

SPECIES INFORMATION

The southwestern willow flycatcher is a small, olive-colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of willow flycatcher, it is distinguished by breeding distribution, song, call and plumage. The southwestern willow flycatcher is a neotropic migrant that is endemic to the Americas and is a summer breeding resident in the southwestern U.S., specifically within Arizona, New Mexico, southern California, southern portions of Nevada and Utah, southwestern Colorado, far western Texas, and extreme northwestern Mexico (U.S. Fish and Wildlife Service [USFWS] 2002). It is the only subspecies of willow flycatcher that is known to breed in southern California, ranging from Kern County to San Diego County. This species arrives on breeding territories by late April to early May and migrates southward again to wintering areas in southern Mexico, Central America, and northern South America in August and September. The two other subspecies of willow flycatcher (e.g., *E. t. brewsteri* and *E. t. adastus*) migrate through southern California in the spring and fall to and from their breeding grounds in northern California.

The southwestern willow flycatcher typically breeds in patchy to dense, well-developed riparian woodlands that occur along streams, rivers, lakes, or other wetlands, are below 8,000 feet in elevation, and provide surface water and/or saturated soil during mid-summer (Sedgwick 2000; Sogge et al. 1997; USFWS 2002). Typical breeding habitat for southwestern willow flycatcher is composed of native riparian plant species such as willows (*Salix* spp.) and mule fat (*Baccharis salicifolia*) in patches at least two acres in size or in linear-shaped habitats at least 10 meters (33 feet) wide (Sogge et al. 1997). However, the species has also been observed successfully breeding in riparian communities dominated by extensive patches of invasive, non-native species such as tamarisk (*Tamarix ramosissima*) and Russian olive (*Eleagnus angustifolia*) (USFWS 2002).

Once a common species in southern California, in the early 20th century the southwestern willow flycatcher population collapsed from the combined effects of habitat loss and nest parasitism by brown-headed cowbird (*Molothrus ater*; Craig and Williams 1998; Garrett and Dunn 1981; Sedgwick 2000; Unitt 2004; USFWS 2002), which is an obligate brood parasite that has been documented to lay its eggs in the nests of over 200 different bird species,

often causing death to some or all of the host species eggs and nestlings (Eastzer et al. 1980). As of 2003, in southern California, the southwestern willow flycatcher bred locally at 75 known sites within 18 drainages from San Diego to Santa Barbara and Kern counties and the Owens Valley, most notably within the San Luis Rey, Santa Ana, Santa Ynez, Owens, and Kern rivers, which supported approximately 70 percent of known territories (Sogge et. al. 2003). As of 2004, of the estimated 200 breeding pairs in southern California, nearly half of them occurred in San Diego County, primarily along the upper San Luis Rey River (Unitt 2004).

METHODS

Methods used for the habitat assessment and focused surveys are described, below.

Habitat Assessment Methods

Prior to initiating the focused surveys for southwestern willow flycatcher, a focused habitat assessment was conducted by qualified biologists to identify locations of suitable southwestern willow flycatcher habitat within the estimated Proposed Project impact area and surrounding 500-foot buffer (see Attachment 1: Figure 3). Biologists conducted the habitat assessment by walking throughout the Proposed Project impact area and buffer and assessing the vegetation communities based on plant species composition, height, and density for their potential to support the southwestern willow flycatcher. Biologists drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems (GIS) specialist using ArcGIS software.

Focused Survey Methods

A USFWS-permitted biologist conducted protocol-level surveys for the southwestern willow flycatcher in accordance with the current USFWS-accepted survey protocol, titled *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge et al. 2010). The survey protocol entails intensive surveys of suitable habitat as well as detailed datasheets documenting detections, habitat, and other information about the southwestern willow flycatcher.

Five surveys were conducted during the three survey periods outlined in the protocol, including one survey conducted during the first period (May 15 to June 1), two surveys conducted during the second period (June 1 to June 24), and two surveys conducted during the third period (June 24 to July 17). All surveys were conducted between approximately 0530 and 1030 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the southwestern willow flycatcher.

Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the southwestern willow flycatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded southwestern willow flycatcher vocalization playbacks were used only to elicit initial calls from the southwestern willow flycatcher and were not used frequently or to elicit further behaviors. Pre-recorded vocalizations were played for a period of 10 to 15

seconds and were generally repeated approximately every 70 to 100 feet within the surveyed habitat. No more than approximately 0.6 mile of suitable habitat was surveyed per day by the USFWS-permitted biologist.

Sensitive species detections were recorded electronically using a hand-held Global Positioning Systems (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

RESULTS

The results of the habitat assessment and focused, protocol-level southwestern willow flycatcher surveys are presented in this section.

Habitat Assessment Results

Qualified BBS biologist Darin Busby and RECON biologist Brenna Ogg initially identified potentially suitable southwestern willow flycatcher habitat within the Proposed Project impact area and 500-foot buffer on March 20, 2015. Following Proposed Project design revisions, additional habitat assessments were performed by RECON biologists Gerry Scheid and JR Sundberg on October 24, 2016, and Brian Parker on March 7, 2017. During these habitat assessments, additional potentially suitable southwestern willow flycatcher habitat was identified, and the 2017 survey area maps were updated (see Attachment 1: Figure 3). An approximate total of 7.14 acres of suitable southwestern willow flycatcher habitat was identified within the Proposed Project impact area and surrounding 500-foot buffer, and included in the 2017 surveys.

Potentially suitable habitat that required surveys includes non-native riparian and disturbed southern riparian scrub. This potentially suitable habitat ranges from low to moderate quality for southwestern willow flycatcher and is briefly described below.

The dominant vegetation community within the survey area is non-native riparian. The majority of this vegetation community occurs along the north bank of the San Luis Rey River and contains a dense canopy ranging in height from approximately 15 to 30 feet and is dominated by non-native plant species such as Brazilian pepper tree (*Schinus terebinthifolius*), saltcedar (*Tamarix ramosissima*), giant reed (*Arundo donax*), and Canary Island date palm (*Phoenix canariensis*), with scattered native species such as Hinds' willow (*Salix exigua* var. *hindsiana*), arroyo willow (*Salix lasiolepis*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*). The understory ranges from open to dense vegetation and is dominated by native species such as mule fat (*Baccharis salicifolia*), southern cattail (*Typha domingensis*), California bulrush (*Schoenoplectus californicus*), western poison oak (*Toxicodendron diversilobum*), yerba mansa (*Anemopsis californica*), and coyote brush (*Baccharis pilularis*), and non-native species such as castor bean (*Ricinus communis*) and garden nasturtium (*Tropaeolum majus*). Non-native riparian provides low quality habitat for the southwestern willow flycatcher, because it contains a high level of disturbance and high density of non-native plant species not typically associated with the species' preferred habitat.

Disturbed southern riparian scrub occurs in relatively small patches in the survey area, predominantly on the north and south banks of the San Luis Rey River. This vegetation community contains a dense canopy ranging in height from approximately 15 to 20 feet and is dominated by native species such as Hinds' willow and arroyo willow, with scattered non-native species such as saltcedar and giant reed. The understory ranges from open to dense vegetation and is dominated by native species such as mule fat, southern cattail, California bulrush, western poison oak, and coyote brush. In addition, a small, disjunct patch of disturbed southern riparian scrub occurs south of the San Luis Rey River and the bike path. The disturbed southern riparian scrub within the survey area provides moderate quality habitat for the southwestern willow flycatcher, because it is dominated by native riparian species typically associated with the species but also contains a low to moderate level of disturbance and a low to moderate density of non-native plant species not typically associated with the species' preferred habitat.

Focused Survey Results

The focused, protocol-level surveys were conducted within and adjacent to 7.14 acres of potentially suitable habitat within the Proposed Project impact area and surrounding 500-foot buffer between May 15 and July 12, 2017. No southwestern willow flycatchers were detected within the Proposed Project impact area or the 500-foot survey buffer. Surveys were conducted during appropriate weather conditions by USFWS-permitted BBS biologist Erik LaCoste (TE-027736-6), with support from BBS biologist Andrew Kort. Dates, times, weather conditions, and surveyors for the focused surveys are provided in Table 1, below.

Table 1. Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precip	
1	5/15/17	Start	0700	59	2-4	50	0	E. LaCoste
		End	0900	67	2-4	10	0	A. Kort
4	6/5/17	Start	0700	63	0-1	100	0	E. LaCoste
		End	0900	63	0-2	100	0	A. Kort
5	6/20/17	Start	0650	67	0-1	100	0	E. LaCoste
		End	1050	74	1-2	50	0	A. Kort
6	7/3/17	Start	0645	68	0-1	100	0	E. LaCoste
		End	1045	75	3-5	0	0	A. Kort
7	7/12/17	Start	0700	71	0-1	100	0	E. LaCoste
		End	0930	76	1-3	0	0	A. Kort

A total of 58 wildlife species were detected during the focused surveys (Attachment 2). Four sensitive species were detected within the 500-foot survey buffer during the survey, including the federally and state-listed endangered least Bell's vireo (*Vireo bellii pusillus*) and CDFW species of special concern Clark's marsh wren (*Cistothorus palustris clarkae*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens auricollis*) (see Attachment 1: Figure 3). Yellow warbler was also detected within the Proposed Project impact area, west of the existing Coast Highway bridge. It should be noted that the locations of sensitive species in Figure 3 of Attachment 1 may reflect repeated detections of the same individuals of a species from one survey to the next and are not intended to represent the quantity of individuals present.

SUMMARY

No southwestern willow flycatchers were detected within or adjacent to the Proposed Project survey area during the focused, protocol-level surveys conducted for the species during the 2017 breeding season. However, this species has potential to occur, as the patches of potentially suitable habitat within the Proposed Project impact area and 500-foot survey buffer provide low to moderate quality habitat for this species. Although this habitat is largely disturbed and contains non-native plant species not typically associated with the species' preferred habitat, the habitat within the survey area is contiguous with larger swaths of potentially suitable habitat.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Melissa Busby at melissa@busbybiological.com or (858) 334-9507 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.

cc: Brenna Ogg, RECON Environmental
Perry Schacht, Moffatt & Nichol
Matt Burgard, Drake Haglan & Associates
Richard Greenbauer, City of Oceanside
Michelle Blake, Caltrans

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected

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1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1997)

PROJECT BIOLOGIST SIGNATURE PAGE

The project biologists performing focused, protocol-level, southwestern willow flycatcher (*Empidonax traillii extimus*) surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) were qualified to survey for this species. The undersigned project biologists certify this report to be a complete and accurate account of the findings and conclusions of surveys for southwestern willow flycatcher conducted for the Proposed Project during spring 2017.



Erik LaCoste
Senior Biologist
Busby Biological Services, Inc.
ESA Permit Number TE-027736-6

ATTACHMENT 1 – Figures



Project Location

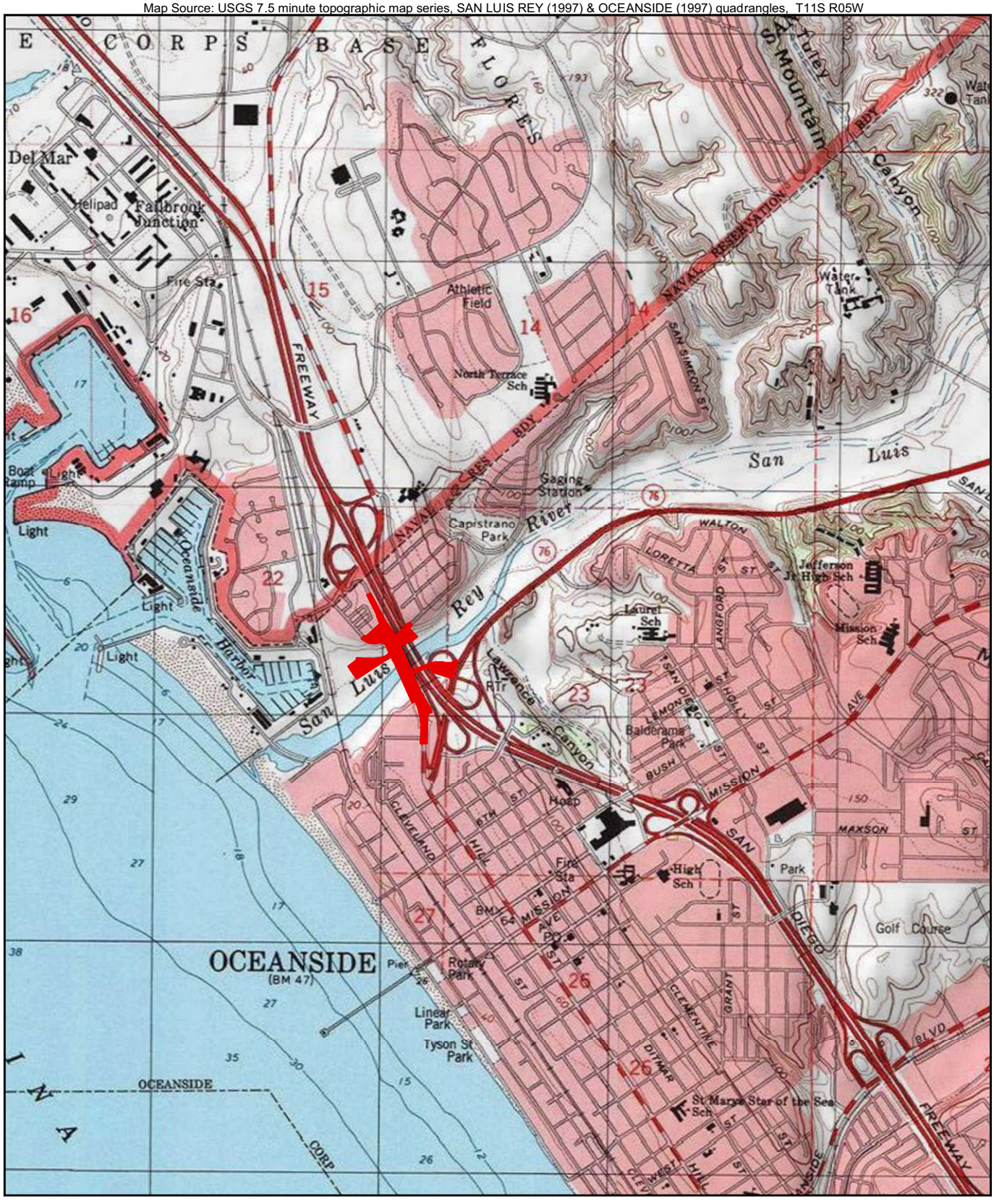
RECON

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FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



Project Impact Area

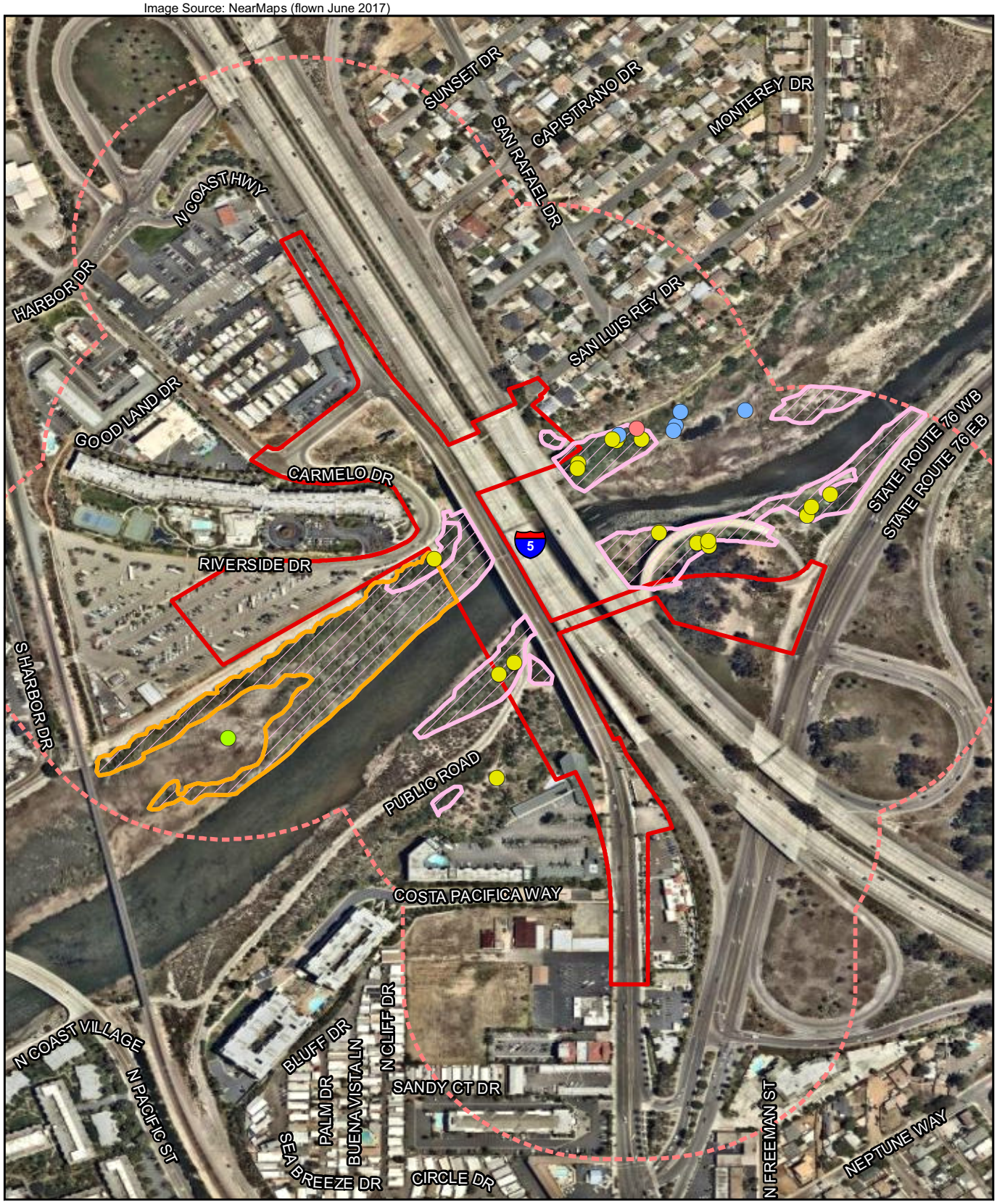
FIGURE 2

Project Location on USGS Map

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Image Source: NearMaps (flown June 2017)



Project Impact Area
500-foot Buffer
Habitat Enhancement Area (Project Mitigation)
Least Bell's Vireo and Southwestern Willow Flycatcher Survey Area

Wildlife Observations

- Least Bell's Vireo
- Marsh Wren
- Yellow Warbler
- Yellow-breasted Chat

0 Feet 400

FIGURE 3

Least Bell's Vireo and Southwestern Willow Flycatcher Survey Results

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ATTACHMENT 2 – Wildlife Species Detected

