

Water Quality Assessment Report
Coast Highway (Hill Street) Bridge Replacement Project



San Diego County, California
Oceanside 7.5-Minute Quadrangle
San Bernardino Meridian, Township 11S, Range 05W, Section 22 and
23
Caltrans District 11
BRLS 5079 (030)

September 2022



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Executive Summary

This Water Quality Assessment Report (WQAR) identifies potential water quality impacts associated with the Coast Highway (Hill Street) Bridge over the San Luis Rey River Replacement Project (Project). This WQAR is intended to assist with compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and to the extent possible, with federal, state, and local permitting requirements related to hydrology and water quality, and recommends environmental commitment measures for potentially adverse impacts, where appropriate.

The City of Oceanside Capital Improvement Program Section (City) is proposing to replace the existing Coast Highway (Hill Street) bridge spanning the San Luis Rey River. Funding is administered by the California Department of Transportation (Caltrans) through the Highway Bridge Program (HBP).

The Project 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 will meet current applicable City, American Association of State Highway and Transportation Officials, and Caltrans design standards. 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 preferred alternative is that the bridge will 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.

Existing water quality conditions within the San Luis Rey River are moderate to low with unknown sources of indicator bacteria, trash, bifenthrin, chloride, nitrogen, phosphorus, total dissolved solids being the main pollutant. The San Luis Rey River is included in the 2018 California 303(d) list of impaired waters and is a waterbody with TMDL requirements (SWRCB 2018).

Potential impacts during construction include exposure of excavated soil from construction activities such as cutting and grading slopes and grubbing and clearing activities. The estimated Disturbed Soil Area (DSA) for the Project is 9.59 acres and will require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) as required by the State Water Resources Control Board (SWRCB) Construction General Permit (CGP) Order No. 2009-0009-DWQ [as amended by Order No. 2010-0014-DWQ and 2012-006-DWQ] NPDES No. CAS000002). The SWPPP will identify temporary construction site best management practices

(BMPs) to be implemented during construction. In addition, the Project will be required to obtain a Clean Water Act Section 401-water quality certification.

Construction of the Project will include the addition of approximately 1.28 acres of impervious surfaces (i.e. new bridge and roadway approaches) but will also remove approximately 1.45 acres of impervious material (i.e. existing Coast Highway (Hill Street) bridge and portions of the existing roadway approaches) resulting in a net increase of approximately 0.17 acres of pervious surfaces. The Project is a bridge replacement and will not increase capacity, add lanes, or substantially widen the bridge.

Pollutants typically generated during the operation of a transportation facility include sediment/turbidity, nutrients, trash and debris, bacteria and viruses, oxygen demanding substances, organic compounds, oil and grease, pesticides, and metals. The Project will implement avoidance and minimization measures to address temporary and permanent water quality impacts.

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List of Abbreviated Terms

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average daily traffic
BFE	Base flood elevation
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CGP	Construction general permit
Corps	U.S. Army Corps of Engineers
City	City of Oceanside Capital Improvement Program Section
CWA	Clean Water Act
CWA	Clean Water Act
DO	Dissolved oxygen
DOT	U.S. Department of Transportation
DSA	Disturbed soil area
DWR	Department of Water Resources
E.O.	Executive Order
EPA	Environmental Protection Agency
ESA	Federal Endangered Species Act
FEMA	Federal emergency management agency

FHWA	Federal Highway Administration
GIS	Geographic Information System
HA	Hydrologic area
HSA	Hydrologic study area
HU	Hydrologic unit
LEDPA	Least environmentally damaging practicable alternative
LID	Low impact development
LSA	Lake and streambed alteration agreement
MBTA	Migratory Bird Treaty Act
mg/L	Milligrams per liter
MS4	Municipal Separate Storm Sewer System
µmho	micromho
NEPA	National Environmental Policy Act
NOAA Fisheries	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NRCS	National Resource Conservation Society
OHWM	ordinary high-water mark
PCR	Post construction requirements
Project	Coast Highway (Hill Street) Bridge Replacement Project
RSP	Rock slope protection
RWQCB	Regional Water Quality Control Board
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total dissolved solids

TMDL	Total maximum daily load
USFWS	United States Fish and Wildlife Service
WDR	Waste discharge requirements
WQAR	Water Quality Assessment Report

Chapter 1. Introduction

1.1. Approach to Water Quality Assessment

The purpose of the Water Quality Assessment Report (WQAR) is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and to provide information for National Pollutant Discharge Elimination System (NPDES) permitting. The document includes a discussion of the Coast Highway (Hill Street) Bridge Replacement Project (Project), the general environmental setting of the Project area, and the regulatory framework with respect to water quality; it also provides data on surface water and groundwater resources within the Project area and the water quality of these waters, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the Project, and recommends avoidance and/or minimization measures for potentially adverse impacts.

1.2. 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 will 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 San Luis Rey 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

1.3. Project Description

The Project is located along the coast in northwestern San Diego County, within the City of Oceanside (**Figure 1-1**) where Coast Highway (Hill Street) crosses the San Luis Rey River, approximately 0.3 miles south of Harbor Drive, immediately west of, and parallel to, Interstate 5 (I-5) (**Figure 1-2**). The Project is on the Oceanside CA USGS 7.5'-minute Quadrangle along the San Bernardino Meridian and within Township 11 South, Range 05 West, Section 22.

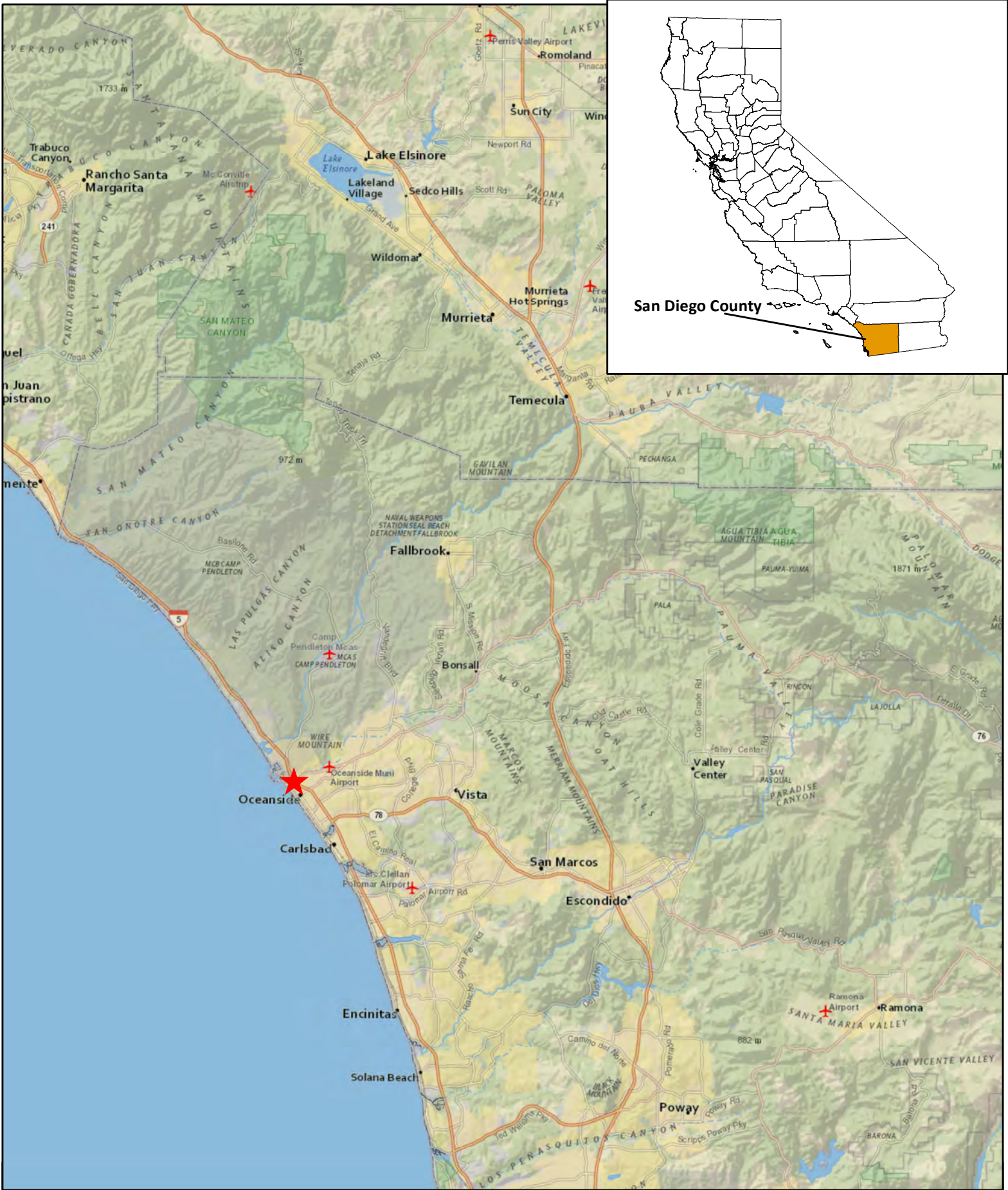
The Coast Highway runs from southeast to northwest at approximately a 30-degree angle to true north. For purposes of this Project Description, the Coast Highway is assumed to run north to south, and the San Luis Rey River flows from east to west.

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 channel supported on piles. Piers 2 and 5, located near the edges of the San Luis Rey 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



★ Project Location - Hill Street Bridge

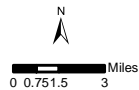
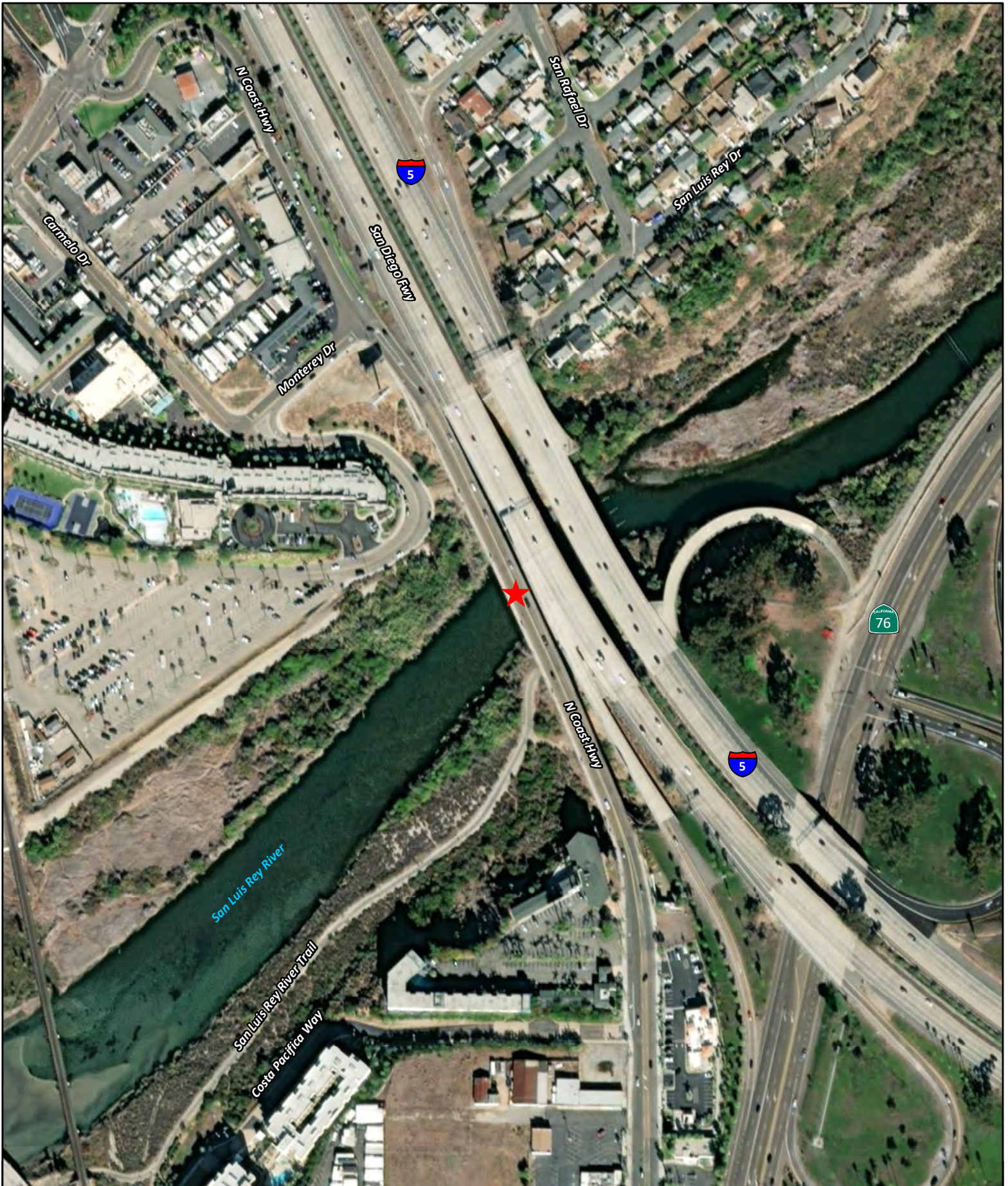


Figure 1-1. Regional Location

**Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California**



★ Project Location - Hill Street Bridge

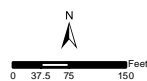


Figure 1-2. Project Location

Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California

- 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; however, temporary closures and/or detours are anticipated to be needed during construction. After construction the trail will be returned to its pre-Project condition.

On the north side of the San Luis Rey River, there is a paved concrete pedestrian path near the top of the slope, which crosses under the I-5 bridges and the existing Coast Highway Bridge. This path 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; however, temporary closures and/or detours are anticipated to be needed during construction. After construction the trail will be returned to its pre-Project condition.

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 preferred alternative is that the bridge will 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. 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. 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 will not affect the overall area of direct impact identified for this report.

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. For the purposes of this report, only the preferred alternative was analyzed and shown on the figures as this is the alternative that has a slightly larger footprint. **Figure 1-3** depicts the area of direct impacts and major Project details.

Roadway Approach Work

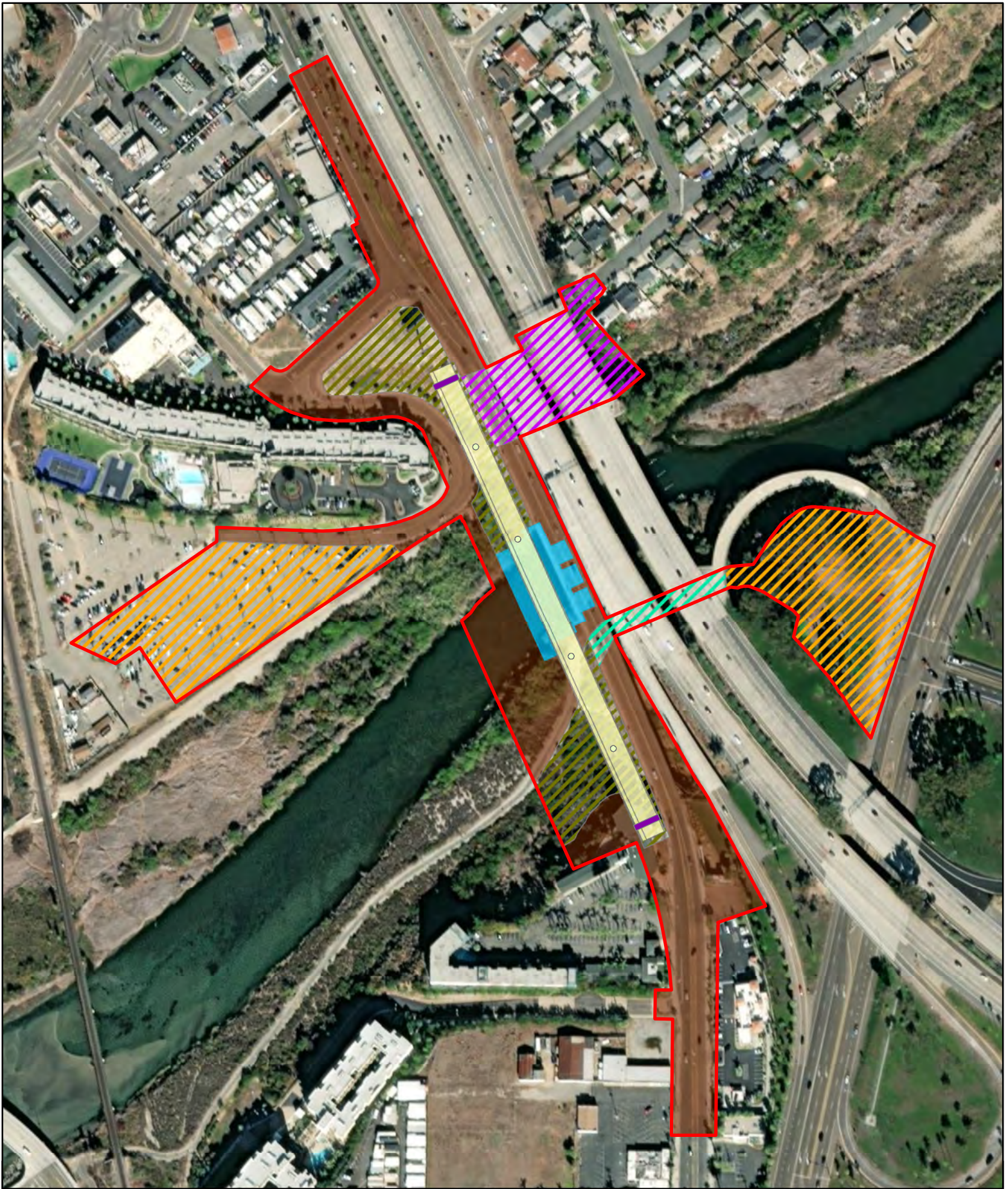
The Project will include new pavement, curbs, gutters, and sidewalks adjacent to the replacement bridge. The Project will conform back to the existing roadway as quickly as practical. The curb-to-curb clear width of the street will match the width of the existing street and bridge. The approaches will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



- | | |
|---|--|
|  Area of Direct Impacts |  Potential Temporary Disturbance Area |
|  Columns |  Temporary Access |
|  Abutments |  Temporary Construction Access and Staging Area |
|  Bridge Deck |  Temporary Construction Area |
|  Temporary Trestle |  Temporary Staging Area |

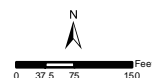


Figure 1-3. Area of Direct Impacts and Project Details
Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California

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. 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. 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.

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 will be removed. Areas around the corners of the new bridge will be cleared of vegetation, fencing, and planter beds to gain access for constructing the new bridge. Vegetation and trees in the San Luis Rey River within the footprint of the new bridge will 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 Rey River Trail under the I-5 bridges. This path will provide access from SR-76 and provide a relatively gradual slope for the access road. Access to the Project site north of the San Luis Rey River could be achieved from Monterey Drive and Riverside Drive.

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 will be used to provide access over the San Luis Rey 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 will 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. 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 San Luis Rey 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 to 15+ feet.

The falsework will 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.

1.3.1 Construction Schedule and Timing

Construction is currently scheduled to start in 2024 and take approximately 24 to 30 months to complete. An in-water 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 Corps levee group. An in-water work window of June 1 to October 31 is anticipated.

During the first season in-water work window, work will primarily consist of installing the temporary trestles and falsework, construction of the permanent bridge piles and substructure, and other construction items that require work inside top of bank and across the San Luis Rey River. At the end of the first season in-water work window the superstructure will begin to be constructed. The superstructure construction will continue through the winter season and all work and access will be above the previously constructed temporary trestle and temporary falsework. During this time, avoidance and minimization measures (described in Chapter 5) will be implemented to prevent contamination of the San Luis Rey River and surrounding environment below the temporary trestles and falsework. Superstructure construction will consist of forming the superstructure, placing reinforcement, and pouring concrete.

During the second season in-water work window work will primarily consist of removing the temporary falsework, demolition of the existing bridge, and then removal of all temporary trestles and other temporary works.

1.4. Findings of the Construction Site Sediment and Receiving Water Risk Determination

A site risk analysis was conducted using the CGP's Risk Determination Worksheet to determine the Risk Level for this Project.

Project location and schedule information was used to determine the R-factor, K-factor, and LS factor components for the project.

- The EPA's Rainfall Erosivity Calculator tool was used to calculate the project R-factor. **R = 46.29**
- The project K-factor was obtained from statewide GIS data, per the regional board: **K = 0.19¹**
- The project LS-factor was obtained from statewide GIS data, per the regional board **LS = 1.41²**

The Project erosion estimate ($R \cdot K \cdot LS$) is **12.40** tons per acre, which translates to a "**Low**" **Site Sediment Risk Factor**.