Attachment 2 - Wildlife Species Detected

VERTEBRATES		
Class Aves		**Birds**
Order Anseriformes		**Ducks, Geese, and Swans**
Family Anatidae		**Ducks, Geese, and Swans**
	Anas platyrhynchos	Mallard
	Oxyura jamaicensis	Ruddy Duck
Order Podicipediformes		**Grebes**
Family Podicipedidae		**Grebes**
	Aechmophorus occidentalis	Western Grebe
	Podiceps nigricollis cakifornicus	Eared Grebe
Order Pelecaniformes		**Pelicans, Herons, Ibises, and Allies**
Family Pelicanidae		**Pelicans**
	Oelecanus occidentalis californicus	Brown Pelican
Family Phalacrocoracidae		**Cormorants**
	Phalacrocorax auritus albociliatus	Double-crested Cormorant
Family Ardeidae		**Bitterns, Herons, and Allies**
	Ardea alba	Great Egret
	Ardea Herodias	Great Blue Heron
	Egretta thula	Snowy Egret
	Nycticorax nycticorax	Black-crowned Night-heron
Order Cathartiformes		**New World Vultures**
Family Vulturidae or Cathartidae		**New World Vultures**
	Cathartes aura	Turkey Vulture
Order Accipitriformes		**Hawks, Kites, Eagles, and Allies**
Family Accipitridae		**Hawks, Kites, Eagles, and Allies**
	Pandion haliaetus	Osprey
	Buteo jamaicensis	Red-tailed Hawk
Order Charadriiformes		**Shorebirds, Gulls, Auks, and Allies**
Family Scolopacidae		**Sandpipers and Snipes**
	Actitis macularius	Spotted Sandpiper
Family Laridae		**Plovers**
	Larus occidentalis	Western Gull
Order Columbiformes		**Pigeons and Doves**
Family Columbidae		**Pigeons and Doves**
	Columba livia	Rock Pigeon
	Streptopelia decaocto	Eurasian Collared-dove
	Zenaida macroura	Mourning Dove
Order Apodiformes		**Swifts and Hummingbirds**
Family Apodidae		**Swifts**
	Aeronautes saxatalis	White-throated Swift
Family Trochilidae		**Hummingbirds**
	Calypte anna	Anna's Hummingbird
	Selasphorus rufus	Rufous Hummingbird

	Selasphorus sasin	Allen's Hummingbird
Order Passeriformes		**Perching Birds**
Family Picadae		**Sapsuckers and Woodpeckers**
	Picoides nuttallii	Nuttall's Woodpecker
Family Tyrannidae		**Tyrant Flycatchers**
	Empidonax difficilis difficilis	Pacific-slope Flycatcher
	Sayornis nigricans	Black Phoebe
Family Vireonidae		**Vireos**
	Vireo bellii pusillus	Least Bell's Vireo
	Vireo huttoni	Hutton's Vireo
Family Corvidae		**Crows and Jays**
	Aphelocoma californica	Western Scrub-jay
Family Alaudidae		**Larks**
	Corvus brachyrhynchos	American Crow
	Corvus corax	Common Raven
Family Hirundinidae		**Swallows**
	Hirundo pyrrhonota	Cliff Swallow
	Stelgidopteryx serripennis	Northern Rough-winged Swallow
	Hirundo rustica erythrogaster	Barn Swallow
Family Aegithalidae		**Bushtits**
	Psaltriparus minimus	Bushtit
Family Troglodytidae		**Wrens**
	Thryomanes bewickii	Bewick's Wren
	Cistothorus palustris clarkae	Clark's Marsh Wren
Family Timaliidae		**Babblers**
	Chamaea fasciata	Wrentit
Family Mimidae		**Mockingbirds and Thrashers**
	Mimus polyglottos	Northern Mockingbird
	Toxostoma redivivum	California Thrasher
Family Sturnidae		**Starlings**
	Sturnus vulgaris	European Starling
Family Parulidae		**Wood-Warblers**
	Dendroica petechia	Yellow Warbler
	Geothlypis trichas	Common Yellowthroat
	Vermivora celata	Orange-crowned Warbler
	Icteria virens auricollis	Yellow-breasted Chat
Family Emberizidae		**Emberizids**
	Melospiza melodia	Song Sparrow
	Pipilo crissalis	California Towhee
	Pipilo maculatus	Spotted Towhee
Family Cardinalidae		**Cardinals and Allies**
	Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae		**Blackbirds**
	Agelaius phoeniceus	Red-winged Blackbird
	Icterus cucullatus	Hooded Oriole
	Icterus bullockii	Bullock's Oriole
	Quiscalus mexicanus	Great-tailed Grackle

Family Fringillidae		**Fringilline and Cardueline Finches and Allies**
	Carduelis psaltria	Lesser Goldfinch
	Carpodacus mexicanus	House Finch
Class Mammalia		**Mammals**
Order Lagomorpha		**Rabbits, Hares, and Pikas**
Family Leporidae		**Rabbits and Hares**
	Sylvilagus audubonii	Desert Cottontail
Order Rodentia		**Rodents**
Family Sciuridae		**Squirrels and Chipmunks**
	Spermophilus beecheyi	California Ground Squirrel
Order Carnivora		**Carnivores**
Family Canidae		**Dogs and foxes**
	Canis familiaris	Domestic Dog
Family Procyonidae		**Raccoons and Relatives**
	Procyon lotor	Raccoon

BUSBY
Biological Services

January 5, 2016

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: SOUTHWESTERN WILLOW FLYCATCHER SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY BRIDGE REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally and state-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*) that were conducted by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway Bridge Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2).

PROJECT INFORMATION

The Proposed Project includes replacement of the existing Coast Highway bridge. While the details of the Proposed Project design are not currently known, RECON, in coordination with Moffatt & Nichol, provided BBS with a preliminary, estimated Proposed Project footprint, which includes the existing bridge as well as all associated access routes and staging yards (Attachment 1: Figure 3). The Proposed Project is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (see Attachment 1: Figures 1 and 2). The Proposed Project is located within Township 11 South, Range 5 West, and in Section 22 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968) (see Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level (amsl).

The Proposed Project area is bordered on all sides by developed land, which includes Interstate 5, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses. Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, bridges, and a bike path, and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and estuarine. Other vegetation communities present in smaller proportions include

disturbed Diegan coastal sage scrub, Diegan coastal sage scrub/southern riparian scrub transition, coastal brackish marsh, and eucalyptus woodland.

SPECIES INFORMATION

The southwestern willow flycatcher is a small, olive-colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of willow flycatcher, it is distinguished by breeding distribution, song, call and plumage. The southwestern willow flycatcher is a neotropic migrant that is endemic to the Americas and is a summer breeding resident in the southwestern U.S., specifically within Arizona, New Mexico, southern California, southern portions of Nevada and Utah, southwestern Colorado, far western Texas, and extreme northwestern Mexico [U.S. Fish and Wildlife Service (USFWS) 2002]. It is the only race of willow flycatcher that is known to breed in southern California, ranging from Kern County to San Diego County. This species arrives on breeding territories by late April to early May and migrates southward again to wintering areas in southern Mexico, Central America, and northern South America in August and September. The two other subspecies of willow flycatcher (e.g., *E. t. brewsteri* and *E. t. adastus*) migrate through southern California in the spring and fall to and from their breeding grounds in northern California.

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Once a common species in southern California, in the early 20th century the southwestern willow flycatcher population collapsed from the combined effects of habitat loss and nest parasitism by brown-headed cowbird (*Molothrus ater*) (Craig and Williams 1998; Garret and Dunn 1981; Sedgwick 2000; Unitt 2004; USFWS 2002). Currently, in southern California it breeds locally at 75 known sites within 18 drainages from San Diego to Santa Barbara and Kern counties and the Owens Valley, most notably within the San Luis Rey, Santa Ana, Santa Ynez, Owens, and Kern rivers, which support approximately 70 percent of known territories (Sogge et. al. 2003). Currently, of the estimated 200 breeding pairs in southern California nearly half of them occur in San Diego County, primarily along the upper San Luis Rey River (Unitt 2004).

METHODS

Methods used for the habitat assessment and focused surveys are described below.

Habitat Assessment Methods

Prior to initiating the focused surveys for southwestern willow flycatcher, a focused habitat assessment was conducted by qualified biologists to identify locations of suitable

southwestern willow flycatcher habitat within the estimated Proposed Project footprint and surrounding 500-foot buffer (Attachment 1: Figure 4). Biologists conducted the habitat assessment by walking throughout the Proposed Project footprint and buffer and assessing the vegetation communities based on plant species composition, height, density, and overall patch size for their potential to support the southwestern willow flycatcher. Biologists drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems (GIS) specialist using ArcGIS software.

Focused Survey Methods

A USFWS-permitted biologist conducted protocol-level surveys for the southwestern willow flycatcher in accordance with the current USFWS-accepted survey protocol, titled *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge et al. 2010). The survey protocol entails intensive surveys of suitable habitat as well as detailed datasheets documenting detections, habitat, and other information about the southwestern willow flycatcher.

Five surveys were conducted during the three survey periods outlined in the protocol, including one survey conducted during the first period (May 15 to June 1), two surveys conducted during the second period (June 1 to June 24), and two surveys conducted during the third period (June 24 to July 17). All surveys were conducted between approximately 0530 and 1030 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that would impede detection of the southwestern willow flycatcher.

Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the southwestern willow flycatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded southwestern willow flycatcher vocalization playbacks were used only to elicit initial calls from the southwestern willow flycatcher and were not used frequently or to elicit further behaviors. Pre-recorded vocalizations were played for a period of 10 to 15 seconds and were generally repeated approximately every 70 to 100 feet within the surveyed habitat. No more than approximately 0.6 mile of suitable habitat was surveyed per day by the USFWS-permitted biologist.

Sensitive species detections were recorded electronically using a hand-held Global Positioning Systems (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

RESULTS

The results of the habitat assessment and focused, protocol-level southwestern willow flycatcher surveys are presented in this section.

Habitat Assessment Results

BBS biologist Darin Busby and RECON biologist Brenna Ogg identified an approximate total of 7.17 acres of potentially suitable southwestern willow flycatcher habitat within the Proposed Project footprint and 500-foot buffer during the habitat assessment conducted on March 20, 2015 (see Southwestern Willow Flycatcher Survey Area on Attachment 1: Figure 4). Potentially suitable habitat that required surveys includes non-native riparian and disturbed southern riparian scrub. This potentially suitable habitat ranges from low to moderate quality for southwestern willow flycatcher and is briefly described below.

Non-native riparian dominates the survey area, the majority of which occurs along the north bank of the San Luis Rey. This vegetation community contains a dense canopy ranging in height from approximately 15 to 30 feet, and is dominated by plant species such as Brazilian pepper tree (*Schinus terebinthifolius*), saltcedar (*Tamarix ramosissima*), giant reed (*Arundo donax*), Canary Island date palm (*Phoenix canariensis*); contains scattered Hinds' willow (*Salix exigua* var. *hindsiana*), arroyo willow (*Salix lasiolepis*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*); and contains an open to dense understory dominated by plant species such as mule fat (*Baccharis salicifolia*), southern cattail (*Typha domingensis*), California bulrush (*Schoenoplectus californicus*), western poison oak (*Toxicodendron diversilobum*), castor bean (*Ricinus communis*), garden nasturtium (*Tropaeolum majus*), and/or coyote brush (*Baccharis pilularis*). Non-native riparian provides low quality habitat for the southwestern willow flycatcher, because it contains a high level of disturbance and high density of nonnative plant species not typically associated with the species' preferred habitat.

Disturbed southern riparian scrub occurs in relatively small patches in the survey area, predominantly on the north and south banks of the San Luis Rey. This vegetation community contains a dense canopy ranging in height from approximately 15 to 20 feet, and is dominated by Hinds' willow and arroyo willow; contains scattered saltcedar and giant reed; and contains an open to dense understory dominated by species such as mule fat, southern cattail, California bulrush, western poison oak, and/or coyote brush. In addition, the small, disjunct patch of disturbed southern riparian scrub south of the San Luis Rey and the bike path borders Eucalyptus woodland containing scattered river red gum (*Eucalyptus camaldulensis*) ranging in height from approximately 30 to 40 feet. The disturbed southern riparian scrub provides moderate quality habitat for the southwestern willow flycatcher. This vegetation community is dominated by native riparian species typically associated with the species; however, the vegetation community also contains a low to moderate level of disturbance and a low to moderate density of nonnative plant species not typically associated with the species' preferred habitat, as well as provides smaller patch sizes than what typically supports southwestern willow flycatcher.

Focused Survey Results

No southwestern willow flycatchers were detected within the approximately 7.17 acres of potentially suitable habitat within and adjacent to the Proposed Project area during the five focused, protocol-level surveys conducted between May 18 and July 17, 2015. Surveys were conducted during appropriate weather conditions by USFWS-permitted biologist Laurie Gorman (TE-233367-2). Dates and survey conditions during the focused surveys are provided in Table 1, below.

Table 1. Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precipitation	
1	5/18/15	Start	0630	60	0-1	95	0	Laurie Gorman
		End	0900	66	0-4	70	0	
2	6/1/15	Start	0630	64	0-1	100	0	Laurie Gorman
		End	0830	65	0-1	100	0	
3	6/12/15	Start	0600	65	0-2	100	0	Laurie Gorman
		End	0830	66	0-2	100	0	
4	7/7/15	Start	0540	65	0-1	100	0	Laurie Gorman
		End	0725	66	0-3	100	0	
5	7/17/15	Start	0540	68	0-1	100	0	Laurie Gorman
		End	0720	69	0-1	100	0	

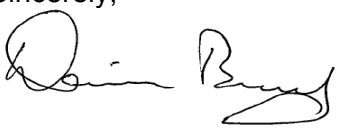
A total of 58 wildlife species were detected during the focused surveys (Attachment 2). Of these 58 species, four sensitive species – olive-sided flycatcher (*Contopus cooperi*), Clark's marsh wren (*Cistothorus palustris clarkae*), western least Bittern (*Ixobrychus exilis*), and yellow warbler (*Dendroica petechia*) – all of which are considered CDFW species of special concern, were detected (see Attachment 1: Figure 4). In addition, one brown-headed cowbird, a brood parasite, was detected and recorded just outside the eastern edge of the survey area during the focused surveys (UTM Coordinate: 33.207748°, -117.383793°; Attachment 1: Figure 4). It should be noted that the locations of sensitive species in Figure 4 of Attachment 1 may reflect repeated detections of the same individuals of a species from one survey to the next and are not intended to represent the quantity of individuals present. A USFWS Willow Flycatcher Survey and Detection Form containing the results of the focused surveys is included as Attachment 3.

SUMMARY

No southwestern willow flycatchers were detected within or adjacent to the Proposed Project area during the focused, protocol-level surveys conducted for the species during the 2015 breeding season.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Melissa Busby at melissa@busbybiological.com or (858) 334-9507 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.

cc: Brenna Ogg, RECON
Alyssa Muto, RECON

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected
Attachment 3: USFWS Willow Flycatcher Survey and Detection Form

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1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1975)

PROJECT BIOLOGIST SIGNATURE PAGE

The below project biologist performing focused, protocol-level, southwestern willow flycatcher (*Empidonax traillii extimus*) surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) was permitted to survey for this species under Section 10(a)(1)(A) of the Endangered Species Act (ESA). The undersigned project biologist certifies this report to be a complete and accurate account of the findings and conclusions of surveys for southwestern willow flycatcher conducted for the Proposed Project during spring 2015.



Laurie Gorman
Senior Biologist / Project Manager
Busby Biological Services, Inc.
ESA Permit Number TE-233367-2

ATTACHMENT 1 – Figures



Project Location

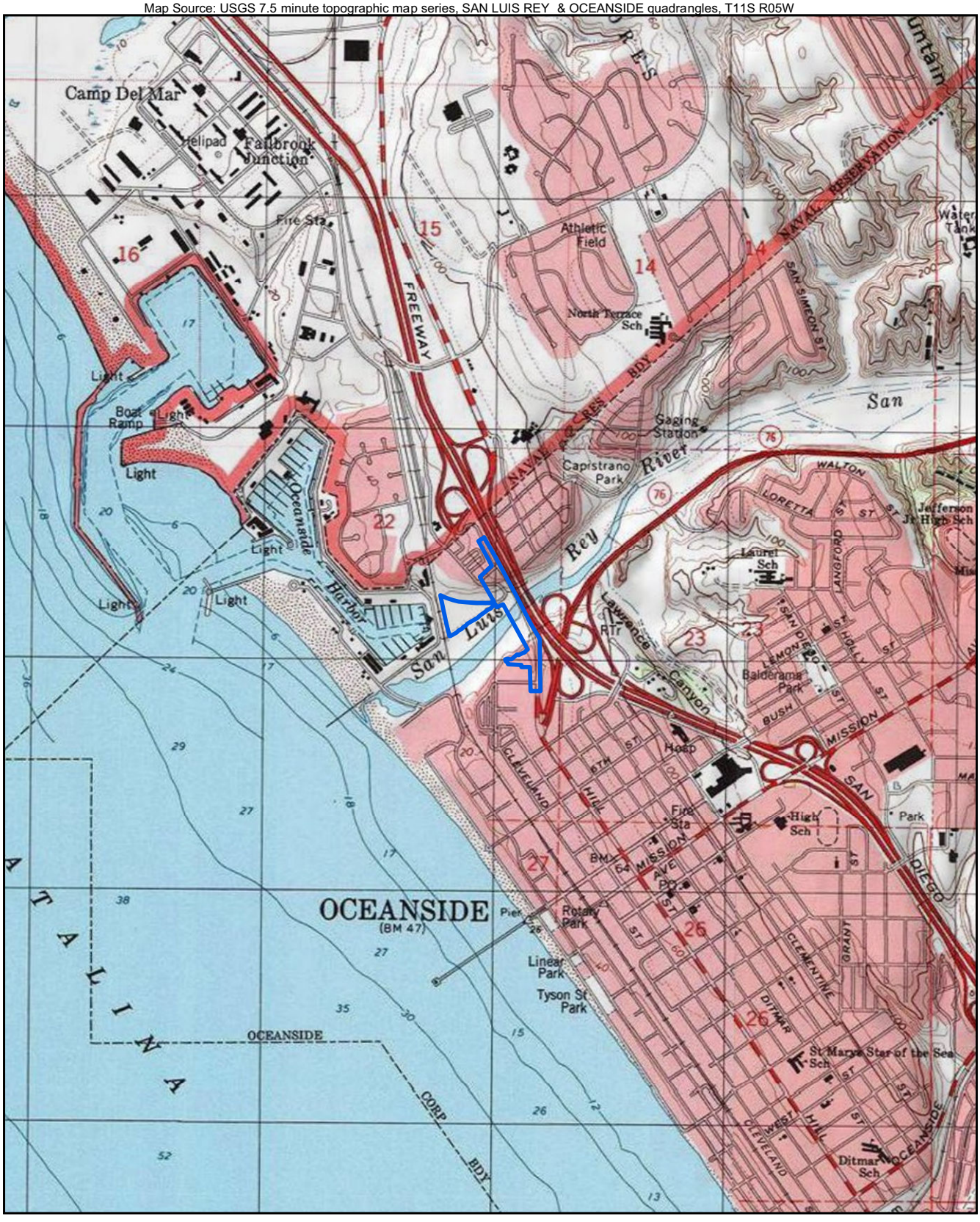
FIGURE 1

Regional Location

RECON

M:\JOBS4\7380\common_gis\fig1.mxd 4/14/2015 sab

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY & OCEANSIDE quadrangles, T11S R05W



0 Feet 2,000

Project Boundary

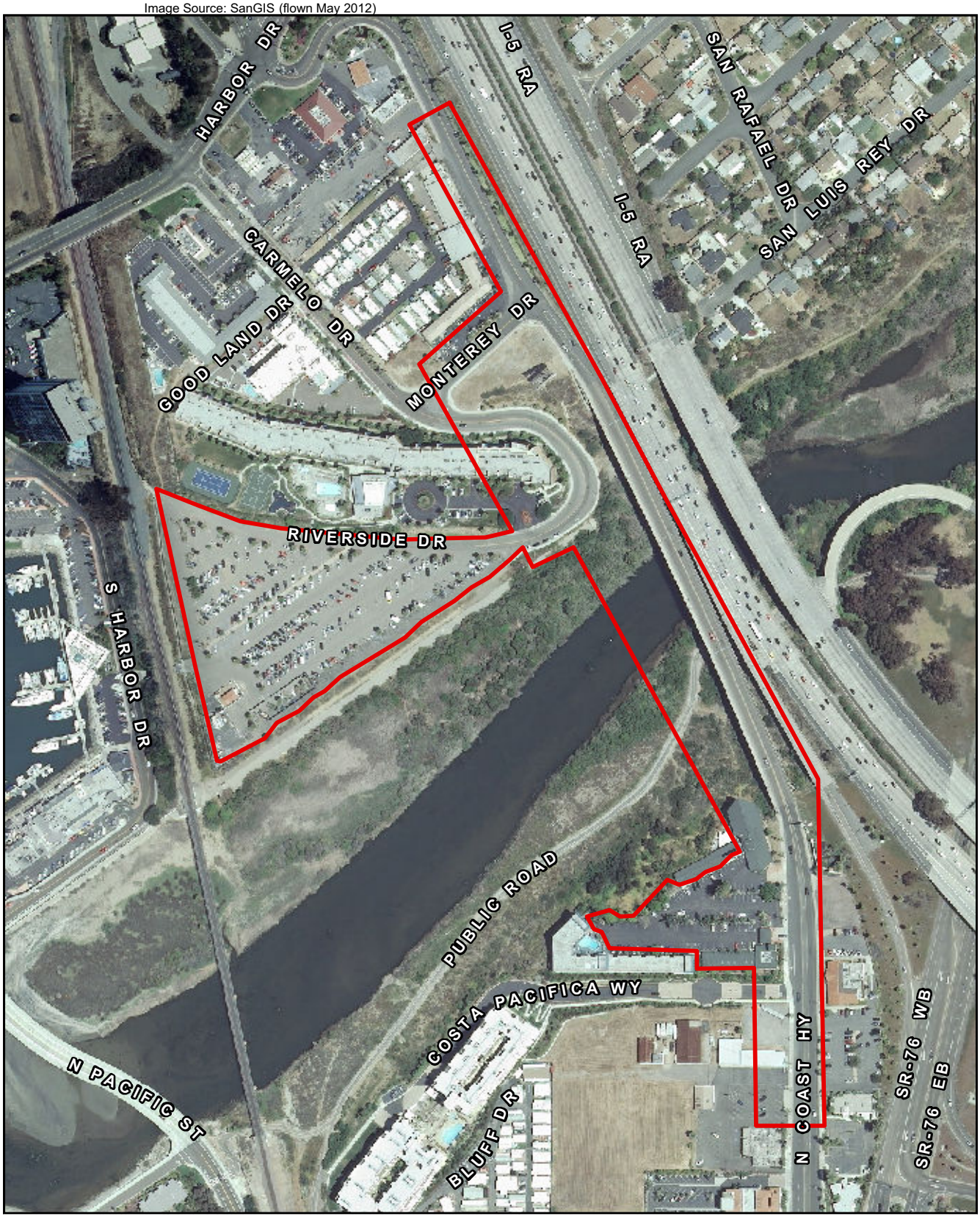
FIGURE 2

Project Vicinity - USGS Topographic Map

RECON

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Image Source: SanGIS (flown May 2012)



Project Boundary

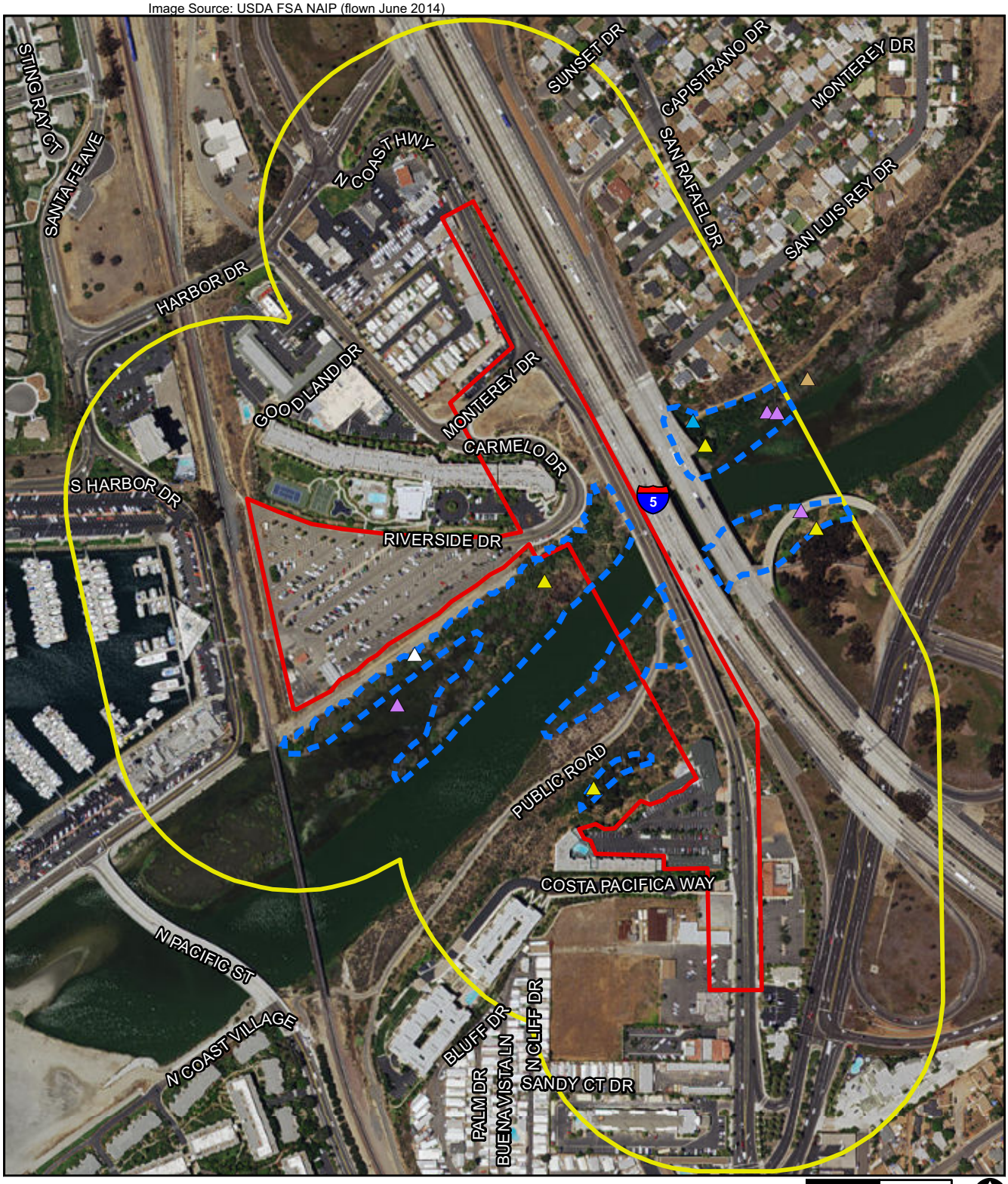
RECON

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FIGURE 3

Project Vicinity - Aerial

Image Source: USDA FSA NAIP (flown June 2014)



Project Boundary

500ft Buffer of Project Boundary

Southwestern Willow Flycatcher Survey Area

Sensitive Species

- Clark's Marsh Wren
- Olive-sided Flycatcher
- Western Least Bittern
- Yellow Warbler

Brood Parasite

- Brown-headed Cowbird

0 Feet 400

FIGURE 4

Southwestern Willow Flycatcher Survey Area and Results

RECON

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ATTACHMENT 2 – Wildlife Species Detected

Attachment 2 - Wildlife Species Detected

VERTEBRATES		
Class Aves		**Birds**
Order Anseriformes		**Ducks, Geese, and Swans**
Family Anatidae		**Ducks, Geese, and Swans**
	Anas platyrhynchos	Mallard
	Oxyura jamaicensis	Ruddy Duck
Order Podicipediformes		**Grebes**
Family Podicipedidae		**Grebes**
	Podilymbus podiceps	Pied-billed Grebe
Order Pelecaniformes		**Pelicans, Herons, Ibises, and Allies**
Family Ardeidae		**Bitterns, Herons, and Allies**
	Ardea alba	Great Egret
	Ardea Herodias	Great Blue Heron
	Butorides virescens	Green Heron
	Egretta thula	Snowy Egret
	Ixobrychus exilis	Least Bittern
	Nycticorax nycticorax	Black-crowned Night-Heron
Order Accipitriformes		**Hawks, Kites, Eagles, and Allies**
Family Accipitridae		**Hawks, Kites, Eagles, and Allies**
	Buteo jamaicensis	Red-tailed Hawk
Order Gruiformes		**Cranes and Rails**
Family Rallidae		**Rails, Fallinules, and Coots**
	Fulica americana	American Coot
	Gallinula galeata	Common Gallinule
Order Falconiformes		**Caracaras and Falcons**
Family Falconidae		**Caracaras and Falcons**
	Falco sparverius	American Kestrel
Order Charadriiformes		**Shorebirds, Gulls, Auks, and Allies**
Family Charadriidae		**Plovers**
	Charadrius vociferous	Killdeer
Family Laridae		**Plovers**
	Hydroprogne caspia	Caspian Tern
	Larus occidentalis	Western Gull
Order Columbiformes		**Pigeons and Doves**
Family Columbidae		**Pigeons and Doves**
	Columba livia	Rock Pigeon
	Zenaida macroura	Mourning Dove
Order Apodiformes		**Swifts and Hummingbirds**
Family Apodidae		**Swifts**
	Aeronautes saxatalis	White-throated Swift
Family Trochilidae		**Hummingbirds**
	Calypte anna	Anna's Hummingbird
	Calypte costae	Costa’s Hummingbird
	Selasphorus sasin	Allen's Hummingbird
Order Passeriformes		**Perching Birds**

Family Tyrannidae		**Tyrant Flycatchers**
	Contopus cooperi	Olive-sided Flycatcher
	Contopus sordidulus	Western Wood-Pewee
	Sayornis nigricans	Black Phoebe
	Tyrannus vociferans	Cassin's Kingbird
Family Corvidae		**Crows and Jays**
	Aphelocoma californica	Western Scrub-Jay
Family Alaudidae		**Larks**
	Corvus brachyrhynchos	American Crow
	Corvus corax	Common Raven
Family Hirundinidae		**Swallows**
	Hirundo pyrrhonota	Cliff Swallow
	Stelgidopteryx serripennis	Northern Rough-winged Swallow
Family Paridae		**Chickadees and Titmice**
Family Aegithalidae		**Bushtits**
	Psaltriparus minimus	Bushtit
Family Troglodytidae		**Wrens**
	Cistothorus palustris clarkae	Clark's Marsh Wren
	Psaltriparus minimus	Bushtit
Family Regulidae		**Kinglets**
	Regulus calendula	Ruby-crowned Kinglet
Family Sylviidae		**Gnatcatchers**
Family Timaliidae		**Babblers**
	Chamaea fasciata	Wrentit
Family Mimidae		**Mockingbirds and Thrashers**
	Mimus polyglottos	Northern Mockingbird
	Toxostoma redivivum	California Thrasher
Family Sturnidae		**Starlings**
	Sturnus vulgaris	European Starling
Family Parulidae		**Wood-Warblers**
	Dendroica petechia	Yellow Warbler
	Geothlypis trichas	Common Yellowthroat
	Vermivora celata	Orange-crowned Warbler
	Wilsonia pusilla	Wilson's Warbler
Family Emberizidae		**Emberizids**
	Melospiza melodia	Song Sparrow
	Pipilo crissalis	California Towhee
	Pipilo maculatus	Spotted Towhee
Family Cardinalidae		**Cardinals and Allies**
	Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae		**Blackbirds**
	Agelaius phoeniceus	Red-winged Blackbird
	Icterus cucullatus	Hooded Oriole
	Molothrus ater	Brown-headed Cowbird
	Quiscalus mexicanus	Great-tailed Grackle
Family Fringillidae		**Fringilline and Cardueline Finches and Allies**

	Carduelis psaltria	Lesser Goldfinch
	Carpodacus mexicanus	House Finch
Family Passeridae		**Old World Sparrows**
	Passer domesticus	House Sparrow
Class Mammalia		**Mammals**
Order Lagomorpha		**Rabbits, Hares, and Pikas**
Family Leporidae		**Rabbits and Hares**
	Sylvilagus audubonii	Desert Cottontail
Order Rodentia		**Rodents**
Family Sciuridae		**Squirrels and Chipmunks**
	Spermophilus beecheyi	California Ground Squirrel
Order Carnivora		**Carnivores**
Family Canidae		**Dogs and foxes**
	Canis familiaris	Domestic Dog
Family Procyonidae		**Raccoons and Relatives**
	Procyon lotor	Raccoon

ATTACHMENT 3 – USFWS Willow Flycatcher Survey And Detection Form

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: **Coast Highway Bridge** State: **California** County: **San Diego**

USGS Quad Name: **Oceanside** Elevation: **0-18** (meters)

Creek, River, or Lake Name: **San Luis Rey River**

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ***Yes*** **X** ***No*** ____

Survey Coordinates: Start: E **463792** N **3674072** UTM Datum: **NAD83** (See instructions)

Stop: E **463808** N **3674275** UTM Zone: **11S**

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

*****Fill in additional site information on back of this page*****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding;-potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
Survey # 1	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	5/18/2015						N/A			
Laurie Gorman	Start:									
	6:30	0	0	0	0	N/A				
	Stop:									
	9:00									
	Total hrs:									
	2.5									
Survey # 2	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	6/1/2015						N/A			
Laurie Gorman	Start:									
	6:30	0	0	0	0	N/A				
	Stop:									
	8:30									
	Total hrs:									
	2.0									
Survey # 3	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	6/12/2015						N/A			
Laurie Gorman	Start:									
	6:00	0	0	0	0	N/A				
	Stop:									
	8:30									
	Total hrs:									
	2.5									
Survey # 4	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	7/7/2015						N/A			
Laurie Gorman	Start:									
	5:40	0	0	0	0	N/A				
	Stop:									
	7:25									
	Total hrs:									
	1.8									
Survey # 5	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	7/17/2015						N/A			
Laurie Gorman	Start:									
	5:40	0	0	0	0	One brown-headed cowbird was detected just outside the eastern edge of the survey area at GPS location (UTM): 11S 464231.81 mE; 3674383.90 mN				
	Stop:									
	7:20									
	Total hrs:									
	1.7									

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests
Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.	0	0	0	0
Total survey hrs: 10.5				

Were any WIFLs color-banded? Yes N/A No N/A

If yes, report color combination(s) in the comments section on back of form and report to USFWS.

Reporting Individual: **Laurie Gorman** Date Report Completed: **7/18/2015**

US Fish & Wildlife Service Permit #: **TE-233367-2** State Wildlife Agency Permit #: **SC-8778**

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual **Laurie Gorman** Phone # **(949) 933-9432**

Affiliation **Busby Biological Services, Inc.** E-mail Laurie@busbybiological.com

Site Name **Coast Highway Bridge** Date report Completed **7/18/2015**

Was this site surveyed in a previous year? Yes____ No__X_ Unknown____

Did you verify that this site name is consistent with that used in previous yrs? Yes ____ No ____ Not Applicable **X**

If name is different, what name(s) was used in the past? **N/A**

If site was surveyed last year, did you survey the same general area this year? Yes **N/A** No ____ If no, summarize below.

Did you survey the same general area during each visit to this site this year? Yes **N/A** No ____ If no, summarize below.

Management Authority for Survey Area: Federal ____ Municipal/County **X** State ____ Tribal ____ Private ____

Name of Management Entity or Owner (e.g., Tonto National Forest) **City of Oceanside**

Length of area surveyed: **Approx. 0.50 km** (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

____ Native broadleaf plants (entirely or almost entirely, > 90% native)

____ Mixed native and exotic plants (mostly native, 50 - 90% native)

X Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

____ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Saltcedar (Tamarix ramosissima), Brazilian pepper tree (Schinus terebinthifolius), giant reed (Arundo donax)

Average height of canopy (Do not include a range): **6** (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
None						

Attach additional sheets if necessary

Appendix N – Coastal California Gnatcatcher Survey Reports

BUSBY
Biological Services

August 9, 2021

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: COASTAL CALIFORNIA GNATCATCHER 2021 SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY (HILL STREET) BRIDGE OVER SAN LUIS REY RIVER REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*) that were conducted in 2021 by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside (City) for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2). The 2021 surveys were completed to update the results of the surveys conducted in 2017 for the Proposed Project.

PROJECT INFORMATION

The Proposed Project includes replacement of the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. RECON provided BBS with a survey area based on the preliminary, estimated Proposed Project impact area, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (Attachment 1: Figure 3).