The San Luis Rey River has established beneficial uses of cold freshwater habitat (**COLD**), spawning (**SPWN**), and migration of aquatic organisms (**MIGR**) and it is a 303(d)-listed waterbody impaired by sediment or have a USEPA approved TMDL implementation plan for sediment, which translates to a "**High**" **Receiving Water Risk**.

The combination of a "Low" Site Sediment Risk Factor and a "High" Receiving Water Risk results in a **Risk Level 2** project. The Risk Determination Worksheet is included in **Appendix A**.

1.5. No Project Alternative

The No Project Alternative will consist of leaving the existing bridge in its current state, with the exception of routine maintenance activities. There will be no replacement bridge. This alternative will not meet the purpose and need of the Project, which is to replace an existing bridge that is considered structurally deficient and does not meet current design standards.

¹ Project lies within two K values, 0.17 and 0.2; 0.19 is average K value

² Project lies within two LS values, 1.18 and 1.64; 1.41 is average LS value

Chapter 2. Regulatory Setting

The various laws and regulations described in this chapter protect surface and groundwater quality and hydrology by establishing water quality compliance standards and waste discharge requirements (WDRs). These laws, regulations, and policies require implementation of a number of design, construction, and operational controls for proper storm water runoff management, treatment, and water quality protection.

2.1. Federal Laws and Requirements

Clean Water Act

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a NPDES permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit program. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act. (Most frequently required in tandem with a Section 404 permit request. See below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. The Federal Environmental Protection Agency delegated to the California State Water Resources Control Board (SWRCB) the implementation and administration of the NPDES program in California. The SWRCB established nine RWQCBs. The SWRCB enacts and enforces the Federal NPDES program and all water quality programs and regulations that cross Regional boundaries. The nine RWQCBs enact, administer and enforce all programs, including NPDES permitting, within their jurisdictional boundaries. Section 402(p) requires permits for discharges of stormwater from industrial, construction, and Municipal Separate Storm Sewer Systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S, including wetlands. This permit program is administered by the U.S. Army Corps of Engineers (Corps).

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The Corps issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are also two types of Individual permits: Standard Individual permit and Letter of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of Corps’ Individual permits. For Standard Individual permit, the Corps decision to approve is based on compliance with U.S. Environmental Protection Agency’s (EPA) Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The 404(b)(1) Guidelines were developed by the U.S. EPA, in conjunction with the Corps, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which will have less adverse effects. The Guidelines state that Corps may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA), to the proposed discharge that will have less effects on waters of the U.S., and not have any other significant adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures have been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause “significant degradation” to waters of the U.S. In addition, every permit from the Corps, even if not subject to the 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

2.2. State Laws and Requirements

Porter-Cologne Water Quality Control Act

California’s Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the State. It predates the CWA and regulates discharges to waters of the State. Waters of the State include more than just waters of the U.S., such as groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of “waste” as defined and this definition is broader than the CWA definition of “pollutant”. Discharges under the Porter-Cologne Act are permitted by WDRs and may be required even when the discharge is already permitted or exempt under the CWA.

The SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) as required by the CWA and regulating discharges to protect beneficial uses of water bodies. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions, and then set standards necessary to protect these uses. Consequently, the water quality standards developed for particular water body segments are based on the designated use and vary depending on such use. Water body segments that fail to meet standards for specific pollutants are included in a Statewide List in accordance with CWA Section 303(d). If a RWQCB determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-source point controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed. The SWRCB implemented the requirements of CWA Section 303(d) through Attachment IV of the Caltrans Statewide MS4, as it includes specific TMDLs for which Caltrans is the named stakeholder.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB adjudicates water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- **National Pollutant Discharge Elimination System (NPDES) Program**

Municipal Separate Storm Sewer Systems (MS4)

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater dischargers, including MS4s. The U.S. EPA defines an MS4 as “any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying stormwater.” The SWRCB has identified Caltrans as an owner/operator of an MS4 pursuant to federal regulations. The Caltrans’ MS4 permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

Construction General Permit

Construction General Permit (NPDES No. CAS000002, SWRCB Order No. 2009-0009-DWQ, adopted on November 16, 2010) became effective on February 14, 2011 and was

amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ. The permit regulates stormwater discharges from construction sites which result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development.

For all projects subject to the CGP, the applicant is required to hire a Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD) to develop and implement an effective SWPPP. All Project Registration Documents, including the SWPPP, are required to be uploaded into the SWRCB's on-line Stormwater Multiple Application and Report Tracking System (SMARTS), at least 30 days prior to construction.

Waivers from CGP coverage.

Projects that disturb over 1.0 acre but less than 5 acres of soil, may qualify for waiver of CGP coverage. This occurs whenever the R factor of the **Watershed Erosion Estimate (=R_xK_xL_S) in tons/acre** is less than 5. Within this CGP formula, there is a factor related to when and where the construction will take place. This factor, the 'R' factor, may be low, medium or high. When the R factor is below the numeric value of 5, projects can be waived from coverage under the CGP, and are instead covered by the Caltrans Statewide MS4.

In accordance with Stormwater Management Plan (SWMP), a WPCP is necessary for construction of a Caltrans project not covered by the CGP.

Construction activity that results in soil disturbances of less than one acre is subject to this CGP if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop a SWPPP, to implement soil erosion and pollution prevention control measures, and to obtain coverage under the CGP.

The CGP contains a risk-based permitting approach by establishing three levels of risk possible for a construction site. Risk levels are determined during the planning, design, and construction phases, and are based on project risk of generating sediments and receiving water risk of becoming impaired. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project will require compulsory stormwater runoff pH and turbidity monitoring, and pre- and post-construction aquatic biological assessments during specified seasonal windows.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most

common federal permit triggering 401 Certification is a CWA Section 404 permit, issued by the Corps. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the Corps issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may prescribe a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act). WDRs may specify the inclusion of additional project features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Lake and Streambed Alteration Program

Fish and Game Code section 1602 requires an entity to notify the California Department of Fish and Wildlife (CDFW) prior to commencing any activity that may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or
- Deposit debris, waste or other materials that could pass into any river, stream or lake.

Please note that "any river, stream or lake" includes those that are episodic (they are dry for periods of time) as well as those that are perennial (they flow year-round). This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

CDFW requires a Lake or Streambed Alteration (LSA) Agreement when it determines that the activity, as described in a complete LSA Notification, may substantially adversely affect existing fish or wildlife resources. An LSA Agreement includes measures necessary to protect existing fish and wildlife resources. CDFW may suggest ways to modify your project that will eliminate or reduce harmful impacts to fish and wildlife resources. Before issuing an LSA Agreement, CDFW must comply with the CEQA.

2.3. Regional and Local Requirements

San Diego Basin Plan

The San Diego Basin Plan (Basin Plan) sets forth water quality objectives for constituents that could potentially cause an adverse effect or impact on the beneficial uses of water. Specifically, the San Diego Basin Plan is designed to accomplish the following:

- Designate beneficial uses for surface water and groundwater;
- Set the narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state’s anti-degradation policy;
- Describe implementation programs to protect the beneficial uses of all waters within the region; and
- Describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan.

The Basin Plan incorporates by reference all applicable SWRCB and RWQCB plans and policies.

Regional MS4 Permit

On May 8, 2013, the RWQCB approved a regional MS4 permit for San Diego, southern Orange, and southwestern Riverside Counties (Order No. R9-2013-0001). Order No. R9-2013-0001 has been subsequently amended by Order Nos. R9-2015-0001 and R9-2015-0100. The region-wide NPDES Permit (commonly referred to as the Regional MS4 Permit) sets the framework for municipalities, such as the City of Oceanside, to implement a collaborative watershed-based approach to restore and maintain the health of surface waters. The Regional MS4 Permit requires development of Water Quality Improvement Plans (WQIPs) that will allow the City of Oceanside (and other watershed stakeholders) to prioritize and address pollutants through an appropriate suite of BMPs in each watershed.

City of Oceanside General Plan

The City of Oceanside’s General Plan Community Facilities Element contains plans, policies, objectives, and goals related to stormwater system management. The overall objective for managing the City’s drainage and stormwater system is to provide adequate stormwater management facilities and services for the entire community in a timely and cost effective manner, while mitigating the environmental impacts or construction of the storm drainage system as well as stormwater runoff.

City of Oceanside Municipal Code

Chapter 40 of the City of Oceanside Municipal Code is known as the Urban Runoff Management and Discharge Control Ordinance. The overall intent of this ordinance is to “protect the health, safety and general welfare of Oceanside residents; to protect water resources and to improve water quality; to cause the use of management practices by the city and its citizens that will reduce the adverse effects of polluted runoff discharges on waters of the state; to secure benefits from the use of stormwater as a resource; and to ensure the city is compliant with applicable state and federal law” (City of Oceanside 2014). General provisions of the Urban

Management and Discharge Control Ordinance include compliance with the current and applicable RWQCB discharge permits, requirements for discretionary approvals subject to discharge control, development of Urban Runoff Standards Manuals, and designations for permitted use of collected stormwater.

San Luis Rey River Watershed Management Area Water Quality Improvement Plan

The San Luis Rey River Watershed Management Area WQIP was developed to demonstrate compliance with the Regional MS4 Permit (Order No. R9-2013-0001) discussed above. This watershed-specific plan was developed by the co-permittees of the San Luis Rey River Watershed Management Area (City of Oceanside, City of Vista, County of San Diego and Caltrans), and is intended to provide a process by which the co-permittees can select and address the highest priority water quality issues. The WQIP includes descriptions of the highest priority pollutants or conditions within the watershed as well as goals and strategies to address those pollutants or conditions, and time schedules associated with those goals and strategies. The WQIP includes drainage area assessments of the highest priority areas in order to identify the pollutant discharges and other sources that are causing the high priority condition. It also provides strategies to address high-priority water quality conditions, interim and final water quality targets for these strategies, and timelines to achieve the targets. While the primary focus of the WQIP is on water quality, it also provides multi-benefit project goals, targets, identification, assessment, prioritization, and timelines for implementation within the Watershed Management Area.

Chapter 3. Affected Environment

This chapter describes the physical condition of the Project site and surrounding area including the existing topography, climate, local and regional hydrology, surface water and groundwater quality, site drainage, erosion, geology, soils, and biological communities.

3.1. General Environmental Setting

The general setting is a perennial river surrounded by commercial development. The Project 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. The San Luis Rey River is the primary aquatic feature and flows throughout the year.