The main portion of the Proposed Project (i.e., Coast Highway bridge) is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2). Other project components (e.g., roadway approaches,

construction staging and access areas) extend north and south along Coast Highway and east along the north side of the San Luis Rey River. The Proposed Project is located within Township 11 South, Range 5 West, and in Sections 22 and 23 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; see Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (see Attachment 1: Figure 3). Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

SPECIES INFORMATION

The coastal California gnatcatcher is a federally listed threatened species and a California Department of Fish and Wildlife (CDFW) species of special concern. It has also been a focused species of regional planning/conservation efforts under the Natural Communities Conservation Program (NCCP). One of three subspecies of the California gnatcatcher (*Polioptila californica*), the coastal California gnatcatcher occurs on coastal slopes and foothills in southern Ventura County, Los Angeles County, Orange County, southwestern San Bernardino County, western Riverside County, and San Diego County; and northwestern Baja California, Mexico (Atwood 1990). This species typically inhabits coastal sage scrub dominated by California sagebrush (*Artemisia californica*; Atwood 1990). Other plant species important for nesting and foraging of this species include California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), coyote brush (*Baccharis pilularis*), and broom baccharis (*Baccharis sarothroides*). Chamise (*Adenostoma fasciculatum*) habitats may also support breeding pairs, especially where coastal sage scrub occurs nearby or forms a component of the habitat (Bontrager 1991). The coastal California gnatcatcher breeding season extends from mid-February through the end of August, with peak nesting activity occurring from mid-March through mid-May (Mock et al. 1990).

Primary threats to the coastal California gnatcatcher include habitat loss, fragmentation, and adverse modification from urban and agricultural development; wildfires; invasive non-native plants; grazing; nest predation; and brood parasitism by brown-headed cowbirds (*Molothrus ater*; Mock et al. 1990).

METHODS

Methods used for the habitat assessment and focused surveys are described, below.

Habitat Assessment Methods

Prior to initiating the focused surveys for coastal California gnatcatcher, a focused habitat assessment was conducted by a qualified biologist to identify locations of suitable coastal California gnatcatcher habitat within the estimated Proposed Project impact area and surrounding 300-foot buffer (Attachment 1: Figure 3). Biologists conducted the habitat assessment by walking throughout the Proposed Project impact area and buffer and assessing the vegetation communities (e.g., species composition, height, density) for their potential to support the coastal California gnatcatcher. Biologists drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems specialist using ArcGIS software.

Focused Survey Methods

USFWS-permitted biologists conducted focused coastal California gnatcatcher surveys in accordance with the current USFWS survey protocol for the species, titled *Coastal California Gnatcatcher* (Polioptila californica californica) *Presence/Absence Survey Guidelines* and dated February 28, 1997, which requires three visits at intervals of no less than 7 days apart for Natural Community Conservation Plan participants (USFWS 1997).

The protocol-level surveys were conducted between 0600 and 1200 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, other inclement weather conditions) that would impede detection of the coastal California gnatcatcher. The surveyors slowly walked throughout the suitable habitat identified within and adjacent to the Proposed Project during the habitat assessment and used visual and auditory cues to detect the coastal California gnatcatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded coastal California gnatcatcher vocalization playbacks were only used to elicit initial calls from coastal California gnatcatcher and were not used frequently or to elicit further behaviors. Pre-recorded vocalizations were played for periods of 5 to 15 seconds and were generally repeated approximately every 100 feet within the surveyed habitat.

Sensitive species detections, including coastal California gnatcatcher detections, were recorded electronically using a hand-held Global Positioning Systems (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

RESULTS

The results of the habitat assessment and focused surveys are summarized, below.

Habitat Assessment Results

A habitat assessment was conducted within the Proposed Project impact area and 300-foot buffer by RECON biologist Brian Parker on March 7, 2017. RECON biologists updated the vegetation mapping in 2021, updating the area of suitable habitat for the species. An

approximate total of 3.10 acres of suitable coastal California gnatcatcher habitat was identified within the Proposed Project impact area and surrounding 300-foot buffer and included in the 2021 surveys (Attachment 1: Figure 3). Potentially suitable habitat that required surveys includes Diegan coastal sage scrub and disturbed Diegan coastal sage scrub. This potentially suitable habitat ranges in quality from low to high and is briefly described below.

Approximately 2.27 acres of Diegan coastal sage scrub within and adjacent to the Proposed Project area has an open or broken canopy with low to moderately-dense shrub cover, ranges in shrub height from approximately 1 to 8 feet, and is dominated by the following plant species: California sagebrush, California buckwheat, black sage, coyote brush, deerweed (*Acmispon glaber*), and goldenbush (*Isocoma menziesii*). Some patches of Diegan coastal sage scrub contain a mix of tall, dense vegetation such as mule fat (*Baccharis salicifolia*) and black elderberry (*Sambucus nigra*). This vegetation community occurs on either side of the bike path, west of the Coast Highway bridge, and north of the bike path, east of the Coast Highway bridge. The majority of the Diegan coastal sage scrub provides moderate to high quality habitat for the coastal California gnatcatcher, because it supports a plant species composition, height, and density typically associated with the species.

Approximately 0.83 acre of disturbed Diegan coastal sage scrub within and adjacent to the Proposed Project area contains a similar species composition and structure to that found in the undisturbed Diegan coastal sage scrub describe above, but it has been subjected to various types of disturbance resulting in a prevalence of invasive or ornamental species, such as black mustard (*Brassica nigra*), sweet fennel (*Foeniculum vulga*re), castor bean (*Ricinus communis)*, pampas grass (*Cortaderia selloana*), and fountain grass (*Pennisetum setaceum*). This vegetation community occurs along a steep slope east of the Coast Highway bridge in the northeastern portion of the coastal California gnatcatcher survey area and under the Coast Highway bridge in the southern portion of the coastal California gnatcatcher survey area. The disturbed Diegan coastal sage scrub provides low quality habitat for the coastal California gnatcatcher, because it supports components of the community typically associated with the species but also contains a high density of disturbed and non-native plant species not typically associated with the species.

Focused Survey Results

No coastal California gnatcatchers were detected within the 3.10 acres of potentially suitable habitat within and adjacent to the Proposed Project area during the six focused, protocol-level surveys conducted between April 20 and June 25, 2021. Surveys were conducted during appropriate weather conditions by USFWS-permitted BBS biologists Darin Busby (TE-115373-4), Erik LaCoste (TE-027736-6), and Charles Vettes (TE-20160B-2). Dates, times, weather conditions, and surveyors for the focused surveys are provided in Table 1, below.

Table 1. Coastal California Gnatcatcher Survey Conditions

Survey #	Date	Time		Weather				Surveyors
				Temp (°F)	Wind (mph)	Clouds (%)	Precip	
1	4/20/21	Start	1020	63	3-7	0	0	D. Busby C. Vettes
		Stop	1120	68	3-7	0	0	
2	4/30/21	Start	1000	74	2-4	0	0	E. LaCoste C. Vettes
		Stop	1100	80	2-5	0	0	
3	5/11/21	Start	1030	62	2-4	100	0	E. LaCoste C. Vettes
		Stop	1130	63	2-5	100	0	
4	5/21/21	Start	1000	65	3-6	20	0	E. LaCoste
		Stop	1100	67	3-6	10	0	
5	6/01/21	Start	1100	61	3-5	50	0	E. LaCoste C. Vettes
		Stop	1200	63	4-7	50	0	
6	6/25/21	Start	0930	63	1-3	100	0	C. Vettes
		Stop	1030	65	2-5	100	0	

A total of 63 wildlife species were detected during the focused coastal California gnatcatcher surveys (Attachment 2). One sensitive species, yellow warbler (*Setophaga petechia*), a CDFW species of special concern, was detected during the focused surveys (Attachment 1: Figure 3). It should be noted that the yellow warbler location in Figure 3 (Attachment 1) reflects repeated detections of the same individual(s) from one survey to the next and is not intended to represent the quantity of individuals present but rather a territory for this pair or individual. No other sensitive wildlife species were detected during these surveys. The survey data will be submitted to the California Natural Diversity Database (CNDDB) by RECON Environmental, Inc. by the end of 2021.

SUMMARY & DISCUSSION

No coastal California gnatcatchers were detected within or adjacent to the Proposed Project area during the focused, protocol-level surveys conducted for the species during the 2021 breeding season. Although the coastal California gnatcatcher was not detected, the patches of potentially suitable habitat within the 300-foot survey buffer range in quality from low to high and have a moderate potential to support the species, as they are small in size and not contiguous with any adjacent large swaths of high quality Diegan coastal sage scrub.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Charles Vettes at charles@busbybiological.com or (559) 707-0548 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.

cc: Wendy Loeffler, RECON Environmental
Perry Schacht, Moffatt & Nichol
Matt Burgard, Dewberry | Drake Haglan
David Toschak, City of Oceanside
Richard Greenbauer, City of Oceanside
Kevin Hovey, Caltrans

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected

REFERENCES

Atwood, J.
1990 Status review of the California gnatcatcher (*Polioptila californica*). Manomet Bird Observatory, Manomet, Massachusetts.

Atwood, J. L. and J. S. Bolsinger
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1991 Habitat requirements, home range and breeding biology of the California gnatcatcher (*Polioptila californica*) in South Orange County, California. Prepared for Santa Margarita Company, Rancho Santa Margarita, California.

Holland, R.F.
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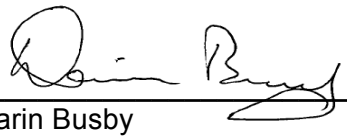
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U.S. Fish and Wildlife Service (USFWS)
1997 Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Guidelines – February 28, 1997.

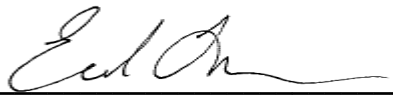
U.S. Geological Survey (USGS)
1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1997)

PROJECT BIOLOGIST SIGNATURE PAGE

The biologists performing focused, protocol-level, coastal California gnatcatcher (*Polioptila californica californica*) surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) were permitted to survey for this species under Section 10(a)(1)(A) of the Endangered Species Act (ESA). The undersigned project biologist certifies this report to be a complete and accurate account of the findings and conclusions of surveys for coastal California gnatcatcher conducted for the Proposed Project during spring 2021.



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.
ESA Permit Number TE-115373-4



Erik LaCoste
Senior Biologist
Busby Biological Services, Inc.
ESA Permit Number TE-027736-6



Charles Vettes
Biologist
Busby Biological Services, Inc.
ESA Permit Number TE-20160B-2

ATTACHMENT 1 – Figures



Project Location

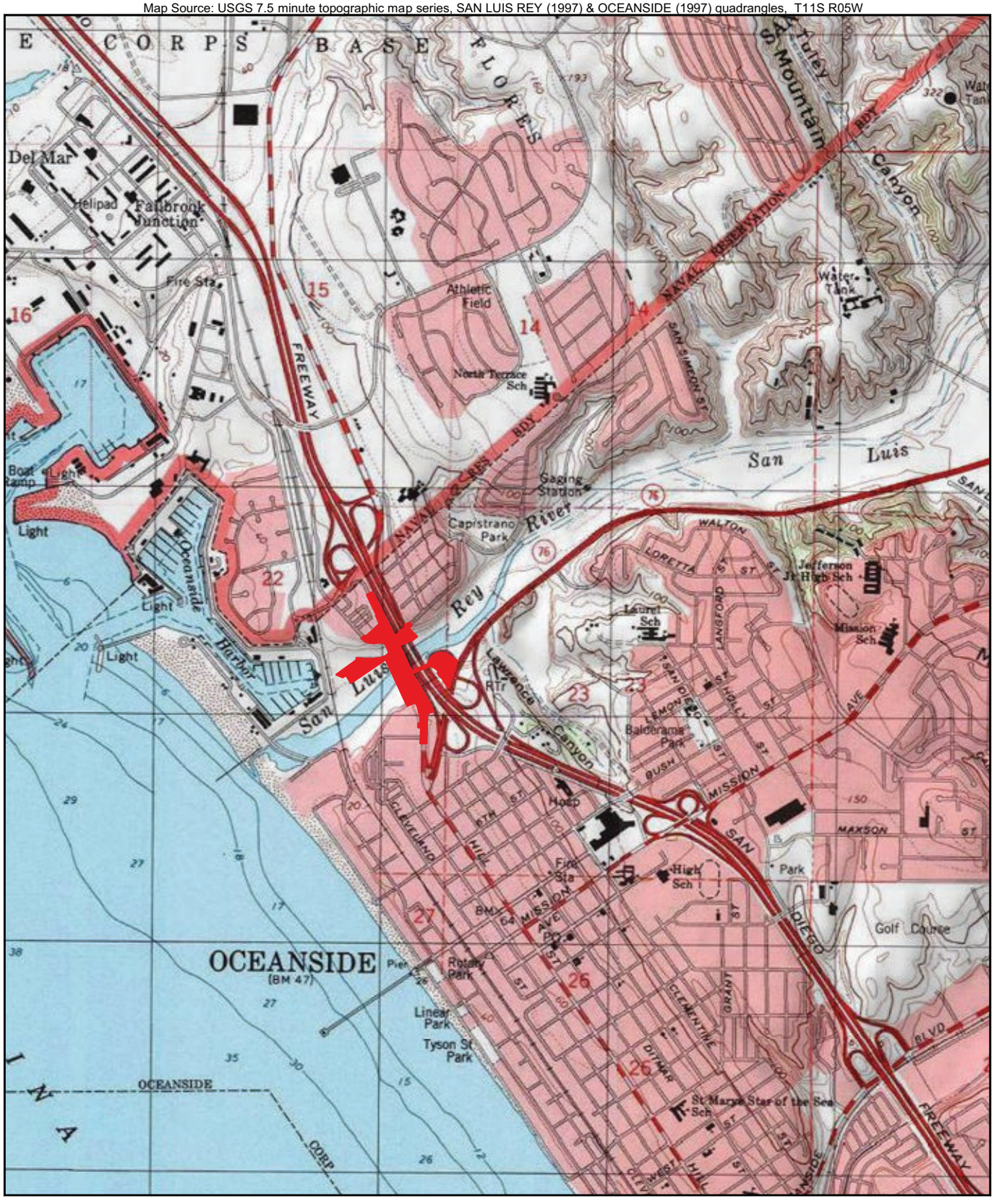
FIGURE 1

Regional Location

RECON

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Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



0 Feet 2,000

Project Impact Area

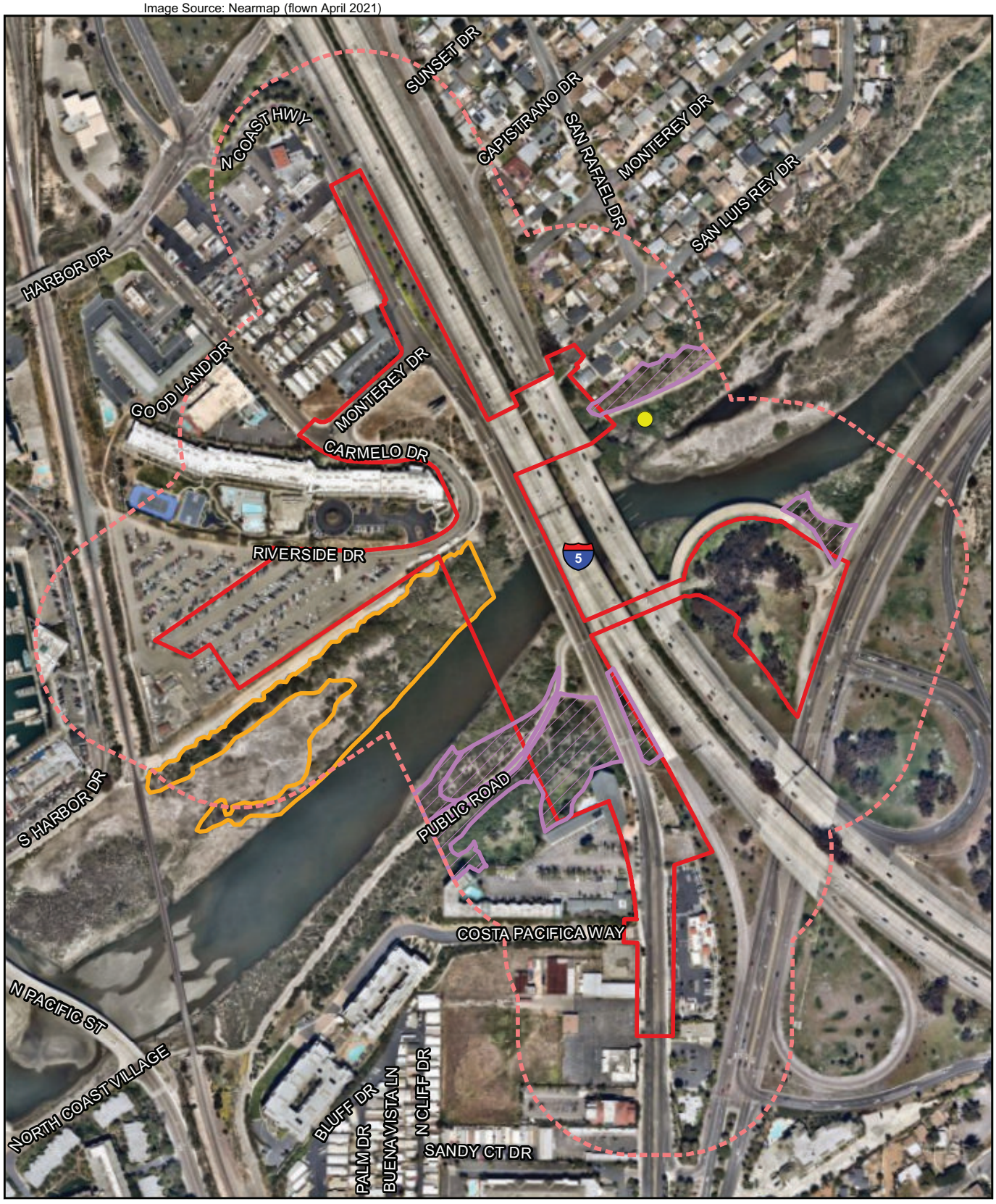
FIGURE 2

Project Location on USGS Map

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Image Source: Nearmap (flown April 2021)



Project Impact Area

300-foot Buffer

Habitat Enhancement Area (Project Mitigation)

Coastal California Gnatcatcher Survey Area

Wildlife Observations

Yellow Warbler

0 Feet 350

FIGURE 3

Coastal California Gnatcatcher Survey Results

RECON

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ATTACHMENT 2 – Wildlife Species Detected