3.1.1. Population and Land Use

The General Plan land uses in the bridge vicinity are Downtown, Public Utility and Transportation, Single Family Detached Residential, Coastal Residential Low Density, Coastal Residential Medium Density, Coastal Open Space, Harbor Precise Plan, and Coastal Dependent, Recreational and Visitor Serving Commercial. The existing roadway at the bridge is classified as a “secondary collector” and accommodates an average daily traffic (ADT) of approximately 9,000 vehicles a day and a level of service (LOS) rating “D” according to the Oceanside General Plan Circulation Element.

3.1.2. Topography

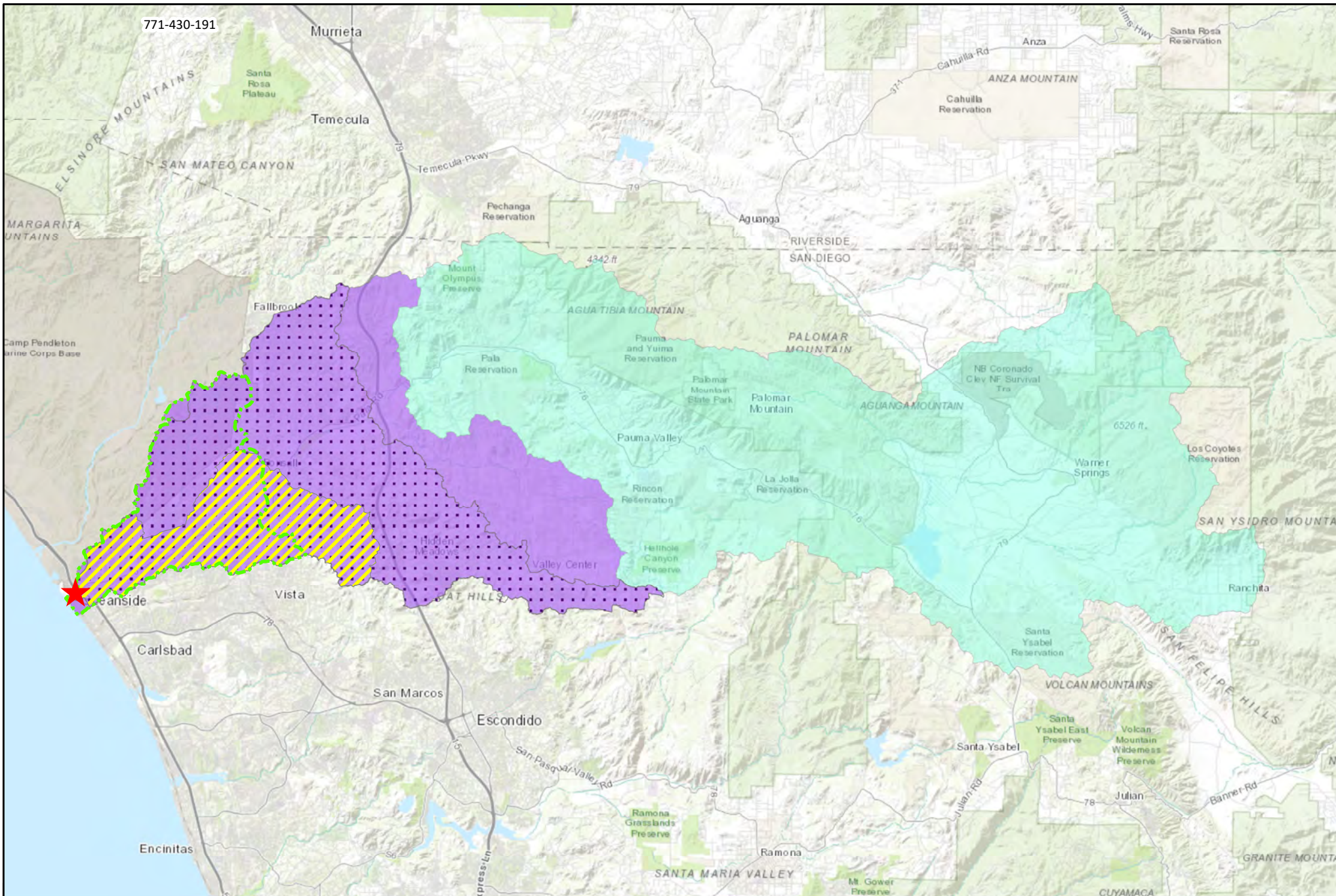
Topography within the Project area is relatively flat. Elevations within the Project range from approximately zero to 70 feet above mean sea level (msl), with the lowest elevations along the water’s surface and the highest elevations within the developed areas of the northern portion of the Project.

3.1.3. Hydrology

3.1.3.1 REGIONAL HYDROLOGY

The Project area is located in the Mission hydrologic sub-area (HSA) of the Lower San Luis hydrologic area (HA), within the San Luis Rey hydrologic unit (HU). It is located in the Guajome Lake-San Luis Rey River subwatershed within the Lower San Luis Rey watershed (**Figure 3-1**).

The Mission HSA drains an area of approximately 47 square miles while the Lower San Luis HA drains approximately 187 square miles. The San Luis Rey HU drains an area of approximately 560 square miles.



- ★ Project Location
- San Luis Rey Hydrologic Unit
- Lower San Luis Rey River Watershed
- Guajome Lake - San Luis Rey River Subwatershed
- Lower San Luis Hydrologic Area
- Mission Hydrologic Subarea

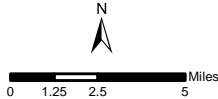


Figure 3-1. Hydrology and Watershed
Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California

The Guajome Lake-San Luis Rey River sub-watershed drains an area of approximately 41 square miles while the Lower San Luis Rey watershed drains an area of approximately 136 square miles.

3.1.3.2 LOCAL HYDROLOGY

Precipitation and Climate

The basic source of all water in San Diego County is precipitation, primarily in the form of rain. Precipitation and temperature extremes increase to the east, with mountains that receive frost and snow in the winter. The average annual precipitation is less than 12 inches, resulting in a borderline arid climate. Rainfall is strongly concentrated in the cooler half of the year, particularly from December through March, although precipitation is lower than any other part of the U.S. west coast. While the summer months are virtually rainless, subtropical moisture from the North American Monsoon usually results in increased humidity and thunderstorms for at least a few days each summer. Rainfall is highly variable from year to year and from month to month, and San Diego is subject to both droughts and floods.

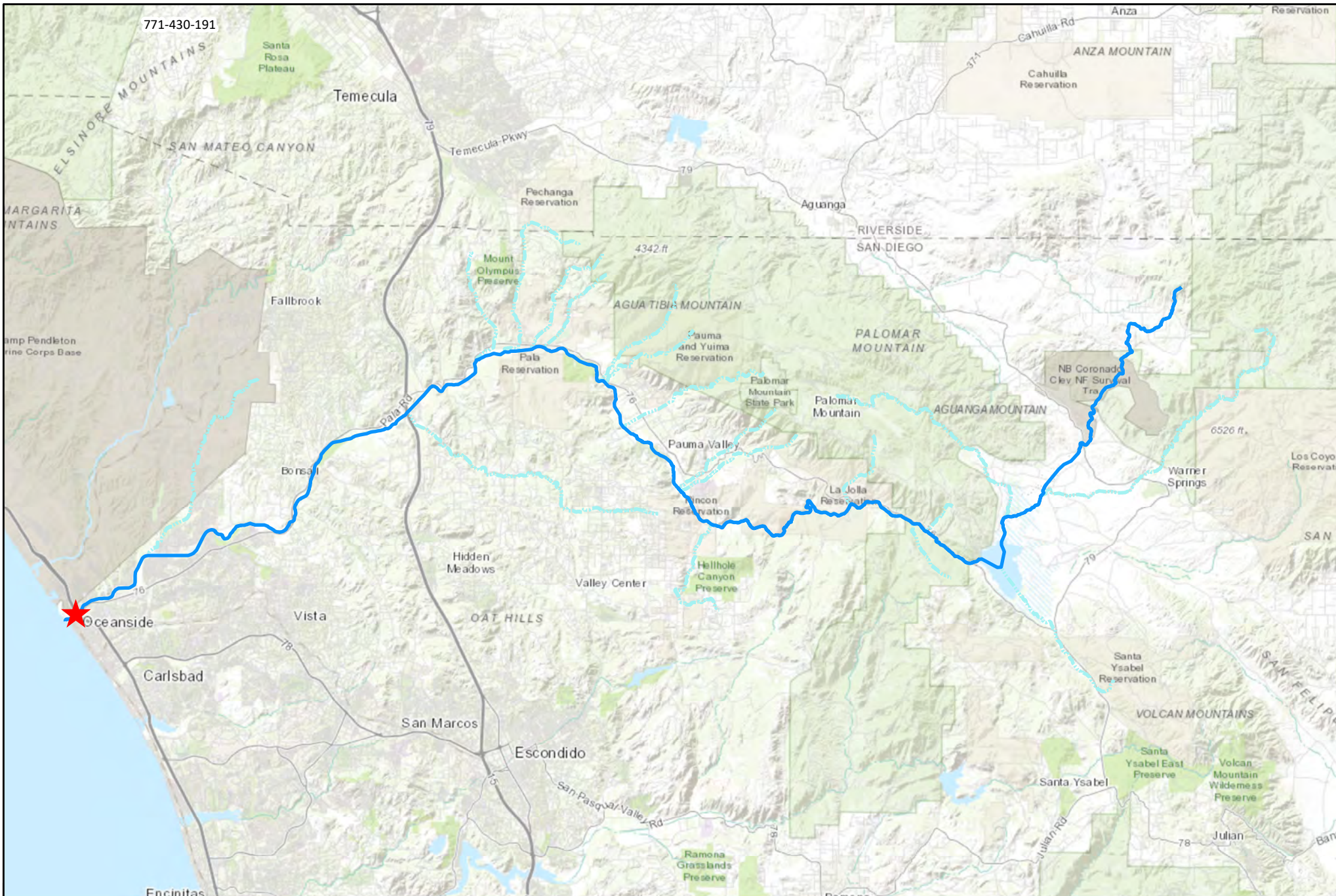
Average monthly temperatures range from 57.3°Fahrenheit (F) in January to 72°F in August. On average, 344 days a year are hotter than 60°F, but only 25 days are hotter than 80°F. Late summer and early autumn are typically the hottest times of the year with an average high of 78°F in August and 77°F in September. Temperatures occasionally reach 90°F or higher in July and August.

Surface Waters

The San Luis Rey River headwaters are in the Palomar Mountain Range and Cleveland National Forest, near Palomar Mountain and the Santa Rosa Mountains. The mouth of the San Luis Rey River, on the Pacific Ocean, is in northern Oceanside. The San Luis Rey River is over 69 miles long and drains approximately 560 square miles. There is little water in the San Luis Rey River during most of the year; however, very large flows can occur during winter storms.

The San Luis Rey River rises in two main branches. The main stem starts east of Rocky Mountain in the Cleveland National Forest and flows generally south-southwest. The West Fork's headwaters rise as a pair of tiny streams, Fry Creek and Iron Springs Creek, to the north of Palomar Mountain. These two streams combine into the West Fork, which flows southeast through the Mendenhall Valley. The West Fork joins the main stem at Lake Henshaw, a reservoir formed by a dam across the main stem San Luis Rey River.

From the base of Henshaw Dam, the San Luis Rey River winds west along the foot of Palomar Mountain, followed by California SR 76. It then bends southwest into a gorge. It leaves the canyon at Pauma Valley, where it becomes a wash surrounded on both sides by agricultural fields. Potrero and Pauma Creeks enter from the east, then Frey Creek and Agua Tibia Creek as the San Luis Rey River travels northwest (**Figure 3-2**).



Project Location



San Luis Rey River



Tributary



0 1 2 4 Miles

Figure 3-2. San Luis Rey River and Major Tributaries

**Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California**

The San Luis Rey River turns west, passing Pala, flowing through a patchwork of privately owned, government-owned, and Native American lands. It then crosses under I-15 and exits the foothills of the mountains near Bonsall.

After passing Bonsall the San Luis Rey River flows generally southwest, through the City. Although usually dry up to this point, the river starts to contain water as it nears the mouth, both from seeps and from tidal activity that forms a lagoon at the mouth of the river. The San Luis Rey River empties into the Pacific Ocean north of the City, approximately 2 miles south of the Santa Margarita River and approximately 30 miles north of San Diego.

Within the City, the San Luis Rey River has been channelized and altered over time. Surface water flows consist of surrounding tributaries supplied by intermittent releases from the Henshaw Dam and surfacing groundwater in the confluence of Couser Canyon Creek (CWAPA 2010). Within the City, the San Luis Rey River is fed by its main tributary, Pilgrim Creek; Henshaw Dam and the Escondido Canal diversion dam are the primary hydrologic controls of the river (Kajtaniak 2010).

Floodplains

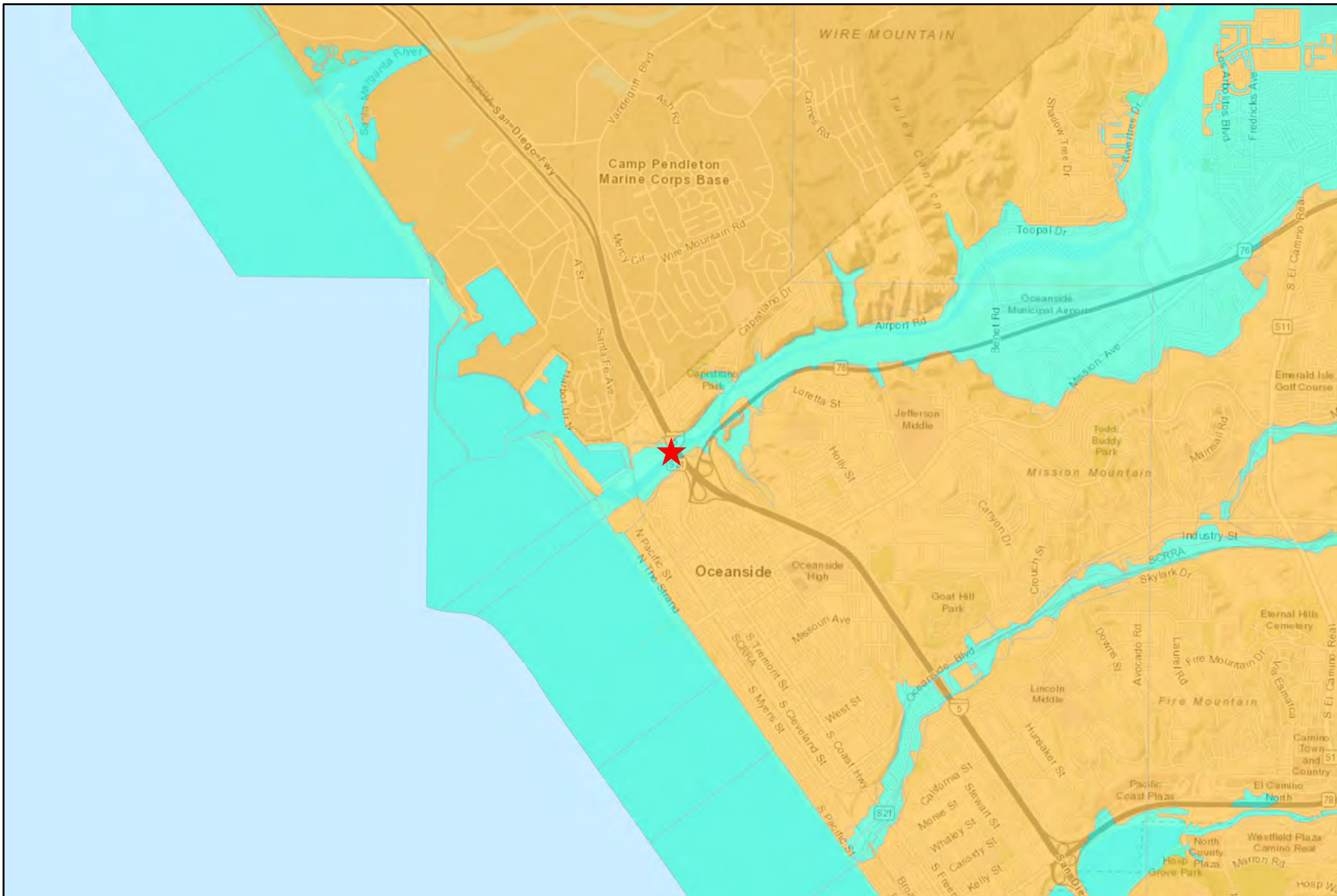
The Federal Emergency Management Agency (FEMA) provides information on flood hazards and frequency on its Flood Insurance Rate Maps (FIRMs) for cities and counties and identifies designated zones of flood hazard potential. The portion of the Project over the San Luis Rey River is within areas inundated by 100-year flooding, while the surrounding area has been determined to be outside of the 100- year floodplain but within the 500-year floodplain, as defined by FEMA geographic information systems (GIS) data (**Figure 3-3**).

Municipal Supply

According to the City, approximately 13 percent of the City's water comes from groundwater within the Mission Basin (City of Oceanside 2016). The brackish groundwater pumped from the Mission Basin is extracted and treated at the Mission Basin Groundwater Purification Facility to become potable water through a reverse osmosis desalting process (City of Oceanside 2016). The City purchases the remaining 85 percent of its water supply from the San Diego County Water Authority (SDCWA), which includes approximately half treated water and half raw water. Treated imported water is conveyed directly to the City's water distribution system, while raw (untreated) imported water is conveyed to the Robert A. Weese Filtration Plant, which serves at a capacity of 25 million gallons per day (mgd).


Groundwater Hydrology

The northern portion of the Project area lies within the San Luis Rey Valley Groundwater Basin (**Figure 3-4**). The San Luis Rey Valley Groundwater Basin underlies an east-west-trending alluvium-filled valley located along the western coast of San Diego County. The major hydrologic feature is the San Luis Rey River, which drains the valley overlying the basin.



 Project Location

Flood Zone

 100-Year Floodplain (Zones A, A99, AE, AH, AO, VE)

 500-Year Floodplain (Zone X)



0 0.175 0.35 0.7 Miles

Figure 3-3. FEMA Flood Zones

**Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California**



★ Project Location

Groundwater Basin

San Luis Rey Valley



0 0.175 0.35 0.7 Miles

Figure 3-4. Groundwater Basin

**Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California**

The basin is bounded on the east, northeast, and southeast by the contact of alluvium with impermeable Mesozoic granitic and pre-Cretaceous metamorphic rocks. In the northwest and southwest of the lower portion of the basin, alluvium is in contact with semi-permeable Eocene marine deposits and Tertiary nonmarine deposits. The basin is bounded on the west by the Pacific Ocean (DWR 2003). The San Luis Rey Valley Groundwater Basin is recharged by precipitation, imported irrigation water applied on upland areas, and by storm flow in the San Luis Rey River and its tributaries. Movement of groundwater in the alluvial aquifer is westward towards the Pacific Ocean. Water levels in the basin declined drastically in the 1950s and 1960s due to groundwater development and overpumping. Since the advent of imported water sources, groundwater levels have risen to near pre-development levels and averages range from 0 to 20 feet below land surface. The estimated total storage capacity for this basin is 240,000 acre-feet (DWR 2003).

3.1.4. Existing Water Quality

3.1.4.1. Surface Water Quality

Existing water quality conditions within the San Luis Rey River are moderate to low with unknown sources of indicator bacteria, trash, bifenthrin, chloride, nitrogen, phosphorus, and total dissolved solids being the main pollutants. Urban runoff and storm sewers are the likely sources of these pollutants. The San Luis Rey River is included in the 2018 California 303(d) list of impaired waters and is a waterbody with TMDL requirements (SWRCB 2018).

3.1.4.2. Ground Water Quality

Water in this basin is of calcium-bicarbonate, calciumsulfate-bicarbonate, and calcium-sulfate types (Luhndorff and Scalmanini 1995). The Department of Health Services data for 19 wells show a total dissolved solids (TDS) content of 530 to 7,060 milligrams per liter (mg/L), with an average of approximately 1,258 mg/L. Values for total dissolved solids ranged from 960 to 3,090 mg/L in 1983 (Izbicki 1985). Electrical conductivity readings for the basin range from 500 to 1,300 micromho (μmho) (Luhndorff and Scalmanini 1995).

3.1.5. Beneficial Uses and Water Quality Objectives/Standards

Beneficial uses applied to the surface waters of the San Luis Rey River identified in the Basin Plan include agriculture and industrial service supply; water contact recreation such as canoeing and rafting; noncontact water recreation such as hiking; warm freshwater habitat; and wildlife habitat for rare, threatened, and/or endangered species, as well as common species (San Diego RWQCB 2016).

Groundwaters in the San Diego Region can have as many as six designated beneficial uses including: (1) municipal and domestic; (2) agricultural; (3) industrial service supply; (4) industrial process supply; (5) ground water recharge; and (6) freshwater replenishment. Beneficial uses for groundwater within the San Luis Rey HU and Lower San Luis Rey HA include municipal and domestic, agricultural, and industrial service supply (San Diego RWQCB 2016).