Attachment 2 - Wildlife Species Detected

VERTEBRATES	
Class Aves	**Birds**
Order Anseriformes	**Ducks, Geese, and Swans**
Family Anatidae	**Ducks, Geese, and Swans**
Anas platyrhynchos	Mallard
Order Podicipediformes	**Grebes**
Family Podicipedidae	**Grebes**
Podilymbus podiceps	Pied-billed Grebe
Order Psittaciformes	**Parrots**
Family Psittacidae	**Parrots**
Parrot	Unidentified Parrot
Order Pelecaniformes	**Pelicans, Herons, Ibises, and Allies**
Family Threskiornithidae	**Ibises and Spoonbills**
Plegadis chihi	White-faced Ibis
Family Phalacrocoracidae	**Cormorants**
Phalacrocorax auritus albociliatus	Double-crested Cormorant
Family Ardeidae	**Bitterns, Herons, and Allies**
Ardea alba	Great Egret
Ardea Herodias	Great Blue Heron
Butorides virescens	Green Heron
Egretta thula	Snowy Egret
Nycticorax nycticorax	Black-crowned Night-heron
Order Cathartiformes	**New World Vultures**
Family Vulturidae or Cathartidae	**New World Vultures**
Order Accipitriformes	**Hawks, Kites, Eagles, and Allies**
Family Pandionidae	**Ospreys**
Pandion haliaetus	Osprey
Family Accipitridae	**Hawks, Kites, Eagles, and Allies**
Accipiter cooperii	Cooper's Hawk
Buteo lineatus	Red-shouldered Hawk
Buteo jamaicensis	Red-tailed Hawk
Order Charadriiformes	**Shorebirds, Gulls, Auks, and Allies**
Family Charadriidae	**Plovers**
Charadrius vociferus	Killdeer
Family Scolopacidae	**Sandpipers and Snipes**
Tringa semipalmata	Willet
Family Laridae	**Terns and Gulls**
Hydroprogne caspia	Caspian Tern
Gull	Unidentified Gull
Family Recurvirostridae	**Stilts and Avocets**
Recurvirostra americana	American Avocet
Order Columbiformes	**Pigeons and Doves**

Family Columbidae	**Pigeons and Doves**
Columba livia	Rock Pigeon
Streptopelia decaocto	Eurasian Collared-dove
Zenaida macroura	Mourning Dove
Order Falconiformes	**Falcons and Kestrel**
Family Falconidae	**Falcons and Kestrel**
Falco sparverius	American Kestrel
Order Apodiformes	**Swifts and Hummingbirds**
Family Apodidae	**Swifts**
Aeronautes saxatalis	White-throated Swift
Family Trochilidae	**Hummingbirds**
Calypte anna	Anna's Hummingbird
Calypte costae	Costa's Hummingbird
Selasphorus rufus	Rufous Hummingbird
Selasphorus sasin	Allen's Hummingbird
Order Passeriformes	**Perching Birds**
Family Picadae	**Sapsuckers and Woodpeckers**
Picoides nuttallii	Nuttall's Woodpecker
Family Tyrannidae	**Tyrant Flycatchers**
Contopus sordidulus	Western Wood-Pewee
Empidonax difficilis	Pacific-slope Flycatcher
Sayornis nigricans	Black Phoebe
Tyrannus vociferans	Cassin's Kingbird
Family Vireonidae	**Tyrant Flycatchers**
Vireo gilvus	Warbling Vireo
Vireo huttoni	Hutton's Vireo
Family Corvidae	**Crows and Jays**
Aphelocoma californica	California Scrub-jay
Family Alaudidae	**Larks**
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Family Hirundinidae	**Swallows**
Hirundo pyrrhonota	Cliff Swallow
Stelgidopteryx serripennis	Northern Rough-winged Swallow
Hirundo rustica erythrogaster	Barn Swallow
Family Aegithalidae	**Bushtits**
Psaltriparus minimus	Bushtit
Family Troglodytidae	**Wrens**
Thryomanes bewickii	Bewick's Wren
Thryomanes bewickii	House Wren
Family Timaliidae	**Babblers**
Chamaea fasciata	Wrentit
Family Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	Northern Mockingbird

Toxostoma redivivum	California Thrasher
Family Sturnidae	**Starlings**
Sturnus vulgaris	European Starling
Family Parulidae	**Wood-Warblers**
Cardellina pusilla	Wilson's Warbler
Geothlypis trichas	Common Yellowthroat
Vermivora celata	Orange-crowned Warbler
Setophaga coronata	Yellow-rumped Warbler
Setophaga petechia	Yellow Warbler
Family Emberizidae	**Emberizids**
Melospiza melodia	Song Sparrow
Zonotrichia leucophrys	White-crowned Sparrow
Pipilo crissalis	California Towhee
Pipilo maculatus	Spotted Towhee
Family Cardinalidae	**Cardinals and Allies**
Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae	**Blackbirds**
Agelaius phoeniceus	Red-winged Blackbird
Icterus cucullatus	Hooded Oriole
Quiscalus mexicanus	Great-tailed Grackle
Family Fringillidae	**Fringilline and Cardueline Finches and Allies**
Carduelis psaltria	Lesser Goldfinch
Carpodacus mexicanus	House Finch

BUSBY
Biological Services

October 10, 2017

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: COASTAL CALIFORNIA GNATCATCHER 2017 SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY (HILL STREET) BRIDGE OVER SAN LUIS REY RIVER REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*) that were conducted in 2017 by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside (City) for the proposed Coast Highway (Hill Street) Bridge over San Luis Rey River Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 through 3).

PROJECT INFORMATION

The Proposed Project includes replacement of the existing structurally deficient Coast Highway (Hill Street) Bridge over the San Luis Rey River. The purpose of the Proposed Project is to remove the deteriorated, structurally deficient, fracture critical, and seismically vulnerable, existing structure and replace it with a new bridge designed to meet current structural and geometric standards while minimizing adverse impacts on the San Luis Rey River and the surrounding riparian area. Two build alternatives are currently under consideration for the Proposed Project. Alternative 1 involves removal of the existing bridge first, followed by construction of the replacement bridge in nearly the same alignment as the existing bridge. Alternative 2 involves keeping the existing bridge open during construction, building the replacement bridge west of the existing alignment, and removing the existing bridge after the replacement bridge is open. RECON provided BBS with a survey area based on the preliminary, estimated Proposed Project impact area, which includes both alternative alignments, as well as all associated access routes, staging yards, and on-site mitigation areas (see Attachment 1: Figure 4).

The main portion of the Proposed Project (i.e., Coast Highway bridge) is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (see Attachment 1: Figures 1 through 3). Other project components (e.g., roadway approaches, construction staging and access areas) extend north and south along Coast Highway and east along the north side of the San Luis Rey River. The Proposed Project is located within

Township 11 South, Range 5 West, and in Sections 22 and 23 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968; see Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level.

Except for the San Luis Rey River channel and adjacent vegetated slopes, the Proposed Project area is bordered to the north and south by developed land, which includes Interstate 5, State Route 76, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses (see Attachment 1: Figure 3). Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges; and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and open water. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, freshwater marsh, and eucalyptus woodland.

SPECIES INFORMATION

The coastal California gnatcatcher is a federally listed threatened species and a California Department of Fish and Wildlife (CDFW) species of special concern. It has also been a focused species of regional planning/conservation efforts under the Natural Communities Conservation Program (NCCP). One of three subspecies of the California gnatcatcher (*Polioptila californica*), the coastal California gnatcatcher occurs on coastal slopes and foothills in southern Ventura County, Los Angeles County, Orange County, southwestern San Bernardino County, western Riverside County, and San Diego County; and northwestern Baja California, Mexico (Atwood 1990). This species typically inhabits coastal sage scrub dominated by California sagebrush (*Artemisia californica*; Atwood 1990). Other plant species important for nesting and foraging of this species include California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), coyote brush (*Baccharis pilularis*), and broom baccharis (*Baccharis sarothroides*). Chamise (*Adenostoma fasciculatum*) habitats may also support breeding pairs, especially where coastal sage scrub occurs nearby or forms a component of the habitat (Bontrager 1991). The coastal California gnatcatcher breeding season extends from mid-February through the end of August, with peak nesting activity occurring from mid-March through mid-May (Mock et al. 1990).

Primary threats to the coastal California gnatcatcher include habitat loss, fragmentation, and adverse modification from urban and agricultural development; wildfires; invasive non-native plants; grazing; nest predation; and brood parasitism by brown-headed cowbirds (*Molothrus ater*; Mock et al. 1990).

METHODS

Methods used for the habitat assessment and focused surveys are described, below.

Habitat Assessment Methods

Prior to initiating the focused surveys for coastal California gnatcatcher, a focused habitat assessment was conducted by U.S. Fish and Wildlife Service (USFWS) permitted

biologists to identify locations of suitable coastal California gnatcatcher habitat within the estimated Proposed Project impact area and surrounding 300-foot buffer (see Attachment 1: Figure 3). Biologists conducted the habitat assessment by walking throughout the Proposed Project impact area and buffer and assessing the vegetation communities (e.g., species composition, height, density) for their potential to support the coastal California gnatcatcher. Biologists drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems specialist using ArcGIS software.

Focused Survey Methods

USFWS-permitted biologists conducted focused coastal California gnatcatcher surveys in accordance with the current USFWS survey protocol for the species, titled *Coastal California Gnatcatcher* (Polioptila californica californica) *Presence/Absence Survey Guidelines* and dated February 28, 1997, which requires three visits at intervals of no less than 7 days apart for Natural Community Conservation Plan participants (USFWS 1997).

The protocol-level surveys were conducted between 0600 and 1200 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, other inclement weather conditions) that would impede detection of the coastal California gnatcatcher. The surveyors slowly walked throughout the suitable habitat identified within and adjacent to the Proposed Project during the habitat assessment and used visual and auditory cues to detect the coastal California gnatcatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded coastal California gnatcatcher vocalization playbacks were only used to elicit initial calls from coastal California gnatcatcher and were not used frequently or to elicit further behaviors. Pre-recorded vocalizations were played for periods of 5 to 15 seconds and were generally repeated approximately every 100 feet within the surveyed habitat.

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RESULTS

The results of the habitat assessment and focused surveys are summarized, below.

Habitat Assessment Results

USFWS-permitted BBS biologist Darin Busby (TE-115373-3) and RECON biologist Brenna Ogg (TE-797665-9.3) initially identified potentially suitable coastal California gnatcatcher habitat within the Proposed Project impact area and 300-foot buffer on March 20, 2015. Following Proposed Project design revisions, additional habitat assessments were performed by RECON biologists Gerry Scheid and JR Sundberg on October 24, 2016, and Brian Parker on March 7, 2017. During these habitat assessments, additional potentially suitable coastal California gnatcatcher habitat was identified, and the 2017 survey area

maps were updated (see Attachment 1: Figure 3). A total of approximately 2.99 acres of suitable coastal California gnatcatcher habitat was identified within the Proposed Project impact area and surrounding 300-foot buffer, and included in the 2017 surveys.

Potentially suitable habitat that required surveys includes Diegan coastal sage scrub and disturbed Diegan coastal sage scrub. This potentially suitable habitat ranges in quality from low to high and is briefly described below.

The Diegan coastal sage scrub within and adjacent to the Proposed Project area has an open or broken canopy with low to moderately-dense shrub cover, ranges in shrub height from approximately 1 to 4 feet, and is dominated by the following plant species: California sagebrush, California buckwheat, black sage, coyote brush, deerweed (*Acmispon glaber*), and goldenbush (*Isocoma menziesii*). This vegetation community occurs on either side of the bike path west of the Coast Highway bridge in the southwestern portion of the coastal California gnatcatcher survey area. The Diegan coastal sage scrub provides high quality habitat for the coastal California gnatcatcher, because it supports a plant species composition, height, and density typically associated with the species.

The disturbed Diegan coastal sage scrub within and adjacent to the Proposed Project area contains a similar species composition and structure to that found in the undisturbed Diegan coastal sage scrub describe above, but it has been subjected to various types of disturbance resulting in a prevalence of invasive or ornamental species, such as black mustard (*Brassica nigra*), sweet fennel (*Foeniculum vulga*re), castor bean (*Ricinus communis)*, pampas grass (*Cortaderia selloana*), and fountain grass (*Pennisetum setaceum*). This vegetation community occurs along a steep slope east of the Coast Highway bridge in the northeastern portion of the coastal California gnatcatcher survey area and under the Coast Highway bridge in the southern portion of the coastal California gnatcatcher survey area. The disturbed Diegan coastal sage scrub provides low quality habitat for the coastal California gnatcatcher, because it supports components of the community typically associated with the species but also contains a high density of disturbance and non-native plant species not typically associated with the species.

One small area within the Diegan coastal sage scrub supports more of an upland-riparian transitional species composition. This area contains some of the same species as found in the undisturbed Diegan coastal sage scrub but also contains a mix of tall, dense vegetation associated with the adjacent riparian scrub habitat, such as mule fat (*Baccharis salicifolia*) and black elderberry (*Sambucus nigra*). This vegetation community occurs south of the bike path and west of the Coast Highway bridge in the southern portion of the coastal California gnatcatcher survey area, and in a small area north of the bike path and east of the Coast Highway bridge (and Interstate 5) in the southeastern portion of the coastal California gnatcatcher survey area. These portions of the Diegan coastal sage scrub provide moderate quality habitat for the coastal California gnatcatcher, because they support components of the community typically associated with the species but also contains woody, riparian-associated plants species not typically associated with the species.

Focused Survey Results

No coastal California gnatcatchers were detected within the 2.99 acres of potentially suitable habitat within and adjacent to the Proposed Project area during the three focused,

protocol-level surveys conducted between April 12 and May 15, 2017. Surveys were conducted during appropriate weather conditions by USFWS-permitted BBS biologists Darin Busby (TE-115373-3) and Erik LaCoste (TE-027736-6), with support from BBS biologist Andrew Kort (non-permitted biologist). Dates, times, weather conditions, and surveyors for the focused surveys are provided in Table 1, below.

Table 1. Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precip	
1	4/12/17	Start	0930	67	1-3	0	0	D. Busby A. Kort
		End	1030	67	2-3	0	0	
2	5/3/17	Start	1100	71	3-5	0	0	D. Busby A. Kort
		End	1200	73	4-8	0	0	
3	5/15/17	Start	1100	67	2-4	10	0	E. LaCoste A. Kort
		End	1200	69	2-4	10	0	

A total of 50 wildlife species were detected during the focused coastal California gnatcatcher surveys (Attachment 2). No sensitive wildlife species were detected during these surveys.

SUMMARY & DISCUSSION

No coastal California gnatcatchers were detected within or adjacent to the Proposed Project area during the focused, protocol-level surveys conducted for the species during the 2017 breeding season. Although the coastal California gnatcatcher was not detected, the patches of potentially suitable habitat within the 300-foot survey buffer range in quality from low to high and have a moderate potential to support the species, as they are small in size and not contiguous with any adjacent large swaths of high quality Diegan coastal sage scrub.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Melissa Busby at melissa@busbybiological.com or (858) 334-9507 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist
Busby Biological Services, Inc.

cc: Brenna Ogg, RECON Environmental
Perry Schacht, Moffatt & Nichol
Matt Burgard, Drake Haglan & Associates
Richard Greenbauer, City of Oceanside
Michelle Blake, Caltrans

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected

REFERENCES

Atwood, J.
1990 Status review of the California gnatcatcher (*Polioptila californica*). Manomet Bird Observatory, Manomet, Massachusetts.

Atwood, J. L. and J. S. Bolsinger
1991 Elevational distribution of California gnatcatchers in the United States. Journal of Field Ornithology 63(2):159-168.

Bontrager, D. R.
1991 Habitat requirements, home range and breeding biology of the California gnatcatcher (*Polioptila californica*) in South Orange County, California. Prepared for Santa Margarita Company, Rancho Santa Margarita, California.

Holland, R.F.
1986 Preliminary descriptions of the terrestrial natural communities of California. State of California. The Resources Agency.

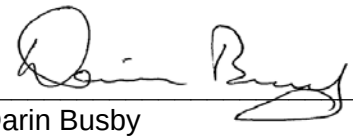
Mock, P. J., B. L. Jones, and J. Konecny
1990 California Gnatcatcher Survey Guidelines. Unpublished Report Prepared by Environmental and Energy Services Company, San Diego, California.

U.S. Fish and Wildlife Service (USFWS)
1997 Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Guidelines – February 28, 1997.

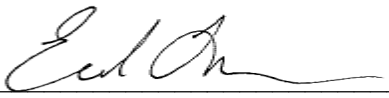
U.S. Geological Survey (USGS)
1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1997)

PROJECT BIOLOGIST SIGNATURE PAGE

The biologists performing focused, protocol-level, coastal California gnatcatcher (*Polioptila californica californica*) surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) were permitted to survey for this species under Section 10(a)(1)(A) of the Endangered Species Act (ESA). The undersigned project biologist certifies this report to be a complete and accurate account of the findings and conclusions of surveys for coastal California gnatcatcher conducted for the Proposed Project during spring 2017.