Water quality objectives for inland surface and ground waters in the region have been set for thermal plan, agricultural supply, un-ionized ammonia, bacteria, biostimulatory substances, boron, chlorides, color, dissolved oxygen, floating material, fluoride, pH, inorganic chemicals, iron, manganese, methylene blue-activated substances, nitrate, oil and grease, organic chemicals, sodium adsorption ratio, pesticides, phenolic compounds, radioactivity, secondary drinking water standards, sediment, suspended and settleable solids, sulfate, tastes and odors, temperature, total dissolved solids, toxicity, toxic pollutants, trihalomethanes, and turbidity (San Diego RWQCB 2016).

3.1.6. Geology/Soils

San Diego County can be divided into three distinct geomorphic regions—the Coastal Plain, the Peninsular Ranges, and the Salton Trough (the desert). Each region is characterized by different climatic, topographic, biological, and geologic settings (San Diego County 2011). The City is located within the Coastal Plain region, which is underlain by layers of marine and non-marine sedimentary rock units from the last 140 million years. The Project area is underlain by late to middle Pleistocene-aged (approximately 80,000 to 200,000 years old) marine and continental deposits (ESA 2017).

The soils in the central portion of the Project are described as tidal flats along the San Luis Rey 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 San Luis Rey River within the Project area largely comprises made land and Tujunga sand, and the eastern reach of the river within the Project area includes made land, tidal flats, Grangeville fine sandy loam, riverwash, and Tujunga sand.

3.1.6.1. Soil Erosion Potential

Soil erosion potential for the Project site was measured using the K factor, or soil-erodibility factor. The soil-erodibility factor (K) represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff.

The Project site has a K factor of 0.19 meaning that the soils at the site have a low to moderate susceptibility to erosion. The Natural Resources Conservation Service (NRCS) (2021) does not give a rating for soils in this area.

3.1.7. Biological Communities

3.1.7.1. Aquatic Habitat

San Luis Rey River

The Project area includes a channelized section of the San Luis Rey River. Within the central Project area 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 San Luis Rey River and groundwater driven. The lack of predominately salt-tolerant vegetation also supports a fresh groundwater hydrology.

Open water occurs within the main channel of the San Luis Rey River. At the time 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.

Freshwater Marsh

Within the Project area, freshwater marsh occurs as large patches within riparian scrub or woodland, or as narrow fringes along the San Luis Rey River's edge. Common species include California bulrush (*Schoenoplectus californicus*), southwestern spiny rush (*Juncus acutus ssp. leopoldii*), 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 Project area, on the north and south banks of the San Luis Rey River. In the eastern portion of the Project area, 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 Hinds' willow (*Salix exigua var. hindsiana*) 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. It 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 Hinds' 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.

3.1.7.2. Fish Passage

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 San Luis Rey River flows directly into the Pacific Ocean. The portion of the San Luis Rey River that occurs within and adjacent to the Project provides only intermittent connectivity for fish and other aquatic species between the river and canyon systems and the ocean. 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.

3.1.7.3. Special Status Species

Special-status animal surveys and habitat assessments indicate that the Project **may affect, but is not likely to adversely affect** the following federally listed species: tidewater goby (*Eucyclogobius newberryi*), southern California steelhead (*Oncorhynchus mykiss*), light-footed Ridgway's rail (*Rallus obsoletus levipes*), least bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), coastal California gnatcatcher (*Polioptila californica californica*), Pacific pocket mouse (*Perognathus longimembris pacificus*) and monarch butterfly (*Danaus plexippus*). In addition, the Project **may affect but is not likely to adversely affect** designated critical habitat for tidewater goby, least Bell's vireo, and southwestern willow flycatcher. Lastly, the Project may adversely affect EFH for groundfish, pelagic fish, or Pacific coast salmon species.

Other species that may occur in the Project study area, but are not likely to be affected by the Project, include the following state-listed species and non-listed special-status species: San Diego ambrosia (*Ambrosia pumila*), sticky dudleya (*Dudleya viscida*), San Diego marsh-elder (*Iva hayesiana*), Lewis' evening primrose (*Camissoniopsis lewisii*), southwestern spiny rush, southwestern pond turtle (*Actinemys marmorata pallida*), Coronado skink (*Eumeces skiltonianus*)

interparietalis), two-striped garter snake (*Thamnophis hammondi*), red-diamond rattlesnake (*Crotalus ruber*), yellow warbler (*Setophaga petechia*), western least bittern (*Ixobrychus exilis*), olive-sided flycatcher (*Contopus cooperi*), Clark's marsh wren (*Cistothorus palustris clarkae*), western mastiff bat (*Eumops perotis*), and Pacific pocket mouse (*Perognathus longimembris pacificus*). In addition to these species, other migratory birds protected under the Migratory Bird Treaty Act (MBTA) may also be present.

For further information on special-status species within the Project site, please refer to the Natural Environment Study (Caltrans 2021) which includes discussions of potential impacts to these species and avoidance and minimization measures that will be incorporated into the Project to reduce impacts.

Chapter 4. ENVIRONMENTAL CONSEQUENCES

4.1. Introduction

This chapter includes an analysis of the potential impacts to surface water and groundwater quality and site drainage as a result of Project implementation. Where applicable, mitigation that will reduce adverse impacts is provided.

Within the Project area, approximately 2.36 acres of soil will be permanently disturbed as a result of the new bridge structure and roadway approaches while approximately 7.23 acres of soil will be temporarily disturbed as a result of construction activities such as grubbing and clearing, as well as equipment staging and material storage. The 2.36 acres also includes the footprint of the maximum number of piles/piers to be installed within the water. In addition, the Project area contains approximately 6.12 acres of existing impervious surfaces. Construction of the Project will include the addition of approximately 1.28 acres of impervious surfaces but will also remove approximately 1.45 acres of impervious material which includes the existing Coast Highway (Hill Street) bridge and portions of the existing roadway approaches resulting in a net increase of approximately 0.17 acres of pervious surfaces. For the purposes of this report, only the proposed alternative was analyzed and shown on the figures as this is the alternative that has a slightly larger footprint. **Figure 4-1** shows the disturbed soil area and **Figure 4-2** shows the impervious and pervious surfaces.

4.2. Potential Impacts to Water Quality

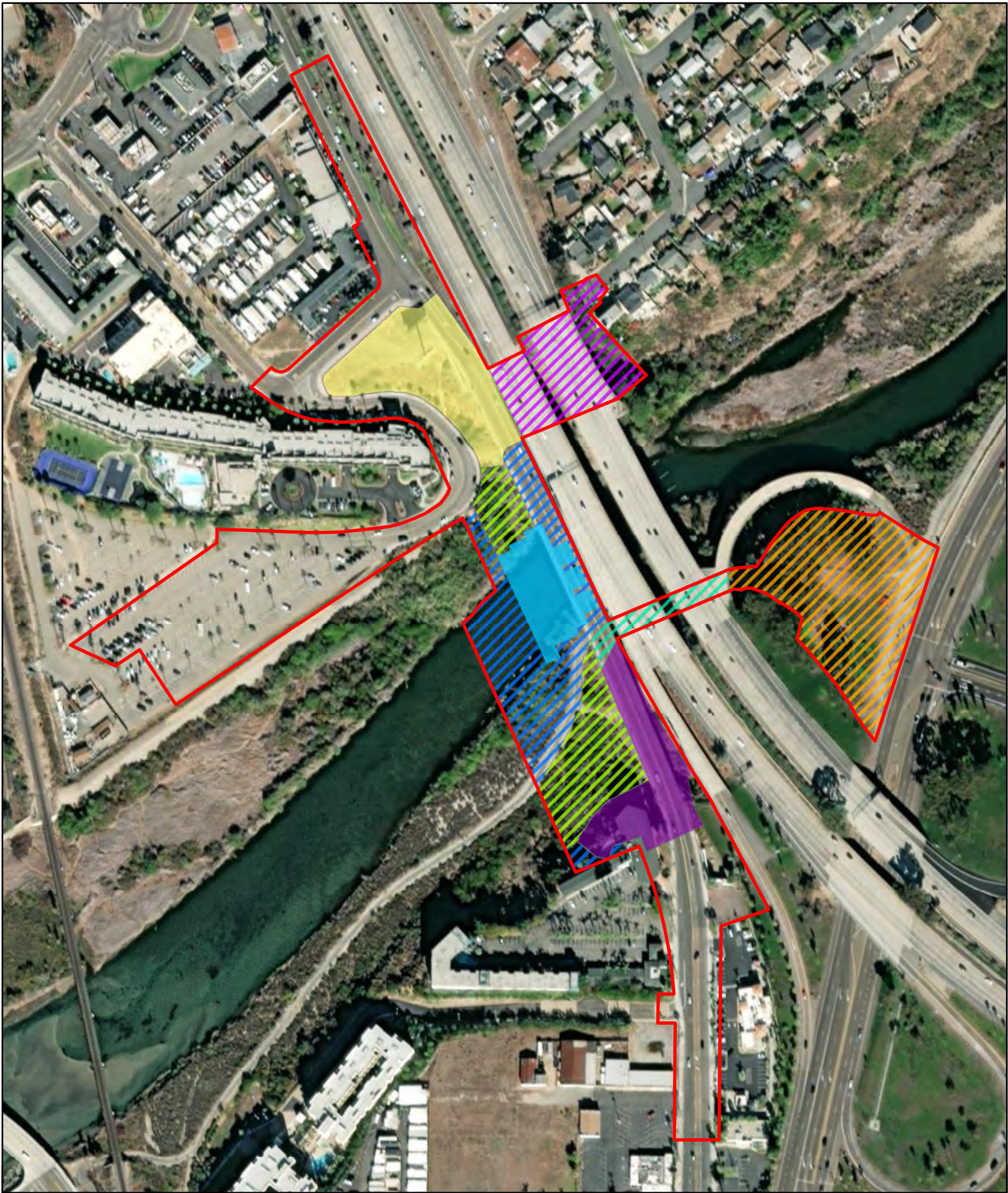
4.2.1. Temporary (Short Term) Impacts During Construction

No Build Alternative

Under the “No Build” alternative, no improvements other than routine roadway maintenance will be made. The “No Build” alternative will result in no short-term water quality impacts from construction related activities.

Build Alternative

Construction will include the series of activities described above in **Section 1.3** that will result in disturbance within and adjacent to San Luis Rey River. Grubbing and clearing activities, as well as installation of temporary falsework and temporary trestles, could result in a temporary increase in turbidity in and around the area of the construction footprint. In addition, the use of construction equipment and other vehicles could result in spills of oil, grease, gasoline, brake fluid, antifreeze, or other vehicle-related fluids and pollutants.



 Area of Direct Impacts (16.48 acres)

Temporary Disturbed Soil Area*

- Potential Temporary Disturbance (1.66 acres)
- Temporary Access (0.30 acre)
- Temporary Construction Access and Staging Area (1.16 acres)

Permanent Disturbed Soil Area

- Northern Approach and Roadway (1.38 acres)
- Southern Approach and Roadway (0.98 acre)

- Temporary Construction Area (1.24 acres)
- Temporary Staging Area (2.23 acres)
- Temporary Trestle (0.64 acre)

*Existing pervious surfaces

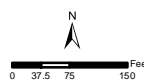
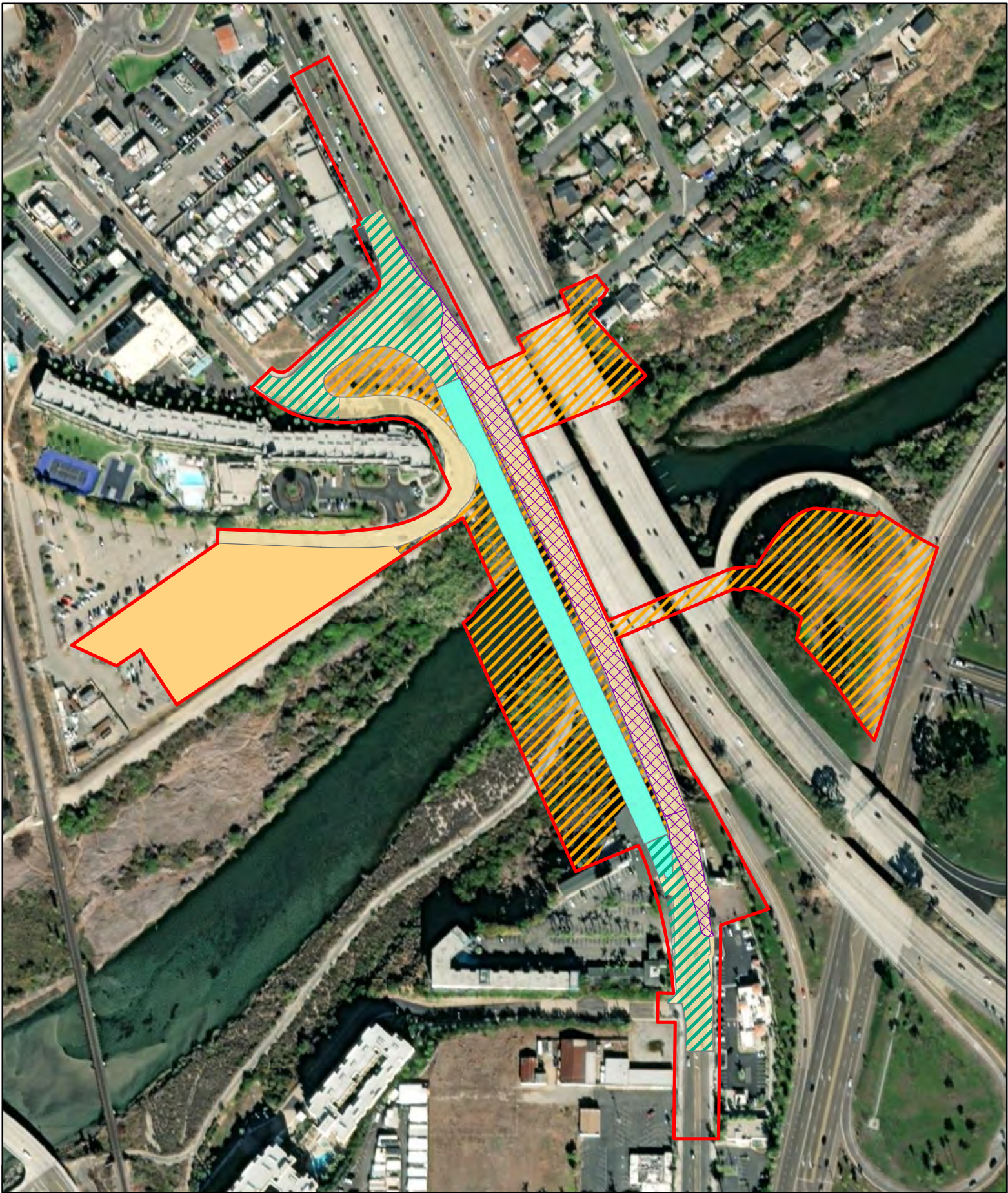


Figure 4-1. Disturbed Soil Area

**Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California**



■ Area of Direct Impacts (16.48 acres)

■ Existing Impervious Surface (6.12 acres)

■ Existing Impervious Surface - Construction Staging (2.26 acres)

■ Existing Impervious Surface - To Be Reconstructed (1.76 acres)

■ New Impervious Surface - Bridge and Southern Approach (1.28 acres)

■ Existing Impervious to Pervious Surface - Bridge Removal (1.45 acres)

■ Existing Pervious Surface - Construction Access and Staging (8.31 acres)

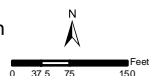


Figure 4-2. Impervious and Pervious Surfaces

**Coast Highway (Hill Street) Bridge (57C-0322)
over the San Luis Rey River Replacement Project
City of Oceanside, California**

Improper handling, storage, or disposal of fuels and materials or improper cleaning of machinery could cause surface water and groundwater quality degradation. Lastly, large pieces of construction equipment may compress soil within the staging areas, which could lead to a reduction in permeability, an increase in site runoff, and an increase in the potential for erosion to occur from the portions of the Project site outside of the channel during Project construction.

If dewatering is necessary, cofferdams along the bank will be used to locally dewater isolated parts of the channel along the banks so that the proposed construction/demolition activities can occur. Short-term increases in turbidity are anticipated to occur during localized dewatering activities, during the first flush of the stream channel when the cofferdams are removed, and during the first rainstorms which may mobilize disturbed sediments within the project area. Turbidity increases could affect water quality downstream of the Project site. Additionally, dewatering discharge could result in an adverse effect to water quality if the effluent contains chemical pollutants or high levels of sediment. While sediment is the primary pollutant of concern, all dewatering effluents such as nitrogen, oil and grease, total petroleum hydrocarbons, and sulfides could potentially impact water quality.

4.2.2. Long-term Impacts During Operation and Maintenance

No Build Alternative

Under the “No Build” alternative, no improvements other than routine roadway maintenance will be made. The “No Build” alternative will not increase the impervious surface to the area however existing runoff will continue.

Build Alternative

Implementation of the Project will not modify the character of the Project site in terms of sources of water pollutants. Vehicles traveling on Coast Highway (Hill Street) will remain the primary sources of water pollutants at the Project site. Pollutants typically generated during the operation of a transportation facility include sediment/turbidity, nutrients, trash and debris, bacteria and viruses, oxygen demanding substances, organic compounds, oil and grease, pesticides and metals.

The staging areas will be utilized only during Project construction and will not be permanently altered. When construction activities are complete, the build alternative will implement post construction source control measures called Design Pollution Prevention BMPs. These measures address long term water quality impacts by implementing design features such as permanent soil stabilization, and concentrated flow conveyance systems (e.g. rock slope protection, velocity dissipation devices, rip rap). In addition, immediately after construction is complete, all exposed soil shall be stabilized with permanent erosion control measures such as hydroseed using a California native plant seed blend. Hydroseeding stabilizes disturbed soil areas, reduces erosion, and provides dust control by dissipating the energy of rain, increasing infiltration, and trapping sediment.

To address the build alternative long-term impacts, the Project will evaluate and incorporate Caltrans approved treatment BMPs and evaluate Low Impact Development (LID) strategies consistent with the Caltrans Statewide NPDES permit. In addition to evaluating and incorporating treatment BMPs, the City will incorporate Design Pollution Prevention (source control) BMPs to ensure that adequate measures are included to minimize pollutant sources such as erosion from the Project improvements.

4.3. Impact Assessment Methodology

Impacts to water quality that can be anticipated during construction for the Project includes soil disturbing activities such as excavation, soil compaction, and grading. Types of construction activities that can cause the transport of sediment include grubbing and clearing activities for construction access, installation of the temporary trestles and falsework, and excavation and grading activities. The DSA created by these activities is susceptible to relatively high rates of erosion from wind and rain that result in sediment transport during rain events via storm water runoff.

The Project will not change the number of vehicles traveling on Coast Highway (Hill Street) or other nearby land uses in the watershed. Therefore, there will not be an increase in the load of vehicle-generated pollutants to San Luis Rey River.

4.4. Cumulative Impacts

NEPA and CEQA require that the direct, indirect, and cumulative impacts of proposed actions (also known as the Project) be assessed and disclosed. A cumulative impact includes the total effect on a natural resource, ecosystem, or human community due to past, present, and future activities or actions. In the case of this WQAR, water quality is the natural resource of primary concern. The incremental effects of the Coast Highway (Hill Street) Bridge Replacement Project, in connection with effects from past, current, and probable future projects that may result in similar impacts, were assessed to determine potential cumulative impacts. While future development within the watershed could result in water quality, erosion, and drainage impacts to the San Luis Rey River and surrounding waterways, the incremental effects of the Project are not considerable when viewed in context of effects from past projects and probable future projects. With preparation and implementation of BMPs as required under the SWPPP and the avoidance and minimization measures discussed below, the Project will not adversely affect water quality. While future development within the watershed could result in water quality, erosion, and drainage impacts to San Luis Rey River and surrounding waterways, the incremental effects of the Project are not considerable when viewed in the context of effects from past projects and probable future projects. Future development within the watershed is subject to the federal, state, and local regulations described herein and will be required to implement BMPs to reduce water quality impacts to the extent practicable. Therefore, no adverse cumulative impacts are expected.