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.
ESA Permit Number TE-115373-3



Erik LaCoste
Senior Biologist
Busby Biological Services, Inc.
ESA Permit Number TE-027736-6

ATTACHMENT 1 – Figures



Project Location

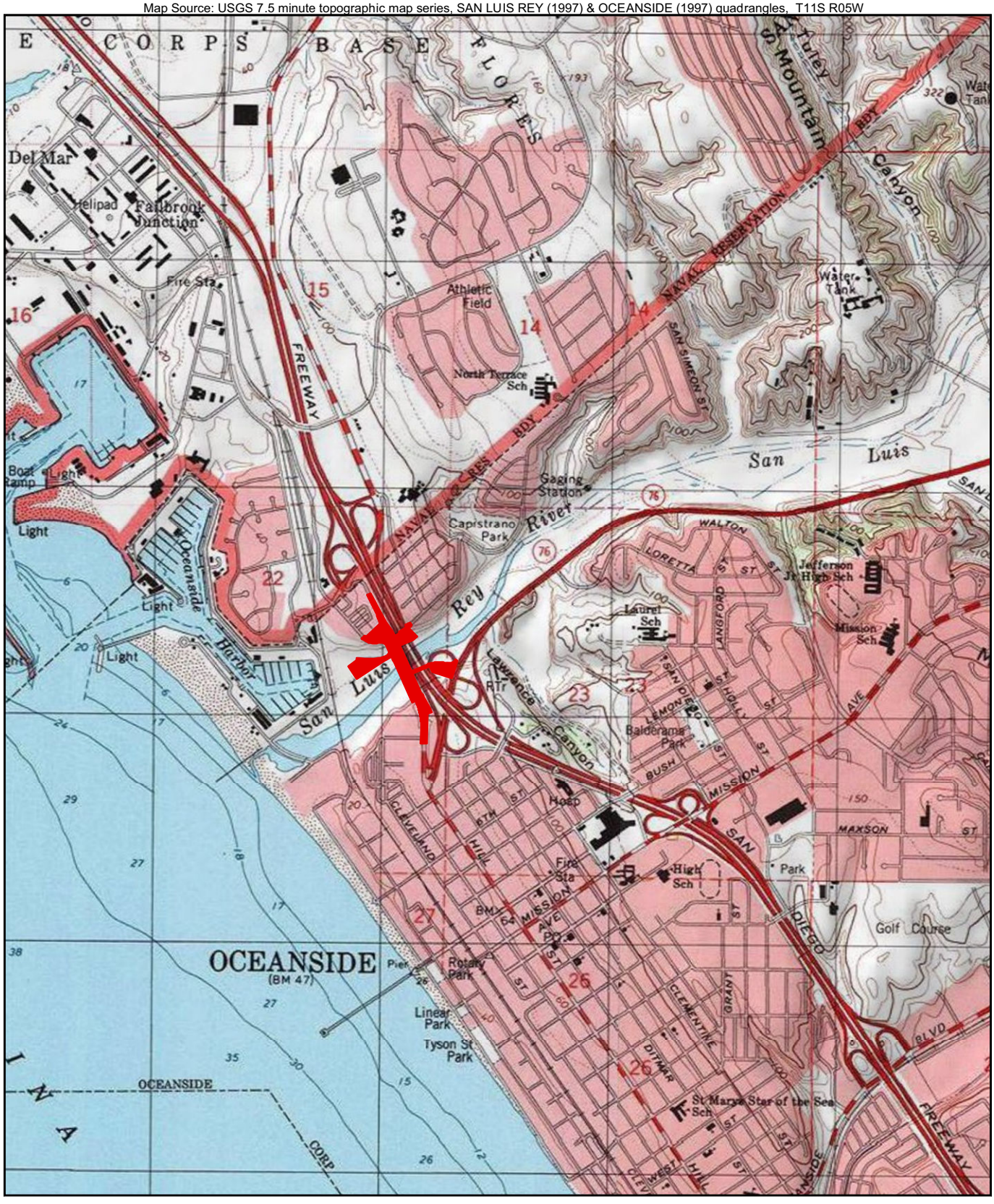
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FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY (1997) & OCEANSIDE (1997) quadrangles, T11S R05W



Project Impact Area

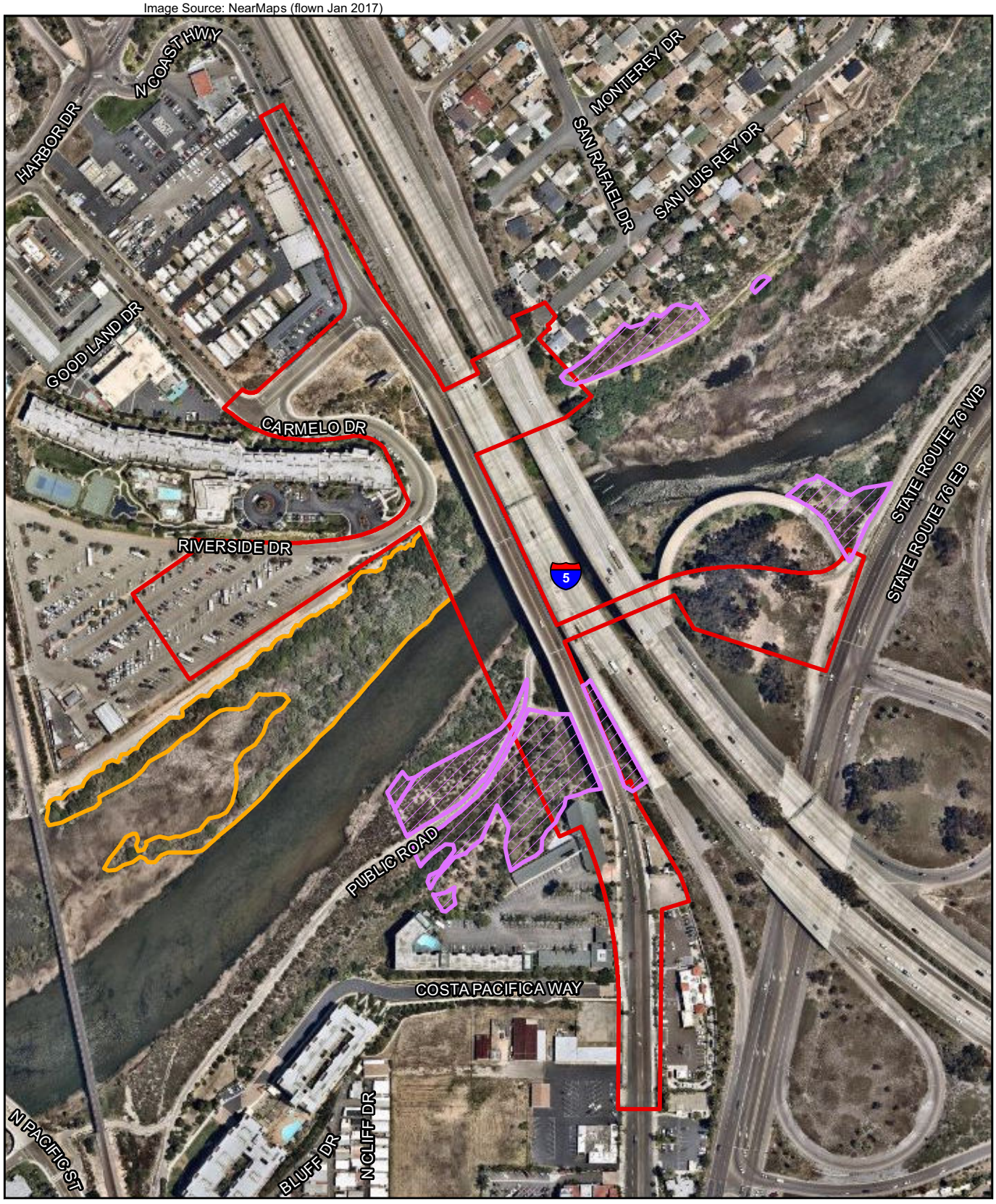
FIGURE 2

Project Location on USGS Map

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Image Source: NearMaps (flown Jan 2017)



0 Feet 300

Project Impact Area

Habitat Enhancement Area (Project Mitigation)

Coastal California Gnatcatcher Survey Area

FIGURE 3

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Coastal California Gnatcatcher Survey Results

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ATTACHMENT 2 – Wildlife Species Detected

Attachment 2 - Wildlife Species Detected

VERTEBRATES		
Class Aves		**Birds**
Order Anseriformes		**Ducks, Geese, and Swans**
Family Anatidae		**Ducks, Geese, and Swans**
	Anas platyrhynchos	Mallard
	Oxyura jamaicensis	Ruddy Duck
Order Podicipediformes		**Grebes**
Family Podicipedidae		**Grebes**
	Podiceps nigricollis cakifornicus	Eared Grebe
Order Pelecaniformes		**Pelicans, Herons, Ibises, and Allies**
Family Pelicanidae		**Pelicans**
	Oelecanus occidentalis californicus	Brown Pelican
Family Phalacrocoracidae		**Cormorants**
	Phalacrocorax auritus albociliatus	Double-crested Cormorant
Family Ardeidae		**Bitterns, Herons, and Allies**
	Ardea alba	Great Egret
	Ardea Herodias	Great Blue Heron
	Egretta thula	Snowy Egret
	Nycticorax nycticorax	Black-crowned Night-heron
Order Cathartiformes		**New World Vultures**
Family Vulturidae or Cathartidae		**New World Vultures**
	Cathartes aura	Turkey Vulture
Order Accipitriformes		**Hawks, Kites, Eagles, and Allies**
Family Accipitridae		**Hawks, Kites, Eagles, and Allies**
	Pandion haliaetus	Osprey
	Buteo jamaicensis	Red-tailed Hawk
Order Charadriiformes		**Shorebirds, Gulls, Auks, and Allies**
Family Scolopacidae		**Sandpipers and Snipes**
	Actitis macularius	Spotted Sandpiper
Family Laridae		**Plovers**
	Larus occidentalis	Western Gull
Order Columbiformes		**Pigeons and Doves**
Family Columbidae		**Pigeons and Doves**
	Columba livia	Rock Pigeon
	Streptopelia decaocto	Eurasian Collared-dove
	Zenaida macroura	Mourning Dove
Order Apodiformes		**Swifts and Hummingbirds**
Family Apodidae		**Swifts**
	Aeronautes saxatalis	White-throated Swift
Family Trochilidae		**Hummingbirds**
	Calypte anna	Anna's Hummingbird
	Selasphorus rufus	Rufous Hummingbird
	Selasphorus sasin	Allen's Hummingbird

Order Passeriformes		**Perching Birds**
Family Picadae		**Sapsuckers and Woodpeckers**
	Picoides nuttallii	Nuttall's Woodpecker
Family Tyrannidae		**Tyrant Flycatchers**
	Sayornis nigricans	Black Phoebe
Family Corvidae		**Crows and Jays**
	Aphelocoma californica	Western Scrub-jay
Family Alaudidae		**Larks**
	Corvus brachyrhynchos	American Crow
	Corvus corax	Common Raven
Family Hirundinidae		**Swallows**
	Hirundo pyrrhonota	Cliff Swallow
	Stelgidopteryx serripennis	Northern Rough-winged Swallow
	Hirundo rustica erythrogaster	Barn Swallow
Family Aegithalidae		**Bushtits**
	Psaltriparus minimus	Bushtit
Family Troglodytidae		**Wrens**
	Thryomanes bewickii	Bewick's Wren
Family Timaliidae		**Babblers**
	Chamaea fasciata	Wrentit
Family Mimidae		**Mockingbirds and Thrashers**
	Mimus polyglottos	Northern Mockingbird
	Toxostoma redivivum	California Thrasher
Family Sturnidae		**Starlings**
	Sturnus vulgaris	European Starling
Family Parulidae		**Wood-Warblers**
	Geothlypis trichas	Common Yellowthroat
	Vermivora celata	Orange-crowned Warbler
Family Emberizidae		**Emberizids**
	Melospiza melodia	Song Sparrow
	Pipilo crissalis	California Towhee
	Pipilo maculatus	Spotted Towhee
Family Cardinalidae		**Cardinals and Allies**
	Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae		**Blackbirds**
	Icterus cucullatus	Hooded Oriole
	Icterus bullockii	Bullock's Oriole
	Quiscalus mexicanus	Great-tailed Grackle
Family Fringillidae		**Fringilline and Cardueline Finches and Allies**
	Carduelis psaltria	Lesser Goldfinch
	Carpodacus mexicanus	House Finch

Class Mammalia		**Mammals**
Order Lagomorpha		**Rabbits, Hares, and Pikas**
Family Leporidae		**Rabbits and Hares**
	Sylvilagus audubonii	Desert Cottontail
Order Rodentia		**Rodents**
Family Sciuridae		**Squirrels and Chipmunks**
	Spermophilus beecheyi	California Ground Squirrel
Order Carnivora		**Carnivores**
Family Canidae		**Dogs and foxes**
	Canis familiaris	Domestic Dog
Family Procyonidae		**Raccoons and Relatives**
	Procyon lotor	Raccoon

BUSBY
Biological Services

September 28, 2015

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

RE: COASTAL CALIFORNIA GNATCATCHER SURVEY SUMMARY REPORT FOR THE PROPOSED COAST HIGHWAY BRIDGE REPLACEMENT PROJECT, CITY OF OCEANSIDE, SAN DIEGO COUNTY, CALIFORNIA

Ms. Love:

This letter report summarizes the results of the focused, protocol-level, presence/absence surveys for the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*) that were conducted by Busby Biological Services, Inc. (BBS) for RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway Bridge Replacement Project (Proposed Project). The Proposed Project is located in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2).

PROJECT INFORMATION

The Proposed Project includes replacement of the existing Coast Highway bridge. While the details of the Proposed Project design are not currently known, RECON, in coordination with Moffatt & Nichol, provided BBS with a preliminary, estimated Proposed Project footprint, which includes the existing bridge as well as all associated access routes and staging yards (Attachment 1: Figure 3). The Proposed Project is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet east of the Pacific Ocean in the City of Oceanside, San Diego County, California (Attachment 1: Figures 1 and 2). The Proposed Project is located within Township 11 South, Range 5 West, and in Section 22 of the U.S. Geological Survey (USGS) 7.5-minute Oceanside topographic quadrangle (USGS 1968) (Attachment 1: Figure 2). Elevations within the Proposed Project area range from sea level to approximately 60 feet above mean sea level (amsl).

The Proposed Project area is bordered on all sides by developed land, which includes Interstate 5, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses. Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges, and undeveloped land composed of native and non-native vegetation. The dominant vegetation communities and land cover types include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and estuarine. Other vegetation communities present in smaller proportions include

disturbed Diegan coastal sage scrub, Diegan coastal sage scrub/southern riparian scrub transition, coastal brackish marsh, and eucalyptus woodland.

SPECIES INFORMATION

The coastal California gnatcatcher is a federally listed threatened species and a California Department of Fish and Wildlife (CDFW) species of special concern. One of three subspecies of the California gnatcatcher (*Polioptila californica*), the coastal California gnatcatcher occurs on coastal slopes and foothills in southern Ventura County, Los Angeles County, Orange County, southwestern San Bernardino County, western Riverside County, and San Diego County, and northwestern Baja California, Mexico (Atwood 1990). This species typically inhabits coastal sage scrub dominated by California sagebrush (*Artemisia californica*; Atwood 1990). Other plant species important for the nesting and foraging of this species include California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), coyote brush (*Baccharis pilularis*), and broom baccharis (*Baccharis sarothroides*). Chamise (*Adenostoma fasciculatum*) habitats may also support breeding pairs, especially where coastal sage scrub may occur nearby or form a component of the habitat (Bontrager 1991). The coastal California gnatcatcher breeding season extends from mid-February through the end of August, with peak nesting activity occurring from mid-March through mid-May (Mock et al. 1990).

Primary threats to the coastal California gnatcatcher include loss, fragmentation, and adverse modification of habitat from urban and agricultural development; wildfire; invasive non-native plants; grazing; nest predation; and brood parasitism by brown-headed cowbirds (*Molothrus ater*; Mock et al. 1990).

METHODS

Methods used for the habitat assessment and focused surveys are described, below.

Habitat Assessment Methods

Prior to initiating the focused surveys for coastal California gnatcatcher, a focused habitat assessment was conducted by U.S. Fish and Wildlife Service (USFWS) permitted biologists to identify locations of suitable coastal California gnatcatcher habitat within the estimated Proposed Project footprint and surrounding 300-foot buffer (Attachment 1: Figure 4). Biologists conducted the habitat assessment by walking throughout the Proposed Project footprint and buffer and assessing the vegetation communities (e.g., species composition, height, density) for their potential to support the coastal California gnatcatcher. Biologists drew polygons of suitable habitat by hand onto high-resolution aerial field maps. The hand-drawn polygons were later screen-digitized in the office by a Geographic Information Systems (GIS) specialist using ArcGIS software.

Focused Survey Methods

USFWS-permitted biologists conducted focused coastal California gnatcatcher surveys in accordance with the current USFWS survey protocol for the species, titled *Coastal California Gnatcatcher* (Polioptila californica) *Presence/Absence Survey Guidelines* and dated February 28, 1997, which requires three visits at intervals of no less than 7 days apart for Natural Community Conservation Plan (NCCP) participants (USFWS 1997).

The protocol-level surveys were conducted between 0600 and 1200 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, other inclement weather conditions) that would impede detection of the coastal California gnatcatcher. The surveyors slowly walked throughout the suitable habitat identified within and adjacent to the Proposed Project during the habitat assessment and used visual and auditory cues to detect the coastal California gnatcatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area. Pre-recorded coastal California gnatcatcher vocalization playbacks were only used to elicit initial calls from coastal California gnatcatcher and were not used frequently or to elicit further behaviors. Pre-recorded vocalizations were played for periods of 5 to 15 seconds and were generally repeated approximately every 100 feet within the surveyed habitat.

Sensitive species detections, including coastal California gnatcatcher detections, were recorded electronically using a hand-held Global Positioning Systems (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when necessary. In addition, other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence were recorded.

RESULTS

The results of the habitat assessment and focused surveys are summarized, below.

Habitat Assessment Results

USFWS-permitted BBS biologist Darin Busby (TE-115373-3) and RECON biologist Brenna Ogg (TE-797665-9.3) identified an approximate total of 4.35 acres of potentially suitable coastal California gnatcatcher habitat within the Proposed Project footprint and 300-foot buffer during the habitat assessment conducted on March 20, 2015 (see Coastal California Gnatcatcher Survey Area on Attachment 1: Figure 4). Potentially suitable habitat that required surveys includes Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, and Diegan coastal sage scrub/southern riparian scrub transition. This potentially suitable habitat ranges in quality from low to high and is briefly described below.

The Diegan coastal sage scrub within and adjacent to the Proposed Project area has an open or broken canopy with low to moderately-dense shrub cover, ranges in shrub height from approximately 1 to 4 feet, and is dominated by the following plant species: California sagebrush, California buckwheat, black sage, coyote brush, deerweed (*Acmispon glaber*), and goldenbush (*Isocoma menziesii*). This vegetation community occurs on either side of the bike path west of the Coast Highway bridge in the southwestern portion of the coastal California gnatcatcher survey area. The Diegan coastal sage scrub provides high quality habitat for the coastal California gnatcatcher, because it supports a plant species composition, height, and density typically associated with the species.

The disturbed Diegan coastal sage scrub within and adjacent to the Proposed Project area contains a similar species composition and structure to that found in the undisturbed Diegan coastal sage scrub describe above, but it has been subject to various types of disturbance resulting in a prevalence of invasive or ornamental species, such as black mustard (*Brassica nigra*), sweet fennel (*Foeniculum vulga*re), castor bean (*Ricinus*

communis), pampas grass (*Cortaderia selloana*), and fountain grass (*Pennisetum setaceum*). This vegetation community occurs along a steep slope east of the Coast Highway bridge in the northeastern portion of the coastal California gnatcatcher survey area and under the Coast Highway bridge in the southern portion of the coastal California gnatcatcher survey area. The disturbed Diegan coastal sage scrub provides low quality habitat for the coastal California gnatcatcher, because it supports components of the community typically associated with the species but also contains a high density of disturbance and nonnative plant species not typically associated with the species.

The Diegan coastal sage scrub/southern riparian scrub transition within and adjacent to the Proposed Project area contains some of the same species as found in the undisturbed Diegan coastal sage scrub but also contains a mix of tall, dense vegetation associated with the adjacent riparian scrub habitat, such as mule fat (*Baccharis salicifolia*) and black elderberry (*Sambucus nigra*). This vegetation community occurs south of the bike path and west of the Coast Highway bridge in the southern portion of the coastal California gnatcatcher survey area. The Diegan coastal sage scrub/southern riparian scrub transition provides moderate quality habitat for the coastal California gnatcatcher, because it supports components of the community typically associated with the species but also contains woody, riparian-associated plants species not typically associated with the species.

Focused Survey Results

No coastal California gnatcatchers were detected within the approximately 4.35 acres of potentially suitable habitat within and adjacent to the Proposed Project area during the three focused, protocol-level surveys conducted between May 28 and June 23, 2015. Surveys were conducted during appropriate weather conditions by USFWS-permitted BBS biologists Darin Busby (TE-115373-3) and Laurie Gorman (TE-233367-2), with support from USFWS-permitted biologist Travis Cooper (TE-170389-5). Dates and survey conditions during the focused surveys are provided in Table 1, below.

Table 1. Survey Conditions

Survey #	Date	Time		Weather				Surveyor
				Temp (°F)	Wind (mph)	Clouds (% cover)	Precipitation	
1	5/28/15	Start	0630	63	0-1	100	None	Darin Busby; Laurie Gorman
		End	0800	64	0-1	100	None	
2	6/8/15	Start	0630	63	0-1	100	None	Darin Busby; Laurie Gorman
		End	0730	65	0-1	100	None	
3	6/23/15	Start	0600	68	0-1	100	None	Laurie Gorman; Travis Cooper
		End	0815	68	0-2	100	None	

A total of 48 wildlife species were detected during the focused coastal California gnatcatcher surveys (Attachment 2). Of these 48 species, yellow warbler (*Dendroica petechia*) and Clark's marsh wren (*Cistothorus palustris clarkae*) are considered CDFW species of special concern (Attachment 1: Figure 4). It should be noted that the locations of sensitive species in Figure 4 of Attachment 1 may reflect repeated detections of the same

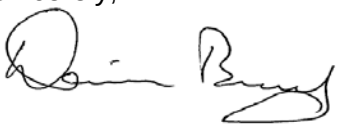
individuals of a species from one survey to the next and are not intended to represent the quantity of individuals present.

SUMMARY

No coastal California gnatcatchers were detected within or adjacent to the Proposed Project area during the focused, protocol-level surveys conducted for the species during the 2015 breeding season.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Melissa Busby at melissa@busbybiological.com or (858) 334-9507 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.

cc: Brenna Ogg, RECON
Alyssa Muto, RECON

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Wildlife Species Detected

REFERENCES

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U.S. Geological Survey (USGS)
1968 7.5-minute Oceanside Topographic Quadrangle (Photorevised 1975)

PROJECT BIOLOGIST SIGNATURE PAGE

The biologists performing focused, protocol-level, coastal California gnatcatcher (*Polioptila californica californica*) surveys for the proposed Coast Highway Bridge Replacement Project (Proposed Project) were permitted to survey for this species under Section 10(a)(1)(A) of the Endangered Species Act (ESA). The undersigned project biologist certifies this report to be a complete and accurate account of the findings and conclusions of surveys for coastal California gnatcatcher conducted for the Proposed Project during spring 2015.



Darin Busby
Principal Biologist / Owner
Busby Biological Services, Inc.
ESA Permit Number TE-115373-3



Laurie Gorman
Senior Biologist / Project Manager
Busby Biological Services, Inc.
ESA Permit Number TE-233367-2



Travis Cooper
Principal Biologist / Owner
Cooper Biological Services
ESA Permit Number TE-170389-5

ATTACHMENT 1 – Figures



Project Location

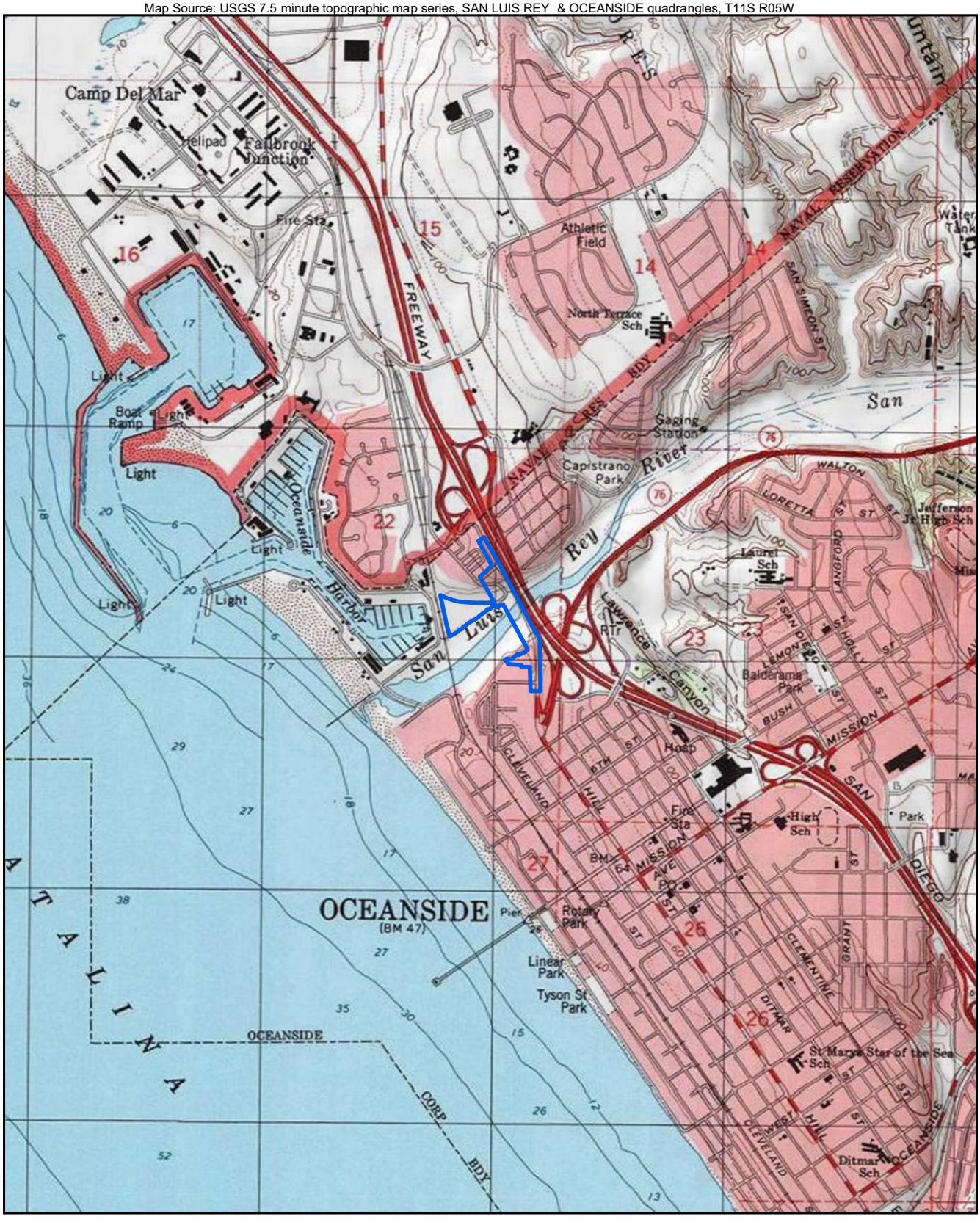
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FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, SAN LUIS REY & OCEANSIDE quadrangles, T11S R05W



0 Feet 2,000

Project Boundary

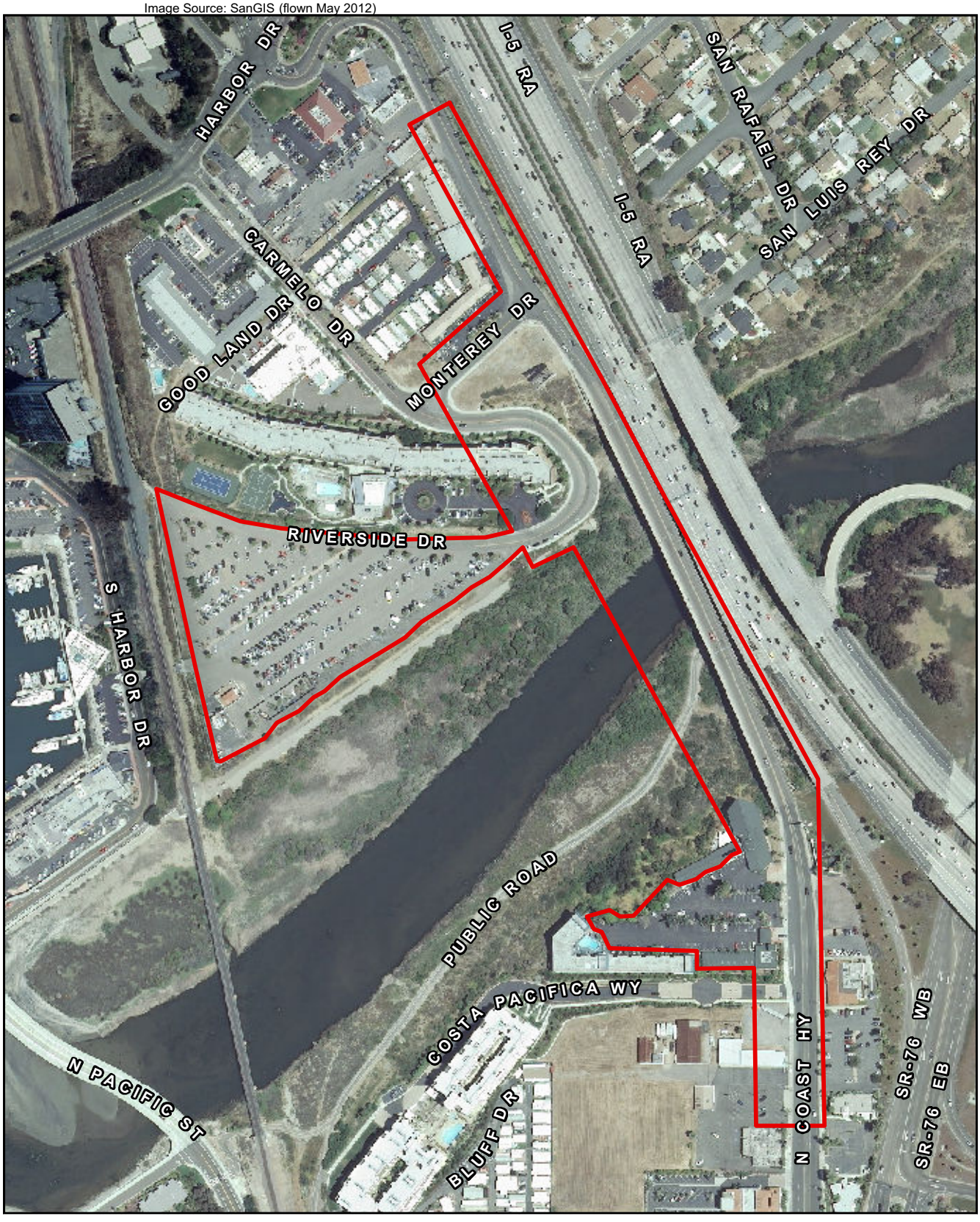
FIGURE 2

Project Vicinity - USGS Topographic Map

RECON

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Image Source: SanGIS (flown May 2012)



Project Boundary

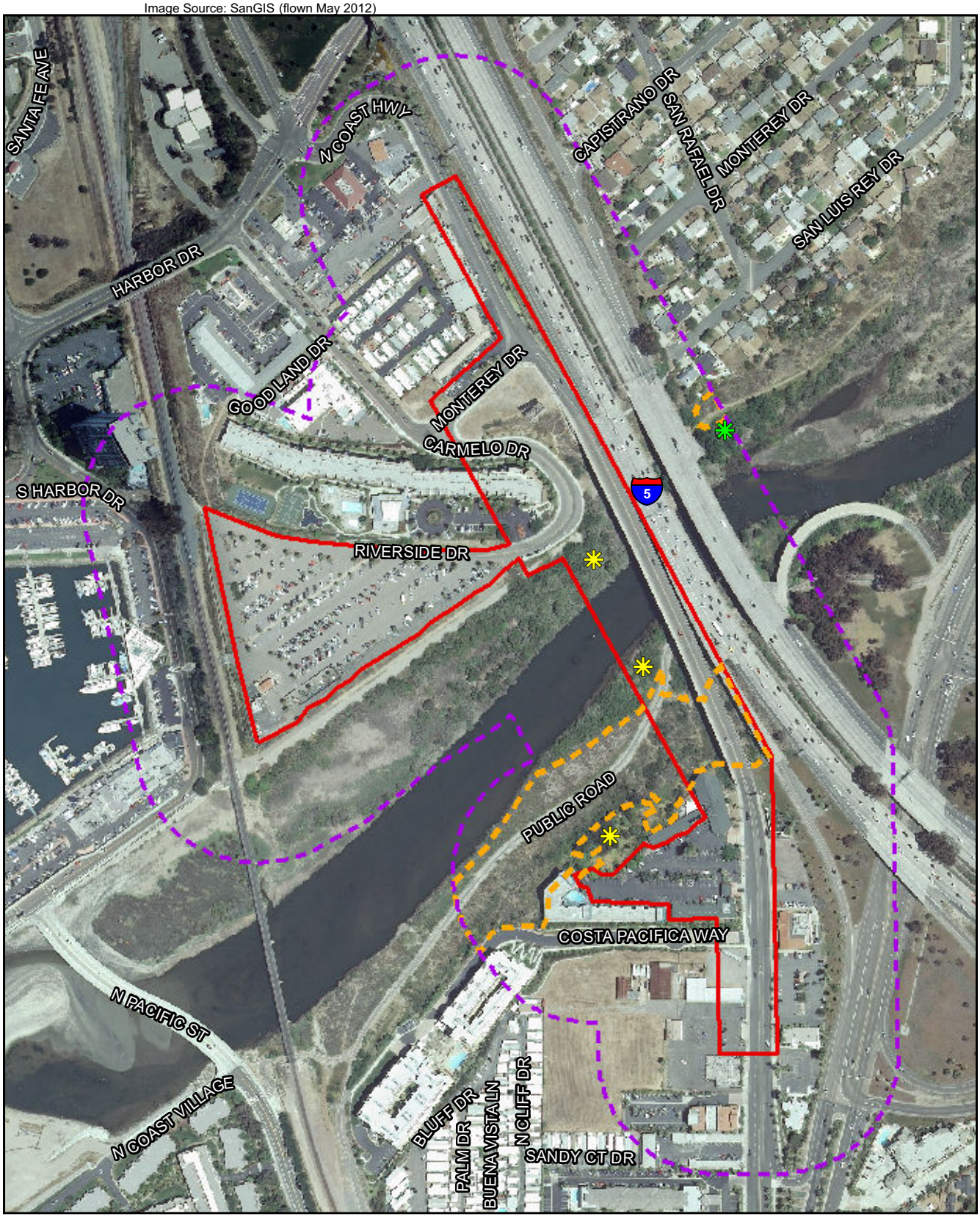
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FIGURE 3

Project Vicinity - Aerial

Image Source: SanGIS (flown May 2012)



0 Feet 350

Project Boundary

300ft Buffer of Project Boundary

Coastal California Gnatcatcher Survey Area

Sensitive Species Observations

Clark's Marsh Wren

Yellow Warbler

FIGURE 4

Coastal California Gnatcatcher Survey Area and Sensitive Species Detections

RECON

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ATTACHMENT 2 – Wildlife Species Detected

Attachment 2 - Wildlife Species Detected

VERTEBRATES		
CLASS AVES		**BIRDS**
Order Podicipediformes		
Family Podicipedidae		
	Podilymbus podiceps	Pied-billed Grebe
Order Anseriformes		**Geese, Swans, and Ducks**
Family Anatidae		**Geese, Swans, and Ducks**
	Anas platyrhynchos	Mallard
	Oxyura jamaicensis	Ruddy Duck
Order Ciconiiformes		**Herons, Ibises, Storks, American Vultures, and Allies**
Family Ardeidae		**Herons, Bitterns, and Allies**
	Egretta thula	Snowy egret
	Ardea herodias	Great Blue Heron
	Ardea alba	Great Egret
	Butorides virescens	Green Heron
	Nycticorax nycticorax	Black-crowned Night-Heron
Order Falconiformes		**Diurnal Birds of Prey**
Family Accipitridae		**Hawks, Kites, Eagles, and Allies**
	Buteo jamaicensis	Red-tailed Hawk
Order Gruiformes		**Rails, Cranes**
Family Rallidae		**Rails**
	Gallinula galeata	Common Gallinule
	Fulica americana	American Coot
Order Charadriiformes		**Shorebirds, Gulls, Auks, and Allies**
Family Laridae		**Gulls, Terns, and Skimmers**
	Larus occidentalis	Western Gull
Family Sterninae		Terns
	Sterna caspia	Caspian Tern
Order Columbiformes		**Pigeons and Doves**
Family Columbidae		**Pigeons and Doves**
	Zenaida macroura	Mourning Dove
Order Apodiformes		**Swifts and Hummingbirds**
Family Trochilidae		**Hummingbirds**
	Calypte anna	Anna's Hummingbird
	Calypte costae	Costa's Hummingbird
	Selasphorus sasin	Allen's Hummingbird
Family Apodidae		**Swifts**
	Aeronautes saxatalis	White-throated swift
Order Passeriformes		**Perching Birds**
Family Tyrannidae		**Tyrant Flycatchers**
	Sayornis nigricans	Black Phoebe
Family Corvidae		**Crows and Jays**
	Aphelocoma californica	Western Scrub-Jay
	Corvus brachyrhynchos	American Crow
	Corvus corax	Common Raven
Family Hirundinidae		**Swallows**
	Stelgidopteryx serripennis	Northern Rough-winged Swallow
	Hirundo pyrrhonota	Cliff Swallow

Family Aegithalidae		**Bushtits**
	Psaltriparus minimus	Bushtit
Family Troglodytidae		**Wrens**
	Thryomanes bewickii	Bewick's Wren
	Troglodytes aedon	House Wren
	Cistothorus palustris clarkae	Clark's Marsh Wren
Family Mimidae		**Mockingbirds and Thrashers**
	Mimus polyglottos	Northern Mockingbird
	Toxostoma redivivum	California Thrasher
Family Sturnidae		**Starlings**
	Sturnus vulgaris	European Starling
Family Parulidae		**Wood-Warblers**
	Vermivora celata	Orange-crowned Warbler
	Dendroica petechia	Yellow Warbler
	Geothlypis trichas	Common Yellowthroat
Family Emberizidae		**Embrezids**
	Pipilo maculatus	Spotted Towhee
	Pipilo crissalis	California Towhee
	Melospiza melodia	Song Sparrow
Family Cardinalidae		**Cardinals and Allies**
	Pheucticus melanocephalus	Black-headed Grosbeak
Family Icteridae		**Blackbirds**
	Agelaius phoeniceus	Red-winged Blackbird
	Quiscalus mexicanus	Great-tailed Grackle
	Icterus cucullatus	Hooded Oriole
Family Fringillidae		**Fringilline and Cardueline Finches and Allies**
	Carpodacus mexicanus	House Finch
	Carduelis psaltria	Lesser Goldfinch
	Carduelis tristis	American Goldfinch
CLASS MAMMALIA		**MAMMALS**
Order Lagomorpha		**Rabbits, Hares, and Pikas**
Family Leporidae		**Rabbits and Hares**
	Sylvilagus audubonii	Desert Cottontail
Order Rodentia		**Rodents**
Family Sciuridae		**Squirrels and Chipmunks**
	Spermophilus beecheyi	California Ground Squirrel
Order Carnivora		**Carnivores**
Family Canidae		**Dogs and foxes**
	Canis familiaris	Domestic Dog
Family Procyonidae		**Raccoons and Relatives**
	Procyon lotor	Raccoon

Appendix O – Bat Survey Reports

July 28, 2021

Wendy Loeffler
RECON Environmental
3111 Camino del Rio North, Suite 600
San Diego, CA 92108-5726

RE: 2021 Bat Reconnaissance Survey Results and Recommendations for the Coast Highway Bridge Replacement Project (RECON No. 7380; SDNHM Project S32)

Dear Ms. Loeffler:

This letter provides a summary of the bat reconnaissance survey conducted in 2021 by the San Diego Natural History Museum (SDNHM) within the City of Oceanside's Coast Highway Bridge Replacement Project area and adjacent habitat enhancement area, located in the City of Oceanside, San Diego County, California. The Project includes replacement of the existing Coast Highway bridge, which is located immediately west of Interstate 5 (I-5) and crosses the San Luis Rey River approximately 2,000 feet upstream from the Pacific Ocean.