Chapter 5. AVOIDANCE AND MINIMIZATION MEASURES

5.1. Introduction

The Project is subject to the Construction General Permit (CGP) (Order No. 2009-0009-DWQ [as amended by Order No. 2010-0014-DWQ and 2012-006-DWQ]) requirements which requires, but is not limited to, preparation and implementation of a SWPPP. The Project will comply with the NPDES CGP including preparing and implementing a SWPPP that identifies project specific BMPs to protect water quality during Project construction. These BMPs must meet the technical standards established by the permit related to conventional (e.g., sediment) and non-conventional (e.g., toxics) pollutants and must be designed and implemented to ensure the Project does not cause or contribute to a violation of water quality standards. The Caltrans Storm Water Quality Handbook has published a set of BMPs, which the Project must utilize in drafting the SWPPP. Through compliance with the NPDES program requirements and implementation of a SWPPP, water quality standards will not be violated during Project construction. In addition, these measures shall conform to the provisions in the Caltrans Standard Specifications and the special provisions that will be included in the contract for the Project.

5.2. Avoidance and Minimization Measures

Avoidance and minimization measures designed to address water quality impacts are described below and will be finalized in consultation with the Project engineer, the City, the San Diego RWQCB, and other appropriate agencies. Please refer to the Natural Environment Study for avoidance and minimization measures designed to protect special-status species.

WQ-1: Return Temporarily Disturbed Areas to Pre-Project Conditions

All temporarily disturbed areas will be returned to pre-project conditions upon completion of construction. These areas will be properly protected from washout and erosion using erosion control devices including, but not limited to coir netting, hydroseeding, and revegetation. In sloped areas, additional erosion control measures will be applied, which will include erosion control blankets and fiber rolls.

WQ-2: Protect Existing Vegetation

Existing vegetation will be protected using temporary fencing, or other similar protection devices, to reduce potential for erosion and sedimentation.

WQ-3: Cover and Stabilize Exposed Soils

Exposed soils will be covered by visqueen or other suitable material, or other methods will be used to reduce erosion and runoff during rainfall events. Exposed soils will be stabilized, through

watering or other measures, to prevent the movement of dust at the Project site caused by winds and construction activities such as traffic and grading activities.

WQ-4: Develop and Implement Toxic Materials and Spill Response Plan

The contractors will develop and implement a toxic materials control and spill response plan to regulate the use of hazardous materials, such as the petroleum-based products used as fuel and lubricants for equipment and other potentially toxic materials associated with Project construction.

WQ-5: Develop Stormwater Pollution Prevention Plan and Implement Water Quality Best Management Practices

Before any ground-disturbing activities, the City shall prepare and implement a SWPPP (as required under the Construction General Permit Order 2009-0009-DWQ [as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ]) that includes erosion control measures and construction waste containment measures to ensure that waters of the State are protected during and after construction. The SWPPP shall follow guidance in the current version of the Caltrans Stormwater Quality Handbook and the California Stormwater Quality Association (CASQA) BMP Handbook. The SWPPP shall include site design to minimize offsite storm water runoff that might otherwise affect adjacent lake or stream habitat.

The SWPPP shall require that the construction contractor implement BMPs to protect water quality within San Luis Rey River. Caltrans and CASQA have developed resources for preventing water pollution during construction activities. Based on review of the Project, the following or equivalent BMPs will be used by the construction contractor when developing the SWPPP:

- Silt fence
- Hydraulic mulch
- Hydroseeding
- Fiber rolls
- Dewatering operations
- Pile driving operations
- Material and equipment use over water
- Structural Demolition/Removal Over or Adjacent to Water
- Other spill control and prevention measures

Information on each proposed BMP is provided in **Section 5.3** (below), as excerpted from the Caltrans stormwater construction site BMP fact sheets (Caltrans 2017). In addition to the measures described below, the SWPPP will require that the Contractor cover or otherwise stabilize all exposed soil 48 hours prior to potential precipitation events of greater than 0.5 inch.

5.3. Best Management Practices

SC-1 and SC-5 Silt Fence and Fiber Rolls

The Contractor will install silt fencing, fiber rolls, or other equivalent erosion and sediment control measures between the designated work area and San Luis Rey River to ensure that construction debris and sediment does not inadvertently enter the waterway. Storage and stockpiling of earth materials near San Luis Rey River will be avoided to the maximum extent feasible

A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site. For the Project, if silt fencing is determined appropriate, reinforced silt fencing anchored to keep the fence in place will be used to prevent debris and materials falling toward San Luis Rey River during demolition.

A fiber roll consists of wood excelsior, rice or wheat straw, or coconut fiber that is rolled or bound into a tight tubular roll and placed on the toe and face slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow; and provide removal of sediment from the runoff. For the Project, if fiber rolls are determined appropriate, fiber rolls will be used at intervals on exposed slopes.

To ensure that wildlife is not trapped, tightly woven fiber netting (no monofilament netting) or similar material shall be used for erosion control or other purposes within the Project work limits. Coconut coir matting and burlap-contained fiber rolls are an example of acceptable erosion control materials.

SS-3 and SS-4 Hydraulic Mulch and Hydroseeding

Immediately after bridge and roadway construction is complete, all exposed soil shall be stabilized. Soil stabilization includes, but is not limited to, seeding with a native grass seed mix, planting native plants and placement of rock. Hydraulic mulch consists of applying a mixture of shredded wood fiber or a hydraulic matrix and a stabilizing emulsion or tackifier with hydroseeding equipment, which temporarily protects exposed soil from erosion by raindrop impact or wind. Hydroseeding typically consists of applying a mixture of wood-fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment, which temporarily protects exposed soils from erosion by water and wind. Hydroseeding is applied on disturbed soil areas requiring temporary protection until permanent vegetation is established; or disturbed soil areas that must be re-disturbed following an extended period of inactivity.

The hydraulic mulch shall be used in conjunction with a native seed mix applied to the disturbed soil. Disturbed soil areas and areas will be reseeded using a California native plant seed blend. An erosion control seed mix (hydroseed) will be applied in disturbed soil area and on slopes flatter

than 1:1. Erosion control (e.g., Bonded Fiber Matrix with a native plant seed blend) will be applied on all disturbed or cut slopes steeper than 1:1.

NS-2 Dewatering Operations

Dewatering Operations are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation (stormwater) must be removed from a work location so that construction work may be accomplished. Dewatering operations are used to manage removal of water from excavations, cofferdams, and areas of ponding (accumulated precipitation). Proper dewatering management prevents discharge of pollutants from these operations to a storm drain or receiving waters. These practices are implemented for discharges of non-stormwater and stormwater (accumulated rainwater) from construction sites. Non-stormwater includes groundwater, dewatering of piles, water from cofferdams, and water used during construction activities that must be removed from a work area.

NS-13 Material and Equipment Use over Water

Caltrans has established procedures for the proper use, storage, and disposal of materials and equipment on barges, boats, temporary construction pads, or similar locations over or adjacent to a watercourse. These measures minimize or eliminate the discharge of potential pollutants to a watercourse.

Other Spill Prevention and Control Measures

The SWPPP will include a waste management section that provides procedural and structural BMPs for collecting, handling, storing, and disposing of wastes generated by the construction of the Project to prevent the accidental release of pollutants during construction. For example, no refueling, storage, servicing, or maintenance of equipment shall take place within 100 feet of aquatic habitat, and all machinery used during construction of the Project shall be properly maintained and cleaned to prevent spills and leaks that could contaminate soil or water. The SWPPP also includes measures to report, contain, and mitigate for any accidental spills during construction. Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) shall be cleaned up in accordance with applicable local, state, and/or federal regulations.

5.4. Agency Coordination and Anticipated Regulatory Permits

The following agency coordination and regulatory permits are anticipated for the Project. All BMPs and other avoidance/minimization measures will be prepared in consultation with the project engineer, City, San Diego RWQCB, and other appropriate agencies.

- NPDES General Construction Permit for Discharges of storm water associated with construction activities (Construction General Permit (Order No. 2009-0009-DWQ [as amended by Order No. 2010-0014-DWQ and 2012-006-DWQ])). A SWPPP will also be

developed and implemented as part of the Construction General Permit. In addition, the following NPDES permits may also be required:

- U.S. Army Corps of Engineers – Clean Water Act, Section 404, Nationwide Permit #14 (Linear Transportation Projects)
- U.S. Army Corps of Engineers – Rivers and Harbors Act, Section 408
- USFWS and NOAA Fisheries – Section 7 Informal Consultation
- California Department of Fish and Wildlife – California Fish and Game Code Section 1600-1602 Streambed Alteration Agreement
- Regional Water Quality Control Board - Clean Water Act, Section 401 Water Quality Certification
- California Coastal Commission – Coastal Development Permit

Chapter 6. REFERENCES

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6.2. Preparer(s) Qualifications

Lindsay Tisch is a Fisheries and Wildlife Biologist and Water Quality Specialist with Dewberry with over 20 years of professional experience. Ms. Tisch received her bachelor's degree in Fisheries and Wildlife Management at the University of Northern British Columbia. In addition, she is a Certified Professional in Stormwater Quality, and a Qualified SWPPP Practitioner and Developer. Her professional experience includes environmental analysis pertaining to hydrology, erosion control and water quality. Ms. Tisch has prepared various levels of environmental documents and water quality technical studies as well as trained staff on Caltrans water quality guidance.

Appendix A. Risk Determination Worksheet

	A	B	C
1	Sediment Risk Factor Worksheet		Entry
2	A) R Factor		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	R Factor Value		34.19
6	B) K Factor (weighted average, by area, for all site soils)		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	K Factor Value		0.19
10	C) LS Factor (weighted average, by area, for all slopes)		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	LS Factor Value		1.41
14			
15	Watershed Erosion Estimate (=R_xK_xLS) in tons/acre		9.159501
16	Site Sediment Risk Factor		Low
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	yes/no	
<p>A.1. Does the disturbed area discharge (either directly or indirectly) to a 303(d)-listed waterbody impaired by sediment (For help with impaired waterbodies please visit the link below) or has a USEPA approved TMDL implementation plan for sediment?:</p> <p>http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml</p> <p style="text-align: center;">OR</p>	Yes	High
<p>A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan)</p> <p>http://www.waterboards.ca.gov/waterboards_map.shtml</p>		
<p>Region 1 Basin Plan</p> <p>Region 2 Basin Plan</p> <p>Region 3 Basin Plan</p> <p>Region 4 Basin Plan</p> <p>Region 5 Basin Plan</p> <p>Region 6 Basin Plan</p> <p>Region 7 Basin Plan</p> <p>Region 8 Basin Plan</p> <p>Region 9 Basin Plan</p>		

Combined Risk Level Matrix

		<u>Sediment Risk</u>		
		Low	Medium	High
<u>Receiving Water Risk</u>	Low	Level 1	Level 2	
	High	Level 2		Level 3

Project Sediment Risk: **Low**

Project RW Risk: **High**

Project Combined Risk: **Level 2**