This purpose of this survey was to update and/or confirm the results of the bat reconnaissance survey conducted by SDNHM in 2016 for the same project (Busby Biological Services 2016). Several species of bats are known to occur within the vicinity of the Project area and to use certain types of bridges, structures, and trees for roosting. Therefore, SDNHM biologists conducted a bat reconnaissance survey to assess the potential for bats to utilize vegetation and structures within the Project area for day and/or night roosting and to identify potential Project constraints associated with the bat species that have potential to occur.

Project Area Description

Predominant vegetation communities and land cover types within the Project area include urban/developed land (e.g., commercial properties, parking lots, roads, bridges, landscaped vegetation), Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and estuarine. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, Diegan coastal sage scrub/southern riparian scrub transition, coastal brackish marsh, and eucalyptus woodland. The enhancement area comprises non-native riparian and freshwater marsh vegetation. The section of the San Luis Rey River where the Project area and enhancement area occur is ultimately surrounded to the north and south by developed land.

Methods

SDNHM biologists Drew Stokes and Brenna Ogg conducted a daytime bat reconnaissance survey between 10:30 and 12:30 on July 15, 2021, within and adjacent to the Project area and enhancement area. The biologists visually inspected the existing Coast Highway bridge, the I-5 bridges, selected structures and trees within the developed areas, and the natural or unmaintained vegetation for bats and/or bat sign (e.g., guano, staining). They also assessed the potential for bat species to use the structures and vegetation within the Project area for day and night roosting.

The biologists focused on areas of the Coast Highway bridge and the adjacent I-5 bridges where the structure of each bridge would be most likely to support night-roosting bats (e.g., crevices, vent holes, recesses). The bridges were inspected from the ground using the naked eye and binoculars.

Additional structures and trees that were inspected included the exterior of the Flying Bridge (vacant and boarded up), the Oceanside street sign, palm trees with substantial skirts of dead fronds, and other trees with dense foliage or other structure with potential to support roosting bats (e.g., eucalyptus trees [*Eucalyptus* spp.], Peruvian pepper [*Schinus terebinthifolius*]).

Results

The SDNHM biologists observed no bats or evidence of bat usage in any of the areas that were inspected. However, suitable roosting sites were observed within the Project area and are discussed in more detail below. Characteristics of suitable day roost sites typically include well-covered crevice and cavity-like situations that offer substantial protection from light, predators, extreme weather, and disturbance. Night roost sites, while still covered, are typically more open and easily accessed by bats for use between foraging trips.

The existing Coast Highway bridge consists primarily of a single layer of reinforced concrete supported by steel girders. It lacks a hollow structure, open joints, or seams that are typically used by bats. Areas with potential to support roosting bats are limited to either end of the bridge, where the horizontal substructure meets the abutments and provides protected crevice-like recesses (Appendix A: Photographs 1–3); two crevices that are formed by the steel structure of the central bridge span and run parallel to the length of the bridge (Appendix A: Photograph 4); and the occasional shallow hole or old swallow nest. Overall, the existing Coast Highway bridge has low potential to support day-roosting bats and moderate potential to support night-roosting bats. In addition, an active transient camp was observed beneath the southern end of the bridge, where the bridge structure is potentially suitable for night-roosting bats. The presence of this camp further reduces the suitability of this area for bats. This bridge is not anticipated to support an entire bat colony.

Each I-5 bridge consists of a hollow structure with concrete-exterior and vent holes on the underside, adjacent to each support and abutment. Bats have commonly been observed utilizing this type of bridge structure, accessing the interior of the bridge by way of the vent holes. Although some of the vent holes at the north end of the bridges are fenced off and likely inaccessible to bats (Appendix A: Photograph 5), the majority of vent holes are accessible to bats (Appendix A: Photographs 6 and 7). Overall, the existing I-5 bridges have moderate potential to support day-roosting bats and low potential to support night-roosting bats.

The exterior structure of the Flying Bridge includes deep eaves and angled recesses, which provide suitable structure for night-roosting bats. However, only one recessed area on the lower, west side of the building likely also has sufficient cover and protection to provide suitable conditions for night-roosting bats (Appendix A: Photograph 8). As no bats or bat sign was observed, this area has a low potential to support night-roosting bats. This building is not anticipated to support day-roosting bats.

The Oceanside street sign includes a small bell tower with an interior, exposed, wooden structure and a tile roof (Appendix A: Photographs 9–11). Because the bell tower has a window opening on each of the four sides (i.e., minimal protection or temperature regulation), the internal tower structure has low potential to support night- or day-roosting bats. The tile roof also has low potential to support day-roosting bats, which may enter by way of the eave edge.

The riparian and ornamental/landscaped vegetation both include scattered trees, such as Mexican fan palm (*Washingtonia robusta*), eucalyptus trees (*Eucalyptus* spp.), and Peruvian pepper (*Schinus terebinthifolius*), that may provide suitable habitat for tree/foliage-roosting bat species during the daytime. Fan palms with substantial skirts of dead fronds, and trees with medium- to large-sized deciduous leaves provide suitable cover for such bats (Appendix A: Photographs 12–18). Overall, these

trees have moderate potential to support day-roosting bats, with the most suitable habitat being the skirted fan palms within the riparian vegetation on the west side of the Coast Highway bridge. These particular palms have full skirts, are immediately adjacent to the riverine foraging habitat, and are set back from the traffic noise.

Discussion

Bat Species Not Detected but with Potential to Occur

The bat species with the highest potential to be roosting within the bridges and other human-made structures on site include the Mexican free-tailed bat (*Tadarida brasiliensis*), Yuma myotis (*Myotis yumanensis*; Western Bat Working Group [WBWG] Low-Medium Priority rank), and big brown bat (*Eptesicus fuscus*). These are the three most common bats found in San Diego County. They appear to be tolerant of urbanization and are often found roosting in human-made structures such as bridges.

Other bat species that could utilize the various exotic trees in the Project area as roosts include the western red bat (*Lasiurus blossevillii*) and western yellow bat (*Lasirus xanthinus*), which are California Department of Fish and Wildlife [CDFW] Species of Special Concern [SSC] and have a WBWG High Priority rank, as well as the highly migratory hoary bat (*Lasiurus cinereus*), which has a WBWG Medium Priority rank.

Project Constraints

Due to the presence of suitable roosting habitat for bats within the Project area, demolition, construction, and habitat enhancement activities could result in direct or indirect (e.g., increased noise, vibration, night lighting) impacts to bats, including the following CDFW SSC: western red bat and western yellow bat.

Recommendations

SDNHM recommends the following measures to determine the presence/absence of sensitive bat species and avoid, minimize, and/or mitigate potential impacts to sensitive bat species:

1. Conduct bridge demolition and other construction activities that are anticipated to produce the most substantial disturbance from noise, vibrations, and/or night lighting between October 15 and March 15, which is outside the bat breeding season (i.e., outside the season when local breeding bat colonies are no longer present in large numbers).

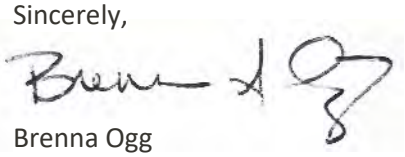
2. Conduct any Project- or enhancement-required tree removals between October 15 and March 15, which is outside the bat breeding season.

3. If bridge demolition, major construction activities, and/or tree removal must be conducted during the bat breeding season (March 16 through October 14), conduct pre-construction surveys of suitable day roost sites identified above. Ideally, pre-construction bat surveys would consist of up to 3 nights of surveys conducted within a 2-week period in late July or early August. Alternatively, conduct pre-construction/demolition surveys within a 2-week period prior to these activities to serve as clearance surveys.

Based on the results of the pre-construction bat surveys, appropriate avoidance, minimization, and/or mitigation measures could be developed, if needed, so that the Proposed Project does not result in significant impacts by way of direct take or increased noise, vibrations, night lighting to any bat species that are present within the Project area.

If you have any questions about the contents of this letter, please feel free to contact me at (619) 255-0178 or **bogg@sdnhm.org** or Drew Stokes at **dstokes@sdnhm.org**.

Sincerely,



Brenna Ogg
Senior Biologist, BioServices

Reference

Busby Biological Services, Inc. 2016. Coast Highway Bridge Bat Reconnaissance Survey Results & Recommendations. July 7.

Appendix A

Photographs of Survey Area



Photograph 1. North End (Abutment) of Coast Highway Bridge, Facing West



Photograph 2. South End (Abutment) of Coast Highway Bridge, Facing East-northeast



Photograph 3. Substructure of South End of Coast Highway Bridge, Facing South-southeast



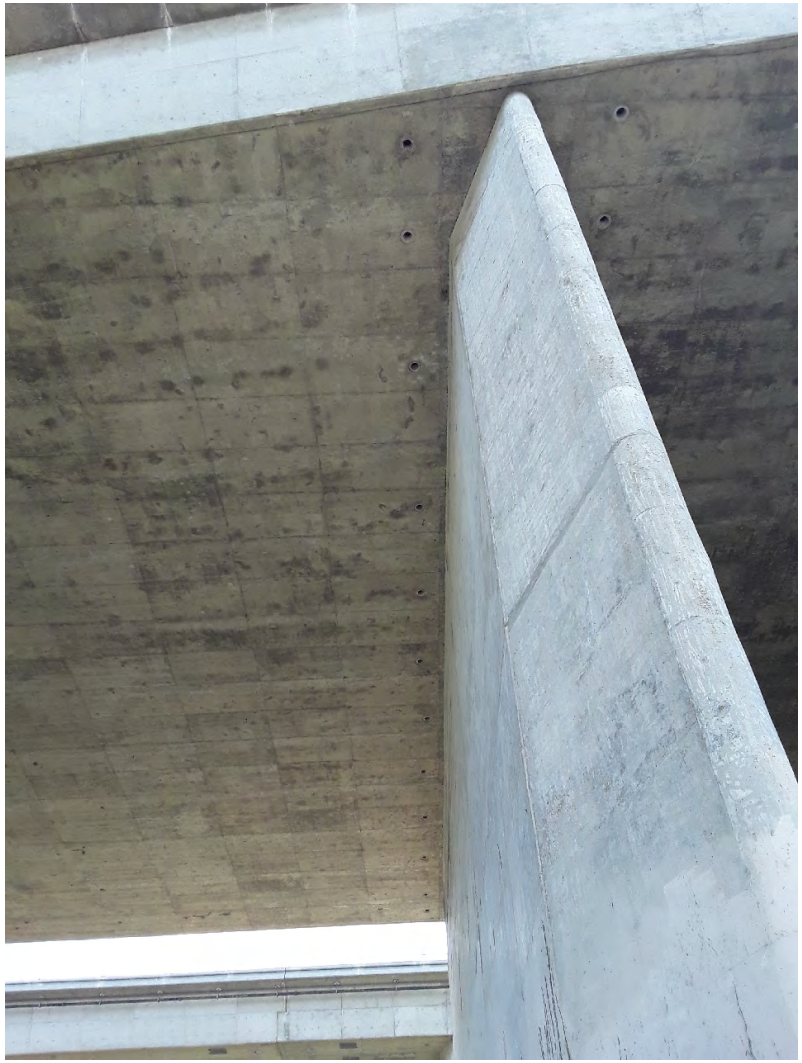
Photograph 4. Crevice Observed Between Steel Support Structures, Central-South Section of Coast Highway Bridge, Facing North-northwest



Photograph 5. North End (Abutment) of I-5 Bridge with Fenced-off Vent Holes, Facing West-southwest



Photograph 6. South End (Abutment) of I-5 Bridge with Accessible Vent Holes, Facing Southeast



Photograph 7. Underside of I-5 Bridge with Accessible Vent Holes, Facing East-northeast



Photograph 8. Recess on West Side of The Flying Bridge, Facing East



Photograph 9. Oceanside Street Sign Bell Tower with Tile Roof, Facing North-northeast



Photograph 10. Oceanside Street Sign Bell Tower Internal Wooden Structure, Facing North



Photograph 11. South Face of Oceanside Street Sign, Facing North-northeast



Photograph 12. Riparian Vegetation on West Side of Coast Highway Bridge, Facing West-southwest



Photograph 13. Riparian Vegetation on West Side of Coast Highway Bridge (Enhancement Area), Facing Southwest Along Northern Bank of San Luis Rey River



Photograph 14. Eucalyptus Woodland On East Side of I-5, Facing Northeast



Photograph 15. Non-native Tree within Parking Lot Adjacent to Flying Bridge, Facing Southeast



Photograph 16. Palm with Skirt of Dead Fronds in Developed Area, Adjacent to the Flying Bridge, Facing North



Photograph 17. Palms with Skirts of Dead Fronds, West of Coast Highway Bridge, Facing Southeast



Photograph 18. Non-native Vegetation on East Side of I-5, Facing Southeast

MEMORANDUM

TO: Brenna Ogg, RECON Environmental, Inc.

FROM: Melissa Busby, Busby Biological Services, Inc.

DATE: July 7, 2016

RE: Coast Highway Bridge Bat Reconnaissance Survey Results & Recommendations

This memorandum summarizes the results of the bat reconnaissance survey that was conducted by the San Diego Natural History Museum (SDNHM) for Busby Biological Services, Inc. (BBS) and RECON Environmental, Inc. (RECON) on behalf of Moffatt & Nichol and the City of Oceanside for the proposed Coast Highway Bridge Replacement Project (Proposed Project), which is located in the City of Oceanside, San Diego County, California. The Proposed Project includes replacement of the existing Coast Highway bridge, which is located immediately west of Interstate 5 and crosses the San Luis Rey River approximately 2,000 feet upstream from the Pacific Ocean.

The Proposed Project is bordered on all sides by developed land, which includes Interstate 5, Oceanside Harbor, commercial properties, gas stations, lodging, parking lots, and residential uses. Within the Proposed Project area, there is a mix of developed land consisting of commercial property (e.g., restaurants, hotels), parking lots, roads, and bridges, and undeveloped land composed of native and non-native vegetation.

The dominant vegetation communities and land cover types within the immediate vicinity of the Proposed Project include urban/developed, Diegan coastal sage scrub, non-native riparian, disturbed southern riparian scrub, disturbed habitat, and estuarine. Other vegetation communities present in smaller proportions include disturbed Diegan coastal sage scrub, Diegan coastal sage scrub/southern riparian scrub transition, coastal brackish marsh, and eucalyptus woodland.

Several species of bats are known to occur within the vicinity of the Proposed Project and are known to use certain types of bridges for roosting. Therefore, SDNHM biologists conducted a bat reconnaissance survey to identify potential constraints associated with the various bat species that have a potential to occur within the Proposed Project area.

METHODS

SDNHM biologists Drew Stokes and Kelly Inglett along with RECON biologist Brian Parker conducted an evening bat reconnaissance survey within and adjacent to the Proposed Project area. The biologists visually inspected the existing Coast Highway bridge, the Interstate 5 bridges, and the surrounding habitats during daylight hours to identify any bats and/or bat sign present within the Proposed Project area and to assess the potential for bat species that are known from the vicinity of the Proposed Project to use the bridges and/or adjacent habitats.

RESULTS

The SDNHM and RECON biologists conducted the bat reconnaissance survey on May 24, 2016, from approximately 1700 to 1830. The biologists carefully inspected both ends of the existing Coast Highway bridge, where night roosting would likely occur if the bridge were being used by bats. The biologists noted that there was no evidence of bat usage in any of the areas that were accessible, and there were very few roosting options for bats within the vicinity of the Proposed Project.

The biologists also visually assessed the Interstate 5 bridges for bats and bat sign. While no bats or bat sign were observed, the biologists noted that the Interstate 5 bridges do provide potential habitat for bats. The Interstate 5 bridges have vent holes, which are commonly used by bats; however, these bridges lack the expansion joints that are frequently associated with bat usage. To determine if bats are using the Interstate 5 bridges, focused bat surveys would be required.

DISCUSSION

Based on previous survey experience and knowledge of local bat species, the SDNHM biologists noted that the existing Coast Highway bridge consists primarily of a single layer of reinforced concrete supported by steel girders. It does not have a hollow structure or open joints or crevices typical of other bridges that they have seen being used by bats. While there were a few small, shallow holes in the bridge along with a few cliff swallow nests that could potentially provide roosting opportunities for a small number of bats, there were not areas that appeared to be able to support an entire bat colony.

The Interstate 5 bridges, however, do provide a design that has the potential to be used by bats. Because these bridges are located immediately east and adjacent to the existing Coast Highway bridge, demolition and construction activities at the Coast Highway bridge could potentially result in impacts (e.g., direct take or increased noise, vibrations, night lighting) to bat species that may be utilizing the existing Interstate 5 bridges.

RECOMMENDATIONS

Although the existing Coast Highway bridge does not provide any obvious potential for roosting bat colonies based on the design of the exiting bridge and lack of observations of bats and bat sign, the SDNHM biologists recommend pre-construction surveys of the existing Coast Highway bridge to determine the presence/absence of sensitive bat species. In addition, because the Interstate 5 bridges do have a potential to support bat species that could be impacted by the Proposed Project, the SDNHM biologists recommend that the Interstate 5 bridges be included in the pre-construction bat surveys for the Proposed Project.

Ideally, pre-construction bat surveys would consist of 3 nights of surveys conducted within a 2-week period sometime in late July or early August.

Based on the results of the pre-construction bat surveys, appropriate avoidance, minimization, and/or mitigation measures could be developed, if needed, so that the Proposed Project does not result in significant impacts (e.g., direct take or increased noise, vibrations, night lighting) to any bat species that are present within the Proposed Project area.